BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of: **Complaint and Request for Investigation of CalCERTS, Inc.**	DOCKET NO. 12-CAI-01

ANSWER OF CALCERTS, INC. TO COMPLAINT AND REQUEST FOR INVESTIGATION

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TABLE OF CONTENTS

Page

I. ADMISSIONS AND DENIALS OF MATERIAL FACTS CONTAINED IN THE COMPLAINT 5

II. THE HOME ENERGY RATING PROGRAM ESTABLISHED INDEPENDENT PRIVATE ENTITIES TO ENSURE THE PUBLIC RECEIVES TRUTHFUL AND ACCURATE RATINGS 5

A. CalCERTS Is A Private Commission-Certified Provider 6

B. The CalCERTS Certified Rater Agreement Requires True and Accurate Ratings 7

C. The CalCERTS Subscription Agreement Requires True and Accurate Data 8

D. CalCERTS Received a Complaint Regarding Petitioners' Employer 8

E. CalCERTS' Investigated the Complaint Prior to Taking Action Against the Petitioners 8

1. Quality Assurance Reviews of Petitioners' Rated Homes Resulted in Significant and Substantial Discrepancies 9

a. Quality Assurance Review Revealed that Mr. Davis Falsified Test Results 11

b. Quality Assurance Review Revealed that Mr. Hoover Falsified Test Results 12

2. CalCERTS Decertified Petitioners as Part of the Complaint Resolution 13

a. Mr. Davis – Hearing & Decertification Process 13

b. Mr. Hoover - Hearing & Decertification Process 14

3. Other Valley Duct Testing Raters 15

F. CalCERTS has Received Unsubstantiated Complaints From Valley Duct Testing 15

G. Providers have Submitted and the Commission has Published Decertifications of Raters 16

III. PETITIONERS UNSUBSTANTIATED LEGAL CLAIMS SHOULD BE REJECTED BY THE COMMISSION 16

A. CalCERTS is Not A State Actor and Therefore, Expanded Due Process Requirements Do Not Apply 17

B. The Commission Did Not Perform the Investigations of the Complaint or Execute the Decertifications 17

C. CalCERTS Is Not a State Actor 18

TABLE OF CONTENTS
(continued)

Page

D. Petitioners' Rights Must Be Asserted Through The Principles of Contract 21

E. Due Process Requirements Were Met Although No Fundamental Right At Stake 22

F. Petitioners Were Given Notice and An Opportunity to Be Heard 22

1. CalCERTS Provided Notice to Petitioners 23

2. CalCERTS Provided a Hearing for Mr. Davis and Mr. Hoover 24

3. An Informal Hearing Was Warranted 25

G. Common Law Requirements of Fair Procedure Were Met 26

H. Consumer Protection, a Mandate of the HERS Program, Must Be Supported By the Commission and the Industry 27

IV. THE COMMISSION MUST UPHOLD ITS MANDATE TO ENSURE HOME ENERGY RATINGS PROVIDE ACCURATE AND TRUTHFUL INFORMATION TO CONSUMERS 28

V. 20 CFR 1231(B)(8) DECLARATION 29

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ANSWER OF CALCERTS, INC. TO COMPLAINT AND REQUEST FOR INVESTIGATION

At its core, Mr. Davis and Mr. Hoover's (collectively, the "Petitioners") Complaint Against and Request for Investigation of CalCERTS, Inc.[1] ("CalCERTS, Inc.") is an attack on the integrity and efficacy of the Home Energy Rating Program[2] ("HERS Regulations"). The HERS Regulations were created to protect the consumer by promoting accurate home energy ratings through training, certification, and quality assurance procedures. Without these safeguards, the program is superfluous and the public is at risk. As certified HERS Raters, the Petitioners had a legal and contractual obligation not to submit untrue, inaccurate, or incomplete rating information. The Petitioners breached their obligations and, by extension, the public trust. Acting in accord with the very purpose of the HERS Regulations, and in a manner that was consistent with its contractual rights, CalCERTS first suspended and then decertified the Petitioners. The Petitioners now request that their decertifications be revoked. In doing so, the Petitioners are asking the California Energy Resources Conservation and Development Commission (the "Commission") to ratify their fraudulent conduct and avoid its statutory mandate of consumer protection.

In order to deflect the Commission's attentions from their transgressions, the Petitioners attack the decertification on the basis they were not afforded due process. However, this argument relies on a flawed premise, which is that CalCERTS is a state actor. In fact, the

[1] Received by the Office of Chief Counsel on February 15, 2012, filed in the Docket Unit on February 24, 2012, Docket No. 12-CAI-01.

[2] The Commission's regulations are codified at 20 California Code of Regulations §§ 1670, *et seq.* and in the Home Energy Rating System Technical Manual, CEC-400-2008-012-CMF; 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, CEC-400-2008-001-CMF; 2008 Reference Appendices CEC-400-2008-004-CMF; 2008 Residential Compliance Manual; CEC-400-2008-016-CFM.

Commission purposefully designed the HERS Program to be implemented by private entities, specifically recognizing the private entities providing these services at the time the regulations were adopted. The HERS Regulations require two different and independent categories of private entities be involved in any home energy rating in order to provide the homeowners and renters with an independent check upon the accuracy of the rating. The HERS Regulations formally establish these two independent and private entities as "providers" and "raters."

Providers are organizations that administer a home energy rating system in compliance with the HERS Regulations.[3] Providers, certified by the Commission, protect the integrity of energy rating services by being independent of and supervising the home energy raters.[4] CalCERTS is a private corporation certified as a provider by the Commission to, among other things, conduct training and certification for individuals who conduct home energy ratings, consistent with the HERS Regulations. The Petitioners are raters. Raters are persons who have been trained, tested, and certified by a provider to perform one or more of the functions or procedures used to develop home energy ratings, audits, field verifications or diagnostic testing.[5] The Petitioners attended CalCERTS training and were certified as raters by CalCERTS. CalCERTS formally delineates the relationship between itself and its raters in contracts reviewed and approved by the Commission for consistency with the HERS Regulations.

As a certified provider, CalCERTS is required to, and does, have a quality assurance program and a complaint response system. Quality assurance programs are worthless if a provider cannot take action to remove raters providing false and misleading ratings to homeowners. Thus, pursuant to its Commission-approved contracts with prospective HERS raters, CalCERTS may decertify raters who fail to provide accurate and truthful ratings. On several occasions prior to the instant controversy, CalCERTS has decertified raters. (*See* **Attachment A**, *Disciplinary Actions taken against HERS Raters and prospective HERS Raters by HERS Providers* <http://www.energy.ca.gov/HERS/documents/disciplinary_actions.pdf> [as of March 15, 2012].) .)

In this instance, CalCERTS received complaints regarding the work performed by Petitioners. CalCERTS conducted quality assurance reviews of Petitioners and found egregious

[3] 20 CCR § 1671.

[4] 20 CCR §1673(j).

[5] 20 CCR § 1671.

and fraudulent representations in their work. As a result of the quality assurance reviews, CalCERTS initiated its internal procedures to decertify the Petitioners as CalCERTS raters. As a private corporation, CalCERTS was not required to provide the Petitioners with the level of due process asserted. Nevertheless, because CalCERTS has a corporate and ethical incentive to ensure that raters are treated fairly, sufficient process was afforded. Petitioners were given notice and an opportunity to be heard.

Petitioners now challenge the HERS Regulations and ask this Commission to compel CalCERTS to certify them despite their submission of fraudulent rating information, in violation of their regulatory and contractual obligations. Without the ability to decertify raters pursuant to a contract that this Commission approved, CalCERTS is placed in an untenable position, unable to act in the face of egregious conduct. If CalCERTS does not have the ability to protect consumers from fraudulent home raters, then the Commission must.

In order to protect the public from fraudulent ratings and maintain the integrity of the Home Energy Rating Program, CalCERTS respectfully requests the Commission take the following action:

1. Affirm that providers certified under Title 20, Chapter 4, Article 8, Section 1674 of the California Code of Regulations maintain the right to decertify raters and enforce the provisions of their Rater Agreements relative to their own certification program.

2. Maintain the decertifications of Mr. Hoover and Mr. Davis during the pendency of this Complaint proceeding.

3. Affirm the decertifications of Mr. Hoover and Mr. Davis, and affirm the decertifications of all HERS Raters previously published by the Commission, and

4. Initiate a Complaint and Request for Investigation of Valley Duct Testing, a division of JaaR Sales, Inc., pursuant to 20 Cal. Code Regs. §§ 1675(b) and 1230.

Pursuant to 20 Cal. Code Regs. § 1233(a), CalCERTS provides this response (the "Answer") to Erik Hoover's and Patrick Davis's Complaint Against and Request for Investigation of CalCERTS, Inc. This Answer begins by responding directly to the specific facts alleged in the Complaint. Next, the Answer describes the legislative mandated independent relationship between the provider, CalCERTS, and its raters. Then, the Answer provides a detailed description of the complaints received by and investigation conducted by CalCERTS leading up to the decertification of Petitioners. Finally, the Answer addresses the erroneous

conclusion in the Complaint that Petitioners have the same due process rights in their contractual relationship with CalCERTS as they might have with a state agency.

I. ADMISSIONS AND DENIALS OF MATERIAL FACTS CONTAINED IN THE COMPLAINT

Pursuant to 20 C.C.R 1233(b)(2), CalCERTS admits and denies the material allegations in the Complaint at section III(a)-(i), as follows:[6]

A. CalCERTS admits that Petitioners were certified as HERS raters in 2009.

B. CalCERTS admits that complaint(s) were received with regard to Petitioners and their employer, Valley Duct Testing, as more specifically discussed herein.

C. CalCERTS admits that Petitioners were suspended based on their quality assurance failures.

D. CalCERTS admits that Petitioners were interviewed and that no audio recordings were conducted.

E. CalCERTS admits that Petitioners' quality assurance failures were discussed during their respective interviews.

F. CalCERTS admits that Petitioners were contacted by email following the interviews.

G. CalCERTS admits that Petitioners were decertified on or about January 20, 2012.

H. CalCERTS admits that Petitioners' attorney was provided with details regarding the quality assurance failure.

I. CalCERTS alleges that the content of the cited correspondence speaks for itself.

II. THE HOME ENERGY RATING PROGRAM ESTABLISHED INDEPENDENT PRIVATE ENTITIES TO ENSURE THE PUBLIC RECEIVES TRUTHFUL AND ACCURATE RATINGS

In 1992 the Legislature decided to encourage homeowners and renters to implement cost effective energy efficiency measures. (SB 1207, stat. 1992.) The program required efficiency measures to be assessed for their ability to effectively reduce energy use, and for homeowners to be informed of the reasonable cost estimates of energy savings. (*Id.*) The legislation was codified, and Public Resources Code Section 25942 empowered the Commission to establish the statewide HERS Program. The statue specifically required the program criteria to include

[6] To the extent not specifically admitted or denied, each material allegation in the Complaint is generally denied.

"training and certification procedures for home raters and quality assurance procedures to *promote accurate ratings and protect consumers*." Pub. Res. Code § 25942(a)(3) (emphasis added). Paramount to the home energy rating system was accurate home energy ratings.

In adopting this legislation the Legislature recognized and encouraged the existing private entities providing energy efficiency evaluations to continue providing this service to the public. But, the new program required these entities to become certified. Therefore, the legislation required private entities that were in the business of rating homes prior to July 1, 1994, to be certified.[7] (SB 1207, stat. 1992.) The Commission required certification of raters by independent private entities called providers. Providers must be certified by the Commission and are regulated by the Commission under Title 20, Chapter 4, Article 8, Sections 1670–1675 of the California Code of Regulations, (the "HERS Regulations"). Since implementation of the HERS Program, the Commission has certified three providers: CHEERS, certified in 1992; CalCERTS, certified in 2003; and CBPCA, certified in 2007.

A. CalCERTS Is A Private Commission-Certified Provider

CalCERTS is a private corporation certified by the Commission as a HERS provider. CalCERTS provides a home energy rating system that includes its proprietary data base. As a provider, CalCERTS trains and certifies home raters.[8] CalCERTS is obligated to ensure that its certified raters provide true and accurate ratings.[9] In order to fulfill its obligation to ensure true and accurate ratings, CalCERTS operates a quality assurance program and responds to complaints.[10]

In order to understand the quality assurance program and CalCERTS response to complaints, this Answer first describes the actions taken by raters. Raters under the HERS program inspect homes to ensure that new construction and alterations of existing homes meet the Building Energy Efficiency Standards set forth in Title 24 of the California Code of Regulations.[11] HERS Raters perform numerous tests, referred to as field verification and

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[7] This date was subsequently extended to January 1, 1996. Pub. Res. Code. §25942(c).

[8] 20 Cal Code Regs §1673(a) .

[9] 20 Cal. Code Regs. §1673(b).

[10] 20 Cal. Code Regs § 1673(i).

[11] 20 Cal. Code Regs. § 1672.

diagnostic testing, on different "measures" related to energy efficiency. For example, raters will test a home's air-condition system and inspect the home's insulation. Once an inspection is completed, the rater enters the data into a registry that generates an energy rating or certification of compliance. The rater signs a statement under penalty of perjury assuring that the information he or she enters into the registry is true and accurate.

The HERS Regulations require specific quality assurance programs.[12] CalCERTS has a designated quality assurance manger and staff that conduct quality assurance reviews. When CalCERTS performs quality assurance reviews on its raters, the reviewer[13] independently rates a home already inspected by the rater. The results of the quality assurance review are then compared to the results reported by the rater. The HERS Regulations require reporting deficiencies to the rater registry maintained by the Commission.[14]

CalCERTS is also required to have a system to receive complaints.[15] CalCERTS is required to respond and resolve complaints related to ratings, field verifications, and diagnostic testing services and reports. CalCERTS initiated an investigation of the Petitioners after receiving a complaint.[16]

B. The CalCERTS Certified Rater Agreement Requires True and Accurate Ratings

The HERS Regulations require CalCERTS to have an approved contract with its raters that requires the raters to provide true and accurate ratings.[17] CalCERTS has a Commission approved CalCERTS Certified Rater Agreement. The Petitioners each executed a Rater Agreement. (*See* **Attachments B and C**, respectively *Davis CalCERTS Certified Rater Agreement* and *Hoover CalCERTS Certified Rater Agreement*, collectively "Rater Agreement".) According to the Rater Agreement CalCERTS may reprove, suspend for a period not to exceed

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[12] 20 Cal. Code of Regs § 1673(i).

[13] The qualifications of Quality Assurance Reviewers are reviewed by the Commission. (See 20 Cal. Code Regs. § 1673(i)(1).)

[14] 20 Cal Code of Regs. § 1673(I)(3).

[15] 20 Cal. Code of Regs § 1762(i)(5).

[16] Petitioners argue that since they failed their quality assurance reviews they are *entitled* to the additional quality control provisions under section 1673(i)(3), applicable in instances where a rater fails a *routine* quality assurance evaluation. (See Complaint at p. 1.) The Petitioners did not fail routine quality assurance reviews, but failed numerous quality assurance reviews specifically targeted to resolve a complaint received under section 1673(i)(5), alleging fraud.

[17] 20 Cal. Code Regs. § 1673(b).

two years, or permanently decertify any rater who willfully fails to provide true, accurate, and complete rating, field verification, diagnostic testing or data entry in compliance with the HERS Regulations. (*See* Rater Agreement at §§ III.B, F.)

C. The CalCERTS Subscription Agreement Requires True and Accurate Data

In addition to a Rater Agreement, CalCERTS' raters also enter into a CalCERTS Subscription Agreement. (See **Attachments D and E**, respectively *Davis CalCERTS Subscription Agreement* and *Hoover CalCERTS Subscription Agreement*, collectively "Subscription Agreement".) The Subscription Agreement establishes the terms upon which a rater may have access to CalCERTS' Commission-approved proprietary registry. The Subscription Agreement is the means by which CalCERTS protects its proprietary interest in its training program, online services, and reputation, by designating the terms for use of CalCERTS' intellectual property. (*See* Subscription Agreement at §§ C, D.) The Subscription Agreement can be terminated by a subscriber's willful failure to provide true and accurate data and information. (*Id.* at § F (4).) The Petitioners each executed a Subscription Agreement.

D. CalCERTS Received a Complaint Regarding Petitioners' Employer

In September of 2011, William Barrett complained to CalCERTS about conduct he had personally witnessed while working at Valley Duct Testing as a HERS rater. Mr. Barrett alleged that Valley Duct Testing raters were deliberately falsifying ratings to the detriment of homeowners, reporting that homes were Title 24 compliant when they were not. Mr. Barrett indicated that this practice was encouraged by Valley Duct Testing to help contractors pass HERS inspections and generate more business for Valley Duct Testing. Mr. Barrett claimed that he had personally witnessed raters falsifying data.[18]

E. CalCERTS' Investigated the Complaint Prior to Taking Action Against the Petitioners

Based on Mr. Barett's complaint, CalCERTS began an investigation. On September 21, 2011, CalCERTS interviewed Mr. Barrett, questioning his allegations against Valley Duct Testing. Mr. Barrett described multiple instances where Valley Duct Testing raters deliberately falsified ratings. Mr. Barrett described how raters were encouraged to issue passing ratings for contractors even for homes in violation of Title 24.

[18] CalCERTS had, up until the time of filing this answer, protected Mr. Barrett's anonymity. Mr. Barrett has agreed to the use of his name for this answer, and has agreed to testify if a hearing is warranted.

On October 3, 2011, CalCERTS conducted a quality assurance review on ratings entered by Mr. Barrett to determine Mr. Barrett's accuracy when rating homes. Mr. Barrett passed the quality assurance review.

Soon thereafter, CalCERTS decided to formally investigate the complaint issued by Mr. Barrett.[19] CalCERTS began identifying homes rated by Valley Duct Testing raters and began performing quality assurance reviews on these homes to investigate the allegations of fraud.

This investigation is still ongoing.[20] To date, three Valley Duct Testing raters have been placed on probation subject to increased quality assurance reviews, and two raters, the Petitioners, have been decertified. The details leading to the decertification of Mr. Hoover and Mr. Davis follow below.

1. Quality Assurance Reviews of Petitioners' Rated Homes Resulted in Significant and Substantial Discrepancies

When ratings reported by Petitioners were compared to ratings generated by CalCERTS' Quality Assurance Team ("QA Team"), *significant* and *substantial* discrepancies were revealed.[21] Many of these discrepancies substantiated the allegations in Mr. Barrett's complaint. Duct leakage, refrigerant charge and airflow, and insulation were some of the most significant measures falsified by Petitioners. A description of these measures has been provided for context.

> Duct Leakage: Duct leakage measures test a home's ability to effectively cool and heat the home. If duct leakage is inaccurately reported, a home-owner may be unaware that energy is being wasted, channeling conditioned air into the attic or other areas of the home that provide no benefit. More importantly, if duct leakage is inaccurately measured, contaminants such as mold, dust, and exhaust may be sucked into a home's airflow system, potentially harming the health and property

[19] This was not the first complaint against Valley Duct Testing received by CalCERTS. In 2010, CalCERTS received a complaint against John Flores and Valley Duct Testing that was resolved with the temporary suspension of Mr. Flores, the president of Valley Duct Testing. The terms of the suspension were published by the Commission at: http://www.energy.ca.gov/HERS/documents/disciplinary_actions.pdf

[20] CalCERTS is required by the regulations to resolve all complaints issued through CalCERTS' Complaint Response System. (*See* 20 Cal. Code. Regs. §§ 1672(i)(5), and 1675(b).) To resolve this complaint, CalCERTS asks the Commission to initiate a Commission-sponsored Complaint and Request for Investigation of Valley Duct Testing, a division of Jaar Sales, Inc., pursuant to 20 Cal. Code. Regs. §§ 1675, 1230.

[21] The data and photographs documenting these discrepancies are provided in the attached declaration of Michael Charles Bachand, CalCERTS' Quality Assurance Manager.

of the homeowner. If duct leakage is above a specified target the home fails this measure and the contractor will be required to better seal the ducts.[22]

Refrigerant Charge & Air Flow: Refrigerant charge measures test whether there is sufficient refrigerant in an air-conditioning unit to properly cool a home. Airflow measures determine the air-conditioning unit's ability to effectively distribute air throughout the home. A series of tests gage these measures. One of the tests is to verify the presence of Temperature Measurement Access Holes (TMAHs). If the holes are present the raters use a temperature split test to measure refrigerant charge and airflow. If TMAHs are not present, a rater might be able to use a flow hood test to test airflow, dependant on the condition of the home. HERS raters also verify the presence and functionality of the Thermal Expansion Valve (TXV), a device used to regulate refrigerant in the air-condition unit. When these measures are falsified, energy is wasted and systems are kept from working as intended by the manufacturer. Fraudulent ratings conceal the problem, and the systems are left unrepaired.

Insulation: Quality Insulation Installation (QII) measures require the home to be inspected with regards to insulation installation. QII requires the home to be inspected during framing to ensure that the home has been sealed against air leakage, and again after the insulation has been installed. Raters ensure that insulators post the appropriate insulation documentation required by law. Insulation is very expensive, and the raters must verify that insulators have provided the quantity and quality of insulation purchased. Insulators are required to install rulers to verify that enough insulation has been installed in the home.

[22] Duct leakage has significant financial consequences for the homeowner, wasting energy every time the home is heated or cooled. Yet, fixing duct leakage is a simple and inexpensive process for the contractor. Once the HERS Rater informs the contractor that duct leakage is high, the contractor can use tape or putty to better seal the ducts. A relatively inexpensive fix for the contractor can conserve significant resources over the life of a home.

a. Quality Assurance Review Revealed that Mr. Davis Falsified Test Results

The QA Team reviewed six properties rated by Mr. Davis.[23] At five of these properties Mr. Davis failed to correctly report duct leakage, providing the homes a passing rating when the homes were not Title 24 compliant. Mr. Davis repeatedly failed to correctly identify homes as new construction, setting erroneous and less stringent target numbers for duct leakage that could allow the home to pass inspection. Compared to the duct leakage measurements generated by the QA Team, Mr. Davis's numbers were off by a significant factor; double digits when the margin of error for this test is plus or minus 3 percent of the actual measurement.[24] For example, in order for a particular home[25] to pass duct leakage it needed to have leakage measured below 150 cfm. Mr. Davis reported duct leakage of 146 cfm for the home. The quality assurance review reported 224 cfm for the same home. The discrepancy between these two numbers directly corresponds to whether the home was Title 24 compliant or not.

Mr. Davis failed to accurately report the refrigerant charge and air flow of the homes he rated. Mr. Davis lied about the presence of TMAHs and the tests he used to measure air flow. The quality assurance reviewer was unable to find any TMAHs at the locations where Mr. Davis indicated the holes were present.[26] Mr. Davis reported that he used temperature split tests to measure air flow at the home, but without the TMAHs, this test is impossible to implement. Mr. Davis repeatedly failed to accurately measure the TXV, passing the system when it was not Title 24 compliant. Mr. Davis's measurements for TXV were sometimes off by more than a factor of two.

The QA Team also found that Mr. Davis failed to measure and report insulation correctly. Mr. Davis lied about the number of rulers present in the attic and the depth of the insulation. Mr. Davis's rating passed the home with regards to the insulation measures. However, the quality assurance review revealed that the insulator did not properly install the insulation and did not provide sufficient insulation for the home.

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[23] A detailed description of each of the QA reviews is provided in the attached declaration of Michael Charles Bachand, CalCERTS' Quality Assurance Manager.

[24] *See* 2008 Reference Appendices; CEC-400-2008-004-CMF at RA3-2.

[25] The address for this example is [redacted] tested on 11/29/2011 and 12/09/2011 respectively.

[26] Mr. Davis applied stickers to plenums to mark the TMAHs. When the quality assurance reviewer removed the stickers to locate the holes no holes were found. Mr. Davis admitted to installing TMAHs for contractors; however, raters are not permitted to install the TMAHs.

In total, the QA Team found five of the six reviewed properties rated by Mr. Davis were falsely certified as Title 24 compliant.[27]

b. Quality Assurance Review Revealed that Mr. Hoover Falsified Test Results

The QA Team reviewed four properties rated by Mr. Hoover.[28] At one property with two air-conditioning systems, Mr. Hoover twice failed to accurately report duct leakage. On the first system, Mr. Hoover reported duct leakage at 71 cfm, with a target of 72 cfm. The quality assurance reviewer recorded duct leakage of 165 cfm, more than double the amount recorded by Mr. Hoover. On the second system, Mr. Hoover reported duct leakage of 47 cfm with a target of 48 cfm. The quality assurance reviewer recorded duct leakage at 121 cfm, again more than double the amount recorded by the rater.[29] Mr. Hoover passed the contractor as to duct leakage by 1 cfm on both systems, despite the fact that neither system was Title 24 compliant. Mr. Hoover failed to accurately report duct leakage at two of the four homes reviewed. He also failed to correctly identify homes as new construction, setting erroneous and less stringent target numbers for duct leakage.

Mr. Hoover failed to accurately report the refrigerant charge and air flow of the homes he rated. Mr. Hoover lied about the presence of TMAHs and the tests he used to measure air flow. Mr. Hoover also failed to accurately measure TXVs; passing homes with regards to these measures that were clearly not Title 24 compliant. For example, Mr. Hoover reported one TXV measurement at 15 degrees with a target of between 3 and 26 degrees.[30] The quality assurance review revealed that the TXV measurement was 34.6 degrees, far outside of the target rage and more than double of that reported by Mr. Hoover. The system at this home was clearly not in compliance with Title 24.

The QA Team also found that Mr. Hoover failed to measure and report insulation correctly. Mr. Hoover did not ensure that the proper insulation certifications were posted in the homes. He set erroneous insulate depth targets and recorded false measurements indicating that

[27] Mr. Davis is a prolific rater. This margin or error is significant for a rater allegedly performing 60–80 ratings a month.

[28] A detailed description of each of the QA reviews is provided in the attached declaration of Michael Charles Bachand, CalCERTS' Quality Assurance Manager.

[29] As mentioned above the standard margin of error permissible is plus or minus 3 percent of the actual measurement. (*See* 2008 Reference Appendices; CEC-400-2008-004-CMFat RA3-2.)

[30] The address for this example is [redacted] tested on 8/08/2011 and 10/28/2011.

that home met those targets. Mr. Hoover also set erroneous weight targets for insulation and recorded false weight measurements indicating the insulation met those targets. Mr. Hoover failed to accurately report every QII measure reviewed by the QA Team.

In total, the QA Team found four of the four reviewed properties rated by Mr. Hoover were falsely certified as Title 24 compliant.[31]

2. CalCERTS Decertified Petitioners as Part of the Complaint Resolution

On December 16, 2011, CalCERTS notified Mr. Hoover and Mr. Davis that they had failed several quality assurance reviews. The notification identified the addresses at which the Petitioners had failed reviews. The Petitioners were notified that they had been placed on a fifteen (15)-day suspension, and were asked to contact CalCERTS within those 15 days to schedule a meeting to discuss the failures. CalCERTS implemented the temporary suspension in order to mitigate the harm to consumers while waiting for a meeting with Petitioners. CalCERTS was hopeful that during the meetings, the issues leading to the failures would be revealed and addressed. The Petitioners were informed to bring their records and documents to the meetings.[32]

a. Mr. Davis – Hearing & Decertification Process

Mr. Davis did not schedule his meeting with CalCERTS until January 4, 2012. When Mr. Davis arrived at his meeting he presented a confidentiality agreement provided to him by John Flores, president of Valley Duct Testing, that indicated Mr. Davis could not talk openly with the CalCERTS QA Team about rating work conducted at homes other than those listed in the notice letter. (*See Confidentiality Agreement,* Decl. Michael Charles Bachand at ¶ 34, Exh. 10.)

During the meeting Mr. Davis was asked to explain the discrepancies between his ratings and those conducted by the CalCERTS QA Team. Mr. Davis was encouraged to ask questions about the reviews, and of the QA Team. Mr. Davis indicated that he performs 60–80 inspections a month, with up to 25 in a week during the summer months. Mr. Davis indicated that he has

[31] Mr. Hoover is a prolific rater, submitting as many as five ratings for a single day. This margin or error is significant for a rater allegedly performing such a high quantity of ratings.

[32] Documents related to the decertification of Petitioners have been included as Exhibits to the Declaration of Michael Charles Bachand, CalCERTS' Quality Assurance Manager.

sufficient time to complete his work and that he was confident in his abilities as a rater.[33] The meeting lasted approximately three hours. During this time, Mr. Davis was unable to explain the discrepancies between his ratings and those conducted by the QA Team. (*See QA Action Report*, Decl. Michael Charles Bachand at ¶ 36, Exh. 11.)

After the January 4, 2012 meeting, the CalCERTS QA Team met to discuss Mr. Davis. The QA Team decided to continue Mr. Davis's suspension and perform two additional quality assurance reviews. These additional reviews supported decertification, indicating that Mr. Davis was entering patently false data into CalCERTS' registry.

On January 17, 2012, CalCERTS offered Mr. Davis an opportunity to submit any additional questions, comments or materials upon which to base their review. Mr. Davis did not submit any additional materials pertaining to the issues discussed.

On January 30, 2012, CalCERTS notified Mr. Davis that he would no longer be certified by CalCERTS. In the notification letter CalCERTS specified the basis for its decision.

b. Mr. Hoover - Hearing & Decertification Process

Mr. Hoover did not schedule his meeting with CalCERTS until January 6, 2012. At the meeting Mr. Hoover was given the opportunity to explain the discrepancies between his ratings and those conducted by the CalCERTS QA Team. Mr. Hoover was encouraged to ask questions about the reviews, and of the QA Team. Mr. Hoover indicated that he might do five ratings per day, over 12 working hours and that he is confident in his abilities as a rater. This meeting lasted approximately two hours. During this time, Mr. Hoover was unable to explain the discrepancies between his ratings and those conducted by the QA Team. (*See QA Action Report*, Decl. Michael Charles Bachand at ¶ 61, Exh. 21.)

After the January 6, 2012 meeting, the CalCERTS QA Team met to discuss Mr. Hoover. The QA Team continued Mr. Hoover's suspension while reviewing the results of the interview.

On January 18, 2012 CalCERTS offered Mr. Hoover an opportunity to submit any additional questions, comments or materials, upon which to base the review. Mr. Hoover did not submit any additional materials.

On January 30, 2012 CalCERTS notified Mr. Hoover that he would no longer be certified by CalCERTS. In the notification letter CalCERTS specified the basis for its decision.

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[33] The QA Team asked questions regarding confidence to gauge whether additional training could effectively improve the rater's performance.

3. Other Valley Duct Testing Raters

In addition to Mr. Hoover and Mr. Davis, CalCERTS performed quality assurance on three other HERS Raters employed by Valley Duct Testing: Mr. Daniel Sidhu, Ms. Jennifer McFall, and Mr. Donald Scott White. These raters also failed quality assurance reviews; however, their failures were less egregious than those of Mr. Hoover and Mr. Davis. Individually, Mr. Sidhu, Ms. McFall, and Mr. White were asked to meet with the CalCERTS QA Team and were given the opportunity to explain their failures. Each of these three raters presented sufficient information during their interviews to indicate that additional instruction or training might improve their accuracy. As a result, Mr. Sidhu, Ms. McFall and Mr. White are presently subject to increased quality assurance reviews.

F. CalCERTS has Received Unsubstantiated Complaints From Valley Duct Testing

On January 20, 2012, CalCERTS received a complaint from Mr. Haddock, legal counsel representing John Flores and Valley Duct Testing, a division of JaaR Sales, Inc. In this letter Mr. Haddock complained that the investigation of "Valley Duct Testing HERS raters" was unlawful, and that CalCERTS had deprived raters due process. Mr. Haddock did not address any of the substantive reasons for the investigations or decertifications. (*See* **Attachment F**, *January 20, 2012 Haddock Letter.*)

CalCERTS responded to Mr. Haddock's letter on February 8, 2012, providing a detailed description of the process and evidence that led to the decertifications of Mr. Hoover and Mr. Davis. CalCERTS, in the spirit of cooperation, agreed to refrain from submitting the decertifications to the Commission while Mr. Hoover and Mr. Davis were given another opportunity to provide information or documents they believed were material to the decertifications. Petitioners did not provide any additional information.[34]

On February 15, 2012, Mr. Haddock sent CalCERTS another letter, this time asserting a right to challenge the quality assurance data and threatening civil litigation. (*See* **Attachment G**, February 15, 2012 *Haddock Letter.*) Mr. Haddock followed the letter with an email requesting

[34] CalCERTS also provided Mr. Haddock details regarding the quality assurance failure of Mr. Sidhu, Ms. McFall, and Mr. White. These documents were produced on February 9, 2012.

that the public notices of quality assurance failures for Mr. Sidhu. Ms. McFall, and Mr. White be removed from CalCERTS' website.[35] (*See* **Attachment H**, *February 28, 2012 Haddock email.*)

On March 6, 2012, CalCERTS sent Mr. Haddock copies of all data generated as part of the decertifications of Mr. Hoover and Mr. Davis, and all of the information generated during the quality assurance reviews of Mr. Sidhu, Ms. McFall, and Mr. White. This information included raw data from the registry and field notes and photographs collected during inspections.[36]

CalCERTS has not submitted the decertifications to the Commission, and requests guidance from the Commission on how to proceed in light of this Complaint and the threatened civil action.

G. Providers have Submitted and the Commission has Published Decertifications of Raters

Prior to the decertifications of Petitioners, CalCERTS had decertified five raters. These five decertifications were independently issued by CalCERTS, with the details of the decertifications submitted to the Commission once the decision to decertify was finalized. It is CalCERTS' understanding that the Commission reviewed the decertifications before publishing the information on the Commission's website. (*See* **Attachment A**, *Disciplinary Actions taken against HERS Raters and prospective HERS Raters by HERS Providers* <http://www.energy.ca.gov/HERS/documents/disciplinary_actions.pdf> [as of March 15, 2012].) Other HERS Providers have also decertified raters. (*Id.*) Since 2007, CHEERS has decertified seven raters, and CBPCA has decertified one.

III. PETITIONERS UNSUBSTANTIATED LEGAL CLAIMS SHOULD BE REJECTED BY THE COMMISSION

Petitioners' Complaint makes loose constitutional arguments without any supporting analysis or facts. The Complaint alleges CalCERTS is a government entity and must thereby provide Petitioners with enhanced due process rights. As described below, CalCERTS does not meet any of the tests to be considered a state entity. Petitioners can exercise their contractual rights against CalCERTS but do not have expanded due process rights.

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[35] CalCERTS refused this request.

[36] CalCERTS does not typically release this type of information to raters. This information is confidential and could be used to undermine quality assurance reviews in the future.

A. CalCERTS is Not A State Actor and Therefore, Expanded Due Process Requirements Do Not Apply

Petitioners assert that the due process requirements of the Fourteenth Amendment of the United States Constitution, and by extension the California Constitution apply to the egregious conduct leading to the decertifications of Mr. Hoover and Mr. Davis. Petitioners argue that because CalCERTS is a certified provider, CalCERTS is "administering" the HERS Program and is by extension a governmental entity. This flawed argument would deem anyone regulated or certified by the government a governmental entity subject to the same constitutional limitations as state action. (*See* Complaint p. 6.) That is simply not what the law requires in order to find state action.

B. The Commission Did Not Perform the Investigations of the Complaint or Execute the Decertifications

Petitioners support their erroneous proposition by citing to two cases; *Lugar v. Edmondson Oil Co.* (1982) 457 U.S. 922, and *Adams v. Department of Motor Vehicles* (1974) 11 Cal. 3d 146; without explaining how the cases apply in this instance. (*See* Complaint p. 6.) In *Lugar*, the court explicitly stated that when an allegation of a due process violation is issued against a private party, the allegation must include *facts* to prove that the private party is a "state actor" otherwise "private parties could face constitutional litigation whenever they seek to rely on some state rule governing their interactions" with others. (*Lugar, supra*, 457 U.S. at 936.) Petitioners fail to demonstrate that *Lugar* applies by failing to make the factual showing required. Furthermore, Petitioners cannot show that CalCERTS is a state actor. CalCERTS is a private corporation that is only certified by the Commission. CalCERTS trains and certifies raters. Only upon CalCERTS' submission can the raters be listed on the Commission's website. CalCERTS is required to have a system to receive complaints and must respond to them, but how that is performed is left to CalCERTS.

CalCERTS performs its own investigation and is solely responsible for meeting the requirements of its status as a provider. CalCERTS uses its proprietary rating model and software that CalCERTS is solely responsible to protect. The Commission has not participated in the training, certification, or complaint processes leading to the decertification of Mr. Hoover or Mr. Davis. Furthermore, the decertification of each individual only applies to CalCERTS' home rating process. Other companies could file to qualify as providers and would be

responsible for training, certifying and conducting complaint investigations of raters. Therefore, CalCERTS action to decertify Petitioners does not meet the requirements of *Lugar* and cannot be considered a state action.

Petitioners cite to *Adams* to prove that CalCERTS is a state actor. In *Adams* the California Supreme Court held that a statute allowing a lien to be executed, permitting the involuntary sale of a vehicle without affording the owner an opportunity for a hearing, was a depravation of due process since the lien was executed by the California Department of Motor Vehicles. (*Adams, supra*, 11 Cal. 3d. at pp. 152, 157.) The court held that because the "depravation procedure is administered" by the state, the challenged statutory scheme required due process protections. (*Id.*) The court made clear that it was addressing only the constitutional requirements of the statue, and was not addressing the private repossession of vehicles through contract. (*Id.* at 157.) These facts are not dispositive when applied to CalCERTS.

Here, Petitioners are not challenging the statutory scheme that underlines the HERS Regulations; nor are they challenging the constitutionality of the HERS Regulations. Rather, Petitioners have attacked CalCERTS' actions to investigate complaints and decertify Petitioners directly. Petitioners take issue with CalCERTS' decertification process; however, they provide no analysis to demonstrate CalCERTS' action was taken in concert with the Commission or that any "joint participation with the state" warrants constitutional protections. (See *Lugar, supra*, 457 U.S. at 938 (holding that private party's joint action with state officials to accomplish prejudgment deprivation of property interest was state action).)

C. CalCERTS Is Not a State Actor

Under the common law, CalCERTS' decertifications of Mr. Hoover and Mr. Davis are presumed *not* to be state action since CalCERTS is a private party. (*See Sutton v. Providence St. Joseph Med. Ctr.*, (9th Cir. 1999) 192 F. 3d 826, 835.) Despite CalCERTS' close relationship with the Commission it cannot be presumed to be a state actor. (*See Jackson v. Metropolitan Edison Co.*, (1974) 419 U.S. 345, at pp. 357 ("A state's mere regulation of the exercise of a private power allowed by the state law and which is exercised solely on the basis of the power and without compulsion from the state, does not convert the actor's conduct into state action").) Petitioners must show more than CalCERTS' reliance on and compliance with the HERS Regulations.

In order for Petitioners to show that the decertifications of Mr. Hoover and Mr. Davis warranted due process, they must first prove a deprivation of a right created by the state and, second, they must show that the depravation was caused by someone appropriately characterized as a "state actor." (*Lugar, supra*, 457 U.S. at pp. 923, 939.) There are four tests commonly used to determine whether a private party is a state actor "(1) public function, (2) joint action, (3) governmental compulsion or coercion, and (4) governmental nexus." (*Sutton, supra*, 192 F.3d. at pp. 835-836.)

Under the *public function test*, Petitioners must show that the function at issue in their complaint is "both traditionally and exclusively governmental." (*Kirtley v. Rainey* (9th Cir. 2003) 326 F. 3d 1088, 1093 citing to *Lee v. Katz* (9th Cir. 2002) 276 F. 3d 550, 554-555.) "The public function doctrine is carefully and narrowly defined." (*Johnson v. Knowles* (9th Cir. 1997) 113 F. 3d 1114, 1118 citing to *Flagg Brothers, Inc. v. Brooks* (1978) 436 U.S. 149 at 158.) Public functions have been limited to deeply traditional functions such as electing public officials and the regulation of public speech. (*Id., see also Katz, supra,* 276 F. 3d at 557.) CalCERTS' function is to train and certify energy raters. Neither of these functions has ever been held to be a traditional and exclusive government function, therefore the test does not apply.

Under the *joint action test*, Petitioners must show that the Commission has "so far insinuated itself into a position of interdependence" with CalCERTS that the Commission must be recognized as a joint participant in the decertifications. (*See Kirtley, supra*, 326 F. 3d at 1093, citing to *Parks Sch. Of Bus., Inc. v. Symington* (9th Cir. 1995) 51 F. 3d 1480, 1486.) Petitioners cannot prove this interdependence because the Commission has played *no role* in the decertifications of Mr. Hoover or Mr. Davis. As explained by the Commission, in a letter to Petitioners dated January 11, 2012, the Commission does not participate in rater discipline. (*See* **Attachment I**. *January 11, 2012 Letter from Mr. Dennis Beck, Senior Staff Counsel California Energy Commission.*) The decertifications of Mr. Hoover and Mr. Davis were issued by CalCERTS, independent of any involvement from the Commission. Further the decertifications are *only effective* relative to CalCERTS' certification. Whether the Commission decides to publish the decertifications, or bar Mr. Hoover and Mr. Davis from working with other providers, such as CHEERS or CBPCA, are decisions in which CalCERTS has no role. There

has been no joint action by the Commission and CalCERTS relative to the decertifications of Mr. Hoover or Mr. Davis to satisfy the joint action test.

Under the *government compulsion or coercion test*, Petitioners must show that the Commission exercised "coercive influence" over CalCERTS to such an extent that CalCERTS' actions are governmental actions. (*Kirtly, supra*, 326 F. 3d at 1094.) Under this test, a regulation or statute is not sufficient to prove coercive influence over CalCERTS.[37] (*Sutton, supra* 192 F. 3d at 843 ("government compulsion, without more, is [not] sufficient to deem a truly private entity a governmental actor...plaintiffs must establish some other nexus").) Petitioners must show that there was "willful participation in a joint activity" by CalCERTS and the state. (*Id.*) Petitioners cannot do this, since as described above the Commission was not involved in the decertifications of Mr. Hoover and Mr. Davis.

In *Blume v. Yaretsky*, (1982) 457 U.S. 991, the Supreme Court held that although the government mandated private hospitals to make assessments discharging Medicaid patients, because the assessments were based on "judgments made by private parties according to professional standards" the judgments were not actions of the state. (*Id.* at pp. 1005–1010.) Similarly, CalCERTS has established its own standards to determine whether raters are exercising truthfulness required under the rater agreements. (*See* 20 Cal. Code Regs. § 1673(b).) Whereas the Commission requires that providers assess raters' ability to comply with the regulations, the Commission did not compel the decertifications. CalCERTS independently initiated the investigation that verified Mr. Hoover and Mr. Davis were intentionally submitting false data to the detriment of homeowners. CalCERTS independently decided to decertify Mr. Hoover and Mr. Davis. Petitioners cannot show that the Commission required anything more of CalCERTS than adherence to the regulations governing providers.

And finally, under the *governmental nexus test*, Petitioners must show "there is a such close nexus between the State and the challenged action that the seemingly private behavior may be fairly attributable as that of the State itself." (*Kirtley, supra*, 326 F. 3d at 1095, citing to *Brentwood Acad. v. Tennessee Secondary Sch. Athletic Ass'n.* 531 U.S. 288, 295.) This test requires the state to be "so far insinuated into a position of interdependence with the private party that [the state] was a joint participant in the enterprise." (*Rowell v. Valley Health Systems* (N.D.

[37] This test addresses precisely the flawed arguments proposed by Complainants. By following the HERS Regulations, CalCERTS has not converted itself into a governmental entity.

Cal. 2010) 2010 WL 4236797 at 3, citing to *Jackson, supra*, 419 U.S. 345 at 351.) "In *Jackson*, the Court found that "a heavily regulated utility with at least something of a governmentally protected monopoly" did not have a sufficiently close nexus with the state to consider the utility's action to be under color of state law." (*Id.*) Similar to the utility in *Jackson*, CalCERTS cannot operate without approval of the Commission, but the roles of the state and CalCERTS are separate.

CalCERTS' role as a provider is distinct from that of the state. (*See Kirtly, supra*, 326 F. 3d at 1095 (a guardian appointed by the state to be an child-advocate, who is paid by the state and regulated by state law is not a state actor because the role is distinct from that of the state).) The HERS Regulations clearly establish what is required of providers, under section 1673, with the oversight role of the Commission defined under section 1675. The only nexus, if any, between CalCERTS and the Commission is solely one of public policy. Everyone involved in the HERS Program, to include raters, are bound by the public policy requirements of section 1672(m).

Petitioners have not and cannot establish CalCERTS as a state actor, subject to the same constitutional requirements as a state agency. Because CalCERTS is a private entity, the due process protections challenged by Petitioners do not apply to the decertification of Mr. Hoover and Mr. Davis. Nevertheless, as the facts show, and as discussed below in section III. E, both Mr. Hoover and Mr. Davis were both afforded due process.

D. Petitioners' Rights Must Be Asserted Through The Principles of Contract

CalCERTS' certification of Petitioners was contingent upon Petitioners entering into and abiding by the terms of the rater agreement and subscription agreement. These agreements obligated the raters to input data that is true, accurate, and complete into CalCERTS' registry. CalCERTS' right to define the terms of their certification is clearly not against public policy since it supported by the authorizing statute and is moral. (*See* Cal. Civ. Code §1667, *see also Spangenberg v. Spangenberg* (1st Dist. 1912) 19 Cal. App. 439, 447 (a contract will not be adjudged void, as against public policy, unless it contravenes public policy as declared by statute or by judicial decisions, or unless it injures the public).)

Petitioners may argue that the provisions of the contract limit their ability to work as HERS raters; however, this argument assumes too much. CalCERTS' rights under the agreements are relative only to CalCERTS' certification program and subscriber services.

CalCERTS has no authority to bar Mr. Hoover and Mr. Davis from working as energy raters or home inspectors. The affect of the decertification is that Petitioners simply cannot claim that CalCERTS has certified them attesting to their honesty and accuracy as raters.

Petitioners are not unprotected under these agreements. The implied covenants of good faith and fair dealings apply to these agreements, and protect raters from the types of bad-faith dealings alleged. (*Kransco v American Empire Surplus Lines Ins. Co.* (2000) 23 Cal. 4th 390, 400.) Disputes arising out of these contracts should be resolved privately. If Petitioners believe that CalCERTS has acted in bad faith, they are not precluded from seeking remedies associated with a beach of contract claim.[38]

E. Due Process Requirements Were Met Although No Fundamental Right At Stake

For due process to apply, Petitioners must have a fundamental right at stake. Petitioners have masked CalCERTS' contractual right to terminate the certifications, which warrants Petitioners' ability to accurately rate homes *and* CalCERTS' contractual right to terminate Petitioners access to the online registry, as their vested right to work as home energy raters. This cannot be so. Under California law it is possible for a non-traditional right to become protected, but only if it is sufficiently vested. (*See Bixby v Pierno* (1971) 4 Cal. 3d 130.) Vestedness is determined by evaluating the extent to which the right was already possessed, or owned by the person claiming the right. (*Id.* at 146.) Petitioners cannot claim a right to CalCERTS' approval of them as raters since CalCERTS maintained all rights to withdraw their approval through contract. (*See* Rater Agreements at § III.B, F.) Moreover, Petitioners certainly cannot claim a right to use CalCERTS' protected intellectual property, the CalCERTS registry, since CalCERTS retained all rights and privileges associated with this property. (*See* Subscription Agreement at § C, D.) Under these circumstances, Petitioners have no vested right subject to due process protections.

F. Petitioners Were Given Notice and An Opportunity to Be Heard

Due process is met, as long as there is "reasonable notice" and a "reasonable opportunity to be heard." (*Ford Dealers Assn. v. Department of Motor Vehicles,* (1982) 32 Cal. 3d 347, 367 ("Due process mandates do not necessarily require that the exacting rules of procedure employed

[38] Complainants may be held to the mediation and arbitration clauses within these contracts.

in the criminal courts be applied to license revocation procedures.") see also *People v. Dean,* (4th Dist. 2009) 174 Cal. App. 4th 186, 204 (due process does not require any particular form, and is not comprised of a specific set of rules).) In the Complaint, there are numerous cases cited to support the specific processes Petitioners desire; however, Petitioners have not addressed the fact that both Mr. Hoover and Mr. Davis were given notice and an opportunity to be heard sufficient under the law.

1. CalCERTS Provided Notice to Petitioners

To meet the requirements of due process notice must be "reasonably calculated, under all the circumstances, to apprise interested parties of the pendency of the action and afford them an opportunity to present their objections." (*See Conservatorship of Moore* (4th Dist. 1986) 185 Cal. App. 3d 718, 725 quoting *Mullane v. Central Hanover Bank Tr. Co.* (1950) 339 U.S. 306.) On December 16, 2011, Mr. Hoover and Mr. Davis were notified by email that they had failed specific quality assurance reviews. Petitioners were provided the addresses of homes where their data conflicted with data gathered by the QA Team.[39] Petitioners were asked to schedule a meeting with CalCERTS to discuss the failures. The information included in the emails to Mr. Hoover and Mr. Davis is precisely the type of information required of notice. Petitioners were told specifically which ratings their decertifications were hinged upon prior to their meetings with the QA Team.

Petitioners argue that the level of detail in the notice letters was not sufficient to constitute notice. (Complaint at p. 4.) However, notice must only be "reasonable" and "inform those affected" of the pendency of an action. (*Id.* at 725–726.) The notices contained the addresses of homes where the Petitioners failed to provide accurate information. Petitioners knew what measures were tested at each home, because they entered the data. Petitioners had access to the CalCERTS' registry through their employer and could have reviewed the details of their ratings at any time prior to their meetings with CalCERTS. Further, Petitioners should have had field notes and documents for each of the homes they rated. By indicating which homes and ratings would be discussed, sufficient notice was given.

Petitioners also argue that the notice, being issued in conjunction with the temporary suspension, violated due process. This is not so. When the public interest is at stake post

[39] At the time the notices were issued the Petitioners had full access to all of their data and ratings through the CalCERTS registry.

deprivation hearings are sanctioned. (Bostean *v. Los Angeles Unified School Dist.* (2nd Dist. 1998) 63 Cal. App. 4th 95, 112 (teacher involuntarily suspended prior to hearing).) Under circumstances protective of the public, due process is met so long as there is the opportunity for a reasonable post depravation hearing. (*City of Los Angeles v. David* (2003) 538 U.S. 715 (thirty-day delay before hearing to return vehicle held constitutional); *Federal Deposit Ins. Corp. v. Mallen* (1988) 486 U.S. 230 (Ninety days for post-suspension hearing regarding bank employment did not violate due process).) In this instance, a post deprivation hearing was offered immediately upon suspension.

CalCERTS issued the notices of quality assurance failures in conjunction with a "temporary suspension" in order to protect consumers. CalCERTS was ready and available to meet with the Petitioners immediately upon serving them with the notice letters. Any delay in process is attributable solely to Mr. Hoover and Mr. Davis failing to schedule timely meetings.

Petitioners also argue that they are entitled to a copy of the complaint that has led to the ongoing investigation of Valley Duct Testing. Petitioners do not cite to any provision in law, or under the HERS Regulations that entitle them to a copy of Mr. Barrett's complaint. CalCERTS did not decertify the Petitioners based solely upon Mr. Barrett's complaint. CalCERTS performed field investigations of homes rated by Mr. Hoover and Mr. Davis. CalCERTS determined Mr. Hoover and Mr. Davis had entered false information into the data base and provided false home ratings. Mr. Hoover and Mr. Davis were decertified based on the patently false information they were entering into the CalCERTS' registry not the complaint that led to the investigation. Petitioners were informed of the specific homes and ratings upon which their decertifications are based prior to their meeting with CalCERTS. As stated above, this is sufficient to meet the constitutional requirements for notice.[40]

2. CalCERTS Provided a Hearing for Mr. Davis and Mr. Hoover

The due process requirements for a hearing require that persons be afforded an opportunity to be heard and to defend themselves, in front of an impartial decisions maker. (*See Humphreys v City and County of San Francisco* (1st Dist. 1928) 92 Cal. App. 69; *Golden Day Schools, Inc. v State Dept. of Educ.* (2nd Dist. 2000) 83 Cal. App. 4th 695.) In California, many

[40] Mr. Barrett's complaint came in through the Complaint Response System, required under the HERS Regulations to protect consumers. (*See* 20 Cal. Code Regs. §1673(i).) CalCERTS requests the Commission advise providers as to whether complainants' identities may be kept confidential.

administrative adjudications follow the provisions of the California Administrative Procedures Act, which allow for informal hearings when a hearing is not required by statute. (*See* Cal. Gov. Code § 1145.10.) Informal hearing may satisfy the due process requirement providing an opportunity to be heard. (*See* Cal. Gov. Code § 11445.10(b)(1).)

The HERS Regulations do not require providers to conduct formal hearings to determine whether raters are in compliance with their rater agreements. Rather, the HERS Regulations only require that rater agreements be approved by the Commission, and are silent as to how the agreements will be enforced. Without a requirement for a formal hearing, CalCERTS appropriately offered Mr. Hoover and Mr. Davis an informal hearing with the opportunity to be heard.[41]

Both Mr. Davis and Mr. Hoover met with CalCERTS to discuss their quality assurance failures. Petitioners were asked to explain the discrepancies between their ratings and the ratings collected during the quality assurance reviews, and were encouraged to ask questions of the QA Team. After the meeting, and after some time of review and reflection, CalCERTS provided Petitioners a second opportunity to ask questions or submit materials. Mr. Hoover and Mr. Davis were either unwilling or unable to provide information that would explain their quality assurance failures. Their refusal to take advantage of the opportunity to defend themselves does not erase the fact the both raters were afforded a hearing.

3. An Informal Hearing Was Warranted

Petitioners may argue that they are entitled to a formal hearing, citing to Cal. Gov. Code § 1145.20(b)(4), claiming that Mr. Hoover and Mr. Davis were licensees, entitled to formal judicial proceedings. However, there is a difference between a professional license, regulated by the California Business and Professions Code, and the type of proprietary certification offered by CalCERTS.

CalCERTS as a provider trains HERS Raters to inspect homes and rate homes relative to the energy efficiency standards set forth in Title 24 of the California Code of Regulations. CalCERTS enters into agreements with raters that establish the terms of the certification. CalCERTS also then allows the raters to use CalCERTS' proprietary program to complete the rating process. Unlike a professional license which is administered by a board and regulated

[41] The Commission has approved of the use of CalCERTS informal hearing process in the past. Therefore, the hearing was also warranted under Cal. Gov. Code §11445.20(b)(5).

pursuant to California's Business and Professions Code, CalCERTS certification is relative only to the agreement between CalCERTS and the rater. CalCERTS has no authority to bar raters from seeking certification from other HERS Providers. CalCERTS decertification only bars Petitioners from CalCERTS proprietary program. Therefore, by offering an informal hearing, similar to those outlined in Cal. Gov. Code § 1145.10, due process was met.

G. Common Law Requirements of Fair Procedure Were Met

Up until recently, there were three HERS Providers certified by the Commission operating in the State of California. Due to the decision of CHEERS to stop operating, CalCERTS is presently the only provider training raters with regards to new construction.[42] Although the common law of fair procure does not apply to private corporations, such as CalCERTS, because at this time there is a limited number of certified providers in the HERS industry, CalCERTS will address the doctrine of fair procedures to show compliance.

"California courts have long recognized a common law right to fair procedure protecting individuals from arbitrary exclusion or expulsion from private organizations which control important economic interests." (*Wilson v. San Luis Obispo County Democratic Cent. Committee* (2009) 175 Cal. App. 4th 489, 501.) The rule has only been applied to a "limited category of private associations such as labor unions or professional and trade associations" because of their "monopolistic position in a given field of employment." (*Pinsker v. Pacific Coast Society of Orthodontists*, (1974) 12 Cal. 3rd 541, 551.) Under the rule "such a private organization's actions must be both substantively rational and procedurally fair." (*Wilson, supra*, 175 Cal. App. 4th at 502.) What constitutes a fair procedure is neither fixed nor judicially prescribed. (*Id.* at 501.) For example, written responses may satisfy the role of a hearing or opportunity to be heard. (*Id.* at 502 citing to *Kurz v. Federation of Petanque U.S.A.*, (2006) 146 Cal. App. 4th 136, 147.)

CalCERTS has made every effort to address rater discipline in a substantially rational and procedurally fair manner. CalCERTS investigated the work of five Valley Duct Testing raters, and provided the same type of quality assurance review on each rater. All of the raters were given written notice of their failures, and an opportunity to explain the discrepancies between their rating and those collected by the quality assurance team.

[42] Both CalCERTS and CBPCA are certified to train and certify raters for alterations.

In some instances, both Mr. Hoover and Mr. Davis entered data into the rating program that could not be correct based upon a field investigation. These failures included instances where sampling holes did not exist to support the tests they claimed to have conducted. Neither Mr. Hoover nor Mr. Davis could explain their quality assurance failures and stated that they had confidence in their abilities to rate homes accurately. Unlike the raters placed on probation, Mr. Hoover and Mr. Davis offered no indication that their ability to rate homes could be improved with additional training, instruction or supervision. CalCERTS was left with no choice but to decertify these raters, and explained its decision in writing. The process leading to decertification was substantively rational and procedurally fair.

H. Consumer Protection, a Mandate of the HERS Program, Must Be Supported By the Commission and the Industry

California Public Resources Code section 25942 empowered the Commission to establish criteria for adopting a statewide home energy rating program for residential dwellings. Those criteria were specifically to include "training and certification procedures for home raters and quality assurance procedures to *promote accurate ratings and protect consumers.*" (Pub. Resources Code § 25942(a)(3) (emphasis added).) CalCERTS has taken the responsibility of consumer protection seriously. The investigation of the Valley Duct Testing raters has cost CalCERTS thousands[43] of dollars in material costs and staff resources. CalCERTS has invested in this process because of its duty under the regulations, but more so because the integrity of the HERS Program is at stake. CalCERTS can not be asked to stand alone, without support from the Commission and others in the HERS industry, when faced with conduct that is patently harmful to consumers.

Mr. Hoover and Mr. Davis intentionally entered false data into CalCERTS' registry, providing enough basis for decertification. Yet, Mr. Hoover and Mr. Davis did far more than lie. Petitioners helped defraud homeowners paying value for homes compliant with Title 24. They intentionally concealed conditions from homeowners that could lead to health risks resulting from poor or contaminated air flow. They generated ratings for homes that in no way reflected the home's true ability to meet energy standards set by the State of California; denying

[43] This amount does not include the costs of responding to this Complaint or responding to the numerous letters issued by Mr. Haddock and Valley Duct Testings.

homeowners the energy savings intended by the HERS Program, and allowing California's natural resources to be needlessly wasted.

CalCERTS welcomes the Commission to examine the process by which it reviews its raters. Yet, these processes must be evaluated in conjunction with the strong public policy mandate of consumer protection, explicit in the authorizing statute of the HERS Program.

IV. THE COMMISSION MUST UPHOLD ITS MANDATE TO ENSURE HOME ENERGY RATINGS PROVIDE ACCURATE AND TRUTHFUL INFORMATION TO CONSUMERS

Petitioners attack the integrity and efficacy of the HERS Regulations while culpable of the very wrongs the regulations were designed to address. As opposed to challenging the Commission and the structure of the HERS Regulations, Petitioners have attacked a private company demanding procedures that require far more than any private company can afford.

Petitioners are clearly in breach of the CalCERTS Certified Rater Agreement and CalCERTS Subscription Agreement. CalCERTS' investigation to determine whether Petitioners were in breach was thoughtful and fair. Mr. Hoover and Mr. Davis were given notice of their quality assurance failures, and were provided an opportunity to respond. CalCERTS cannot be asked to provide more than this without changing the entire scope of their duties as a provider under the regulations.

Respectfully submitted,
DOWNEY BRAND, LLP

By: _____
Andrew L. Collier
Attorneys for CalCERTS, Inc.

V. 20 CFR 1231(B)(8) DECLARATION

Pursuant to 20 CFR § 1231(b)(8), 1233, under penalty of perjury, we the undersigned hereby declare that to the best of our knowledge the facts contained herein are true and correct.

Dated: March 26, 2012 CALCERTS, INC

By: Michael E Bachand
Michael E. Bachand
President, CalCERTS, Inc.

STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:	)	Docket No. 12-CAI-01
	)	
Complaint and Request for Investigation of CalCERTS, Inc.	)	**DECLARATION OF SERVICE (3/23/12**
	)	
	)	

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2272 Sierra Meadows Drive, Suite A
Rocklin, CA 95677

Erik Hoover
JaaR Sales, Inc.
DBA Valley Duct Testing
2272 Sierra Meadows Drive
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COMPLAINANTS' COUNSEL
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David Haddock Legal
P.O. Box 2501
Citrus Heights, CA 95611
dave@davidhaddocklegal.com

INTERESTED AGENCIES/ENTITIES/PERSONS
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20422 Beach Boulevard,
Suite 235
Huntington Beach, CA 92648
dblanke@cheers.org

CBPCA HERS Providership
Michael T. Thompson,
Director
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Nevada City, CA 95959
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ENERGY COMMISSION DECISION-MAKERS (con't.)

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ENERGY COMMISSION – PUBLIC ADVISER
Jennifer Jennings Public Adviser's Office
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CERTIFICATE OF FILING

I, Lois Navarrot declare that on March 26, 2012, I served and filed copies of the attached declaration of **ANSWER OF CALCERTS, INC. TO COMPLAINT AND REQUEST FOR INVESTIGATION**, accompanied by a copy of the most recent *Proof of Service* list (most recent version is located on the proceeding's web page) with the Docket Unit OR with the presiding committee member of the proceeding. The document has been sent to the Commission AND the applicant, as well as the other parties in this proceeding (as shown on the *Proof of Service* list), in the following manner:

(*Check all that Apply*)

FOR SERVICE TO THE APPLICANT AND ALL OTHER PARTIES:

_____ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, CA, with first-class postage thereon fully prepaid and addressed as provided on the *Proof of Service* list above to those addresses **NOT** marked "email preferred." Due to the size of this document, cd copies have been delivered to those preferring email service.

AND

FOR FILING WITH THE ENERGY COMMISSION:

_____ sending an one electronic copy, emailed to the address below (preferred method);

OR

__X__ delivering an original and one cd (per the Docket Office's request), as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 12-CAI-01
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Lois Navarrot

Lois Navarrot

3/26/12

Date

ATTACHMENT A

Disciplinary Actions taken against HERS Raters and prospective HERS Raters by HERS Providers
As of December 19, 2011

Under the HERS Regulations, HERS Providers are responsible for certifying and overseeing HERS Raters. The information contained in this document reflects the actions taken by a HERS Provider against the named HERS Rater (or applicant), and such information has been provided to the Energy Commission by that HERS Provider. For additional information regarding an action taken, contact the HERS Provider directly (www.CalCERTS.com; www.CBPCA.org; www.CHEERS.org).

Rater/Applicant Name	DBA	HERS Provider	Certification #	Action Taken by HERS Provider	Reason for Decertification or other action by HERS Provider	Date Decertified, Denied Certification, or Other Action
Kevin Davis	K Davis Certification	CalCERTS	CC2004709	Decertification	Conflict of interest; non-payment of fees	10-Jul-07
Rod Gonzales	ESC	CalCERTS	CC2004273	Decertification	Conflict of interest; fraudulent documentation	25-Mar-08
Anne-Marie Pringle		CBPCA		Decertification	Fraudulent documentation	7-Feb-10
Adam Lau		CHEERS		Decertification	Failed to report data to the registry	3-May-10
Christopher Stark		CHEERS	N/A	Barred from certification through CHEERS	Application rejected for posing as a HERS Rater prior to certification	20-May-10
Michael Ybarra	Crown Heating & Air conditioning	CHEERS	CCN48736438	Decertification	Conflict of interest	17-Jun-10
Jeremiah Ellis		CHEERS (applying for CalCERTS)	CCN59254677	Barred from certification through CalCERTS, barred from use of CalCERTS data registries.	A CHEERS rater seeking CalCERTS certification, CalCERTS has permanently revoked permission to use the CalCERTS data registry; for unethical activities.	22-Nov-10
Mark Silva		N/A	N/A	Barred from use of CalCERTS data registries.	CalCERTS has permanently revoked permission to use the CalCERTS data registry, and any registries operated by CalCERTS partners or subsidiaries, such as USNRG.com and USNRG.net; for unethical activities.	12-Nov-10
Miguel Jimenez	AMC/AIR	CHEERS	CCN26492942	Decertification	Improper use of CHEERS Registry	18-Mar-11
Marc Haas	Haasy's Home Energy	CHEERS	CCNMH678828	Decertification	Improper use of CHEERS Registry	18-Mar-11
Ryan Figueroa	RDF Certified Raters	CHEERS	CCN91262911	Decertification	Improper use of CHEERS Registry	18-Mar-11
Bill Landress	Landress Enterprises	CHEERS	CCN27725803	Decertification	Improper use of CHEERS Registry	18-Mar-11
William Conwell	Cool Breeze Heating and Air Conditioning	CHEERS	CCNWC725867	Decertification	Improper use of CHEERS Registry	18-Mar-11
John Flores	Valley Duct Testing	CalCERTS	CC2004321	Barred from use of CalCERTS data registries for a period of six months, from 4-Apr-11 through 4-Oct-11. *(This term has been reduced by 3 months, so access to the CalCERTS Registry was reactivated effective 5-Jul-11)*	Improper sample grouping and improper documentation	4-Apr-11 through 4-Oct-11 *(revised end date-through 4-July-11)*.
Dennis Haskett	Haskett Sales	CalCERTS	CC2005155	Decertification	Falsification of QII inspections and HERS verification forms	18-May-11
Rhonda Johnson	Premier Energy Ratings	CalCERTS	CC2005554	Decertification	Multiple violations of Title 20, Article 4, Section 1672	4-Oct-11
Barry Ben Yakov	Goodman Air Conditioning and Heating	CalCERTS	CC2004650	Decertification	Falsification of RCA inspections and HERS verification forms	9-Dec-11

ATTACHMENT B

CalCERTS Certified Rater Agreement

PLEASE READ THE FOLLOWING TERMS CAREFULLY UNDER WHICH CALCERTS, INC. GRANTS PROFESSIONAL CERTIFICATION TO YOU. CALCERTS, INC PROVIDES THIS CERTIFICATION TO YOU ONLY IF YOU ACCEPT THE TERMS OF THIS AGREEMENT. THE RIGHTS GRANTED UNDER THIS AGREEMENT SHALL NOT BE EFFECTIVE UNTIL THE CANDIDATE HAS SUCCESSFULLY COMPLETED THE CALCERTS RATER CERTIFICATION TEST, OR THE CALCERTS CHALLENGE TEST IF YOU ARE ALREADY CERTIFIED BY ANOTHER PROVIDER, OR OTHERWISE APPROVED BY CALCERTS TO TAKE THE CHALLENGE TEST.

This Certification Agreement ("Agreement") is made and entered into by and between CalCERTS®, Inc., a California Home Energy Ratings System(HERS) rater training and certification provider ("CalCERTS"), and You as an individual Certification Program Candidate (the "Candidate" or "Rater" as defined below), and sets forth the terms and conditions that govern your rater certification.

As used herein, the term **RATER** means a person performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic testing required for demonstrating compliance with the Title 24 Energy Efficiency Standards, who is listed on a registry in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Section 1673(c).

RATER also means a person who has been trained, tested, and certified by a provider to perform one or more of the functions or procedures used to develop a California Whole□House Home Energy Rating, a California Home Energy Audit, performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic testing required for demonstrating compliance with the Title 24, Part 6, Building Energy Efficiency performance Standards, and who is listed on a provider's registry in compliance with Section 1673(c).

RATING means a California Whole House Home Energy Rating, a California Home Energy Audit, or the Field Verification and Diagnostic Testing required for verifying compliance with the Title 24, Part 6, Building

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Energy Efficiency Standards, as specified by these regulations represented on a 0 to 100 scale of the annual source energy efficiency of a home, as specified in Section 1672(c).

RATING SYSTEM means the materials, analytical tools, diagnostic tools and procedures to produce home energy ratings, and provide home energy rating and field verification and diagnostic testing services (referred to as "home energy rating services" in Section 25942 of the Public Resources Code).

COMISSION means the State of California Energy Resources Conservation and Development Commission, commonly known as the California Energy Commission.

CalCERTS RATER or CalCERTS Certified Rater is a rater that is trained, tested and certified by CalCERTS. A CalCERTS **RATER** has submitted a Rater Application, completed CalCERTS Rater Training, has completed all required continuing education, and has passed the Rater Certification Test; or the CalCERTS Challenge Test, if already certified by another approved Provider or otherwise approved by CalCERTS to take the challenge test.

I. The Certification Authority's Obligations

A. CalCERTS shall provide a Certificate of completion and a certification to the Commission upon completion of CalCERTS training and testing requirements in effect at the time of the application and upon the payment of applicable certification fees.

B. As a condition of RATER Certification, CalCERTS shall certify to the Commission that a rater applicant has met the requirements of training and certification procedures and entered into the Subscription Agreement. CalCERTS shall maintain a registry of all raters who meet these requirements, provide an electronic copy of the registry to the Commission and make that registry available in printed or electronic form upon written request.

C. Field Checks (Quality Assurance, or QA) of RATER: CalCERTS shall annually evaluate the greater of one home or one percent of the RATER's annual total of homes for which field verification and diagnostic testing services or ratings were provided. CalCERTS may independently repeat the field verification and diagnostic testing to check whether field verification and diagnostic testing was accurately completed by RATER, and determine whether information was completely collected and reported.

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D. CalCERTS shall provide to Rater Training Manuals ("Manuals"); Training Materials ("Materials"); User's Guides ("Guides"), and/or any supporting Proprietary Information under the following terms and conditions:

1. RATER agrees that the Manuals, Materials, Guides, and Proprietary Information are owned exclusively by CalCERTS, and are protected by the copyright laws of the United States.

2. RATER agrees that RATER obtains no rights in the Manuals, Materials, Guides, or Proprietary Information, except to use them specifically in accordance with this Agreement.

3. "Proprietary Information" shall mean CalCERTS's confidential information, trade secrets and know-how embodied in the Manuals, Materials and Guides and verbal information provided by CalCERTS that is not generally known or available to the public, including but not limited to, data communication processes and systems design.

4. The Manuals, Materials, Guides and Proprietary Information may only be used by CalCERTS RATERS who shall keep strictly confidential the Manuals, Materials, Guides and Proprietary Information. RATER acknowledges that the Manuals, Materials, Guides and Proprietary Information constitute valuable property and work product of CalCERTS, and that any breach of the confidentiality obligations hereunder may cause CalCERTS irreparable harm and damage, and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

5. CalCERTS shall have the right, without prior approval from CalCERTS RATER, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS.

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II. The Candidate's Obligations

A. The Candidate Rater hereby warrants and represents that he/she meets the Certification Requirements at the time of certification and will continue to meet the Certification Requirements throughout the time they are certified, in accordance with the Certification Policy of CalCERTS, as periodically amended.

B. RATER shall comply with all CalCERTS policies and procedures. All current policies at the time of signing, and all new and revised policies and procedures shall be sent to RATER via email.

C. RATER shall comply with all CalCERTS Quality Assurance Procedures and Performance Requirements provided to RATER by CalCERTS and will meet the requirements of California Code of Regulations, Title 20 as a minimum standard. Quality Assurance includes field quality assurance, Registry quality assurance and consumer quality assurance, as well as continuing education requirements as may be necessary from time to time.

D. RATER shall comply with all applicable federal, state and local laws and regulations.

E. RATER shall personally complete all required field verification and diagnostic testing; THESE ACTIVITIES MAY NOT BE PERFORMED BY ANYONE ELSE. RATER agrees to provide true, accurate and complete ratings, field verification and diagnostic testing.

1. Rating Site Inspections and Diagnostic Testing: Each rating shall be based on a site inspection of the home, and diagnostic testing as specified by the rating system.

2. Field Verification and Diagnostic Testing: RATER shall provide field verification and diagnostic testing of energy efficiency improvements as a condition for those improvements to qualify for Title 24 or other building energy performance standards' compliance credit, scores, indices or ratings. RATER shall not knowingly provide untrue, inaccurate or incomplete field verification diagnostic testing information or report field verification or test results that were not conducted in compliance with these regulations. RATER shall not knowingly

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accept payment or consideration in exchange for reporting a rating or field verification and diagnostic test result that was not in fact conducted and reported in compliance with *California Code of Regulations*, Title 20 Chapter 4, Article 8, Sections 1670-1675.

F. RATER shall transmit all data to CalCERTS via the CalCERTS online Registry within forty-eight (48) hours after completing the rating, including the field verification, and diagnostic testing. CalCERTS RATER is responsible and liable for all data transmitted hereunder. CalCERTS may also use transmitted data for statistical, evaluation, quality control and archival purposes.

G. RATER shall keep confidential all ratings, field verifications and diagnostic testing results and all information gathered from ratings except for transmission to CalCERTS, the Builder, Homeowner or Utility. All confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

H. RATER shall be an independent entity from the builder and the subcontractor installer of the energy efficiency improvements being tested and verified, and shall have no financial interest in the installation of the improvements, whether the improvements are existing or proposed. Accordingly, RATER may <u>not</u> rate or perform a field verification or diagnostic test on any home in which RATER has any financial interest, including, but not limited to the following:

1. Property in which RATER has a direct or indirect ownership;

2. Property in which RATER has a financial interest of any kind; or

3. Property for which RATER is making a loan or negotiating a loan, or soliciting a prospective lender to make a loan with the expectation of compensation.

I. RATER shall act hereunder solely as an independent contractor. RATER shall not represent himself/herself to be an employee or agent of CalCERTS.

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III. Termination and Decertification

A. Upon written notice to CalCERTS, RATER may terminate this Agreement at any time effective ten (10) days after receipt of the written notice by CalCERTS. RATER agrees to return all intellectual property and materials including Manuals, Guides and proprietary written materials within ten (10) days of notification of termination or decertification. RATER will also cease the display of any CalCERTS Certificates and cease any representation to the public that RATER is CalCERTS certified.

B. CalCERTS may reprove, suspend for a period not to exceed two years, or PERMANENTLY decertify any RATER who is found to have committed one or more of the following acts:

1. Failure of RATER to comply with any of the terms and conditions of this Agreement, the Subscriber Agreement or any other agreement between RATER and CalCERTS.
2. RATER's conviction of a felony.
3. Disciplinary action of RATER by the Contractors State License Board or any like authority.
4. Willful failure of RATER to provide a true, accurate and complete rating, field verification or diagnostic testing.
5. Pattern of failure of RATER to provide a true, accurate and complete rating, field verification, diagnostic testing or data entry, whether willful or not.
6. Two or more complaints about RATER from ratings customers, or potential customers.
7. RATER's failure to promptly pay any amounts due CalCERTS.
8. Misrepresentation of CalCERTS RATER's relationship with CalCERTS, or
9. Any act or failure to act which, in CalCERTS's opinion, harms its name or reputation.

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C. The certification of Rater and this agreement shall automatically terminate upon the occurrence of any of the following events:

1. RATER or CalCERTS RATER's business is adjudged bankrupt;
2. RATER or CalCERTS RATER's business is placed in the hands of a receiver;
3. RATER or CalCERTS RATER's business makes an assignment for the benefit of creditors;
4. RATER or CalCERTS RATER's business takes the benefit of any insolvency act; or
5. RATER or CalCERTS RATER's business is liquidated or dissolved.

D. RATER shall return to CalCERTS all material received from CalCERTS within ten (10) days of the date of the first to occur of any of the above-described events or any termination notice.

E. TERMINATION OF THIS AGREEMENT RESULTS IN DECERTIFICATION OF RATER,THEREBY TERMINATING RATER'S ABILITY TO RATE, TEST, INSPECT OR VERIFY ENERGY EFFICIENCY INSTALLATIONS. DECERTIFICATION WILL CANCEL THE RATER'S ABILITY TO REGISTER RATINGS RESULTS VIA THE CalCERTS ONLINE DATABASE SERVICE. ALL DATA PREVIOUSLY ENTERED BY THE RATER REMAINS THE EXCLUSIVE PROPERTY OF CALCERTS.

F. Decertification Procedures: CalCERTS may, upon the verified complaint in writing of any person, investigate the actions of RATER and may temporarily suspend or permanently revoke, the certification of RATER who is guilty of, or commits one or more of the acts or omissions constituting grounds for disciplinary action under the conditions of certification.

IV. Miscellaneous Provisions

A. RATER may not do the following:

1. Make copies of the Manuals and other proprietary material;
2. Alter, remove or conceal any copyright or trademark notice on the Manual; or
3. Assign or transfer any rights to use the Manual, Guides or Proprietary Information except as set forth in this Agreement and the Subscription Agreement.

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4. Use any of the trademarks, copyrighted works or intellectual property without an express written license agreement with CalCERTS, Inc. However, RATER may indicate that RATER is a CalCERTS CERTIFIED RATER. RATER shall use CalCERTS's trademarks and copyrighted works in good faith and solely for purposes of marketing Rating services under this Agreement and shall take no action that would diminish the goodwill associated with the trademarks.

B. RATER shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of CalCERTS services including, but not limited to, ratings or any other services for rating customers; or performance of ratings for other rating firms; including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS in defense or settlement of such claims.

C. This Agreement does not confer any right which can or may be transferred, assigned, or otherwise disposed of by Rater and any attempt at transferring, assigning, sublicensing, or otherwise disposing of any interest in this Agreement shall be null and void and a breach of this Agreement. The CalCERTS certification may not be transferred to any third party by RATER.

D. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

E. RATER acknowledges that RATER has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675 ("Regulations"), a copy of which is attached and incorporated herein by reference.

F. RATER understands the Regulations and agrees to provide home energy ratings, field verification services and diagnostic testing services in compliance with the Regulations, laws and requirements of the State of California.

G. This instrument contains the entire and only agreement between the Parties and supersedes all preexisting agreements between them respecting its subject matter. Any representation, promise, or condition in connection with such subject matter that is not incorporated in this Agreement shall not be binding on either Party. No modification, renewal, extension, or waiver of this Agreement or any of its provisions, shall be binding on the Party against whom enforcement of such modification, renewal, extension, or waiver is sought, unless made in writing and signed on behalf of such Party. Each Party to this Agreement acknowledges that no representations, inducements, promises, or agreements have been

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made by or on behalf of any Party except those covenants and agreements embodied in this Agreement.

H. RATER acknowledges that RATER has read this Agreement, understands it and agrees to be bound by its terms and conditions.

SUBSCRIBER:	CalCERTS, Inc.:
Signature	Signature
Patricia Davis	Michael E. Bachand
Print Name	Print Name
RATER	President
Title	Title
12/02/09	
Date	Date

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Acknowledgement of Rater Certification Status

To: Raters Attending Training Classes prior to CalCERTS formal approval:

CalCERTS, Inc. is an approved HERS Provider for the 2005 Standards, but the CEC requires that ALL HERS PROVIDERS must be RE-CERTIFIED for the 2008 Standards. CEC has ruled that a Rater MAY NOT be certified until the Rater successfully passes a commission approved exam after certification of the provider. CalCERTS, Inc. anticipates receiving certification in late November. NO OTHER PROVIDERS WILL BE APPROVED AHEAD OF THIS, EITHER.

In order to get everyone TRAINED in time, CEC has approved CalCERTS, Inc. to administer training, subject to CEC final approval. The CEC is in the process of reviewing the training. It is possible that CEC will develop a uniform test that ALL raters from ALL providers would have to take in order to demonstrate competence. CalCERTS, Inc. would have input into the composition of the test, but would not control all its contents or questions or formatting.

The CEC has decided that a commission approved exam will need to be administered after certification of the provider 1673 (a) 7. It is possible that the test you will take during this class will be approved as adequate, in which case successful candidates will be certified as soon as CalCERTS, Inc. is certified. If, on the other hand, candidates are required to take an additional test later, CalCERTS, Inc. will provide easily accessible opportunities in many locations, statewide, and there will be no additional fee.

Even with the possibility of having to take a proctored exam a little later, CalCERTS, Inc. and SBSI determined that this would still be the best and fastest way to get people through the training and testing in order to be ready when CalCERTS, Inc. is certified. We regret this inconvenience, but you can rest assured that CalCERTS, Inc. is not being singled out in this matter since all Providers are in the same situation.

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Also, a reminder that the 2008 Update Class does NOT contain the training for doing the Refrigerant Charge and Airflow Verification using gauges connected to the coolant lines. That class will be separate and requires the candidate to have an EPA certification to connect gauges to coolant lines. CalCERTS, Inc. will endeavor to set up convenient locations for this training throughout the State, but these arrangements have not been concluded yet. This means that even though a rater is certified for the 2008 Compliance Classification, Raters will only be able to do the non-invasive method of RCA Verification until they also get the regular training and their EPA Certification.

Please sign below acknowledging that you have read and understand these conditions. If you have any questions or need more clarification, ask the Instructor in your class.

CalCERTS, Inc. appreciates your understanding on this issue and we look forward to continuing our relationship with you in the years to come.

I, PATRICK DAVIS, have read and understand the above
Print Name Above
statements and I will comply with all requirements as set forth herein.

Signed: _____ Date: 12/12/09

ATTACHMENT C

CalCERTS Certified Rater Agreement

PLEASE READ THE FOLLOWING TERMS CAREFULLY UNDER WHICH CALCERTS, INC. GRANTS PROFESSIONAL CERTIFICATION TO YOU. CALCERTS, INC PROVIDES THIS CERTIFICATION TO YOU ONLY IF YOU ACCEPT THE TERMS OF THIS AGREEMENT. THE RIGHTS GRANTED UNDER THIS AGREEMENT SHALL NOT BE EFFECTIVE UNTIL THE CANDIDATE HAS SUCCESSFULLY COMPLETED THE CALCERTS RATER CERTIFICATION TEST, OR THE CALCERTS CHALLENGE TEST IF YOU ARE ALREADY CERTIFIED BY ANOTHER PROVIDER, OR OTHERWISE APPROVED BY CALCERTS TO TAKE THE CHALLENGE TEST.

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As used herein, the term **RATER** means a person performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic testing required for demonstrating compliance with the Title 24 Energy Efficiency Standards, who is listed on a registry in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Section 1673(c).

RATER also means a person who has been trained, tested, and certified by a provider to perform one or more of the functions or procedures used to develop a California Whole□House Home Energy Rating, a California Home Energy Audit, performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic testing required for demonstrating compliance with the Title 24, Part 6, Building Energy Efficiency performance Standards, and who is listed on a provider's registry in compliance with Section 1673(c).

RATING means a California Whole House Home Energy Rating, a California Home Energy Audit, or the Field Verification and Diagnostic Testing required for verifying compliance with the Title 24, Part 6, Building

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Energy Efficiency Standards, as specified by these regulations represented on a 0 to 100 scale of the annual source energy efficiency of a home, as specified in Section 1672(c).

RATING SYSTEM means the materials, analytical tools, diagnostic tools and procedures to produce home energy ratings, and provide home energy rating and field verification and diagnostic testing services (referred to as "home energy rating services" in Section 25942 of the Public Resources Code).

COMISSION means the State of California Energy Resources Conservation and Development Commission, commonly known as the California Energy Commission.

CalCERTS RATER or CalCERTS Certified Rater is a rater that is trained, tested and certified by CalCERTS. A CalCERTS **RATER** has submitted a Rater Application, completed CalCERTS Rater Training, has completed all required continuing education, and has passed the Rater Certification Test; or the CalCERTS Challenge Test, if already certified by another approved Provider or otherwise approved by CalCERTS to take the challenge test.

I. The Certification Authority's Obligations

A. CalCERTS shall provide a Certificate of completion and a certification to the Commission upon completion of CalCERTS training and testing requirements in effect at the time of the application and upon the payment of applicable certification fees.

B. As a condition of RATER Certification, CalCERTS shall certify to the Commission that a rater applicant has met the requirements of training and certification procedures and entered into the Subscription Agreement. CalCERTS shall maintain a registry of all raters who meet these requirements, provide an electronic copy of the registry to the Commission and make that registry available in printed or electronic form upon written request.

C. Field Checks (Quality Assurance, or QA) of RATER: CalCERTS shall annually evaluate the greater of one home or one percent of the RATER's annual total of homes for which field verification and diagnostic testing services or ratings were provided. CalCERTS may independently repeat the field verification and diagnostic testing to check whether field verification and diagnostic testing was accurately completed by RATER, and determine whether information was completely collected and reported.

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D. CalCERTS shall provide to Rater Training Manuals ("Manuals"); Training Materials ("Materials"); User's Guides ("Guides"), and/or any supporting Proprietary Information under the following terms and conditions:

1. RATER agrees that the Manuals, Materials, Guides, and Proprietary Information are owned exclusively by CalCERTS, and are protected by the copyright laws of the United States.

2. RATER agrees that RATER obtains no rights in the Manuals, Materials, Guides, or Proprietary Information, except to use them specifically in accordance with this Agreement.

3. "Proprietary Information" shall mean CalCERTS's confidential information, trade secrets and know-how embodied in the Manuals, Materials and Guides and verbal information provided by CalCERTS that is not generally known or available to the public, including but not limited to, data communication processes and systems design.

4. The Manuals, Materials, Guides and Proprietary Information may only be used by CalCERTS RATERS who shall keep strictly confidential the Manuals, Materials, Guides and Proprietary Information. RATER acknowledges that the Manuals, Materials, Guides and Proprietary Information constitute valuable property and work product of CalCERTS, and that any breach of the confidentiality obligations hereunder may cause CalCERTS irreparable harm and damage, and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

5. CalCERTS shall have the right, without prior approval from CalCERTS RATER, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS.

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II. The Candidate's Obligations

A. The Candidate Rater hereby warrants and represents that he/she meets the Certification Requirements at the time of certification and will continue to meet the Certification Requirements throughout the time they are certified, in accordance with the Certification Policy of CalCERTS, as periodically amended.

B. RATER shall comply with all CalCERTS policies and procedures. All current policies at the time of signing, and all new and revised policies and procedures shall be sent to RATER via email.

C. RATER shall comply with all CalCERTS Quality Assurance Procedures and Performance Requirements provided to RATER by CalCERTS and will meet the requirements of California Code of Regulations, Title 20 as a minimum standard. Quality Assurance includes field quality assurance, Registry quality assurance and consumer quality assurance, as well as continuing education requirements as may be necessary from time to time.

D. RATER shall comply with all applicable federal, state and local laws and regulations.

E. RATER shall personally complete all required field verification and diagnostic testing; THESE ACTIVITIES MAY NOT BE PERFORMED BY ANYONE ELSE. RATER agrees to provide true, accurate and complete ratings, field verification and diagnostic testing.

1. Rating Site Inspections and Diagnostic Testing: Each rating shall be based on a site inspection of the home, and diagnostic testing as specified by the rating system.

2. Field Verification and Diagnostic Testing: RATER shall provide field verification and diagnostic testing of energy efficiency improvements as a condition for those improvements to qualify for Title 24 or other building energy performance standards' compliance credit, scores, indices or ratings. RATER shall not knowingly provide untrue, inaccurate or incomplete field verification diagnostic testing information or report field verification or test results that were not conducted in compliance with these regulations. RATER shall not knowingly

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accept payment or consideration in exchange for reporting a rating or field verification and diagnostic test result that was not in fact conducted and reported in compliance with *California Code of Regulations*, Title 20 Chapter 4, Article 8, Sections 1670-1675.

F. RATER shall transmit all data to CalCERTS via the CalCERTS online Registry within forty-eight (48) hours after completing the rating, including the field verification, and diagnostic testing. CalCERTS RATER is responsible and liable for all data transmitted hereunder. CalCERTS may also use transmitted data for statistical, evaluation, quality control and archival purposes.

G. RATER shall keep confidential all ratings, field verifications and diagnostic testing results and all information gathered from ratings except for transmission to CalCERTS, the Builder, Homeowner or Utility. All confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

H. RATER shall be an independent entity from the builder and the subcontractor installer of the energy efficiency improvements being tested and verified, and shall have no financial interest in the installation of the improvements, whether the improvements are existing or proposed. Accordingly, RATER may <u>not</u> rate or perform a field verification or diagnostic test on any home in which RATER has any financial interest, including, but not limited to the following:

1. Property in which RATER has a direct or indirect ownership;

2. Property in which RATER has a financial interest of any kind; or

3. Property for which RATER is making a loan or negotiating a loan, or soliciting a prospective lender to make a loan with the expectation of compensation.

I. RATER shall act hereunder solely as an independent contractor. RATER shall not represent himself/herself to be an employee or agent of CalCERTS.

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III. Termination and Decertification

A. Upon written notice to CalCERTS, RATER may terminate this Agreement at any time effective ten (10) days after receipt of the written notice by CalCERTS. RATER agrees to return all intellectual property and materials including Manuals, Guides and proprietary written materials within ten (10) days of notification of termination or decertification. RATER will also cease the display of any CalCERTS Certificates and cease any representation to the public that RATER is CalCERTS certified.

B. CalCERTS may reprove, suspend for a period not to exceed two years, or PERMANENTLY decertify any RATER who is found to have committed one or more of the following acts:

1. Failure of RATER to comply with any of the terms and conditions of this Agreement, the Subscriber Agreement or any other agreement between RATER and CalCERTS.
2. RATER's conviction of a felony.
3. Disciplinary action of RATER by the Contractors State License Board or any like authority.
4. Willful failure of RATER to provide a true, accurate and complete rating, field verification or diagnostic testing.
5. Pattern of failure of RATER to provide a true, accurate and complete rating, field verification, diagnostic testing or data entry, whether willful or not.
6. Two or more complaints about RATER from ratings customers, or potential customers.
7. RATER's failure to promptly pay any amounts due CalCERTS.
8. Misrepresentation of CalCERTS RATER's relationship with CalCERTS, or
9. Any act or failure to act which, in CalCERTS's opinion, harms its name or reputation.

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C. The certification of Rater and this agreement shall automatically terminate upon the occurrence of any of the following events:

1. RATER or CalCERTS RATER's business is adjudged bankrupt;
2. RATER or CalCERTS RATER's business is placed in the hands of a receiver;
3. RATER or CalCERTS RATER's business makes an assignment for the benefit of creditors;
4. RATER or CalCERTS RATER's business takes the benefit of any insolvency act; or
5. RATER or CalCERTS RATER's business is liquidated or dissolved.

D. RATER shall return to CalCERTS all material received from CalCERTS within ten (10) days of the date of the first to occur of any of the above-described events or any termination notice.

E. TERMINATION OF THIS AGREEMENT RESULTS IN DECERTIFICATION OF RATER,THEREBY TERMINATING RATER'S ABILITY TO RATE, TEST, INSPECT OR VERIFY ENERGY EFFICIENCY INSTALLATIONS. DECERTIFICATION WILL CANCEL THE RATER'S ABILITY TO REGISTER RATINGS RESULTS VIA THE CalCERTS ONLINE DATABASE SERVICE. ALL DATA PREVIOUSLY ENTERED BY THE RATER REMAINS THE EXCLUSIVE PROPERTY OF CALCERTS.

F. Decertification Procedures: CalCERTS may, upon the verified complaint in writing of any person, investigate the actions of RATER and may temporarily suspend or permanently revoke, the certification of RATER who is guilty of, or commits one or more of the acts or omissions constituting grounds for disciplinary action under the conditions of certification.

IV. Miscellaneous Provisions

A. RATER may not do the following:

1. Make copies of the Manuals and other proprietary material;
2. Alter, remove or conceal any copyright or trademark notice on the Manual; or
3. Assign or transfer any rights to use the Manual, Guides or Proprietary Information except as set forth in this Agreement and the Subscription Agreement.

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4. Use any of the trademarks, copyrighted works or intellectual property without an express written license agreement with CalCERTS, Inc. However, RATER may indicate that RATER is a CalCERTS CERTIFIED RATER. RATER shall use CalCERTS's trademarks and copyrighted works in good faith and solely for purposes of marketing Rating services under this Agreement and shall take no action that would diminish the goodwill associated with the trademarks.

B. RATER shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of CalCERTS services including, but not limited to, ratings or any other services for rating customers; or performance of ratings for other rating firms; including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS in defense or settlement of such claims.

C. This Agreement does not confer any right which can or may be transferred, assigned, or otherwise disposed of by Rater and any attempt at transferring, assigning, sublicensing, or otherwise disposing of any interest in this Agreement shall be null and void and a breach of this Agreement. The CalCERTS certification may not be transferred to any third party by RATER.

D. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

E. RATER acknowledges that RATER has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675 ("Regulations"), a copy of which is attached and incorporated herein by reference.

F. RATER understands the Regulations and agrees to provide home energy ratings, field verification services and diagnostic testing services in compliance with the Regulations, laws and requirements of the State of California.

G. This instrument contains the entire and only agreement between the Parties and supersedes all preexisting agreements between them respecting its subject matter. Any representation, promise, or condition in connection with such subject matter that is not incorporated in this Agreement shall not be binding on either Party. No modification, renewal, extension, or waiver of this Agreement or any of its provisions, shall be binding on the Party against whom enforcement of such modification, renewal, extension, or waiver is sought, unless made in writing and signed on behalf of such Party. Each Party to this Agreement acknowledges that no representations, inducements, promises, or agreements have been

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made by or on behalf of any Party except those covenants and agreements embodied in this Agreement.

H. RATER acknowledges that RATER has read this Agreement, understands it and agrees to be bound by its terms and conditions.

SUBSCRIBER:	CalCERTS, Inc.:
Signature	Signature
Erik Hoover	Michael E. Bachand
Print Name	Print Name
	President
Title	Title
12/12/2009	
Date	Date

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CERTIFIED ENERGY RATING & TESTING SERVICES™

Title 24 HERS Provider
California Energy Commission Approved
ENERGY STAR® Provider
Department of Energy Approved
CalCERTS®
www.calcerts.com

EMAIL: office@calcerts.com
PHONE: 916.985.3400
FAX: 916.985.3402
31 Natoma St., Ste. 120
Folsom, CA, 95630

TITLE 24 RESIDENTIAL HERS

RATER ADDENDUM

THIS **ADDENDUM,** effective as of the date of last signature below, is by and between **California Certified Energy Rating And Testing Services ("CalCERTS®")** and:

Erik Hoover _____ **("Calcerts Rater")**

THIS IS AN INITIAL CalCERTS® RATER CERTIFICATION ADDENDUM ☑

THIS IS A RENEWAL CalCERTS™ RATER CERTIFICATION ADDENDUM ☐

THIS IS IN ADDITION TO AN EXISTING RATER CERTIFICATION ☐

Existing Provider Certification Information:

Provider: CHEERS

Certification Number or ID: _____

Expiration Date of Certification: _____

RATER means a person performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic testing required for demonstrating compliance with the Title 24 Energy Efficiency Standards, who is listed on a registry in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, section 1673(c).
Rating or Rate means a representation on a 0 to 100 scale of the annual source energy efficiency of a home as specified in California Code of Regulations, Title 20 Chapter 4, Article 8, section 1672(c).
Rating System means the materials, analytical tools, diagnostic tools and procedures to produce home energy ratings and provide home energy rating and field verification and diagnostic testing services (referred to as "home energy rating services" in Section 25942 of the Public Resources Code).
Commission means the State of California Energy Resources Conservation and Development Commission, commonly known as the California Energy Commission.

WHEREAS, CalCERTS™ ***RATER*** has submitted a Rater Application, completed Title-24/Residential New Construction Rater Training, has completed all required continuing education, and has passed the Title-24/Residential New Construction Rater Certification Test; or the CalCERTS™ Challenge Test, if already certified by another approved Provider and
NOW, THEREFORE, in consideration of the mutual covenants set forth herein, CalCERTS™ and CalCERTS™ ***RATER*** agree as follows:

1. CalCERTS™ ***RATER*** warrants that the recitals set forth above are true and correct.
2. CalCERTS™ ***RATER*** shall comply with the attached CalCERTS™ Subscription Agreement. The term of this Addendum shall co-exist with the term of the CalCERTS™ Subscription Agreement.
3. CalCERTS™ ***RATER*** shall comply with all CalCERTS™ policies and procedures. All current policies are stated herein or attached hereto, and all new and revised policies and procedures shall be sent to CalCERTS™ ***RATER***.
4. As a condition of CalCERTS™ ***RATER's*** Certification, CalCERTS™ shall certify to the ***Commission*** that a rater applicant has met the requirements of training and certification procedures and entered into the Subscription Agreement and Rater Addendum. CalCERTS™ shall maintain a registry of all raters who meet these requirements, provide an electronic copy of the

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registry to the ***Commission*** and make that registry available in printed or electronic form upon written request.

5. CalCERTS™ ***RATER*** shall comply with all CalCERTS™ Quality Assurance Procedures and Performance Requirements detailed herein. Quality Assurance includes field quality assurance, Registry quality assurance and consumer quality assurance, as well as continuing education requirements as may be necessary from time to time.

   A. ***Rating Site Inspections and Diagnostic Testing:*** Each ***rating*** shall be based on a site inspection of the home, and diagnostic testing as specified by the ***rating*** system.

   B. ***Field Verification and Diagnostic Testing:*** CalCERTS™ ***RATER*** shall provide field verification and diagnostic testing of energy efficiency improvements as a condition for those improvements to qualify for Title 24 building energy performance standards compliance credit. CalCERTS™ ***RATER*** shall not knowlingly provide untrue, inaccurate or imcomplete field verification diagnostic testing information or report field verification or test results that were not conducted in compliance with these regulations. CalCERTS™ ***RATER*** shall not knowingly accept payment or consideration in exchange for reporting a rating or field verification and diagnostic test result that was not in fact conducted and reported in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Sections 1670-1675.

   C. ***Field Checks of*** **CalCERTS™** ***RATER:*** CalCERTS™ shall annually evaluate the greater of one home or one percent of CalCERTS™ ***RATER's*** annual total of homes for which field verification and diagnostic testing services were provided. CalCERTS™ shall independently repeat the field verification and diagnostic testing to check whether field verification and diagnostic testing was accurately completed by CalCERTS™ ***RATER***, and determine whether information was completely collected and reported.

6. CalCERTS™ ***RATER*** shall comply with all applicable federal, state and local laws and regulations.

7. CalCERTS™ ***RATER*** shall ***personally*** complete all required field verification and diagnostic testing; THESE ACTIVITIES MAY NOT BE PERFORMED BY ANYONE ELSE. CalCERTS™ ***RATER*** agrees to provide true, accurate and complete ***ratings***, field verification and diagnostic testing.

8. CalCERTS™ ***RATER*** may use the CalCERTS™ Title-24/New Residential Construction Training Manual ("Manuals"); Training Materials ("Materials"); User's Guides ("Guides"), and/or any supporting Proprietary Information under the following terms and conditions:

   A. CalCERTS™ ***RATER*** agrees that the Manuals, Materials, Guides, and Proprietary Information are owned exclusively by CalCERTS™, and are protected by the copyright laws of the United States.

   B. CalCERTS™ ***RATER*** agrees that CalCERTS™ ***RATER*** obtains no rights in the Manuals, Materials, Guides, or Proprietary Information, except to use them specifically in accordance with this Agreement.

   C. "Proprietary Information" shall mean CalCERTS™'s confidential information, trade secrets and know-how embodied in the Manuals, Materials and Guides and not generally known or available to the public, including but not limited to, data communication processes and systems design.

   D. The Manuals, Materials, Guides and Proprietary Information may only be used by CalCERTS™ ***RATERS*** who shall keep strictly confidential the Manuals, Materials, Guides and Proprietary Information. CalCERTS™ RATER acknowledges that the Manuals, Materials, Guides and Proprietary Information constitute valuable property and work product of CalCERTS™, and that any breach of the confidentiality obligations hereunder may cause CalCERTS™ irreparable harm and damage, and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

9. CalCERTS™ ***RATER*** may not do the following:

   A. Make copies of the Manual;

   B. Alter, remove or conceal any copyright or trademark notice on theManual; or

   C. Assign or transfer any rights to use the Manual, Guides or Proprietary Information except as set forth in this Addendum and the Subscription Agreement

10. CalCERTS™ shall have the right, without prior approval from CalCERTS™ ***RATER***, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS™.

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11. CalCERTS™ ***RATER*** shall transmit all data to CalCERTS™ via the CalCERTS™ online Registry within forty-eight (48) hours after completing the ***rating***, including the field verification, and diagnostic testing.. CalCERTS™ ***RATER*** is responsible and liable for all data transmitted herunder.

12. CalCERTS™ ***RATER*** shall keep confidential all ***ratings***, field verifications and diagnostic testing results and all information gathered from ***ratings*** except for transmission to CalCERTS™, the Builder, Homeowner or Utility. All confidentiality obligations hereunder shall survive any expiration or termination of this Addendum.

13. CalCERTS™ ***RATER*** may not ***rate*** or perform a field verification or diagnostic test on any home in which CalCERTS™ ***RATER*** has any financial interest, including, but not limited to the following:

    A. Property in which ***RATER*** has a direct or indirect ownership;

    B. Property in which ***RATER*** has a financial interest of any kind; or

    C. Property for which ***RATER*** is making a loan or negotiating a loan, or soliciting a prospective lender to make a loan with the expectation of compensation.

14. CalCERTS™ ***RATER*** shall be an independent entity from the builder and the subcontractor installer of the energy efficiency improvements being tested and verified, and shall have no financial interest in the installation of the improvements.

15. Upon written notice to CalCERTS™, CalCERTS™ ***RATER*** may terminate this Addendum at any time.

16. TERMINATION OF THIS AGREEMENT RESULTS IN DECERTIFICATION OF CalCERTS™ RATER, THEREBY TERMINATING CalCERTS™ RATER'S ABILITY TO RATE, TEST, INSPECT OR VERIFY ENERGY EFFICIENCY INSTALLATIONS. DECERTIFICATION WILL CANCEL THE CalCERTS™ RATER'S ABILITY TO REGISTER RATINGS RESULTS VIA THE CalCERTS™ ONLINE DATABASE SERVICE.

17. ***Decertification Procedures:*** CalCERTS™ may, upon the verified complaint in writing of any person, investigate the actions of CalCERTS™ ***RATER*** and may temporarily suspend or permanently revoke, the certification of CalCERTS™ ***RATER*** who is guilty of, or commits one or more of the acts or omissions constituting grounds for disciplinary action under this Addendum.

    A. CalCERTS™ may reprove, suspend for a period not to exceed two years, or decertify any CalCERTS™ ***RATER*** who is found to have commited one or more of the following acts:

    i. Failure of CalCERTS™ ***RATER*** to comply with any of the terms and conditions of this Addendum, the Subscriber Agreement or any other agreement between CalCERTS™ ***RATER*** and CalCERTS™.

    ii. CalCERTS™ ***RATER's*** conviction of a felony.

    iii. Disciplinary action of CalCERTS™ ***RATER*** by the Contractors State License Board or any like authority.

    iv. Willful failure of CalCERTS™ ***RATER*** to provide a true, accurate and complete ***rating***, field verification or diagnostic testing.

    v. Pattern of failure of CalCERTS™ ***RATER*** to provide a true, accurate and complete ***rating***, field verification, diagnostic testing or data entry, whether willful or not.

    vi. Two or more complaints about CalCERTS™ ***RATER*** from ***ratings*** customers, or potential customers.

    vii. CalCERTS™ ***RATER 's*** failure to promptly pay any amounts due CalCERTS™

    viii. Misrepresentation of CalCERTS™ ***RATER***'s relationship with CalCERTS™, or

    ix. Any act or failure to act which, in CalCERTS™'s opinion, harms its name or reputation.

18. This Addendum shall automatically terminate upon the occurrence of any of the following events:

    A. CalCERTS™ ***RATER*** or CalCERTS™ ***RATER***'s business is adjudged bankrupt;

    B. CalCERTS™ ***RATER*** or CalCERTS™ ***RATER***'s business is placed in the hands of a receiver;

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C. CalCERTS™ ***RATER*** or CalCERTS™ ***RATER***'s business makes an assignment for the benefit of creditors;

D. CalCERTS™ ***RATER*** or CalCERTS™ ***RATER***'s business takes the benefit of any insolvency act; or

E. CalCERTS™ ***RATER*** or CalCERTS™ ***RATER***'s business is liquidated or dissolved.

19. CalCERTS™ ***RATER*** shall return to CalCERTS™ all material received from CalCERTS™S within ten (10) days of the date of the first to occur of any of the above-described events or any termination notice.
20. CalCERTS™ ***RATER*** shall act hereunder solely as an independent contractor.
21. CalCERTS™ ***RATER*** shall not represent himself/herself to be an employee or agent of CalCERTS™.
22. CalCERTS™ ***RATER*** may indicate that CalCERTS™ ***RATER*** is a CalCERTS™ CERTIFIED ***RATER***.
23. CalCERTS™ ***RATER*** shall indemnify and hold harmless CalCERTS™, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of ***ratings*** or any other services for ***rating*** customers, including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS™ in defense or settlement of such claims.
24. This Addendum may not be assigned by CalCERTS™ ***RATER***.
25. This Addendum shall be governed by and construed in accordance with the laws of the State of California.
26. CalCERTS™ ***RATER*** acknowledges that CalCERTS™ ***RATER*** has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675 ("Regulations"), a copy of which is attached and incorporated herein by reference.
27. CalCERTS™ ***RATER*** understands the Regulations and agrees to provide home energy ***ratings***, field verification services and diagnostic testing services in compliance with the Regulations.
28. This Addendum and all attachments which are incorporated herein by reference cancels and supersedes all prior CalCERTS™ TITLE-24/RESIDENTIAL NEW CONSTRUCTION RATER ADDENDUM(s) between the parties, sets forth the entire understanding of the parties with respect to the subject matter herein, and shall not be amended, modified or waived except in a writing signed by both parties.
29. CalCERTS™ ***RATER*** acknowledges that CalCERTS™ ***RATER*** has read this Addendum, understands it and agrees to be bound by its terms and conditions.

The undersigned CalCERTS™ *RATER* and CalCERTS™ authorized agent declare, pursuant to California Code of Regulations Title 20 Chapter 4, Article 8, Section 1673(i),under penalty of perjury they are independent entities from each other as well as independent entities from the builder and from the subcontractor installer of energy efficiency improvements which are to be field verified or diagnostically tested.

SUBSCRIBER:	CalCERTS:
Signature	Signature
Erik Hoover	Michael E. Bachand
Print Name	Print Name
	President
Title	Title
8/20/08	
Date	Date

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Acknowledgement of Rater Certification Status

To: Raters Attending Training Classes prior to CalCERTS formal approval:

CalCERTS, Inc. is an approved HERS Provider for the 2005 Standards, but the CEC requires that ALL HERS PROVIDERS must be RE-CERTIFIED for the 2008 Standards. CEC has ruled that a Rater MAY NOT be certified until the Rater successfully passes a commission approved exam after certification of the provider. CalCERTS, Inc. anticipates receiving certification in late November. NO OTHER PROVIDERS WILL BE APPROVED AHEAD OF THIS, EITHER.

In order to get everyone TRAINED in time, CEC has approved CalCERTS, Inc. to administer training, subject to CEC final approval. The CEC is in the process of reviewing the training. It is possible that CEC will develop a uniform test that ALL raters from ALL providers would have to take in order to demonstrate competence. CalCERTS, Inc. would have input into the composition of the test, but would not control all its contents or questions or formatting.

The CEC has decided that a commission approved exam will need to be administered after certification of the provider 1673 (a) 7. It is possible that the test you will take during this class will be approved as adequate, in which case successful candidates will be certified as soon as CalCERTS, Inc. is certified. If, on the other hand, candidates are required to take an additional test later, CalCERTS, Inc. will provide easily accessible opportunities in many locations, statewide, and there will be no additional fee.

Even with the possibility of having to take a proctored exam a little later, CalCERTS, Inc. and SBSI determined that this would still be the best and fastest way to get people through the training and testing in order to be ready when CalCERTS, Inc. is certified. We regret this inconvenience, but you can rest assured that CalCERTS, Inc. is not being singled out in this matter since all Providers are in the same situation.

Also, a reminder that the 2008 Update Class does NOT contain the training for doing the Refrigerant Charge and Airflow Verification using gauges connected to the coolant lines. That class will be separate and requires the candidate to have an EPA certification to connect gauges to coolant lines. CalCERTS, Inc. will endeavor to set up convenient locations for this training throughout the State, but these arrangements have not been concluded yet. This means that even though a rater is certified for the 2008 Compliance Classification, Raters will only be able to do the non-invasive method of RCA Verification until they also get the regular training and their EPA Certification.

Please sign below acknowledging that you have read and understand these conditions. If you have any questions or need more clarification, ask the Instructor in your class.

CalCERTS, Inc. appreciates your understanding on this issue and we look forward to continuing our relationship with you in the years to come.

I, Erik Hoover, have read and understand the above
Print Name Above
statements and I will comply with all requirements as set forth herein.

Signed: _____ Date: 12/12/09

ATTACHMENT D

CalCERTS, Inc. Subscription Agreement

TYPE OF SUBSCRIPTION -------CHECK APPROPRIATE BOX:

Rater-Owner: ☑ Fill out sections I and II below and sign the signature page. Rater will be paying certificate fees.

Rater-Employee: ☑ Fill out section I below. Must be accompanied by a Subscription Agreement with Section II filled out and signed by Employer.

Rater Employer: ☑ **Employer** must fill out Section II below. **Employer** will be paying certificate fees.

Non-Rater User: ☐ Fill out Section II below, **Employer must sign.**

SECTION I
Certificate Holder's Information (ALL items required)

Name PATRICK DAVIS

Home Address 5837 TWEEDSMUIR DRIVE
Rocklin CA 95677

Email prdavis3@gmail.com

Phone 916 624 2092

Mobile Phone 916 316 4595

Are You Currently Certified With Another Provider? [ ] yes [ ] no
If Yes, Provider CHEERS Certificate # _____ Exp Date _____

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SECTION II
Billing Customer Information (ALL items required)

Company Name VALLEY Duct Testing

Company Address 6345 Rainier Ave
Rocklin CA 95677

Business Email golfenjohn@sbcglobal.net

Contact John Flores

Contact's Title President

Billing Email golfenjohn@sbcglobal.net

Billing Contact John Flores

Phone 916 624 2092

Fax 916 624 3352

THIS AGREEMENT, effective as of the date of last signature below, is by and between CalCERTS, Inc.® (CalCERTS aka California Certified Energy Rating and Testing Services), an S Corporation in the State of California and an approved HERS Provider organization that administers a home energy rating system in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675, and ("SUBSCRIBER") a person, entity or organization that is a customer, user, rater, Title 24 Consultant, Utility Company, Building Department, Contractor, Realtor®, or a combination of one or more of these, or other user approved by CalCERTS, to use the online database service for data input, retrieval, searching or any other features provided on the CalCERTS website now or in the future. The purpose of this Agreement is to establish the terms and conditions governing Subscriber's use of the CalCERTS online database service and conform this relationship to the California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein, CalCERTS and Subscriber agree as follows:

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A. Terms of Payment

1. A Subscriber is a person or entity whose business is that of providing home energy ratings and/or audits and field verification and diagnostics, or information related to audits and ratings that is or employs at least one Certified Rater.
2. A person or entity is not a Subscriber until CalCERTS has received and acknowledged the receipt of the initial Subscription Fee, and a signed Agreement and approved by CalCERTS.
3. Subscriber shall abide by the terms and conditions of this Agreement and pay all amounts due CalCERTS in accordance with the CalCERTS Fee Schedule established by volume or other criteria as may from time to time be negotiated between Subscriber and CalCERTS, Inc.
4. All invoices are Due and Payable Upon Receipt.
5. Subscriber will pay an annual Subscription fee in an amount not less than $120.00. Subscriber must pay the fee annually thereafter to remain active.
6. CalCERTS reserves the right to charge interest on all unpaid and past due balances at the rate of 1.5% per month (18% per year) until paid. NOTE: Payments will be applied to your most current invoice first.
7. Subscription fee is subject to change without notice and is non-refundable.
8. A Subscriber, whether a person or an entity, may be refused access to the website due to delinquent payments at the sole discretion of CalCERTS without notice to the delinquent Subscriber.

B. Terms of Use By Subscriber

1. A Subscriber may designate other Users to enter data, use software or make payments through the CalCERTS online services.
2. Users designated by Subscriber may or may not be employees of the Subscriber.
3. Subscriber is responsible for the conduct and access of all users.
4. Subscriber must obtain a separate and unique login and password from CalCERTS for each identified User that is under Subscriber's supervision.
5. Subscriber shall be responsible for ensuring their designated Users comply with the terms and conditions of this Agreement.
6. Subscriber warrants that the information set forth in the recitals set forth above is true and correct.

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7. Subscriber shall comply with all Addendums, Information Forms, Affidavits if any, Code of Ethics Statements, Pricing Policy and Fee Schedules provided by CalCERTS.
8. Subscriber shall comply with all current CalCERTS policies described herein. Any new, amended, and/or revised policies shall be sent to Subscriber **via email**. **Notice of amended or revised policies is deemed to have been received by Subscriber by email and no further notice must be given. Initial_____** Subscriber shall provide CalCERTS with his/her current telephone number, email address and mailing address, notifying CalCERTS within ten days of any changes of mailing address, email or telephone number.
9. Subscriber shall comply with all applicable federal, state, and local laws and regulations.
10. The term of this Agreement shall co-exist with all agreements, addendums and attachments between Subscriber, Subscribers Raters and CalCERTS.

C. Terms of Use of CalCERTS Intellectual Property By Subscriber

Upon payment of the subscription fees set forth herein and the agreement to abide by the terms of use, the Subscriber shall have access to CalCERTS online services, supporting documents, trademarks and software and support so long as this agreement is maintained and not terminated.

Trademarks:

1. CalCERTS grants to Subscriber a non-exclusive, terminable license to use certain trademarks of CalCERTS, namely "CalCERTS Certified Rater" as a Certification Mark to indicate to the public that Subscriber is currently certified by CalCERTS to conduct home energy ratings, audits, and/or field verification and diagnostics and the flying star logo.

    i. Examples of its use include, but are not limited to, the following: Patches on clothing to be worn by Raters; business cards; stationery; identification cards; advertisements; and marketing materials.

    ii. Note: The CalCERTS service mark cannot be used alone. It must be accompanied by either the name of a Rater or used in conjunction with a Rating business.

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The Subscriber shall not represent, imply or connote in any way to the public that it uses the Certification Marks for any goods or services other than Certified Rater Services or on a CalCERTS rated building. Subscriber may indicate that Subscriber is a CalCERTS Subscriber to the public.

2. "CalCERTS Registered Home" is another service mark owned by CalCERTS, Inc. CalCERTS has developed this special version of its trademark/service mark for the exclusive use of Subscribers who have an executed CalCERTS Subscriber's Agreement. Note: This service mark can be used only on, near, or in reference to a home, that has been rated by a CalCERTS Certified Rater. Examples of its use include, but are not limited to, the following: window decals, real estate advertisements, yard signs, sign hangers on "for sale" signs, flags, banners and marketing materials.

3. The Subscriber shall not use any trademark that imitates or is similar to the "CalCERTS," "CalCERTS Certified Rater" or "CalCERTS Registered Home" marks or any part thereof. Nor shall it use as a trademark any word, symbol, character, or set of words, symbols, or characters that in any language would be confusingly similar thereto, be it optical, acoustical or conceptual. Improper use of the CalCERTS trademarks and materials will be grounds for termination of this Subscription Agreement at the option of CalCERTS.

4. Upon termination or expiration of this Agreement, Subscriber shall cease using, reproducing, advertising, marketing and distributing any material using the CalCERTS trademarks as soon as is commercially feasible.
5. Use of CalCERTS's name in Subscriber's printed material must be approved in advance in writing by the CalCERTS President or designated authorized party. Except that printed material distributed solely to the employees or members of the entity producing the material, commonly known as "in house material" will be permitted. The entity may NOT distribute this material to its customers unless they have followed the procedures and conditions set forth herein.

Copyrighted Media Materials:

1. CalCERTS grants to Subscriber a non-exclusive, terminable license to use the "copyrighted materials" of CalCERTS including CalCERTS User's Guides ("Guides"), Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing

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Materials and/or any supporting Proprietary Information produced from time to time by CalCERTS. CalCERTS also grants a limited right to copy and distribute paper or electronic copies of CalCERTS Training Materials or Collateral Marketing Materials, Informational Material and other documents made available to Subscriber under this agreement for public distribution. CalCERTS also grants a limited non-exclusive, terminable license to incorporate the CalCERTS copyright works, in whole or in part, into derivative works for Subscribers own use and distribution throughout California upon final approval of CalCERTS. Such derivative works remain the property of CalCERTS.

2. Subscriber agrees that the Guides, Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information are the intellectual property of CalCERTS, are owned exclusively by CalCERTS, and are protected by the copyright laws of the United States. Subscriber agrees that Subscriber obtains no rights in the Guides, online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials or Proprietary Information, except to use them specifically in accordance with this Agreement.

3. "Proprietary Information" shall mean CalCERTS's confidential information, trade secrets and know-how embodied in the Guides, online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and not generally known or available to the public, including but not limited to, data communication processes and systems design.

4. The Guides, Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information may only be used by CalCERTS Subscribers who shall keep strictly confidential the Guides online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information, and Subscriber acknowledges that the Guides online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information constitute valuable property and work product of CalCERTS; that any breach of the confidentiality obligations hereunder may

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cause CalCERTS irreparable harm and damage; and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

5. Subscriber may not assign or transfer any rights to use the Guides Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials or Proprietary Information, except as set forth in this Agreement upon approval of CalCERTS.

6. Form of Copyright Notice for all CalCERTS materials and all derivative materials will be as follows:

© Copyright 2009 (CalCERTS). All Rights Reserved.

7. The copyright notice should be used if both of the following tests are met and in accordance with the approval procedures adopted by CalCERTS:
   i. The work was created by or for CalCERTS; and
   ii. The work is owned by CalCERTS

8. On written work, place the copyright notice on the cover or the first page after the cover. On a computer program, place the copyright notice on a label affixed to the disk and on a label affixed to the envelope or box, which holds the disk. Also, place the notice within the title of the program at the beginning of the program so that it is visible on the user's screen. If "c" in a circle is not available, for example on a computer program, delete it from the notice. The year in the notice is the year of creation of the work.

9. Procedure for Approval: The Subscriber's printed material must be submitted to the CalCERTS President or other designated authorized party for approval. Subscriber will be notified in writing whether the printed material submitted with any CalCERTS trademarks or service marks is approved. Subscriber agrees that the printed materials including CalCERTS trademarks, copyright materials and other intellectual property of CalCERTS will not be used by Subscriber until approved by CalCERTS as a Subscriber.

10. CalCERTS shall have the right, without prior approval from, or notice to Subscriber, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS.

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D. CalCERTS Database and Software Usage, Restrictions and Guidelines

1. CalCERTS' online database service and software are provided on an "as is, as available" basis. Due to CalCERTS' relationship with on-line networks, CalCERTS gives no warranty, expressed or implied, for the online database services provided, including without limitation, warranty of the merchantability and warranty of fitness for a particular purpose. This disclaimer of warranty expressly disclaims any right to reimbursement for direct or consequential losses, including but not limited to losses of income, due to disruption of service by provider or its service providers.

2. SUBSCRIBER expressly agrees that use of the CalCERTS' online database service and software is done so at Subscriber's sole risk. CalCERTS, its employees, affiliates, agents, third party information providers, merchants, licensors or the like, indicate CalCERTS's online service may be interrupted and is not likely to be error free. CalCERTS makes no warranty as to the results that may be obtained from the use of the CalCERTS online database service or software.

3. Under no circumstances, shall CalCERTS, its agents or anyone else involved in creating, producing or distributing CalCERTS's online database service or software be liable for any direct, indirect, incidental, special or consequential damages that result from the use of or inability to use CalCERTS's online database service or software; or that result from mistakes, omissions, interruptions, deletion or loss of files or data, errors, defects, delays in operation, or of performance, whether or not limited to acts of God, communication failure, theft, destruction or unauthorized access to CalCERTS's records, programs or services. Subscriber maintains sole responsibility for data backups and restoration. Subscriber hereby acknowledges that this paragraph shall apply to all content on CalCERTS's online database service or software usage.

4. Use of any information obtained by way of CalCERTS is at Subscriber's own risk. Connection speed represents the speed of a connection and does not represent guarantees of available end-to-end bandwidth.

5. CalCERTS disclaims liability for any damages arising from Subscriber's use of CalCERTS online database service or software. CalCERTS disclaims liability for Subscriber's data, files, or

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directories residing on CalCERTS's equipment or its providers' equipment. Subscriber is solely responsible for maintaining data, file, and directory structure back-ups.

6. Notwithstanding the above, Subscriber's exclusive remedies for all damages, losses and causes of actions whether in contract, tort, including negligence or otherwise, shall not exceed the aggregate dollar amount which Subscriber paid during the annual term of this Agreement.

7. CalCERTS makes no representations, warranties, or assurances that Subscriber's equipment will be compatible with CalCERTS's services.

E. **CalCERTS Waiver of Use of Materials**

1. CalCERTS DOES NOT WARRANT THE APPLICABILITY, PROFITABLILITY OR ANY USEFULNESS, WHATSOEVER, OF THIS SERVICE AS IT RELATES TO THE SUBSCRIBER'S BUSINESS. TO THE EXTENT PERMITTED BY APPLICABLE LAW, CalCERTS DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE GUIDE, PRINTED MATERIALS AND ONLINE DATABASE SERVICE.
2. To the extent permitted by applicable law, in no event shall CalCERTS be liable for any damages whatsoever (including but not limited to, without limitation, damages for loss of profits, loss of business information, business interruption, good will or any other financial loss) arising out of the use of or inability to use any work product of CalCERTS including but not limited to, the Manual, printed materials as noted above, and the CalCERTS online services, even if CalCERTS has been advised of the possibility of such damages.

F. **Termination of Agreement**

Upon written notice to CalCERTS, Subscriber may terminate this Agreement at any time.

Upon written notice to Subscriber, CalCERTS may terminate this Agreement upon the occurrence of any of the following events:

1. Failure of Subscriber to comply with any of the terms and conditions of this Agreement or any other agreement between Subscriber and CalCERTS;

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2. SUBSCRIBER is convicted of a felony;
3. SUBSCRIBER'S disciplinary action by the Contractors State License Board or any like authority;
4. Willful failure of a Subscriber to provide true and accurate data and information;
5. SUBSCRIBER'S failure to promptly pay any amounts due CalCERTS;
6. Misrepresentation of Subscriber's relationship with CalCERTS;
7. Any act or failure to act by Subscriber which, in CalCERTS's opinion, harms its name or reputation of CalCERTS.
8. Subscriber or Subscriber's business is adjudged bankrupt, placed in the hands of a receiver, makes an assignment for the benefit of creditors, takes the benefit of any insolvency act, or is liquidated or dissolved.

G. Upon Termination of Agreement

SUBSCRIBER shall return to CalCERTS all material received from CalCERTS within ten (10) days of the date of the first to occur of any of the above-described termination events or receipt of any termination notice from CalCERTS.

H. Hold Harmless Clause

SUBSCRIBER shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of CalCERTS services including but not limited to services for rating for customers, or services for performing ratings for other rating firms, including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS in defense or settlement of such claims.

I. California State Codes and Regulations

This Agreement shall be governed by and construed in accordance with the laws of the State of California. California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675 shall govern any conflicts.

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SUBSCRIBER acknowledges that Subscriber has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675. **Initial**_____

J. Dispute Resolution

1. Mediation: Subscriber and CalCERTS agree to mediate any dispute or claims arising between them out of this Agreement, or any resulting transaction, before resorting to arbitration or court action. Mediation fees, if any, shall be divided equally among the parties involved. If, for any dispute or claim to which this paragraph applies, any party commences an action without first attempting to resolve the matter through mediation; or refuses to mediate after a request has been made, then that party shall not be entitled to recover attorney's fees, even if they would otherwise be available to that party in any such action. THIS MEDIATION PROVISION APPLIES WHETHER OR NOT THE ARBITRATION PROVISION IS INITIALED. **Initial**_____.

2. Arbitration of Disputes: Subscriber and CalCERTS agree that any dispute or claim in Law or equity arising between them out of this Agreement or any resulting transaction, which is not settled through mediation, shall be decided by neutral, binding arbitration. The arbitrator shall be a retired judge or justice, or an attorney with at least five (5) years experience, unless the parties mutually agree to a different arbitrator, who shall render an award in accordance with substantive California Law. In all other respects, the arbitration shall be conducted in accordance with Part III, Title 9 of the California Code of Civil Procedure. Judgment upon the award of the arbitrator(s) may be entered in any court having jurisdiction. The parties shall have the right to discovery in accordance with the Code of Civil Procedure §1283.05.

3. NOTICE: BY INITIALING THE SPACE BELOW YOU ARE AGREEING TO HAVE ANY DISPUTE ARISING OUT OF THE MATTERS INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION DECIDED BY NEUTRAL ARBITRATION AS PROVIDED BY CALIFORNIA LAW AND YOU ARE GIVING UP ANY RIGHTS YOU MIGHT POSSESS TO HAVE THE DISPUTE LITIGATED IN A COURT OR JURY TRIAL. BY INITIALING IN THE SPACE BELOW YOU ARE GIVING UP YOUR JUDICIAL RIGHTS TO APPEAL, UNLESS THOSE RIGHTS ARE SPECIFICALLY

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INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION. IF YOU REFUSE TO SUBMIT TO ARBITRATION AFTER AGREEING TO THIS PROVISION, YOU MAY BE COMPELLED TO ARBITRATE UNDER THE AUTHORITY OF THE CALIFORNIA CODE OF CIVIL PROCEDURE.

I have read and understand the foregoing and agree to submit disputes arising out of the matters included in the arbitration of disputes provision to neutral arbitration.
Subscriber's Initials: _____.

4. In the event it is necessary for CalCERTS to file legal action to enforce this agreement, the prevailing party in such action shall be entitled to recover all costs and expenses incurred in connection with such legal action, including reasonable attorney fees and court costs.

5. If any provision of this Agreement is held in whole or in part to be unenforceable for any reason, the remainder of that provision and of the entire Agreement will be severable and remain in effect.

K. Miscellaneous Provisions

1. This Agreement and any attachments which are incorporated herein by reference cancels and supersedes all prior CalCERTS TITLE-24/RESIDENTIAL NEW CONSTRUCTION SUBSCRIPTION AGREEMENT(s) between the parties, sets forth the entire understanding of the parties with respect to the subject matter herein. No other agreement, statement or promise made on or before the effective date of this Agreement will be binding on the parties.
2. This agreement shall not be amended, modified, or waived except in writing signed by both parties. This Agreement may not be assigned by Subscriber.
3. Entire Agreement. This Agreement contains the parties' entire agreement and supersedes any prior oral or written agreements between them with respect to the subject matter contained herein. There are no representations, agreements, arrangements, or understandings (oral or written) between the parties relating to the subject matter of this Agreement which are not fully expressed herein.

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4. Governing Law. This Agreement, together with the parties' respective rights and obligations hereunder, shall be governed by and construed in accordance with the laws of the State of California.
5. Severability. If a court of competent jurisdiction finds any provision in this Agreement to be invalid or unenforceable, such invalidity or unenforceability shall not affect the remainder of the Agreement; the provision shall be deemed severed therefrom and the remainder of the Agreement shall remain valid and enforceable in accordance with its terms and of full force and effect.
6. Counterparts. This Agreement may be executed in two (2) or more counterparts and all counterparts so executed shall for all purposes constitute one agreement, binding on all parties.

SUBSCRIBER acknowledges that Subscriber has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SUBSCRIBER:	CalCERTS, Inc.:
[redacted]	
Signature	Signature
Pamela Davis	Michael E. Bachand
Print Name	Print Name
[redacted] CEO - RATER	President
Title	Title
12/12/09	
Date	Date

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ATTACHMENT E

CalCERTS, Inc. Subscription Agreement

TYPE OF SUBSCRIPTION -------CHECK APPROPRIATE BOX:

Rater-Owner: ☐ Fill out sections I and II below and sign the signature page. Rater will be paying certificate fees.

Rater-Employee: ☑ Fill out section I below. Must be accompanied by a Subscription Agreement with Section II filled out and signed by Employer.

Rater Employer: ☐ **Employer** must fill out Section II below. **Employer** will be paying certificate fees.

Non-Rater User: ☐ Fill out Section II below, **Employer must sign.**

SECTION I
Certificate Holder's Information (ALL items required)

Name Erik Hoover

Home Address 7245 Mountainside Dr
Citrus Heights, CA 95621

Email ehoover79@Yahoo.com

Phone 916-769-0598

Mobile Phone

Are You Currently Certified With Another Provider? [✓ yes [ ] no
If Yes, Provider CHEERS Certificate # Exp Date

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SECTION II
Billing Customer Information (ALL items required)

Company Name Valley Duct Testing
Company Address 6345 Rainier Ave
Rocklin, CA 95677

Business Email golferJohn@starstream.net
Contact John Flores
Contact's Title Owner
Billing Email golferjohn@starstream.net
Billing Contact John Flores
Phone 624 2092
Fax 624 3352

THIS AGREEMENT, effective as of the date of last signature below, is by and between CalCERTS, Inc.® (CalCERTS aka California Certified Energy Rating and Testing Services), an S Corporation in the State of California and an approved HERS Provider organization that administers a home energy rating system in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675, and ("SUBSCRIBER") a person, entity or organization that is a customer, user, rater, Title 24 Consultant, Utility Company, Building Department, Contractor, Realtor®, or a combination of one or more of these, or other user approved by CalCERTS, to use the online database service for data input, retrieval, searching or any other features provided on the CalCERTS website now or in the future. The purpose of this Agreement is to establish the terms and conditions governing Subscriber's use of the CalCERTS online database service and conform this relationship to the California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein, CalCERTS and Subscriber agree as follows:

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A. Terms of Payment

1. A Subscriber is a person or entity whose business is that of providing home energy ratings and/or audits and field verification and diagnostics, or information related to audits and ratings that is or employs at least one Certified Rater.
2. A person or entity is not a Subscriber until CalCERTS has received and acknowledged the receipt of the initial Subscription Fee, and a signed Agreement and approved by CalCERTS.
3. Subscriber shall abide by the terms and conditions of this Agreement and pay all amounts due CalCERTS in accordance with the CalCERTS Fee Schedule established by volume or other criteria as may from time to time be negotiated between Subscriber and CalCERTS, Inc.
4. All invoices are Due and Payable Upon Receipt.
5. Subscriber will pay an annual Subscription fee in an amount not less than $120.00. Subscriber must pay the fee annually thereafter to remain active.
6. CalCERTS reserves the right to charge interest on all unpaid and past due balances at the rate of 1.5% per month (18% per year) until paid. NOTE: Payments will be applied to your most current invoice first.
7. Subscription fee is subject to change without notice and is non-refundable.
8. A Subscriber, whether a person or an entity, may be refused access to the website due to delinquent payments at the sole discretion of CalCERTS without notice to the delinquent Subscriber.

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2. Users designated by Subscriber may or may not be employees of the Subscriber.
3. Subscriber is responsible for the conduct and access of all users.
4. Subscriber must obtain a separate and unique login and password from CalCERTS for each identified User that is under Subscriber's supervision.
5. Subscriber shall be responsible for ensuring their designated Users comply with the terms and conditions of this Agreement.
6. Subscriber warrants that the information set forth in the recitals set forth above is true and correct.

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7. Subscriber shall comply with all Addendums, Information Forms, Affidavits if any, Code of Ethics Statements, Pricing Policy and Fee Schedules provided by CalCERTS.
8. Subscriber shall comply with all current CalCERTS policies described herein. Any new, amended, and/or revised policies shall be sent to Subscriber **via email**. **Notice of amended or revised policies is deemed to have been received by Subscriber by email and no further notice must be given. Initial**_____ Subscriber shall provide CalCERTS with his/her current telephone number, email address and mailing address, notifying CalCERTS within ten days of any changes of mailing address, email or telephone number.
9. Subscriber shall comply with all applicable federal, state, and local laws and regulations.
10. The term of this Agreement shall co-exist with all agreements, addendums and attachments between Subscriber, Subscribers Raters and CalCERTS.

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   i. Examples of its use include, but are not limited to, the following: Patches on clothing to be worn by Raters; business cards; stationery; identification cards; advertisements; and marketing materials.

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The Subscriber shall not represent, imply or connote in any way to the public that it uses the Certification Marks for any goods or services other than Certified Rater Services or on a CalCERTS rated building. Subscriber may indicate that Subscriber is a CalCERTS Subscriber to the public.

2. "CalCERTS Registered Home" is another service mark owned by CalCERTS, Inc. CalCERTS has developed this special version of its trademark/service mark for the exclusive use of Subscribers who have an executed CalCERTS Subscriber's Agreement. Note: This service mark can be used only on, near, or in reference to a home, that has been rated by a CalCERTS Certified Rater. Examples of its use include, but are not limited to, the following: window decals, real estate advertisements, yard signs, sign hangers on "for sale" signs, flags, banners and marketing materials.

3. The Subscriber shall not use any trademark that imitates or is similar to the "CalCERTS," "CalCERTS Certified Rater" or "CalCERTS Registered Home" marks or any part thereof. Nor shall it use as a trademark any word, symbol, character, or set of words, symbols, or characters that in any language would be confusingly similar thereto, be it optical, acoustical or conceptual. Improper use of the CalCERTS trademarks and materials will be grounds for termination of this Subscription Agreement at the option of CalCERTS.

4. Upon termination or expiration of this Agreement, Subscriber shall cease using, reproducing, advertising, marketing and distributing any material using the CalCERTS trademarks as soon as is commercially feasible.
5. Use of CalCERTS's name in Subscriber's printed material must be approved in advance in writing by the CalCERTS President or designated authorized party. Except that printed material distributed solely to the employees or members of the entity producing the material, commonly known as "in house material" will be permitted. The entity may NOT distribute this material to its customers unless they have followed the procedures and conditions set forth herein.

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Materials and/or any supporting Proprietary Information produced from time to time by CalCERTS. CalCERTS also grants a limited right to copy and distribute paper or electronic copies of CalCERTS Training Materials or Collateral Marketing Materials, Informational Material and other documents made available to Subscriber under this agreement for public distribution. CalCERTS also grants a limited non-exclusive, terminable license to incorporate the CalCERTS copyright works, in whole or in part, into derivative works for Subscribers own use and distribution throughout California upon final approval of CalCERTS. Such derivative works remain the property of CalCERTS.

2. Subscriber agrees that the Guides, Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information are the intellectual property of CalCERTS, are owned exclusively by CalCERTS, and are protected by the copyright laws of the United States. Subscriber agrees that Subscriber obtains no rights in the Guides, online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials or Proprietary Information, except to use them specifically in accordance with this Agreement.

3. "Proprietary Information" shall mean CalCERTS's confidential information, trade secrets and know-how embodied in the Guides, online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and not generally known or available to the public, including but not limited to, data communication processes and systems design.

4. The Guides, Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information may only be used by CalCERTS Subscribers who shall keep strictly confidential the Guides online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information, and Subscriber acknowledges that the Guides online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials and Proprietary Information constitute valuable property and work product of CalCERTS; that any breach of the confidentiality obligations hereunder may

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cause CalCERTS irreparable harm and damage; and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

5. Subscriber may not assign or transfer any rights to use the Guides Online Tutorials, Training Materials, Videos or Supplementary Printed Materials, Collateral Marketing Materials or Proprietary Information, except as set forth in this Agreement upon approval of CalCERTS.

6. Form of Copyright Notice for all CalCERTS materials and all derivative materials will be as follows:

   © Copyright 2009 (CalCERTS). All Rights Reserved.

7. The copyright notice should be used if both of the following tests are met and in accordance with the approval procedures adopted by CalCERTS:
   i. The work was created by or for CalCERTS; and
   ii. The work is owned by CalCERTS

8. On written work, place the copyright notice on the cover or the first page after the cover. On a computer program, place the copyright notice on a label affixed to the disk and on a label affixed to the envelope or box, which holds the disk. Also, place the notice within the title of the program at the beginning of the program so that it is visible on the user's screen. If "c" in a circle is not available, for example on a computer program, delete it from the notice. The year in the notice is the year of creation of the work.

9. Procedure for Approval: The Subscriber's printed material must be submitted to the CalCERTS President or other designated authorized party for approval. Subscriber will be notified in writing whether the printed material submitted with any CalCERTS trademarks or service marks is approved. Subscriber agrees that the printed materials including CalCERTS trademarks, copyright materials and other intellectual property of CalCERTS will not be used by Subscriber until approved by CalCERTS as a Subscriber.

10. CalCERTS shall have the right, without prior approval from, or notice to Subscriber, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS.

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D. CalCERTS Database and Software Usage, Restrictions and Guidelines

1. CalCERTS' online database service and software are provided on an "as is, as available" basis. Due to CalCERTS' relationship with on-line networks, CalCERTS gives no warranty, expressed or implied, for the online database services provided, including without limitation, warranty of the merchantability and warranty of fitness for a particular purpose. This disclaimer of warranty expressly disclaims any right to reimbursement for direct or consequential losses, including but not limited to losses of income, due to disruption of service by provider or its service providers.

2. SUBSCRIBER expressly agrees that use of the CalCERTS' online database service and software is done so at Subscriber's sole risk. CalCERTS, its employees, affiliates, agents, third party information providers, merchants, licensors or the like, indicate CalCERTS's online service may be interrupted and is not likely to be error free. CalCERTS makes no warranty as to the results that may be obtained from the use of the CalCERTS online database service or software.

3. Under no circumstances, shall CalCERTS, its agents or anyone else involved in creating, producing or distributing CalCERTS's online database service or software be liable for any direct, indirect, incidental, special or consequential damages that result from the use of or inability to use CalCERTS's online database service or software; or that result from mistakes, omissions, interruptions, deletion or loss of files or data, errors, defects, delays in operation, or of performance, whether or not limited to acts of God, communication failure, theft, destruction or unauthorized access to CalCERTS's records, programs or services. Subscriber maintains sole responsibility for data backups and restoration. Subscriber hereby acknowledges that this paragraph shall apply to all content on CalCERTS's online database service or software usage.

4. Use of any information obtained by way of CalCERTS is at Subscriber's own risk. Connection speed represents the speed of a connection and does not represent guarantees of available end-to-end bandwidth.

5. CalCERTS disclaims liability for any damages arising from Subscriber's use of CalCERTS online database service or software. CalCERTS disclaims liability for Subscriber's data, files, or

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directories residing on CalCERTS's equipment or its providers' equipment. Subscriber is solely responsible for maintaining data, file, and directory structure back-ups.

6. Notwithstanding the above, Subscriber's exclusive remedies for all damages, losses and causes of actions whether in contract, tort, including negligence or otherwise, shall not exceed the aggregate dollar amount which Subscriber paid during the annual term of this Agreement.

7. CalCERTS makes no representations, warranties, or assurances that Subscriber's equipment will be compatible with CalCERTS's services.

E. **CalCERTS Waiver of Use of Materials**

1. CalCERTS DOES NOT WARRANT THE APPLICABILITY, PROFITABLILITY OR ANY USEFULNESS, WHATSOEVER, OF THIS SERVICE AS IT RELATES TO THE SUBSCRIBER'S BUSINESS. TO THE EXTENT PERMITTED BY APPLICABLE LAW, CalCERTS DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE GUIDE, PRINTED MATERIALS AND ONLINE DATABASE SERVICE.
2. To the extent permitted by applicable law, in no event shall CalCERTS be liable for any damages whatsoever (including but not limited to, without limitation, damages for loss of profits, loss of business information, business interruption, good will or any other financial loss) arising out of the use of or inability to use any work product of CalCERTS including but not limited to, the Manual, printed materials as noted above, and the CalCERTS online services, even if CalCERTS has been advised of the possibility of such damages.

F. **Termination of Agreement**

Upon written notice to CalCERTS, Subscriber may terminate this Agreement at any time.

Upon written notice to Subscriber, CalCERTS may terminate this Agreement upon the occurrence of any of the following events:

1. Failure of Subscriber to comply with any of the terms and conditions of this Agreement or any other agreement between Subscriber and CalCERTS;

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2. SUBSCRIBER is convicted of a felony;
3. SUBSCRIBER'S disciplinary action by the Contractors State License Board or any like authority;
4. Willful failure of a Subscriber to provide true and accurate data and information;
5. SUBSCRIBER'S failure to promptly pay any amounts due CalCERTS;
6. Misrepresentation of Subscriber's relationship with CalCERTS;
7. Any act or failure to act by Subscriber which, in CalCERTS's opinion, harms its name or reputation of CalCERTS.
8. Subscriber or Subscriber's business is adjudged bankrupt, placed in the hands of a receiver, makes an assignment for the benefit of creditors, takes the benefit of any insolvency act, or is liquidated or dissolved.

G. Upon Termination of Agreement

SUBSCRIBER shall return to CalCERTS all material received from CalCERTS within ten (10) days of the date of the first to occur of any of the above-described termination events or receipt of any termination notice from CalCERTS.

H. Hold Harmless Clause

SUBSCRIBER shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of CalCERTS services including but not limited to services for rating for customers, or services for performing ratings for other rating firms, including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS in defense or settlement of such claims.

I. California State Codes and Regulations

This Agreement shall be governed by and construed in accordance with the laws of the State of California. California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675 shall govern any conflicts.

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SUBSCRIBER acknowledges that Subscriber has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675. **Initial**_____

J. Dispute Resolution

1. Mediation: Subscriber and CalCERTS agree to mediate any dispute or claims arising between them out of this Agreement, or any resulting transaction, before resorting to arbitration or court action. Mediation fees, if any, shall be divided equally among the parties involved. If, for any dispute or claim to which this paragraph applies, any party commences an action without first attempting to resolve the matter through mediation; or refuses to mediate after a request has been made, then that party shall not be entitled to recover attorney's fees, even if they would otherwise be available to that party in any such action. THIS MEDIATION PROVISION APPLIES WHETHER OR NOT THE ARBITRATION PROVISION IS INITIALED. **Initial**_____.

2. Arbitration of Disputes: Subscriber and CalCERTS agree that any dispute or claim in Law or equity arising between them out of this Agreement or any resulting transaction, which is not settled through mediation, shall be decided by neutral, binding arbitration. The arbitrator shall be a retired judge or justice, or an attorney with at least five (5) years experience, unless the parties mutually agree to a different arbitrator, who shall render an award in accordance with substantive California Law. In all other respects, the arbitration shall be conducted in accordance with Part III, Title 9 of the California Code of Civil Procedure. Judgment upon the award of the arbitrator(s) may be entered in any court having jurisdiction. The parties shall have the right to discovery in accordance with the Code of Civil Procedure §1283.05.

3. NOTICE: BY INITIALING THE SPACE BELOW YOU ARE AGREEING TO HAVE ANY DISPUTE ARISING OUT OF THE MATTERS INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION DECIDED BY NEUTRAL ARBITRATION AS PROVIDED BY CALIFORNIA LAW AND YOU ARE GIVING UP ANY RIGHTS YOU MIGHT POSSESS TO HAVE THE DISPUTE LITIGATED IN A COURT OR JURY TRIAL. BY INITIALING IN THE SPACE BELOW YOU ARE GIVING UP YOUR JUDICIAL RIGHTS TO APPEAL, UNLESS THOSE RIGHTS ARE SPECIFICALLY

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INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION. IF YOU REFUSE TO SUBMIT TO ARBITRATION AFTER AGREEING TO THIS PROVISION, YOU MAY BE COMPELLED TO ARBITRATE UNDER THE AUTHORITY OF THE CALIFORNIA CODE OF CIVIL PROCEDURE.

I have read and understand the foregoing and agree to submit disputes arising out of the matters included in the arbitration of disputes provision to neutral arbitration.
Subscriber's Initials: _____.

4. In the event it is necessary for CalCERTS to file legal action to enforce this agreement, the prevailing party in such action shall be entitled to recover all costs and expenses incurred in connection with such legal action, including reasonable attorney fees and court costs.

5. If any provision of this Agreement is held in whole or in part to be unenforceable for any reason, the remainder of that provision and of the entire Agreement will be severable and remain in effect.

K. Miscellaneous Provisions

1. This Agreement and any attachments which are incorporated herein by reference cancels and supersedes all prior CalCERTS TITLE-24/RESIDENTIAL NEW CONSTRUCTION SUBSCRIPTION AGREEMENT(s) between the parties, sets forth the entire understanding of the parties with respect to the subject matter herein. No other agreement, statement or promise made on or before the effective date of this Agreement will be binding on the parties.
2. This agreement shall not be amended, modified, or waived except in writing signed by both parties. This Agreement may not be assigned by Subscriber.
3. Entire Agreement. This Agreement contains the parties' entire agreement and supersedes any prior oral or written agreements between them with respect to the subject matter contained herein. There are no representations, agreements, arrangements, or understandings (oral or written) between the parties relating to the subject matter of this Agreement which are not fully expressed herein.

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4. Governing Law. This Agreement, together with the parties' respective rights and obligations hereunder, shall be governed by and construed in accordance with the laws of the State of California.
5. Severability. If a court of competent jurisdiction finds any provision in this Agreement to be invalid or unenforceable, such invalidity or unenforceability shall not affect the remainder of the Agreement; the provision shall be deemed severed therefrom and the remainder of the Agreement shall remain valid and enforceable in accordance with its terms and of full force and effect.
6. Counterparts. This Agreement may be executed in two (2) or more counterparts and all counterparts so executed shall for all purposes constitute one agreement, binding on all parties.

SUBSCRIBER acknowledges that Subscriber has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SUBSCRIBER:	CalCERTS, Inc.:
Signature	Signature
Erik Hoover	Michael E. Bachand
Print Name	Print Name
	President
Title	Title
12/12/2009	
Date	Date

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CERTIFIED ENERGY RATING & TESTING SERVICES™

Title 24 HERS Provider
CEC Approved
ENERGY STAR® Provider
Department of Energy & RESNET Approved
CalCERTS®

EMAIL: office@calcerts.com
PHONE: 916.985.3400
FAX: 916.985.3402
31 Natoma St, Ste. 120
Folsom, CA 95630

TITLE-24/RESIDENTIAL HERS SUBSCRIPTION AGREEMENT

TYPE OF SUBSCRIPTION: (Check all that apply)

Rater ☑

Multiple Rater ☐ Attach List of Additional Users

Builder ☐

Title 24 Consultant ☐

Utility ☐

Other ☐ If "Other", please describe: _____

THIS AGREEMENT, effective as of the date of last signature below, is by and between CALIFORNIA CERTIFIED ENERGY RATING AND TESTING SERVICES ("CalCERTS™"), a sole proprietorship and Provider organization that administers a home energy rating system in compliance with California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675, and ("SUBSCRIBER") a person, entity or organization that is a customer, approved by CalCERTS™, to use the online database service for data input, retrieval, searching or any other features provided on the CalCERTS™ website now or in the future: The purpose of this Agreement is to establish the terms and conditions governing SUBSCRIBER's use of CalCERTS™ online database service and conform this relationship with the California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675.

Valley Duct Testing
Business Name/Employer Name

Erik Hoover
Primary User

7245 Mountainside Dr
Address

Citrus Hts | CA | 95621
City | State | Zip

916-769-0598 | choover79@Yahoo.com
Phone | Fax | Email (Required)

6345 Rainier Ave
Billing Address (if different)

Rocklin | CA | 95677
City | State | Zip

916-624-2092 | golferjohn@starstream.net
Phone | Fax | Email (Required)

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NOW, THEREFORE, in consideration of the mutual covenants set forth herein, CalCERTS™ and SUBSCRIBER agree as follows:

A. SUBSCRIBER warrants that the information set forth in the recitals set forth above is true and correct.

B. SUBSCRIBER shall comply with all attached CalCERTS™ Addendums and CalCERTS™ Fee Schedule. SUBSCRIBER shall abide by the terms and conditions of the CalCERTS™ Subscriber Agreement and pay all amounts due CalCERTS™ in accordance with the CalCERTS™ Fee Schedule. The term of this Agreement shall co-exist with all addendums and attachments hereto.

C. SUBSCRIBER shall comply with all current CalCERTS™ policies described herein. Any new, amended, and/or revised policies shall be sent to SUBSCRIBER via email. SUBSCRIBER shall provide CalCERTS™ with his/her current telephone number, email address and mailing address, notifying CalCERTS™ within two days of any changes of mailing address, email or telephone number.

D. SUBSCRIBER shall comply with all applicable federal, state, and local laws and regulations.

E. SUBSCRIBER may use any CalCERTS™ User's Guides ("Guides"), and/or any supporting Proprietary Information under the following terms and conditions:

1. SUBSCRIBER agrees that the Guides, and Proprietary Information are owned exclusively by CalCERTS™, and are protected by the copyright laws of the United States. SUBSCRIBER agrees that SUBSCRIBER obtains no rights in the Guides, or Proprietary Information, except to use them specifically in accordance with this Agreement.

2. "Proprietary Information" shall mean CalCERTS™'s confidential information, trade secrets and know-how embodied in the Guides and not generally known or available to the public, including but not limited to, data communication processes and systems design.

3. The Guides and Proprietary Information may only be used by CalCERTS™ SUBSCRIBERS who shall keep strictly confidential the Guides and Proprietary Information, and SUBSCRIBER acknowledges that the Guides and Proprietary Information constitute valuable property and work product of CalCERTS™; that any breach of the confidentiality obligations hereunder may cause CalCERTS™ irreparable harm and damage; and that all confidentiality obligations hereunder shall survive any expiration or termination of this Agreement.

4. SUBSCRIBER may not assign or transfer any rights to use the Guides or Proprietary Information, except as set forth in this Agreement.

F. CalCERTS™ is a trademark and service mark owned by California Certified Energy Rating and Testing Services and is registered with the United States Patent and Trademark Office.

G. The Trademarks and Service Marks of CalCERTS™ may only be used by SUBSCRIBERS as follows:

1. Form of Copyright Notice:

© Copyright 2003 California Certified Energy Rating and Testing Services (CalCERTS™). All Rights Reserved.

2. The copyright notice should be used if both of the following tests are met and in accordance with the approval procedures set forth in Paragraph H:

i. The work was created by or for CalCERTS™; and

ii. The work is owned by CalCERTS™.

3. On written work, place the copyright notice on the cover or the first page after the cover. On a computer program, place the copyright notice on a label affixed to the disk and on a label affixed to the envelope or box, which holds the disk. Also, place the notice within the title of the program at the beginning of the program so that it is visible on the user's screen. If "c" in a circle is not available, for example on a computer program, delete it from the notice. The year in the notice is the year of creation of the work.

4. CalCERTS™ Certified Rater is a service mark owned by California Certified Entergy Rating and Testing Services. CalCERTS™ has developed this special version of its trademark/service mark for the exclusive use of certified Raters who have an executed CalCERTS™ Subscriber Agreement and Rater Addendum.

i. Examples of its use include, but are not limited to, the following: Patches on clothing to be worn by Raters; business cards; stationery; identification cards; advertisements; and marketing materials.

Note: This service mark cannot be used alone. It must be accompanied by either the name of a Rater or used in conjunction with a Rating business (see paragraph 5).

5. CalCERTS™ Registered Home is a service mark owned by California Certified Entergy Rating and Testing Services. CalCERTS™ has developed this special version of its trademark/service mark for the exclusive use of SUBSCRIBERS who have an executed CalCERTS™ Subscriber Agreement.

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Note: This service mark can be used only on, near, or in reference to a home, that has been rated by a CalCERTS™ Certified Rater. Examples of its use include, but are not limited to, the following: real estate advertisements, yard signs, sign hangers on "for sale" signs, flags, banners and marketing materials.

6. Names of businesses should not be so similar to CalCERTS™ or California Certified Energy Rating and Testing Services as to mislead or cause confusion among consumers or potential consumers. Subscribers with business names deemed too similar to CalCERTS™ or California Certified Energy Rating & Testing Services, shall, at the discretion of CalCERTS™ immediately cease and desist from the use thereof, unless they can clearly establish that there is not sufficient similarity to be construed as being a part of CalCERTS™.

H. SUBSCRIBER agrees the name CalCERTS™ may only be used in printed material by SUBSCRIBER as follows:

1. Use of CalCERTS™'s name in printed material must be approved in advance in writing by the CalCERTS™ President or designated authorized party. Except that printed material distributed solely to the employees or members of the entity producing the material, commonly known as "in house material" will be permitted. The entity may NOT distribute this material to its customers unless they have followed the procedures in paragraph H.2.

2. Procedure for Approval: The printed material must be submitted to the CalCERTS™ President or other designated authorized party for approval. SUBSCRIBER will be notified in writing whether the printed material submitted with any CalCERTS™ trademarks or service marks is approved.

3. CalCERTS™ shall have the right, without prior approval from, or notice to SUBSCRIBER, to make changes, updates, modifications or enhancements to any of its work product, and such changes, updates, modifications and enhancements shall remain the property of CalCERTS™.

I. CalCERTS™ DOES NOT WARRANT THE APPLICABILITY, PROFITABLILITY OR ANY USEFULNESS, WHATSOEVER, OF THIS SERVICE AS IT RELATES TO THE SUBSCRIBER'S BUSINESS. TO THE EXTENT PERMITTED BY APPLICABLE LAW, CalCERTS™ DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE GUIDE AND ONLINE DATABASE SERVICE

J. To the extent permitted by applicable law, in no event shall CalCERTS™ be liable for any damages whatsoever (including but not limited to, without limitation, damages for loss of profits, loss of business information, business interruption, good will or any other financial loss) arising out of the use of or inability to use any work product of CalCERTS™ including but not limited to, the Manual and the CalCERTS™ online services, even if CalCERTS™ has been advised of the possibility of such damages.

K. CalCERTS™ 's online database service is provided on an "as is, as available" basis. Due to CalCERTS™'s relationship with on line networks, CalCERTS™ gives no warranty, expressed or implied, for the online database services provided, including without limitation, warranty of the merchantability and warranty of fitness for a particular purpose. This disclaimer of warranty expressly disclaims any right to reimbursement for direct or consequential losses, including but not limited to losses of income, due to disruption of service by provider or its providers.

1. SUBSCRIBER expressly agrees that use of CalCERTS™ 's online database service is at SUBSCRIBER's sole risk. CalCERTS™, its employees, affiliates, agents, third party information providers, merchants, licensors or the like, indicate CalCERTS™ 's online database service may be interrupted and is not likely to be error free. CalCERTS™ makes no warranty as to the results that may be obtained from the use of the online database service.

2. Under no circumstances, including negligence, shall CalCERTS™, its agents or anyone else involved in creating, producing or distributing CalCERTS™ 's online database service be liable for any direct, indirect, incidental, special or consequential damages that result from the use of or inability to use CalCERTS™ 's online database service; or that results from mistakes, omissions, interruptions, deletion or loss of files or data, errors, defects, delays in operation, or of performance, whether or not limited to acts of God, communication failure, theft, destruction or unauthorized access to CalCERTS™ 's records, programs or services. SUBSCRIBER maintains sole responsibility for data backups and restoration. SUBSCRIBER hereby acknowledges that this paragraph shall apply to all content on CalCERTS™ 's online database service.

3. Use of any information obtained by way of CalCERTS™ is at SUBSCRIBER's own risk. Connection speed represents the speed of a connection and does not represent guarantees of available end-to-end bandwidth.

4. CalCERTS™ disclaims liability for any damages arising from SUBSCRIBER's use of CalCERTS™ online database service. CalCERTS™ disclaims liability for SUBSCRIBER's data, files, or directories residing on CalCERTS™ 's equipment or its providers' equipment. SUBSCRIBER is solely responsible for maintaining data, file, and directory structure back-ups.

5. Notwithstanding the above, SUBSCRIBER's exclusive remedies for all damages, losses and causes of actions whether in contract, tort, including negligence or otherwise, shall not exceed the aggregate dollar amount which SUBSCRIBER paid during the term of this Agreement.

6. CalCERTS™ makes no representations, warranties, or assurances that SUBSCRIBER's equipment will be compatible with CalCERTS™ 's services.

L. Upon written notice to CalCERTS™, SUBSCRIBER may terminate this Agreement at any time.

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M. Upon written notice to SUBSCRIBER, CalCERTS™ may terminate this Agreement upon the occurrence of any of the following events:

1. Failure of SUBSCRIBER to comply with any of the terms and conditions of this Agreement or any other agreement between SUBSCRIBER and CalCERTS™
2. SUBSCRIBER'S conviction of a felony
3. SUBSCRIBER'S disciplinary action by the Contractors State License Board or any like authority
4. Willful failure of a SUBSCRIBER to provide a true and accurate data and information
5. SUBSCRIBER'S failure to promptly pay any amounts due CalCERTS™
6. Misrepresentation of SUBSCRIBER's relationship with CalCERTS™
7. Any act or failure to act by SUBSCRIBER which, in CalCERTS™'s opinion, harms its name or reputation

N. This Agreement shall automatically terminate upon the occurrence of any of the following events: SUBSCRIBER or SUBSCRIBER's business is adjudged bankrupt, placed in the hands of a receiver, makes an assignment for the benefit of creditors, takes the benefit of any insolvency act, or is liquidated or dissolved.

O. SUBSCRIBER shall return to CalCERTS™ all material received from CalCERTS™' within ten (10) days of the date of the first to occur of any of the above-described events or any termination notice from CalCERTS™.

P. SUBSCRIBER shall act hereunder solely as an independent contractor. SUBSCRIBER shall not represent himself/herself to be an employee or agent of CalCERTS™ SUBSCRIBER may indicate that SUBSCRIBER is a CalCERTS™ SUBSCRIBER.

Q. SUBSCRIBER shall indemnify and hold harmless CalCERTS™, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of CalCERTS™ services including but not limited to services for rating or other customers, including all expenses, costs, settlements, judgments, awards, and legal fees incurred by CalCERTS™ in defense or settlement of such claims.

R. This Agreement may not be assigned by SUBSCRIBER.

S. This Agreement shall be governed by and construed in accordance with the laws of the State of California. California Code of Regulations Title 20 Chapter 4, Article 8, Section 1670-1675 shall govern any conflicts.

T. SUBSCRIBER acknowledges that SUBSCRIBER has read California Code of Regulations, Title 20, Chapter 4, Article 8, Sections 1670-1675.

U. This Agreement and all attachments which are incorporated herein by reference cancels and supersedes all prior CalCERTS™ TITLE-24/RESIDENTIAL NEW CONSTRUCTION SUBSCRIPTION AGREEMENT(s) between the parties, sets forth the entire understanding of the parties with respect to the subject matter herein. No other agreement, statement or promise made on or before the effective date of this Agreement will be binding on the parties.

V. This agreement shall not be amended, modified, or waived except in writing signed by both parties.

W. Dispute Resolution:

1. Mediation: SUBSCRIBER and CalCERTS™ agree to mediate any dispute or claims arising between them out of this Agreement, or any resulting transaction, before resorting to arbitration or court action. Mediation fees, if any, shall be divided equally among the parties involved. If, for any dispute or claim to which this paragraph applies, any party commences an action without first attempting to resolve the matter through mediation, or refuses to mediate after a request has been made, then that party shall not be entitled to recover attorney's fees, even if they would otherwise be available to that party in any such action. THIS MEDIATION PROVISION APPLIES WHETHER OR NOT THE ARBITRATION PROVISION IS INITIALED.

2. Arbitration of Disputes: SUBSCRIBER and CalCERTS™ agree that any dispute or claim in Law or equity arising between them out of this Agreement or any resulting transaction, which is not settled through mediation, shall be decided by neutral, binding arbitration. The arbitrator shall be a retired judge or justice, or an attorney with at least five (5) years experience, unless the parties mutually agree to a different arbitrator, who shall render an award in accordance with substantive California Law. In all other respects, the arbitration shall be conducted in accordance with Part III, Title 9 of the California Code of Civil Procedure. Judgment upon the award of the arbitrator(s) may be entered in any court having jurisdiction. The parties shall have the right to discovery in accordance with the Code of Civil Procedure §1283.05.

X. NOTICE: BY INITIALING THE SPACE BELOW YOU ARE AGREEING TO HAVE ANY DISPUTE ARISING OUT OF THE MATTERS INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION DECIDED BY NEUTRAL ARBITRATION AS PROVIDED BY CALIFORNIA LAW AND YOU ARE GIVING UP ANY RIGHTS YOU MIGHT POSSESS TO HAVE THE DISPUTE LITIGATED IN A COURT OR JURY TRIAL. BY INITIALING IN THE SPACE BELOW YOU ARE GIVING UP YOUR JUDICIAL RIGHTS TO APPEAL, UNLESS THOSE RIGHTS ARE SPECIFICALLY INCLUDED IN THE ARBITRATION OF DISPUTES PROVISION. IF YOU REFUSE TO SUBMIT TO ARBITRATION AFTER AGREEING TO THIS PROVISION, YOU MAY BE COMPELLED TO ARBITRATE UNDER THE AUTHORITY OF THE CALIFORNIA CODE OF CIVIL PROCEDURE.

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I have read and understand the foregoing and agree to submit disputes arising out of the matters included in the arbitration of disputes provision to neutral arbitration.

Subscriber's Initials: _____

Y. In the event it is necessary for CalCERTS™ to file legal action to enforce this agreement, the prevailing party in such action shall be entitled to recover all costs and expenses incurred in connection with such legal action, including reasonable attorney fees and court costs.

Z. If any provision of this Agreement is held in whole or in part to be unenforceable for any reason, the remainder of that provision and of the entire Agreement will be severable and remain in effect.

SUBSCRIBER acknowledges that SUBSCRIBER has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SUBSCRIBER:	CalCERTS:
_____	_____
Signature	Signature
Erik Hoover	Michael E. Bachand
Print Name	Print Name
Rater	President
Title	Title
8-20-08	_____
Date	Date

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ATTACHMENT F

Mike Bachand

From: David Haddock <dave@davidhaddocklegal.com>
Sent: Friday, January 20, 2012 7:55 AM
To: Charlie Bachand; Mike Bachand; Mark Wiese
Cc: dbeck@energy.state.ca.us
Subject: CalCERTS, Inc. and Lack of Due Process

Dear Sirs,

I am an attorney who represents Mr. John Flores and Valley Duct Testing. From this point forward, I will be involved in any efforts by you to interfere with their rights to earn a living as HERS raters.
Accordingly, if you have any further inquiries about Mr. Flores, Valley Duct Testing, or any of it's employees, or the work done by them, please direct those inquiries to me. I will comply with every lawful request.

I understand that you have already received a copy of my e-mail to employees and commissioners of the California Energy Commission regarding the unlawful and unconstitutional way you impose discipline on HERS raters. Two employees of Valley Duct Testing have now been suspended from work for more than a month. This suspension was imposed without notice, meaning that it was effective before they were notified, and before they had a reasonable opportunity to address any charges against them. Despite already attending a meeting with you, these employees have still not been provided with a clear and plain statement of the charges against them. Yet their suspension continues unabated. It has been extended by you for no apparent reason weeks past the time these employees answered all of your questions. You are now inquiring into work and procedures unrelated to the limited number of addresses that you initially notified them about. This is totally unacceptable.

I demand that you immediately cease imposing discipline in this way.
Because CalCERTS, Inc. is exercising delegated government power in an area of government control, CalCERTS, Inc. is governed by the U.S. and state constitutions which prohibit interference with vested rights, such as the right of HERS raters to use their professional licenses to earn a living, without reasonable notice and a reasonable opportunity for a hearing. Fairly simple changes to your procedures could be made that would comply with constitutional demands. I would be happy to help you develop and implement those changes. If you are unwilling to make the necessary changes voluntarily, I will be forced to use the power of the courts to force appropriate reforms.

At a minimum, the right of HERS raters to work may not be interfered with until AFTER they have been provided with a plain statement describing their alleged wrongdoing, and an opportunity to address the charges before a neutral fact finder. You are not permitted to punish HERS raters for mistakes that were not made by them. For example, your current practice of maintaining the suspensions of some Valley Duct Testing employees until your investigation of other Valley Duct Testing HERS raters has been completed is totally unlawful.

If complaints have been made about any HERS raters, they are entitled to receive a copy of the complaints, so they can adequately address the charges. If CalCERTS, Inc. has received any complaints about John Flores, Valley Duct Testing, or it's employees, I demand that you provide me with a copy of the complaints immediately.

My hope as always is that you will willingly make the changes the law requires. In anticipation of the likelihood that you will not, I ask you again to direct all further inquiries regarding John Flores, Valley Duct Testing, or its employees, to me. If your current unlawful practices are not immediately ceased, and if substantive changes are not made within seven days of this e-mail, I will proceed with further efforts to enforce the rights of my clients.

Sincerely,
David Haddock

Attorney at law

--

David Haddock
David Haddock Legal
P. O. Box 2501
Citrus Heights, CA 95611
(916) 420-5802
Fax: (916) 725-6000
dave@davidhaddocklegal.com

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ATTACHMENT G

DAVID HADDOCK LEGAL
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February 15, 2012

DOWNEY BRAND LLP
Attorney for CalCERTS, Inc.
Andrew L. Collier
621 Capitol Mall, 18th Floor
Sacramento, CA 95814

Via Email & U.S. Mail

Re: CalCERTS, Inc. HERS Decertification of Erik Hoover and Patrick Davis

Dear Mr. Collier,

Thank you for your letter to me dated February 8, 2012, and for the explanation of your client's decision to decertify my clients Erik Hoover and Patrick Davis as HERS raters. I do not share your opinion that the decertifications were proper. I believe the HERS regulations specify precisely what actions CalCERTS, or any other provider, must take if a HERS rater fails some aspect of quality assurance review. In particular, Title 20 § 1673 (i)(3)(C) requires that when quality assurance evaluation shows that a HERS rater has failed to meet the standard for truth, accuracy, or completeness, the Provider is required to report the quality assurance failure in the Provider's registry, and conduct additional quality assurance evaluations over a period of 12 months. No provision of the authorizing statute, or the regulations themselves, allows CalCERTS to depart from this policy. CalCERTS is bound by it, and my clients are entitled to rely upon it.

CalCERTS has apparently taken the position that when it determines, in its sole discretion, that a QA failure is egregious, establishes a pattern, or is not rectifiable, it may ignore and entirely depart from the procedure the regulations demand and impose any penalty it chooses. I presume that if any legal authority supported this particular position, you would have cited it in your February 8 letter to me. In arguing that CalCERTS' contracts with my clients authorize CalCERTS to decertify Hoover and Davis, you are implicitly claiming that CalCERTS' private agreements with third parties allow them to avoid the application of the law. This is a remarkable position to take. Again, if any legal authority supports this position, I invite you to provide me with citations to it. CalCERTS simply lacks the statutory and regulatory authority to decertify a HERS rater, especially in so precipitous a fashion as was done here.

Certainly CalCERTS' contracts with HERS raters will not be interpreted to supersede the HERS regulations, given that by their own terms the contracts are made expressly subject to those regulations. However, the contracts will be interpreted to require CalCERTS to act reasonably, and not arbitrarily.[1] CalCERTS has not established any objective standards defining when a HERS rater's actions are egregious, establish a pattern, or are not rectifiable. Neither the QA

[1] "In every contract there is an implied covenant of good faith and fair dealing that neither party will do anything which injures the right of the other to receive the benefits of the agreement." *Brown v. Superior Court*, 34 Cal. 2d 559, 564 (1949).

disposition documents you sent to me, nor any other CalCERTS document I am aware of includes any discussion of the meaning of these terms, or what particular facts justify CalCERTS' conclusion that they apply to my clients. Moreover, the contracts do not grant CalCERTS the broad and independent discretion it apparently claims to draw these conclusions on any basis it chooses. For all of these reasons, it is CalCERTS that has breached the contracts by acting unreasonably, and in bad faith. This will subject CalCERTS to liability.

As I have also emphasized in all of my correspondence with you, CalCERTS is bound by the constitutional strictures of due process. The Fourteenth Amendment of the United States Constitution provides in part that no state shall "deprive any person of life, liberty, or property, without due process of law." Section 13 of article I of the California Constitution similarly provides in part that no person shall ". . . be deprived of life, liberty, or property without due process of law . . . ." This provision of the state constitution has been held to be identical in scope and purpose with the Fourteenth Amendment of the Federal Constitution. *Manford v. Singh*, 40 Cal. App. 700 (1919).

While this requirement to provide due process typically only applies to governmental actors, *see Shelley v. Kramer*, 334 U.S. 1 (1948), where sufficient entanglement between government and a private person exists, private persons will also be bound. For example, the United States Supreme Court has explained that "a private party's joint participation with state officials in the seizure of disputed property is sufficient to characterize that party as a 'state actor' for purposes of the Fourteenth Amendment." *Lugar v. Edmondson Oil Co.*, 457 US 922, 942 (1982). Likewise, the California Supreme Court has explained that "private conduct may become so entwined with governmental action as to become subject to the constitutional limitations placed on state action by the Fourteenth Amendment to the United States Constitution and article I, section 13, of the California Constitution." *Adams v. Department of Motor Vehicles*, 11 Cal.3d 146, 152 (1974) (citations omitted).

In this case it is clear that the actions of CalCERTS in administering the HERS program are so entwined with governmental action as to require compliance with due process. All of the functions of CalCERTS are performed pursuant to the HERS regulations, without which CalCERTS itself would not exist. The HERS program is entirely a creation of the state. It is authorized by statute, created by regulation, and overseen by an agency of state government. Though CalCERTS asserts an independent right to contract with HERS raters, even that right depends upon Title 20 § 1673(c), which requires CalCERTS to make such contracts. CalCERTS in fact makes its contracts with raters expressly subject to the HERS regulations. When CalCERTS disciplines HERS raters, it claims to be enforcing the HERS regulations. The effect of such discipline is to limit the ability of HERS raters to submit energy efficiency data to the HERS database, the creation of which is one of the fundamental purposes of the HERS program. *See* Cal Public Resources Code § 25942 (a)(4). Clearly, CalCERTS acts solely as the delegate of the California Energy Commission. It is consequently subject to the demands of due process to the same extent that the CEC itself would be.[2]

[2] These significant entanglements with a state agency also mean that when CalCERTS takes away my clients' professional certifications without due process, it acts "under color of state law" to deprive my clients of their civil rights. This also subjects CalCERTS to liability under 42 U.S.C. § 1983.

Complying with the requirements of due process is not an extreme burden. My clients ask only that CalCERTS act decently. The recipe for this is simple: Perform QA review according to written standards that everyone can understand. If someone complains about a HERS rater, give the rater a copy of the complaint. If QA evaluation turns up conflicting data, give the HERS raters the data, so they can try to figure out what went wrong. Before interfering with a HERS rater's ability to earn a living, give the rater a meaningful opportunity to defend himself (rather than an interrogation). In order to make sure that mistakes aren't made in imposing such severe discipline as this, provide some sort of opportunity to appeal. It wouldn't take much to comply with due process. But CalCERTS did none of these things. My clients ask for no more than what every person would want.

The data provided by CalCERTS to date is inadequate. Please provide copies of any complaints that have been submitted about my clients, including Erik Hoover, Patrick Davis, Dan Sidhu, Jennifer McFall, Donald White, John Flores and Valley Duct Testing. In addition, I have included with this letter a spreadsheet describing specific numerical data relating to the alleged QA failures. Please provide this data for all QA reviews that have been completed relating to my clients. This data is required for my clients to meaningfully determine what mistakes, if any, were made by them, and the extent of the errors made by the CalCERTS QA tester.

CalCERTS has breached its contracts with my clients by acting unreasonably and in bad faith. It has violated my clients' civil right to due process under 42 U.S.C. § 1983. If CalCERTS publishes its decision to decertify my clients before due process has been provided, it will also defame them, and subject itself to additional liability. My clients have also lost significant income due to CalCERTS' unlawful acts, income that they will look to CalCERTS to restore.

My hope, as always, is that CalCERTS will choose willingly to provide my clients and all HERS raters the procedural assurances the law requires, so that further legal process is not necessary to resolve these disagreements. I renew my offer to support any effort by CalCERTS to develop new procedures that comply with the law. I have good reason to believe that a very broad selection of HERS raters throughout the state agree that the time has come for CalCERTS to begin administering this important program fairly. I invite cooperation in this important task.

Thank you for your prompt attention to this matter.

Sincerely,

David Haddock
Attorney at law

Rater Additional Information
Required to Supply by CalCerts

Rater	Address	QA Findings	QA Items (Need Exact Results)	QA Exact Results
Erik Hoover	[redacted]	Failed Superheat	Suction Pressure	
			Suction Temperature	
			Evaporator Saturation Temperature	
			Outdoor Temp.	
			Superheat	
		Failed Duct Leakage	Duct Leakage	
	[redacted]	Building Leakage	Building Leakage	
		Failed QII	Thickness or Insulation (R38)	
			Weight of Insulation (R38)	
		High EER Fail	ARI Cert to prove Fail	
	[redacted]	Building Leakage	Building Leakage	
		QII Fail	Thickness or Insulation (R38)	
			Weight of Insulation (R38)	
	[redacted]	Failed Duct Leakage (Sys. 1)	System Leakage System #1	
		RCV Fail (Sys. 1)	Liquid Pressure System #1	
			Liquid Temperature System #1	
			Cond. Saturation Temp System #1	
			Outdoor Temp. System #1	
			Subcooling	
		Airflow Fail (Sys. 1)	Airflow System #1	
		Fan Watt Draw Fail (Sys. 1)	Fan Watt Draw System #1	
		Failed Duct Leakage (Sys. 2)	System Leakage System #2	
		Airflow Fail (Sys. 2)	Airflow System #2	
		RCV Fail (Sys. 2)	Liquid Pressure System #2	
			LiquidTemperature #2	
			Cond. Saturation Temp System #2	
			Outdoor Temp. System #2	
			Subcooling	
		Superheat Fail System #2	Suction Pressure System #2	
			Suction Temperature System #2	
			Evaporator Saturation Temp. System #2	
			Superheat System #2	
		Airflow Fail System #2	Airflow System #2	
		Fan Watt Draw Fail (Sys. 2)	Fan Watt Draw System #2	

Rater Additional Information
Required to Supply by CalCerts

Rater	Address	QA Findings	QA Items (Need Exact Results)	QA Exact Results
Donald White	[redacted]	Duct Leakage Fail	Duct Leakage	
		Temperature Split Fail	Supply Dry Bulb	
			Return Dry Bulb	
			Return Wet Bulb	
			Actual Temp. Split	
			Target Temp. Split	
			Difference	
		Subcooling Fail	Liquid Pressure	
			Liquid Temperature	
			Condenser Saturation Temperature	
			Target Sub Cooling	
			Difference	
			Outside Temnperature	
		Superheat Fail	Suction Pressure	
			Suction Temperature	
			Evap. Saturation Temperature	
			Superheat	
			Outside Temnperature	
		Airflow Fail	Airflow	
		Fan Watt Draw Fail	Fan Watt Draw	
	[redacted]	Duct Leakage Fail	Duct Leakage	
		Temperature Split Fail	Supply Dry Bulb	
			Return Dry Bulb	
			Return Wet Bulb	
			Actual Temp. Split	
			Target Temp. Split	
			Difference	
			Outside Temnperature	
		Subcooling Fail	Liquid Pressure	
			Liquid Temperature	
			Cond. Saturation Temp.	
			Actual Subcooling	
			Target Sub Cooling	
			Difference	

Rater Additional Information
Required to Supply by CalCerts

Rater	Address	QA Findings	QA Items (Need Exact Results)	QA Exact Results
Patrick Davis	[redacted]	Duct Leakage Fail	Duct Leakage	
		Airflow Fail	Airflow	
		Superheat Fail	Suction Pressure	
			Suction Temperature	
			Evap. Saturation Temperature	
			Superheat	
			Outdoor Temp.	
	[redacted]	Duct Leakage Fail	Duct Leakage	
		Airflow Fail	Airflow	
		Superheat Fail	Suction Pressure	
			Suction Temperature	
			Evap. Saturation Temperature	
			Superheat	
			Outdoor Temp.	
	[redacted]	Airflow Fail System #1	Airflow System #1	
		Duct Leakage Fail Sys. #2	Duct Leakage System #2	
	[redacted]	Duct Leakage Fail	Duct Leakage	
		Smoke Test Failed		
Jennifer Mcfall	[redacted]	RCA Fail (No Plenum)	Documention stating that all units	
			need plenums.	
Daniel Sidhu	[redacted]	QII Fail	Proof with ruler or picture or insulation	
			behind Air handler was low. Seems like	
			rest of attic was passing	
		Duct Leakage Fail	Duct Leakage	
		High EER Fail	ARI Cert to prove Fall	
	[redacted]	QII Fail No Cert. In Attic	Documentation to show this is required.	
		Duct Leakage Fail	Duct Leakage	
		High EER Fail	ARI Cert to prove Fail	

ATTACHMENT H

Gatlin, Shelby

From: David Haddock [dave@davidhaddocklegal.com]
Sent: Tuesday, February 28, 2012 11:28 AM
To: Collier, Andrew
Cc: dbeck@energy.state.ca.us; Luckhardt, Jane; Gatlin, Shelby; Puzar, Linda
Subject: Re: CalCERTS, Inc. HERS Decertification of Erik Hoover and Patrick Davis

Follow Up Flag: Follow up
Flag Status: Red

Andrew,

I just wanted to follow up on my letter to you dated February 15, 2012. I have not received a response from you. However, my clients are eager to review the complaints that were submitted to CalCERTS about them, and also to review the specific data that the QA rater produced relating to their work. Are you intending to send those items?

As with Mr. Hoover and Mr. Davis, my other clients, Dan Sidhu, Jennifer McFall, and Donald White, have received discipline from CalCERTS by having alleged QA failures published in the CalCERTS database, even though they have not been provided with detailed info about their alleged failures. On their behalf I request that CalCERTS remove the notice of QA failures for each of them until such time as CalCERTS has provided them with the data the QA rater produced so they have an opportunity to contest CalCERTS' findings.

I would appreciate your prompt response to this request.

Sincerely,
Dave

On Wed, Feb 15, 2012 at 2:33 PM, David Haddock <dave@davidhaddocklegal.com> wrote:
> Dear Mr. Collier,
>
> Please find attached to this e-mail a response to your letter dated
> February 8, 2012. A paper copy of my letter to you is going in the
> mail today.
>
> FYI, I will be out of the country with limited access to telephone or
> e-mail from February 18, 2012 through February 26, 2012.
>
> Thank you,
> Dave
>
> --
> David Haddock
> David Haddock Legal
> P. O. Box 2501
> Citrus Heights, CA 95611
> (916) 420-5802
> Fax: (916) 725-6000
> dave@davidhaddocklegal.com
>
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--
David Haddock

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ATTACHMENT I

CALIFORNIA ENERGY COMMISSION
OFFICE OF THE CHIEF COUNSEL
1516 NINTH STREET, MS-14
SACRAMENTO, CA 95814-5512
www.energy.ca.gov

January 11, 2012

Mr. David Haddock, Esq.
David Haddock Legal
P.O. Box 2501
Citrus Heights, CA 95611

Dear Mr. Haddock:

This letter is in response to your e-mail of January 9, 2012, which is enclosed with this letter. In that e-mail you express concerns about the manner in which CalCERTS administers its California Home Energy Rating System (HERS) Providership.

The HERS program was created under the authority of Section 25942 of the California Public Resources Code. The regulations implementing that statute – the HERS Regulations – are found in Sections 1670 through 1675 of Title 20 of the California Code of Regulations.[1] Incorporated by reference in those regulations is the HERS Technical Manual.[2]

Under the HERS Regulations, the California Energy Commission certifies Providers and Rating Systems, but not the Raters themselves. (See Section 1674 of Title 20.) Although the HERS Regulations set forth specific procedures that Providers must follow in training and certifying Raters (see Section 1674 of Title 20 and Section 8.1 of the HERS Technical Manual) and providing quality assurance of work done by Raters (see Section 1673(l) of Title 20 and Section 8.2 of the HERS Technical Manual), it is the Providers that are responsible for that training, certification, and quality assurance; this includes Rater discipline.

Providers and Raters are prohibited from knowingly providing untrue, inaccurate, or incomplete rating information or from reporting rating results that were not conducted in compliance with the HERS Regulations, and from knowingly accepting payment or other consideration in exchange for reporting a rating result that was not in fact conducted and reported in compliance with the HERS Regulations. (See Section 1672(m) of Title 20.)

It is mandatory that Raters and Providers be separate entities with each having no financial interest in the other. (See Sections 1671 and 1673(j)(1) of Title 20.) Providers are also required to have a complaint response system for responding to and resolving complaints related to ratings and field verification and diagnostic testing services and reports. (See Section 1673(i)(5) of Title 20.)

[1] http://www.energy.ca.gov/2008publications/CEC-400-2008-011/CEC-400-2008-011-CMF.PDF

[2] http://www.energy.ca.gov/2008publications/CEC-400-2008-012/CEC-400-2008-012-CMF.PDF

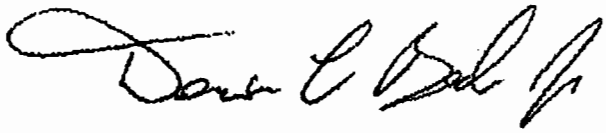
Taken together, the above-cited HERS Regulations create a system in which the Energy Commission has direct oversight of the Providers, and the Providers have direct oversight of the Raters. Although there are some general provisions in the HERS Regulations pertaining to Rater conduct and responsibilities and quality assurance of Rater work, it is the role of the Provider to monitor and if necessary investigate the work of Raters and to take appropriate action in response to Rater misconduct. The conflict of interest provisions of the HERS Regulations ensure that Providers are separate, independent entities from their Raters and thus may be independent and neutral in investigating Rater misconduct and imposing Rater discipline.

Given the structure of this system, your concerns and request for changes in the CalCERTS process are best directed to CalCERTS itself and not the Energy Commission. There is no indication in your e-mail that you have addressed these concerns with CalCERTS, or of any response from CalCERTS if indeed you have (also, it does not appear that you included anyone from CalCERTS on your e-mail of January 9).

Further, as the HERS Regulations were adopted pursuant to the provisions of the California Administrative Procedure Act (APA) (California Government Code section 11340, et seq.) any changes to the regulations, including adding requirements pertaining to a Provider's complaint response system, would need to be implemented via a rulemaking proceeding under the APA.[3] Section 1221 of Title 20 contains the procedure by which any person may petition the Energy Commission to begin a rulemaking proceeding.

If you have questions or further concerns, you can contact me at 916-654-3974. Thank you.

Sincerely,



Dennis L. Beck, Jr.
Senior Staff Counsel

Encl: January 9, 2012 e-mail from David Haddock to Eurlyne Geiszler, Jim Holland and Tav Commins (two pages)

Cc: Eurlyne Geiszler, Supervisor, Building Standards Implementation
Jim Holland, Building Standards Implementation
Tav Commins, Building Standards Implementation
Mike Bachand, President, CalCERTS

[3] See this webpage for additional information on this rulemaking process -- http://www.oal.ca.gov/Regular_Rulemaking_Process.htm.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of: **Complaint and Request for Investigation of CalCERTS, Inc.**	DOCKET NO. 12-CAI-01

DECLARATION OF MICHAEL CHARLES BACHAND IN SUPPORT OF CALCERTS, INC.'S ANSWER TO PATRICK DAVIS AND ERIK HOOVER'S COMPLAINT AND REQUEST FOR INVESTIGATION OF CALCERTS, INC.

Jane E. Luckhardt
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Attorneys for CalCERTS, Inc.

March 26, 2012

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of: **Complaint and Request for Investigation of CalCERTS, Inc.**	DOCKET NO. 12-CAI-01

DECLARATION OF MICHAEL CHARLES BACHAND IN SUPPORT OF CALCERTS INC.'S ANSWER TO PATRICK DAVIS AND ERIK HOOVER'S COMPLAINT AND REQUEST FOR INVESTIGATION OF CALCERTS, INC.

I, Michael Charles Bachand, declare as follows:

Competency of Declarant

1. I am the Quality Assurance Manager for CalCERTS ("CalCERTS") and submit this Declaration in support of CalCERTS' Answer to Patrick Davis and Erik Hoover's Complaint and Request for Investigation of CalCERTS, Inc. This Declaration provides additional detail regarding certain events recited in CalCERTS' Answer, particularly with regard to the Quality Assurance reviews of Patrick Davis and Erik Hoover.

2. In my capacity as Quality Assurance Manager for CalCERTS, I am familiar with the books, records and files of the company as those books, records, and files pertain to the Quality Assurance reviews of Mr. Davis and Mr. Hoover. I have knowledge of said books, records, and files, and as to the following facts I know them to be true based on my own knowledge *or* I have gained knowledge of them from the business records of CalCERTS that were made at or about the time the events were recorded, and that are maintained in the ordinary course of CalCERTS' business at or near the time of the acts, conditions, or events to which they relate. Any such document or record was prepared in the ordinary course of the business of CalCERTS by a person who had personal knowledge of the event being recorded and had a business duty to accurately record such event.

///

CalCERTS' Quality Assurance Program and Complaint Response System

3. I have been employed by CalCERTS since 2006, and began working as the Quality Assurance Manager for CalCERTS in 2008. CalCERTS is an approved provider for California's Home Energy Ratings System Program under Title 20, Chapter 4, Article 8, Sections 1673–1674 of the California Code of Regulations (commonly referred to as the "HERS Regulations"). Among other things, CalCERTS certifies home energy raters ("Raters") under the HERS Regulations. I am also a certified HERS Rater.

4. As a Quality Assurance Manager I am responsible for administering CalCERTS' Quality Assurance program, managing its Quality Assurance Team (referred to as the "QA Team"), and responding to and resolving complaints issued against CalCERTS' certified Raters through its Complaint Response System.

5. Certified HERS Raters inspect homes consistent with the HERS Regulations which require truthful and accurate reporting. The ratings reflect whether new construction and alterations of existing homes meet the Building Energy Efficiency Standards set forth in Title 24 of the California Code of Regulations ("Title 24"). Certified HERS Raters ensure that homes are equipped with the appropriate equipment relative to Title 24, and that the equipment is operating properly.

6. HERS Raters perform numerous tests, referred to as field verification and diagnostic testing, on different "measures" related to energy efficiency. For example, Raters will test a home's air-condition system and inspect the home's insulation. Once an inspection is completed, the Rater enters the data into CalCERTS' online registry, which generates a certificate documenting compliance with Title 24. The Rater signs a statement under penalty of perjury assuring that the information he or she enters into the registry is true and accurate.

7. CalCERTS Quality Assurance program is designed to determine the accuracy of the information entered into the registry against actual independent analysis performed at a given property. When CalCERTS performs Quality Assurance reviews on its certified Raters, the reviewer independently rates a home already inspected by the Rater, through a separate physical inspection with appropriate field verification and diagnostic testing. The results of the Quality Assurance review are then compared to the results input into the registry by the Rater.

///

Investigation of Complaint Regarding Valley Duct Testing Raters

8. In September of 2011, CalCERTS received a complaint by William Barrett about CalCERTS certified Raters employed by Valley Duct Testing. I am informed and believe that Mr. Barrett is a former employee of Valley Duct Testing. Mr. Barrett alleged that Valley Duct Testing's Raters, including Mr. Davis and Mr. Hoover, were deliberately falsifying ratings in violation of the HERS Regulations and were reporting that homes were Title 24 compliant when they were not. Mr. Barrett alleged that this practice was encouraged by Valley Duct Testing in order to assist contractors to pass HERS inspections and ultimately generate more business for Valley Duct Testing. Mr. Barrett alleged that he had personally witnessed raters falsifying data in the course of their HERS inspections and related data entry into the registry.

9. As part of CalCERTS' Complaint Response System, all complaints are investigated for merit before CalCERTS takes any action. Consistent with that practice, on September 21, 2011, Mr. Barrett was interviewed regarding his allegations against Valley Duct Testing and its Raters, including Mr. Davis and Mr. Hoover. In the course of the interview, Mr. Barrett described multiple instances where he believed that Valley Duct Testing's Raters had deliberately falsified home energy ratings as part of a pattern and practice that he believed was encouraged by the company's management.

10. On October 3, 2011, CalCERTS conducted a Quality Assurance review on ratings entered by Mr. Barrett to determine Mr. Barrett's accuracy when rating homes in order to evaluate his credibility. Mr. Barrett passed the Quality Assurance review.

11. On or about October 4, 2011, CalCERTS initiated a formal investigation of the complaint issued by Mr. Barrett. I was involved in the investigation and charged with implementing and overseeing Quality Assurance reviews on a number of homes that were rated by Mr. Davis and Mr. Hoover through members of the QA Team that had a business duty to observe my direction and report to me.

CalCERTS' Quality Assurance Reviews For Mr. Davis

12. In connection with its investigation of Mr. Barrett's complaint relative to Mr. Davis, CalCERTS performed Quality Assurance reviews on six properties more specifically described below. Mr. Davis submitted ratings for each of the properties into the CalCERTS' registry, attesting that the information was true and correct under penalty of perjury. In connection with its response to Mr. Barrett's complaint and as part of its Quality Assurance

review, CalCERTS conducted an independent review of Mr. Davis' field verifications and diagnostic testing by comparing the data with actual conditions at the homes.

13. I oversaw CalCERTS' independent review of Mr. Davis' work at these homes, I worked with CalCERTS' QA Team members in this regard, I am familiar with the results of the Quality Assurance reviews, and I caused to be prepared the Quality Assurance Summary Report for all of the subject properties, a true and correct copy of which is attached hereto as **Exhibit 1**, and which is summarized as follows.

[redacted], [redacted] CA [redacted]

14. A Quality Assurance review was conducted at [redacted] on December 9, 2011, by CalCERTS' employee Tim O'Neil, a member of the QA Team. Mr. O'Neil is a certified HERS Rater and an approved Quality Assurance Reviewer. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on November 29, 2011. A true and correct copy of the respective data submitted by Mr. Davis and then by Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 2**.

15. The Quality Assurance review of [redacted] indicated that Mr. Davis failed to accurately report the duct leakage for the home. Duct leakage is one of the efficiency measures that is required to be analyzed by a certified HERS Rater. Duct leakage impacts the efficiency of a home's cooling and heating system. Duct leakage is required to be measured within a margin of plus or minus 3% or better. Mr. Davis reported a duct leakage of 146 cubic feet per minute ("cfm") and a target of 150 cfm, passing the home as to this measure. The target measurement is set by the Rater based on the condition of the home according to a standard set of criteria. The Quality Assurance review revealed a duct leakage of 224 cfm, with a target of 150 cfm, failing the home as to this measure. Mr. Davis passed this home as to duct leakage, when the home was *clearly* not compliant.

16. The Quality Assurance review also revealed that Mr. Davis failed to accurately record refrigerant charge and airflow. Refrigerant charge measures test whether there is sufficient refrigerant in an air-conditioning unit to properly cool a home. Airflow measures determine the air-conditioning unit's ability to effectively distribute air throughout the home. A series of tests gauge these measures. One of the tests is to verify the presence of temperature measurement access holes ("TMAHs"). If the TMAHs are present, certified HERS Raters may

use a temperature split test to measure refrigerant charge and airflow. If TMAHs are not present, a certified HERS Rater might be able to use a flow hood test to test airflow, dependant on the configuration of the home.

17. Mr. Davis reported the presence of TMAHs at [redacted] but upon inspection the Quality Assurance reviewer could not locate any TMAHs. Mr. Davis applied labels to indicate and mark the TMAHs, but when the labels were lifted by the Quality Assurance reviewer, no TMAHs were present. Mr. Davis passed the home using the temperature split method although this method *could not* have been used given the lack of TMAHs. Further, the Quality Assurance reviewer used the flow hood method and recorded inadequate airflow for the home.

18. During Mr. O'Neil's review of [redacted], he was informed by one of the residents that Mr. Davis spent less than 30 minutes inspecting the home. Given my experience, this amount of time is inadequate to accurately test the measures reported by Mr. Davis. Mr. O'Neil concurs.

[redacted] CA [redacted]

19. A Quality Assurance review was conducted at [redacted] on October 20, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on August 8, 2011. A true and correct copy of the respective data submitted by Mr. Davis and then by Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 3.**

20. The Quality Assurance review of [redacted] indicated that Mr. Davis failed to accurately record the duct leakage for this home. Mr. Davis reported a duct leakage of 77 cfm and a target of 150 cfm. The Quality Assurance review recorded duct leakage at 134 cfm with a target of 60 cfm. Mr. Davis passed this home as to duct leakage when the home was *clearly* not compliant. Mr. Davis also failed to accurately identify the home as new construction, and applied the less stringent duct leakage target standards used for alterations.

21. The Quality Assurance review also revealed that Mr. Davis failed to accurately record refrigerant charge and airflow. Mr. Davis again reported the presence of TMAHs, although none were present. The home's plenums were accessible which indicates that the TMAHs needed to be installed. Mr. Davis passed the home using the temperature split method although this method *could not* have been used given the lack of TMAHs.

22. Mr. Davis also passed the home with respect to the presence and functionality of the Thermal Expansion Valve ("TXV"), a device used to regulate refrigerant in the air-conditioning unit. Mr. Davis passed the home with respect to TXV, reporting a superheat of 17 degrees. The Quality Assurance reviewer failed this home with respect to TXV, finding a superheat of 35.5 degrees, *well outside* the target range of 3–26 degrees, which means the TXV was either not present or not operating properly.

[redacted] CA [redacted]

23. A Quality Assurance review was conducted at [redacted] on October 20, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on August 8, 2011. A true and correct copy of the respective data submitted by Mr. Davis and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 4**.

24. The Quality Assurance review of [redacted] indicated that Mr. Davis failed to accurately record the duct leakage for this home. Mr. Davis reported a duct leakage of 70 cfm and a target of 150 cfm. The Quality Assurance reviewer recorded duct leakage at 102 cfm with a target of 60 cfm. Mr. Davis passed this home as to duct leakage when the home was not compliant. Mr. Davis also failed to accurately identify the home as new construction, and applied the less stringent standards used for alterations.

25. The Quality Assurance review of [redacted] indicated that Mr. Davis failed to accurately record refrigerant charge and airflow. Mr. Davis reported the presence of TMAHs, although none were present and the supply and return plenums were accessible, which indicates that the TMAHs needed to be installed. Mr. Davis passed the home using the temperature split method although this method could not have been used given the lack of TMAHs.

26. Mr. Davis also passed the home with respect to the presence and functionality of the TXV. Mr. Davis recorded a superheat of 15 degrees. The Quality Assurance reviewer failed this home with respect to TXV, finding that the superheat of 27.3 degrees, outside the target range, meaning the TXV was either not present or not operating properly.

[redacted] CA [redacted]

27. A Quality Assurance review was conducted at [redacted] on December 8, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on November 1, 2011. A true and correct

copy of the respective data submitted by Mr. Davis and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 6.** [1]

28. The Quality Assurance review of [redacted] indicated that Mr. Davis failed to accurately record the duct leakage for this home. Mr. Davis correctly identified the home as above the target; however, he passed the home verifying that all accessible leaks were sealed when they were not. For a home to pass on all accessible leaks sealed, a smoke test and a visual verification are required. At this home, the Quality Assurance reviewer recorded leakage of 374.5 cfm, and failed the home as to the smoke test and visual verification. During the smoke test and visual verification the Quality Assurance reviewer identified unsealed ducts. Most of the leakage was under the house at the boots or from holes in the ducts. These leaks could have easily been sealed.

[redacted] CA [redacted]

29. A Quality Assurance review was conducted at [redacted] on January 18, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on December 8, 2011. A true and correct copy of the respective data submitted by Mr. Davis and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 7**.

30. The Quality Assurance review indicated that Mr. Davis made misrepresentations about Quality Insulation Installation ("QII"). QII requires the home to be inspected during framing to ensure that the home has been sealed against air leakage, and again after the insulation has been installed to ensure insulators provided the quantity and quality of insulation purchased. Certified HERS Raters also ensure that insulators post the appropriate insulation documentation required by law.

31. The Quality Assurance review indicated Mr. Davis failed to measure and report insulation correctly. Mr. Davis misrepresented the number of rulers present in the attic, posting of the certification, and the depth of the insulation. Mr. Davis reported higher measurements of insulation thickness and depth than were measured during the Quality Assurance review. The Quality Assurance review indicated that the insulator did not properly install the insulation and did not provide sufficient insulation for the home. Mr. Davis' rating passed the home with

[1] Exhibit 5 Omitted intentionally.

regards to QII. However, Mr. Davis' results were so strongly contradicted during Quality Assurance review that the QA Team questioned whether Mr. Davis inspected the home at all.

32. Mr. Davis also failed to properly verify the energy efficiency ratio for the home, which confirms the presence and functionality of the equipment used to generate compliance credits. There was no verifiable documentation available for the equipment installed.

[redacted] CA [redacted]

33. A Quality Assurance review was conducted at [redacted] on January 27, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Davis for the same residence on November 11, 2011. A true and correct copy of the respective data submitted by Mr. Davis and then by Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 8**. The Quality Assurance review of [redacted] indicated that Mr. Davis generally performed his testing properly at this address.

Suspension and Decertification of Mr. Davis

34. On December 16, 2011, CalCERTS notified Mr. Davis that he had failed Quality Assurance reviews. The notification identified at which addresses Mr. Davis failed the Quality Assurance review. Mr. Davis was notified that he had been placed on 15-day suspension. Mr. Davis was asked to contact CalCERTS within the 15 days to schedule a meeting to discuss the Quality Assurance review failures. Mr. Davis was informed that he could present records and documents at the meeting. Attached hereto as **Exhibit 9** is a true and correct copy of the notification for Mr. Davis.

35. Mr. Davis did not schedule his meeting with CalCERTS until January 4, 2012. When Mr. Davis arrived at his meeting he presented a Confidentiality Agreement provided to him by John Flores, President of Valley Duct Testing. The proposed agreement indicated that Mr. Davis was only allowed to discuss specific addresses with CalCERTS. Attached hereto as **Exhibit 10** is a true and correct copy of the Confidentiality Agreement presented to CalCERTS by Mr. Davis on January 4, 2012.

36. At the January 4, 2012 meeting Mr. Davis was given the opportunity to explain the discrepancies between his ratings and those conducted by the CalCERTS' QA Team. In attendance at the meeting was myself, and Quality Assurance Coordinator Mark Wiese. This meeting lasted approximately three hours. Mr. Davis was encouraged to ask questions about the

reviews, and of the QA Team. Mr. Davis was unable to explain the discrepancies between his ratings and those conducted by the QA Team. Attached hereto as **Exhibit 11**, is a true and correct copy of the Quality Assurance Action Report that summarizes the meeting with Mr. Davis.

37. After the January 4, 2012 meeting, the CalCERTS' QA Team met to discuss Mr. Davis. Based on the results of the Quality Assurance reviews, the QA Team decided to continue the suspension and perform two additional Quality Assurance reviews. These additional reviews were for [redacted] and [redacted], which are discussed in more detail above.

38. On January 17, 2012 CalCERTS offered Mr. Davis and opportunity to submit any additional questions, comments, or materials upon which to base its review. Mr. Davis did not submit any additional materials pertaining to the issues discussed. Attached hereto as **Exhibit 12** is a true and correct copy of the January 17, 2012, email.

39. On January 30, 2012, CalCERTS notified Mr. Davis that he would no longer be certified by CalCERTS. In the notification letter CalCERTS specified the basis for its decision. Attached hereto as **Exhibit 13** is a true and correct copy of CalCERTS' January 30, 2012 letter.

40. On January 20, 2012, CalCERTS was contacted by Mr. Haddock, an attorney for Mr. Davis, requesting additional information regarding "the charges against" Mr. Davis. CalCERTS produced a Quality Assurance Disposition for Mr. Davis and submitted the document to Mr. Haddock on February 8, 2012. Attached hereto as **Exhibit 14** is a true and correct copy of the Quality Assurance Disposition for Mr. Davis.

41. On February 15, 2012, Mr. Haddock asked for additional information regarding the decertifications of Mr. Davis. On March 6, 2012, CalCERTS provided to Mr. Haddock, copies of all of the data included in Exhibits 2, 3, 4, 6, 7 and 8 of this declaration.

CalCERTS' Quality Assurance Reviews for Mr. Hoover

42. In connection with its investigation of Mr. Barrett's complaint relative to Mr. Hoover, CalCERTS performed Quality Assurance reviews on four properties more specifically described below. Mr. Hoover submitted ratings for each of the properties into the CalCERTS registry, attesting that the information was true and correct under penalty of perjury. In connection with its response to Mr. Barrett's complaint and as part of its Quality Assurance review, CalCERTS conducted an independent review of Mr. Hoover's field verifications and diagnostic testing by comparing the data with actual conditions at the homes.

43. I oversaw CalCERTS' independent review of Mr. Hoover's work at these homes, I worked with CalCERTS' QA Team members in this regard, I am familiar with the results of the Quality Assurance reviews, and I caused to be prepared Quality Assurance Summary Report for all of the subject properties, a true and correct copy of which is attached hereto as **Exhibit 15**, and which is summarized as follows.

[redacted] CA [redacted]

44. A Quality Assurance review was conducted at [redacted] on October 27, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Hoover for the same residence on October 13, 2011. A true and correct copy of the ratings submitted by Mr. Hoover and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 16**.

45. The Quality Assurance review of [redacted] indicated that Mr. Hoover failed to accurately report duct leakage. There were two air conditioning systems at this property, and Mr. Hoover failed to correctly report on both systems. On the first system, Mr. Hoover reported duct leakage at 71 cfm, with a target of 72 cfm. The Quality Assurance review recorded duct leakage at 165 cfm. On the second system, Mr. Hoover reported duct leakage at 47 cfm with a target of 48 cfm. The Quality Assurance review recorded duct leakage at 121 cfm. Mr. Hoover passed the contractor as to duct leakage by 1 cfm on both systems, despite the fact that neither system was Title 24 compliant.

46. The Quality Assurance review also indicated that Mr. Hoover failed to accurately report refrigerant charge and airflow. Mr. Hoover reported the presence of TMAHs, although none were present and the plenums were accessible, which indicates that the TMAHs needed to be installed.

47. Quality Assurance review determined that Mr. Hoover failed to accurately report on cooling coil airflow and refrigerant charge verification measures which determine heating, ventilation, and air conditioning efficiency.

48. Mr. Hoover also incorrectly passed one of the systems as to the presence and functionality of the TXV, reporting a superheat of 21 degrees. The Quality Assurance reviewer failed this home with respect to TXV, finding a superheat of 26.1 degrees.

[redacted] CA [redacted]

49. A Quality Assurance review was conducted at [redacted] on October 28, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Hoover for the same residence on August 8, 2011. A true and correct copy of the ratings submitted by Mr. Hoover and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 17**.

50. The Quality Assurance review of [redacted] indicated that Mr. Hoover failed to accurately report the duct leakage for this home. Mr. Hoover reported a duct leakage of 78 cfm and a target of 150 cfm. The Quality Assurance review recorded duct leakage at 99 cfm with a target of 60 cfm. Mr. Hoover passed this home as to duct leakage when the home was not compliant. Mr. Hoover also failed to accurately identify the home as new construction, and applied the less stringent standards used for alterations.

51. The Quality Assurance review also revealed that Mr. Hoover failed to accurately report refrigerant charge and airflow. Mr. Hoover reported the presence of TMAHs, although none were present and the plenums were accessible, which indicates that the TMAHs needed to be installed. Mr. Hoover passed the home using the temperature split method although this method could not have been used given the lack of TMAHs.

52. Mr. Hoover also passed the home with respect to the presence and functionality of the TXV, reporting a superheat of 15 degrees. The Quality Assurance reviewer failed this home with respect to TXV, finding a superheat of 34.6 degrees, well outside the target range of 3–26 degrees, which means the TXV was either not present or not operating properly.

[redacted] CA [redacted]

53. A Quality Assurance review was conducted at [redacted] on November 15, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Hoover for the same residence on September 12, 2011. A true and correct copy of the respective data submitted by Mr. Hoover and then Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 18**.

54. The Quality Assurance review indicated that Mr. Hoover made misrepresentations relative to QII. Mr. Hoover failed to measure and report insulation correctly. Mr. Hoover misrepresented the posting of the certification and the weight and depth of the insulation. Mr. Hoover reported higher measurements of insulation thickness and depth than were measured

during the Quality Assurance review. Mr. Hoover's rating passed the home with regards to QII. However, the Quality Assurance review revealed that the insulator did not provide sufficient insulation for the home.

55. The Quality Assurance review also indicated that Mr. Hoover also failed to properly verify the energy efficiency ratio for the home, which confirms the presence and functionality of the equipment used to generate compliance credits. There was no documentation available for the equipment installed.

56. The Quality Assurance review indicated that Mr. Hoover appropriately passed the home as to the Building Envelope measure. However, Mr. Hoover's reported a leakage of 1289 cfm, and the Quality Assurance reviewer reported a leakage of 927 cfm. The difference of 350 cfm for this test was not used to fail Mr. Hoover as to this measure, but should be noted as a significantly high discrepancy.

[redacted] CA [redacted]

57. A Quality Assurance review was conducted at [redacted] on November 15, 2011, by Mr. O'Neil. The results of the Quality Assurance review were compared to the results submitted by Mr. Hoover for the same residence on September 12, 2011. A true and correct copy of the respective data submitted by Mr. Hoover and Mr. O'Neil as part of his Quality Assurance review for [redacted] are attached hereto as **Exhibit 19**.

58. The Quality Assurance review indicated that Mr. Hoover made misrepresentations relative to QII. Mr. Hoover failed to measure and report insulation correctly. Mr. Hoover misrepresented the posting of the certification and the weight and depth of the insulation. Mr. Hoover reported higher measurements of insulation thickness and depth than were measured during the Quality Assurance review. Mr. Hoover's rating passed the home with regards to QII. However, the Quality Assurance review revealed that the insulator did not provide sufficient insulation for the home.

59. Mr. Hoover appropriately passed the home as to the Building Envelope measure; however, Mr. Hoover's reported a leakage of 1302 cfm, and the Quality Assurance reviewer reported a leakage of 833.5 cfm. The difference of 468.5 for this test was not used to fail Mr. Hoover as to this measure, but should be noted as a significantly high discrepancy.

Suspension and Decertification of Mr. Hoover

60. On December 16, 2011, CalCERTS notified Mr. Hoover that he had failed Quality Assurance reviews. The notification identified at which addresses Mr. Hoover failed the Quality Assurance review. Mr. Hoover was notified that he had been placed on a 15-day suspension. Mr. Hoover was asked to contact CalCERTS within the 15 days to schedule a meeting to discuss the Quality Assurance review failures. Mr. Hoover was informed that he could present records and documents at the meeting. Attached hereto as **Exhibit 20** is a true and correct copy of the notification for Mr. Hoover.

61. Mr. Hoover did not schedule his meeting with CalCERTS until January 6, 2012. In attendance at the meeting was myself and Quality Assurance Coordinator Mark Wiese. This meeting lasted approximately two hours. At the meeting Mr. Hoover was given the opportunity to explain the discrepancies between his ratings and those conducted by the CalCERTS' QA Team. Mr. Hoover was encouraged to ask questions about the reviews, and of the QA Team. Mr. Hoover was unable to explain the discrepancies between his ratings and those conducted by the QA Team. Attached hereto as **Exhibit 21**, is a true and correct copy of the Quality Assurance Action Report that summarizes the meeting with Mr. Hoover.

62. After the January 6, 2012 meeting, the CalCERTS' QA Team met to discuss Mr. Hoover. The QA Team continued the suspension while reviewing and analyzing the results of the interview.

63. On January 18, 2012, CalCERTS offered Mr. Hoover an opportunity to submit any additional questions, comments, or materials upon which to base its review. Mr. Hoover did not submit any additional materials. Attached hereto as **Exhibit 22** is a true and correct copy of the January 18, 2012 email.

64. On January 30, 2012, CalCERTS notified Mr. Hoover that he would no longer be certified by CalCERTS. In the notification letter CalCERTS specified the basis for its decision. Attached hereto as **Exhibit 23** is a true and correct copy of the Decertification Letter.

65. On January 20, 2012, CalCERTS was contacted by Mr. Haddock, an attorney for Mr. Hoover, requesting additional information regarding "the charges against" Mr. Hoover. CalCERTS produced a Quality Assurance Disposition for Mr. Hoover and submitted the document to Mr. Haddock on February 8, 2012. Attached hereto as **Exhibit 24** is a true and correct copy of the Quality Assurance Disposition for Mr. Hoover.

66. On February 15, 2012, Mr. Haddock asked for additional information regarding the decertifications of Mr. Hoover. On March 6, 2012, CalCERTS provided to Mr. Haddock, copies of all of the data included in Exhibits 16, 17, 18, and 19 of this Declaration.

Quality Assurance Reviews On Other Valley Duct Testing Raters

67. Based on concerns relating to the results of the Quality Assurance reviews on Mr. Hoover and Mr. Davis, as well as Mr. Barrett's allegations, CalCERTS performed Quality Assurance reviews on three other HERS Raters employed by Valley Duct Testing, Daniel Sidhu, Jennifer McFall, and Donald Scott White.

68. These Raters also failed Quality Assurance reviews. Individually, Mr. Sidhu, Ms. McFall, and Mr. White were asked to meet with the CalCERTS' QA Team and were given the opportunity to explain their failures. Each of these three raters presented sufficient information during their interviews to indicate that additional instruction or training was warranted, rather than suspension and/or decertification.

69. As a result, Mr. Sidhu, Ms. McFall and Mr. White are presently subject to increased Quality Assurance reviews. Attached hereto collectively as **Exhibit 25** are the Quality Assurance Reports for Mr. Sidhu, Ms. McFall and Mr. White.

70. On February 8, 2012, Mr. Haddock indicated that he was also representing Mr. Sidhu, Ms. McFall and Mr. White and requested information regarding their Quality Assurance failures. On February 9, 2012, CalCERTS sent Mr. Haddock copies of the Quality Assurance Dispositions of Mr. Sidhu, Ms. McFall and Mr. White. Attached hereto collectively as **Exhibit 26** are true and correct copies of those Quality Assurance Dispositions.

71. On February 15, 2012, Mr. Haddock asked for additional information regarding the Quality Assurances reviews that were conducted on Mr. Sidhu, Ms. McFall and Mr. White. On March 6, 2012 CalCERTS provided Mr. Haddock copies of all of the data generated as part of the Quality Assurance reviews. Attached hereto as **Exhibit 27**, is a true and correct copy of the data submitted to Mr. Haddock in response to this request.

I declare under penalty of perjury under the laws of the State of California that the foregoing statements are true and correct to the best of my knowledge and information.

Executed this 26 day of March 2012, at Sacramento, California.

Dated: March 26, 2012

By: _____
MICHAEL CHARLES BACHAND

STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:	)	Docket No. 12-CAI-01
	)	
Complaint and Request for	)	
Investigation of CalCERTS, Inc.	)	**DECLARATION OF SERVICE**
	)	**(3/23/12**
	)	

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CERTIFICATE OF FILING

I, Lois Navarrot declare that on March 26, 2012, I served and filed copies of the attached **DECLARATION OF MICHAEL CHARLES BACHAND IN SUPPORT OF CALCERTS INC. ANSWER TO PATRICK DAVIS AND ERIK HOOVER'S COMPLAINT AND REQUEST FOR INVESTIGATION OF CALCERTS, INC.**, accompanied by a copy of the most recent *Proof of Service* list (most recent version is located on the proceeding's web page) with the Docket Unit OR with the presiding committee member of the proceeding. The document has been sent to the Commission AND the applicant, as well as the other parties in this proceeding (as shown on the *Proof of Service* list), in the following manner:

(*Check all that Apply*)

FOR SERVICE TO THE APPLICANT AND ALL OTHER PARTIES:

_____ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, CA, with first-class postage thereon fully prepaid and addressed as provided on the *Proof of Service* list above to those addresses **NOT** marked "email preferred." Due to the size of this document, cd copies have been delivered to those preferring email service.

AND

FOR FILING WITH THE ENERGY COMMISSION:

_____ sending an one electronic copy, emailed to the address below (preferred method);

OR

__X__ delivering an original and one cd (per the Docket Office's request), as follows:

CALIFORNIA ENERGY COMMISSION -
Attn: Docket No. 12-CAI-01
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Lois Navarrot _____ 3/26/12

Lois Navarrot **Date**

EXHIBIT 1

QA SUMMARY REPORT

CalCERTS inc.

Patrick Davis- Rater since 07-19-07, RCA 01-08-10

This rater has had seven QAs completed and has fails in five of them, with an issue in the sixth, a QA that passed the Building Envelope Sealing (ENV) at [redacted], but there was a difference of 251 cfm. Fails include visual inspections, such as verifying TMAHs although none were present; Duct Leakage Sealing with the use of smoke; Failing to record the correct number of attic rulers present; Determining minimum insulation requirements for QII, and properly verifying High EER. Fails were recorded in measuring device tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV).

[redacted] (08/08/2011, QA- 10/20/2011)

Duct Leakage: Fail

Rater recorded duct leakage of **77** cfm and a target of **150**.

QA recorded DL of 134 cfm with a target of **60**.

Note:

*According to the CF-1R at the Stockton Building Department, this is new construction and should have had a 6 percent target. The leakage the rater recorded was 57 cfm less than the QA. The Heating Method could have raised the target to **66** cfm.*

Refrigerant Charge: Fail

TMAHs: Fail

No TMAHs present. Both supply and return plenums were accessible.

RCA: Fail

Rater passed Airflow using temperature split. QA could not verify RCA using the Temperature/Split Method because no TMAHs were present. Using the Flow Hood, QA passed RCA, recording an airflow of 1070 cfm surpassing the target of **750** cfm.

RCV: Pass

The Rater passed RCV with a difference of 3°

QA Passed RVC with a difference of 2.3°

TXV: Fail

Rater passed with a recorded Superheat of 17°

QA failed TXV with superheat of 35.5°.

[redacted] (08/08/2011, QA- 10/20/2011) (This QA mirrors that of [redacted], with the same passes and fails)

Duct Leakage: Fail

Rater recorded duct leakage of 70 cfm, and a target of **150**.

QA recorded DL of 102 cfm, with a target of **60**.

According to the CF-1R at the Stockton Building Department, this is new Construction and should have had a 6 percent target. The leakage the rater recorded was 32 cfm less than the QA. The Heating Method could have raised the target to **66** cfm.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs present. Both supply and return plenums were accessible.
RCA: Fail
Rater passed Airflow using temperature split. QA could not verify RCA using the Temperature/Split Method because no TMAHs were present. Using the Flow Hood, QA passed RCA, recording an airflow of 1080 cfm surpassing the target of **750** cfm.
RCV: Pass
The Rater passed RCV with a difference of 3°
QA Passed RVC with a difference of 2.3°
TXV: Fail
The Rater passed with a recorded 15°.
QA failed with a recorded superheat of 27.3°.

[redacted](10/11/2011 QA- 10/28/2011)
Building Envelope: Pass
Rater recorded **984** cfm, within the range of **720** to **1295** cfm.
QA recorded **1235** cfm, a difference of **251** cfm between the two tests.

CCAF: Pass.
HSPP was present in supply plenum.
Rater recorded **1137** cfm (Flow Hood) and a target of **1050.**
QA recorded **1119** cfm.

[redacted](11/29/2011 QA- 12/09/2011)
*Owner's fiancée states that the rater was in the house for a **1/2 hour or less.** She let him in at 8 am, left at 8:10 to take son to school, and returned home at 8:30, and no one was there or came back. It is unlikely the rater was able to do DL tests on two systems and RCV on System 1.*

Duct Leakage: Fail
Rater recorded 146 cfm, and a target of **150.**
QA recorded 224 cfm.

Refrigerant Charge: Fail
TMAHs: Fail
System 1 has the labels for TMAHs, but no holes.
RCA: Fail
Rater passed Airflow using temperature split. QA could not do temp/split to test air flow because no TMAHs were present. QA used Flow Hood for RCA and measured 442 cfm, which failed to reach the target of **600** cfm.

[redacted] (11/01/2011 QA- 12/08/2011)

Duct Leakage: Fail

Rater properly failed DL, recording 280 cfm leakage with a target of **180**, then passed it on "all accessible leaks sealed with smoke".

QA recorded leakage of 374.5, and failed on smoke test. All ducts **were accessible** under the house. Most of the leakage was under the house at the boots or holes in the ducts, which could have easily been sealed. Owner stated that she was "concerned" with the first person that came out, but felt satisfied when another showed up. She didn't remember names.

POST INTERVIEW QA

[redacted] (12/08/2011, QA- 01/18/2012)(+2)

QII(F): Fail

Site QA not performed at framing stage. Review of documentation found the following:

Sq. footage of attic listed on the CF-6R and CF-4R-ENV-21 does not match the CF-1R.

CF-6R-ENV-21 lists 10 attic rulers, the Rater recorder 12 on the CF-4R.

At QII(I) stage, only one attic ruler was visible from access.

QII(I): Fail

1. Blown in insulation
    a. Insulation certificate not posted in attic
    b. Depth: Fail
        i. Rater entered an incorrect **R-30** installed minimum thickness of **15.5"**, with settled min. of 11.75" and stated it had been 1 day since installation
        ii. QA contacted installer and was told the installed insulation was Certainteed Insulsafe. The **R-38** (per CF-1R) target installed and settled thickness is **14.5"** – depth was measured in three places at 14.75", 13" and 13"
    c. Density: Fail (on data entry)
        i. Rater entered an incorrect **R-30** installed minimum target weight of .462 lb/sf, and a measured .610 lb/sf.
        ii. QA entered an **R-38** (per CF-1R) minimum target weight of .591 lb/sf, and a measured .648 lb/sf

Duct Leakage: Pass

Rater recorded 58 cfm, and a target of 106.16. Rater entered incorrect heating output.

QA recorded 63 cfm, with a target of 135.41

QA, **63** cfm @25.0 Pa (**135.41**),

EER Fail, couldn't verify installed matched equipment on AHRI website.

[redacted] (11/11/2011), QA 01/27/2012(+2)

QA SUMMARY REPORT

Duct Leakage: Pass
Rater recorded duct leakage of **231** cfm and a target of **240**.
QA recorded DL of 230

EXHIBIT 2

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot [redacted]		[redacted]	CA	[redacted]	CC-1798605977	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-04 CSLB: 941412 Green Home Solutions by Grupe Chuck Meyers
CF-6R-MECH-21-HERS CSLB: 941412 Green Home Solutions by Grupe Chuck Meyers
CF-6R-MECH-RCA-HERS CSLB: 941412 Green Home Solutions by Grupe Chuck Meyers

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (265395)	TESTED (Davis, Patrick)	TESTED (Davis, Patrick)

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

This is the 1st system in this house and serves the downstairs except the living room.
DL, Rater, 95 cfm, pass, target = 120 cfm. QA, 108.5 cfm, pass, target = 120 cfm. RC, fail, labels present for TMAHs, but no holes, could not do temp/ split to test air flow. I used Flow Hood and measured 442 cfm, which failed to reach the target of 600 cfm.
Owner's fiancee states that the rater was in the house for 1/2 hour or less. She let him in at 8 am, left at 8:10 to take son to school, and returned home at 8:30, and no one was there or came back.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]	
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CalCERTS, Inc.

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Contact Us

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Report Detail

Date / Time: 12/09/2011 / 16:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Day & Night **Model:** N4A324 **# of Vents:** 5 **# of Returns:** 1 **SEER:**
F.A.U. Make: Goodman **Model:** GMS080453AXCC **AFUE:** .80 **HSPF:** **Output BTU:** 36000 **Location:** Crawl
Coil Make: Aspen **Model:** ACE30A24145L087 **EER:**
Coil Number: J11-00004521 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **2** x 400 = **800** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **800** x 0.15 = **120** CFM Actual Leakage = **95** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ____ x 0.10 = ____ CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = ____ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605977**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/29/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

✔ 1. Measured leakage less than 15% of fan flow

2. Measured leakage to outside less than 10% of Fan Flow

3. Reduce leakage by 60% and conduct smoke and fix all leaks

4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✔ ✔ Cooling system method: Size of condenser in Tons **2** x 400 = **800** CFM

✔ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✔ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **800** x 0.15 = **120** CFM Actual Leakage = **108.5** CFM **Pass if Leakage Actual is less than Allowed**	✔ Pass	Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **800** x 0.10 = **80** CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	Pass	Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = **____%** Reduction **Pass if % Reduction > 60%**	Pass	Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	✔ Pass	Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Additional QA Questions:

Heating System Method: 21.7 X **48,000** Output Capacity in Thousands of Btu/hr = **1041.6** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **635** CFM

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

✔ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605980**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **12/9/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (Instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112513204**			
Outdoor Unit Make	**Day&Night**			
Outdoor Unit Model	**N4A324**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**11.29.2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**11.1.2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**11.1.2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**47**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**53**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**33**			
Condensor saturation temperature ($T_{condensor, sat}$)	**69**			
Suction line temperature ($T_{suction}$)	**50**			
Liquid Line Temperature (T_{liquid})	**62**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**55**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**23.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.4**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.6**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	[redacted]				
Calculated Minimum Airflow Requirement (CFM)	[redacted]				
Measured Airflow using RA3.3 procedures (CFM)	[redacted]				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**					

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**7.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**17.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605977**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/29/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Additional QA Questions:

Ambiant Temperature: **57.1°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	Yes	✔ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	Yes	✔ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ Pass	✔ ✔ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ N/A	✔ Pass	✔ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ✔ N/A	✔ Pass	✔ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112513204**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**N4A324**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**12/09/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**12/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**12/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)				
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)				
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)				
Evaporator saturation temperature ($T_{evaporator, sat}$)	**30**			
Condensor saturation temperature ($T_{condensor, sat}$)	**67**			
Suction line temperature ($T_{suction}$)	**43.8**			
Liquid Line Temperature (T_{liquid})	**61.5**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**57.1**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag				
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$				
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$				
Calculate difference: Actual Temperature Split - Target Temperature Split =				
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)	600			
Measured Airflow using RA3.3 procedures (CFM)	442			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Fail			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**5.5**			
Target Subcooling specified by manufacturer	**8**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-2.5**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**13.8**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3 - 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

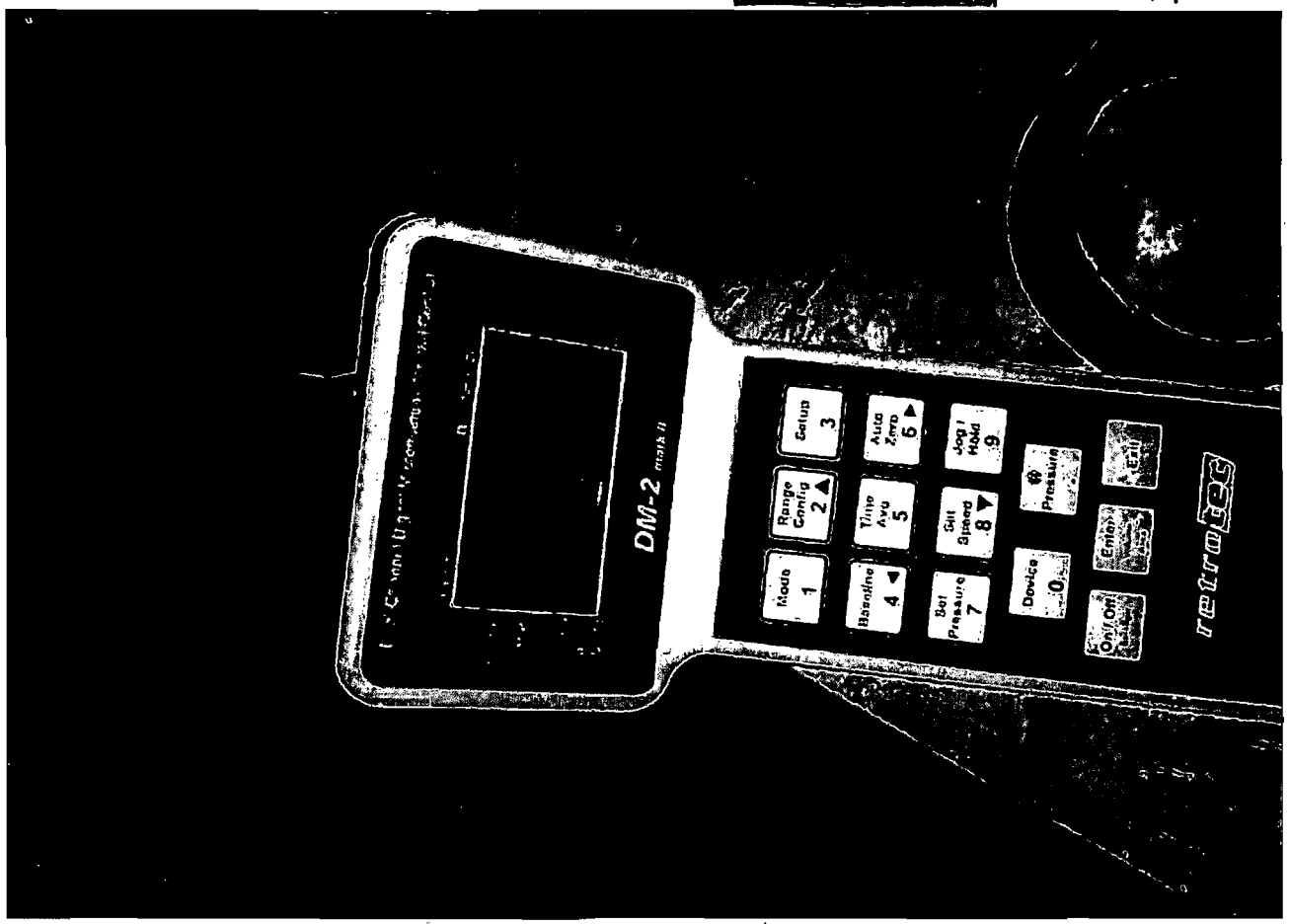
CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (If applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605977**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **12/9/2011**	

SPLIT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retrotec
Mode 1
Baseline 4
Bat Pressure 7
Device 0
Range Config 2
Time Avg 5
Batt Speed 8
Pressure
Auto Zero 6
Jog / Hold 9
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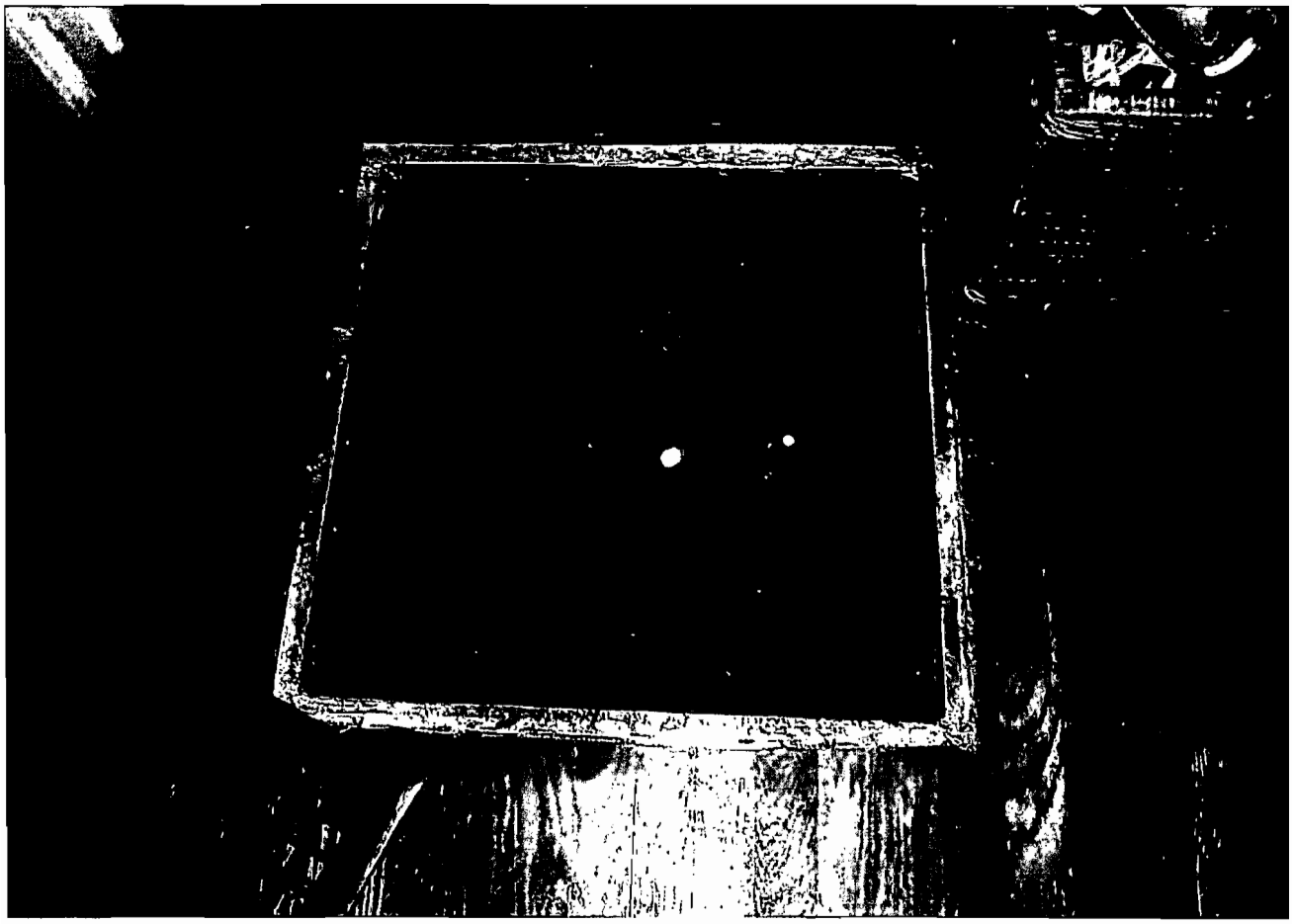
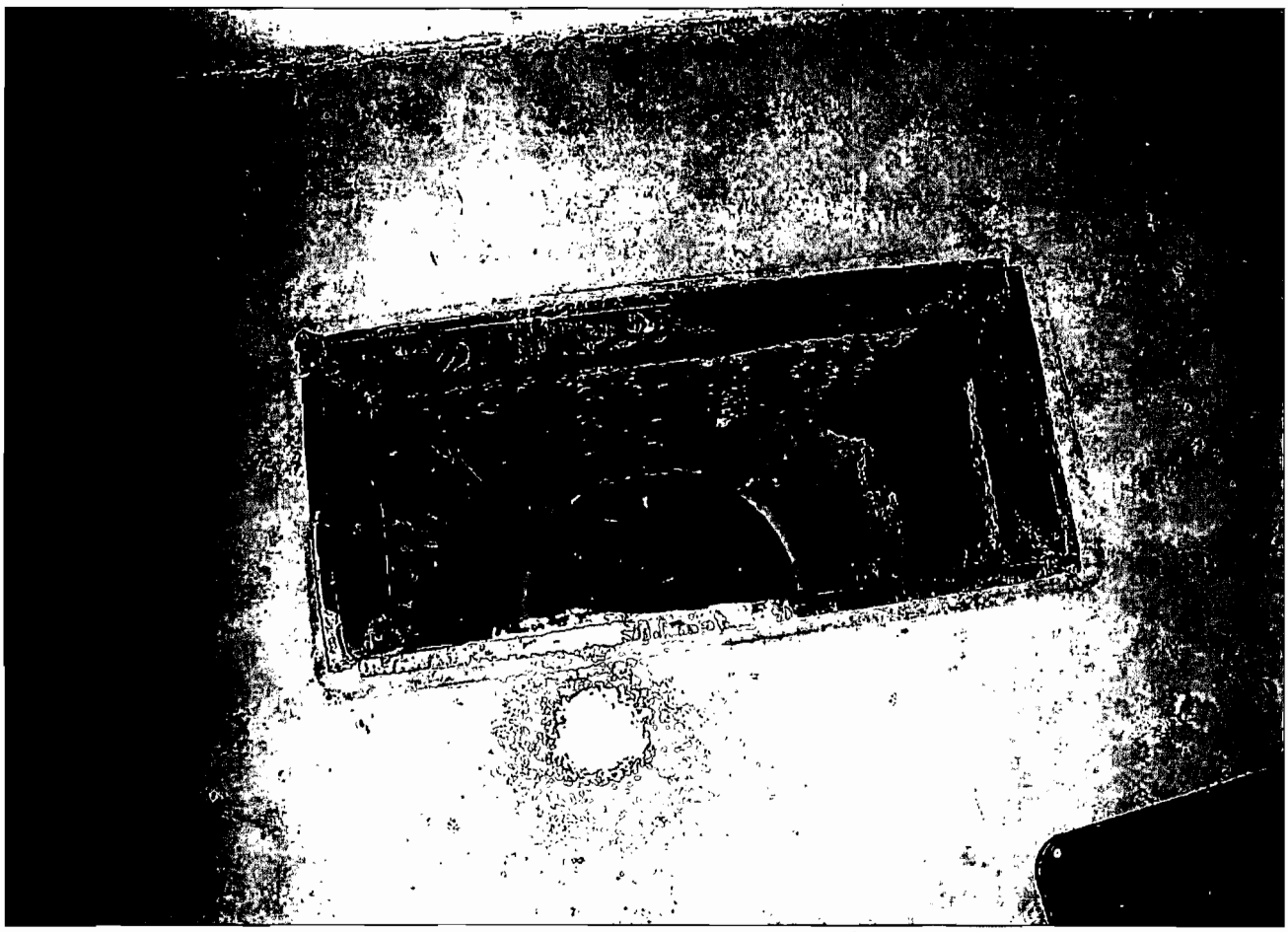
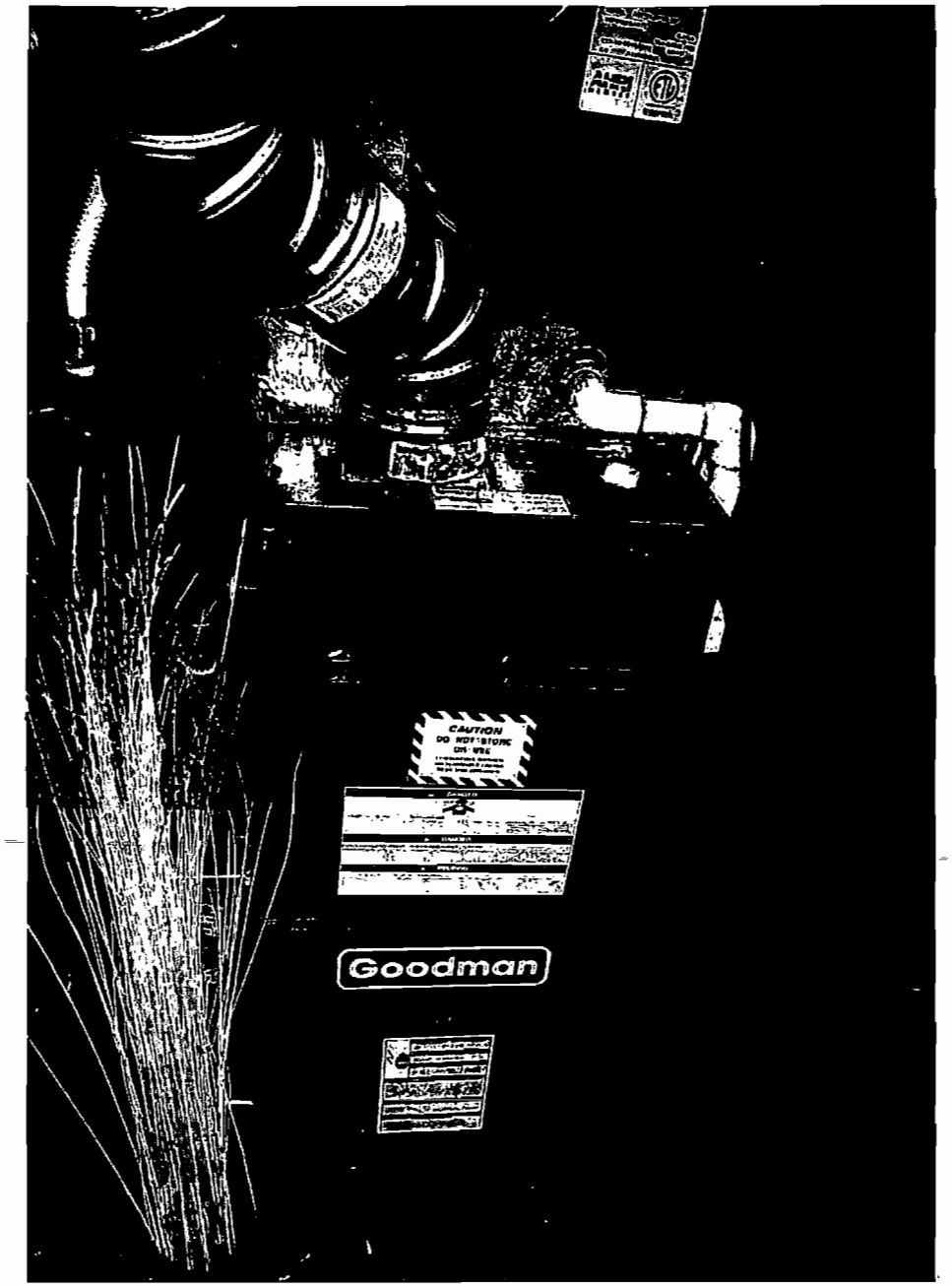
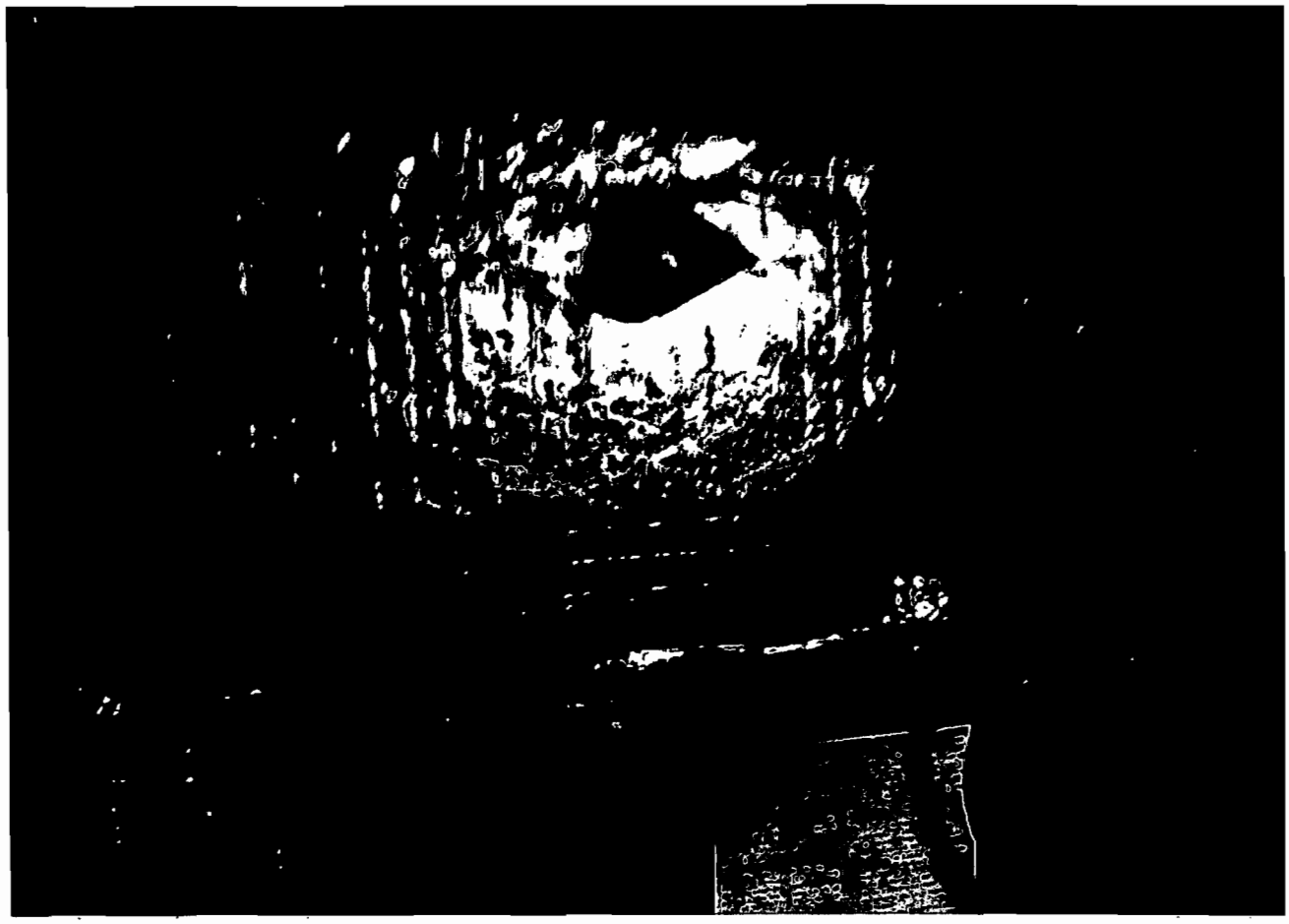
ESC

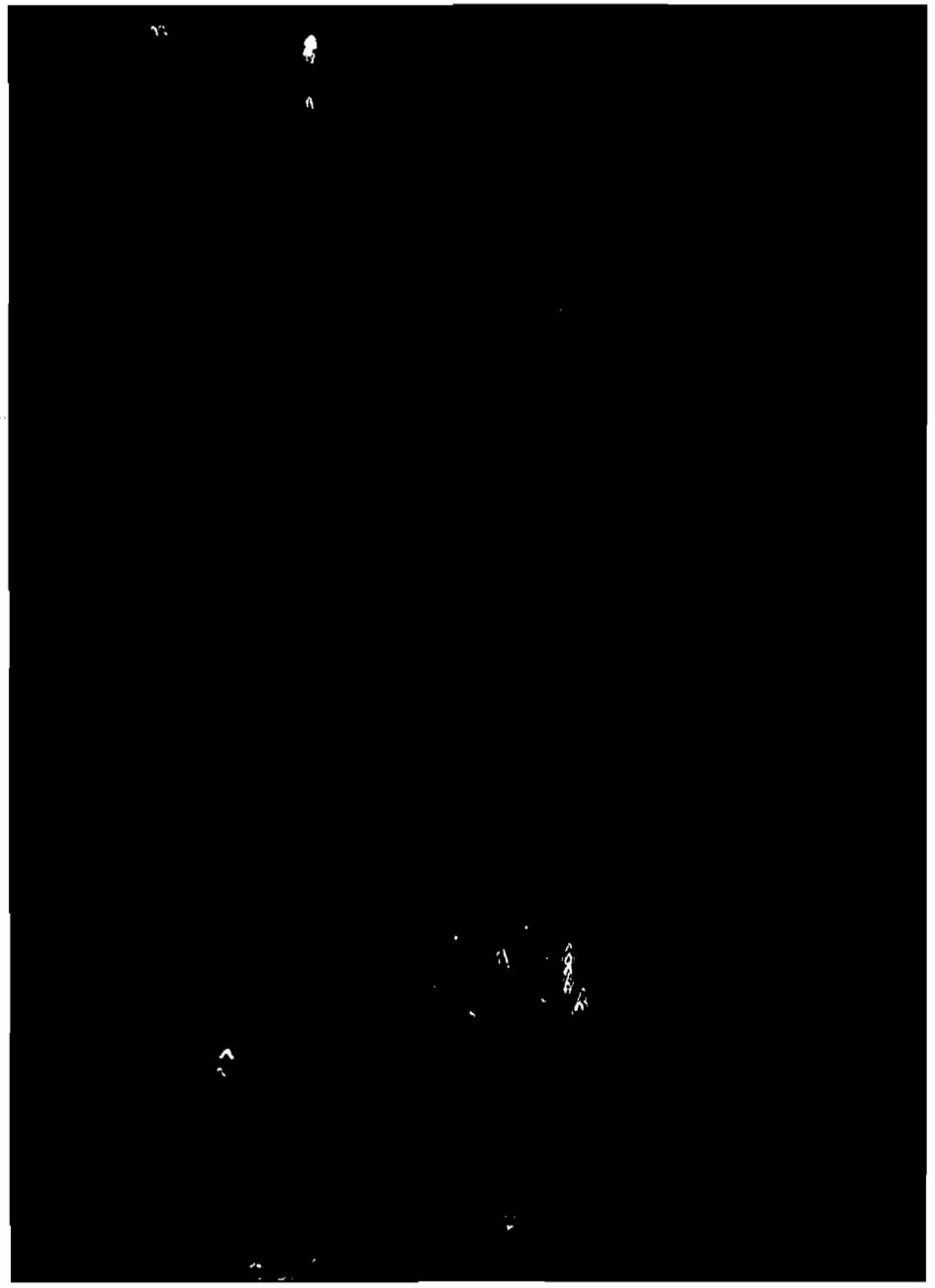





CAUTION
Goodman

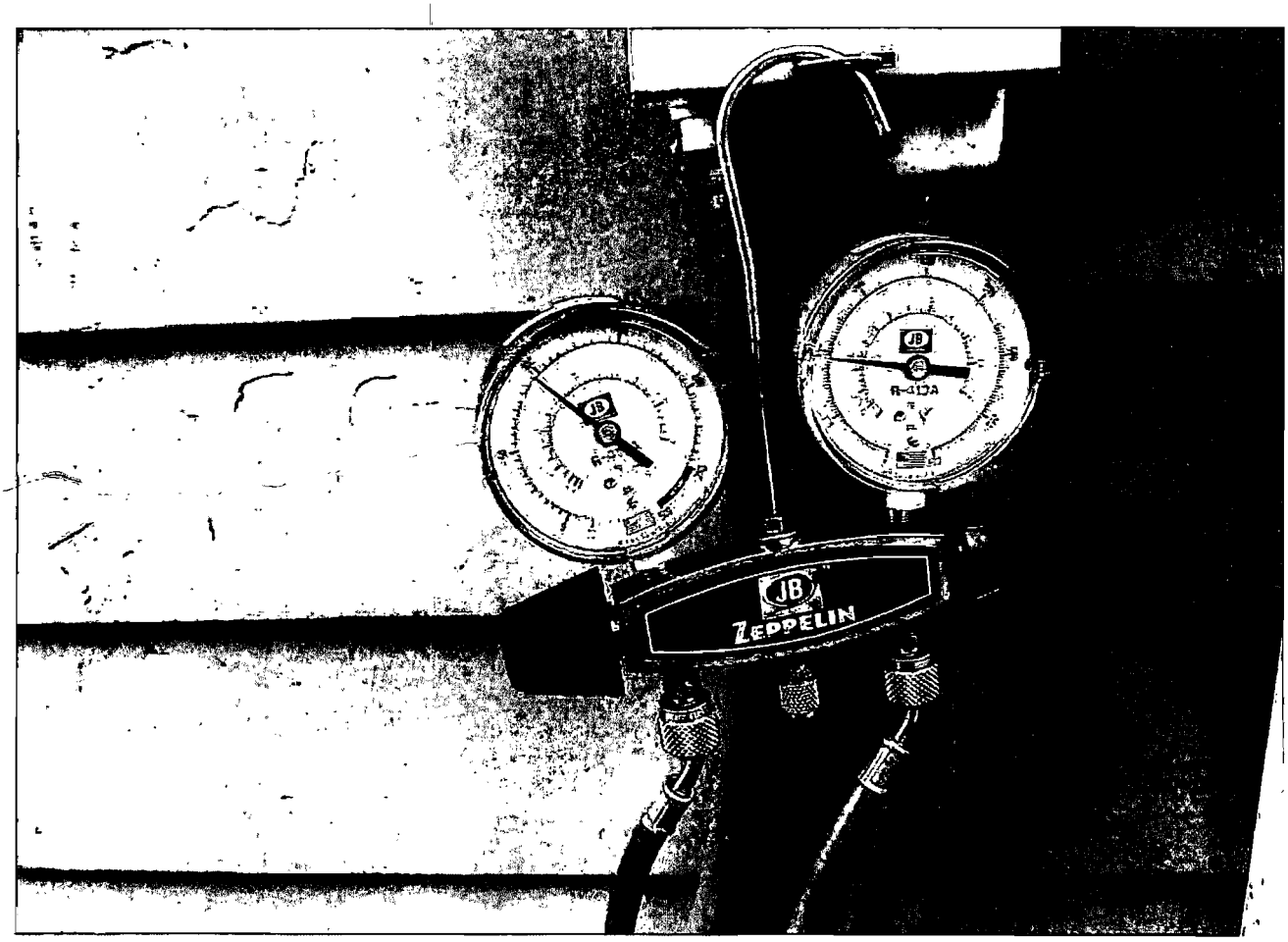
Gama





CAUTION: ONCE INSTALLED, ASPEN COILS MAY CONTAIN CHLOROFLUOROCARBONS (CFCs) OR HYDROCHLOROFLUOROCARBONS (HCFCs). UNDER CERTAIN CONDITIONS, CFCs & HCFCs MAY POSE A HEALTH RISK. PLEASE NOTIFY A LICENSED SERVICE TECHNICIAN IMMEDIATELY IF YOU SUSPECT YOUR SYSTEM MAY CONTAIN A LEAK.
CAUTION: A METAL DRAIN PAN MUST BE USED IF DRAIN PAN TEMPERATURES EXCEED 300°F.
P/N: 8403 REV.7/07
PRECAUCIÓN: UNA VEZ INSTALADAS, LAS BOBINAS ASPEN PUEDEN CONTENER CLOROFLUOROCARBONOS (CFCs) O HIDROCLOROFLUOROCARBONOS (HCFCs). EN CIERTAS CONDICIONES LOS CFC Y HCFC PUEDEN PRESENTAR UN RIESGO PARA LA SALUD. FAVOR NOTIFICAR INMEDIATAMENTE A UN TÉCNICO AUTORIZADO DE SERVICIO SI SOSPECHA UNA FUGA EN EL SISTEMA.
PRECAUCIÓN: SE DEBE USAR UNA BANDEJA METÁLICA DE DRENAJE SI LA TEMPERATURA DEL DRENAJE ES SUPERIOR A 300°F.
REFRIGERANT EVAPORATOR
MODEL ACE30A24145L087
REFRIGERANTS R-410A
TXV INSTALLED
DESIGN PRESSURE 600 PSI
S/N J11-00004521
intertek

TSI


JB
ZEPPELIN
JB
R-410A
JB

DAVIS

Tim O'Neil Logged In [Logout]

CalCERTS

QA Data Collection Form: [redacted] CA [redacted]

STEP 1: Collect information

Date / Time:* 12/9 / 16:00

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

(2 Bd | Ba | LIV)

RESULTS FOR SYSTEM 1

Type of System: Split

Is the unit a HEAT ONLY unit? No

SYS 1 Downstairs SPLIT

UP – 4 Vents | Ret

Down – 5 Vents | Ret | Ba | Kit | Din | OFF

Condenser Make:* DAY & NIGHT Model:* N4A324 # of Vents:* [ ] # of Returns:* [ ] SEER: [ ]

S/N – 1101603286

F.A.U. Make:* GOODMAN Model:* GMS80453AX6 AFUE: .80 HSPF: [ ]

IN-45,000 Output BTU:* 36000 Location: Attic

Coil Make:* ASPEN Model:* ACE30A24141 EER: 11.087

Coil Number:* 5111-0000452 Ducts R4 or R6: R4

SYS 2 UPSTAIRS UNIT

Package – M/N PGD330060K001C | EER 11.5 SEER: 13.5, AFUE .80 Out BTU – 48,000 S/N C111865750

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

SYS 2 RATER 95, TARGET 120 (2×400 × .15)
QA 108.5
Rater 146 TARGET = 150
RCA – Q/A = 224.

Chuck Myers – CF-6R – 92 CFM Sys 1 UP-CF-

Attic Investigation:* [Select from list]

NEXT

* Required Fields

NOT Valid

Vents Sealed to material (Drywall) Could Not Remove.

RC – T ref DB – ~~54.3~~ 70.8 WB – 54.3 T out T-S – 57.1

Tmb: 57.1
Cond ent: 56.5
P evap: 96 Pa
T = 30
P cond: 190
T = 67
T suc = 43.8
T Liq = 61.5

DL Signed 11/29
Verf 11/29

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CalCERTS, Inc.
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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

SYSTEM #2

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798605980	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-04 CSLB: 941412 Green Home Solutions by Grupe Chuck Meyers
CF-6R-MECH-21-HERS CSLB: 941412 Green Home Solutions by Grupe Chuck Meyers

Address	Duct Leakage Existing CF-4R-MECH-21
[redacted](265398)	TESTED (Davis, Patrick)

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted], [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

This is the 2nd system in this house and serves the upstairs and living room. Could not look inside the vents or open return register, they were sealed w/ caulk. Duct Leakage was done with the filter in. DL, Rater, 146 cfm, pass.
Target = 150.
QA, 224 cfm, fail.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 12/09/2011 / 14:30
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Package
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Payne **Model:** PGD330060K001C1 **# of Vents:** 5 **# of Returns:** 1 **SEER:** 13.5
F.A.U. Make:	Payne **Model:** PGD330060K001C1 **AFUE:** .80 **HSPF:** **Output BTU:** 48,000 **Location:** Attic
Coil Make:	Payne **Model:** PGD330060K001C1 **EER:** 11.2

Coil Number: C111865750 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: Could not look inside the vents or open return register, they were sealed w/ caulk.Duct Leakage was done with the filter in.

Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency

NO Photos

Registered CF-4R Data

***** ALERT *** ADMIN USE:** [UNTEST QA]

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **2.5** x 400 = **1000** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **146** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ____ x 0.10 = ____ CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = ____ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605980**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/29/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

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4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ✓ Cooling system method: Size of condenser in Tons **2.5** x 400 = **1000** CFM

✓ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **224** CFM **Pass if Leakage Actual is less than Allowed**	Pass ✓	Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1000** x 0.10 = **100** CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	Pass	Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = **___%** Reduction **Pass if % Reduction > 60%**	Pass	Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	Pass ✓	Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 11-3694

Additional QA Questions:

Heating System Method: 21.7 X **36,000** Output Capacity in Thousands of Btu/hr = **781.2** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **442** CFM

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

✔ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
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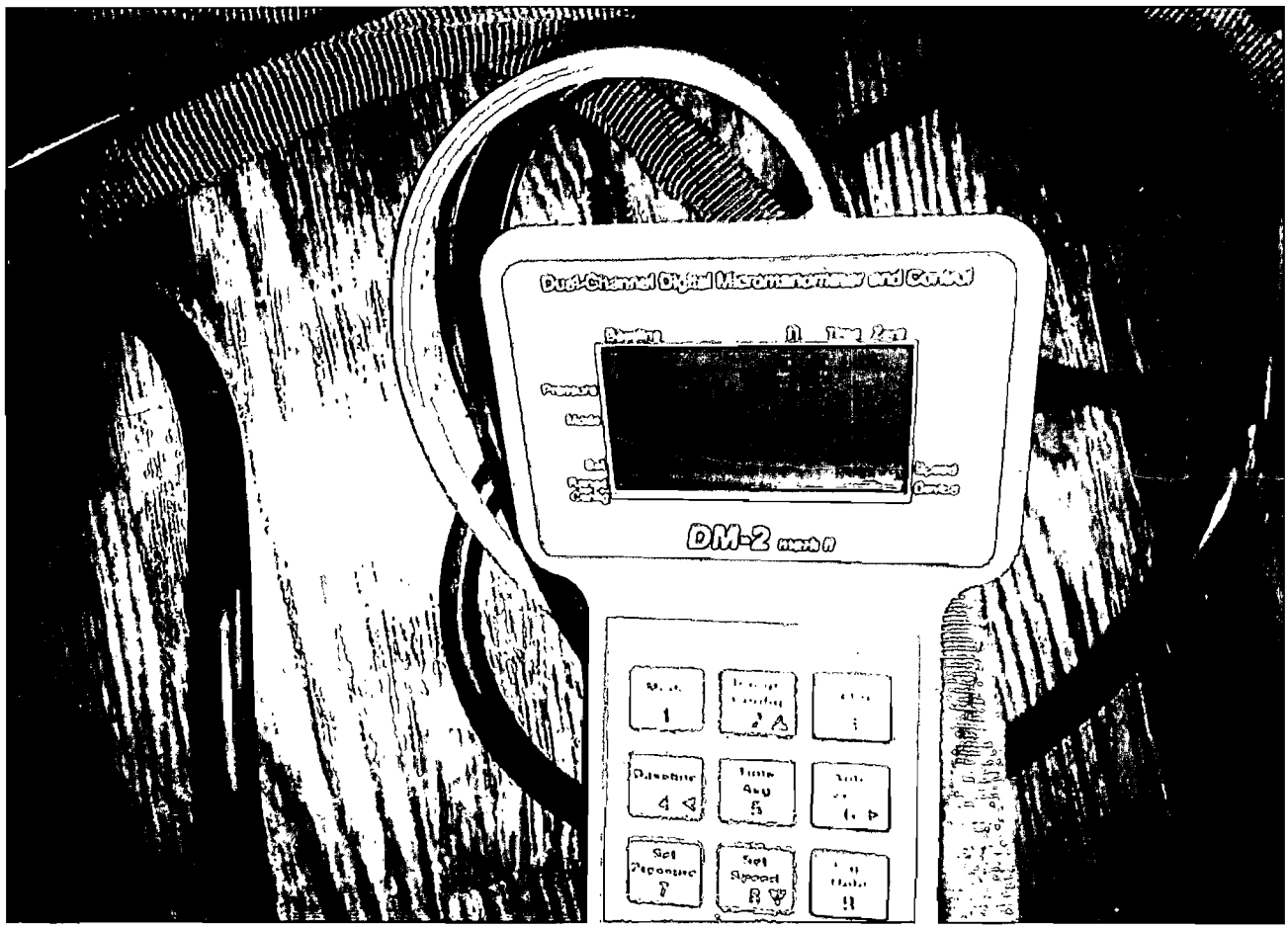
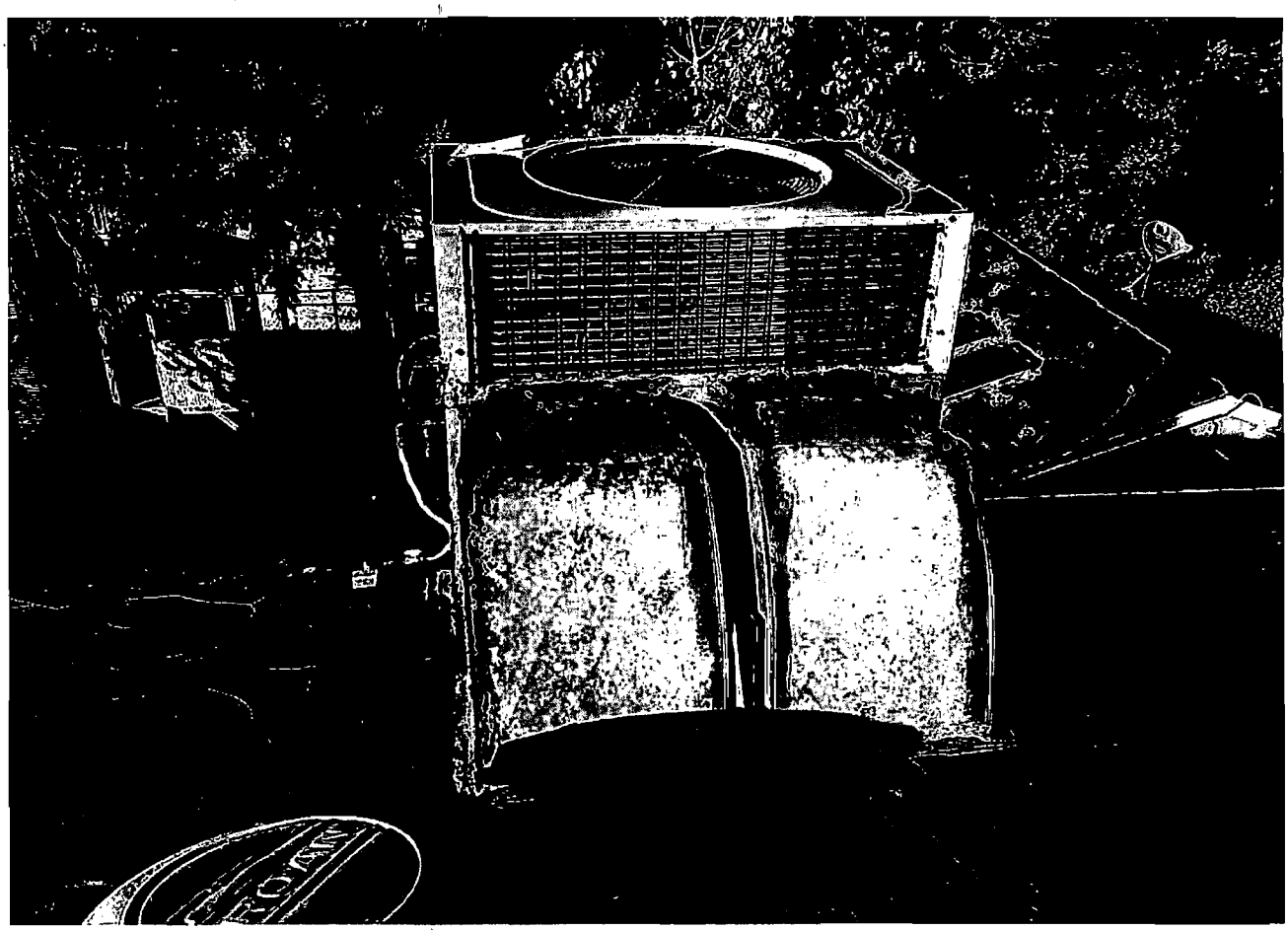
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **GREEN HOME SOLUTIONS BY GRUPE**		
Responsible Person's Name: **Chuck Meyers**	CSLB License: **941412**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605977**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **12/9/2011**	

[redacted] - PACKAGE





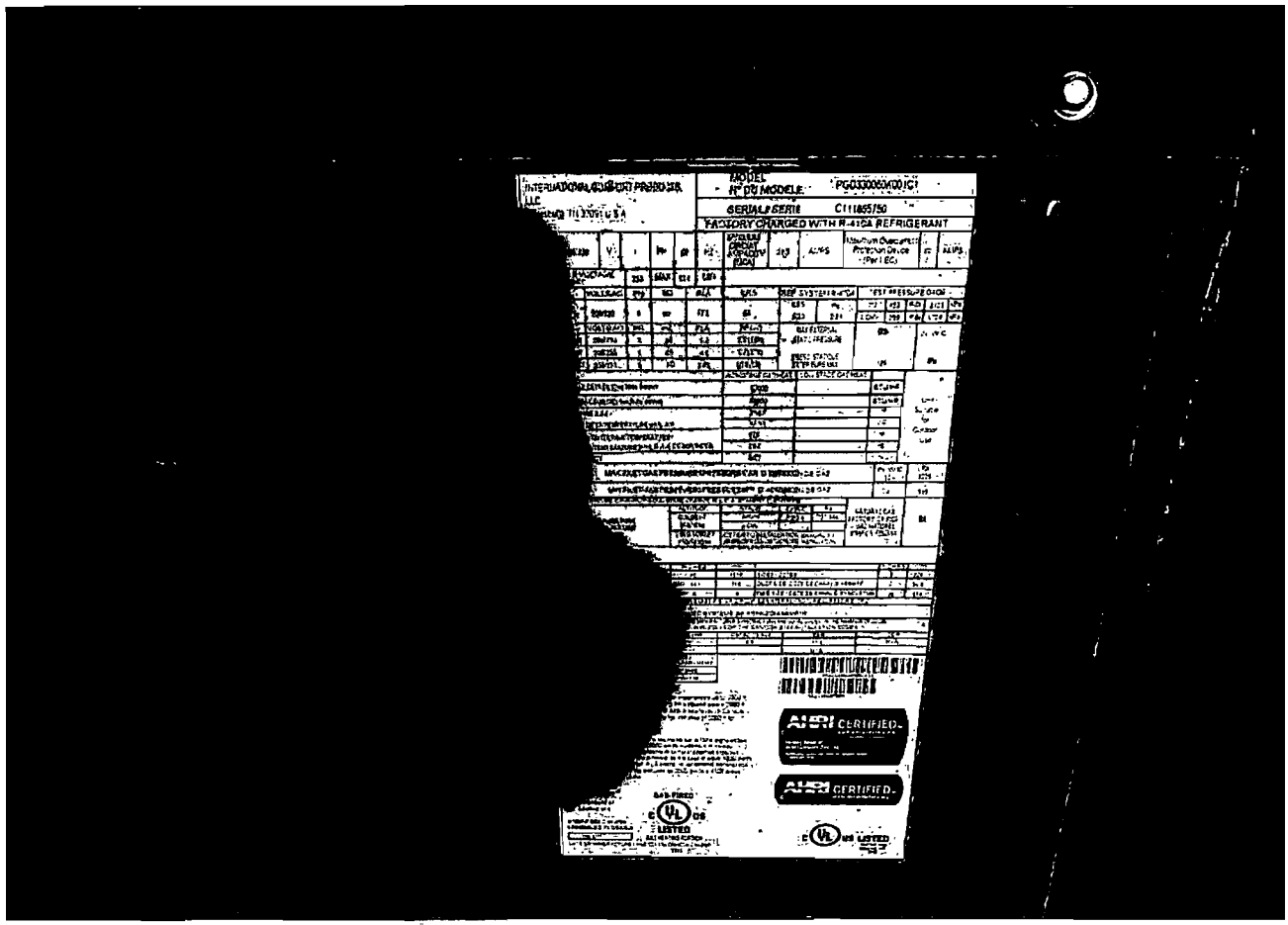

MODEL
SERIAL/SERIE
FACTORY CHARGED WITH R-410A REFRIGERANT
AHRI CERTIFIED
AHRI CERTIFIED

EXHIBIT 3

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798581418	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr
CF-6R-MECH-RCA-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted](240836)	TESTED (Davis, Patrick)	TESTED (Davis, Patrick)

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

No TMAH seen. How did rater do Split/ temperature method for CCAF?
Split/temp failed when I took temperature readings from the return register and closest supply vent. It passed using flow hood, reading 1070 cfm, target = 750.
The rater used the Cooling system method, target leakage = 150 cfm.
The Heating system method had a target leakage = 166 cfm.
The rater had an actual leakage of 77 cfm, QA had a leakage of 134.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]	
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 10/20/2011 / 16:00
Cust. Name: TENANT **Cust. Phone:** NONE
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: KeepRite **Model:** N4A330AKC200 **# of Vents:** 8 **# of Returns:** 1 **SEER:** 13
F.A.U. Make: Day & Night **Model:** G8MXL0701716A **AFUE:** .81 **HSPF:** **Output BTU:** 51000 **Location:** Attic
Coil Make: Aspen **Model:** ACE36C34175L087 **EER:**
Coil Number: J10-00009569 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: Tenant states that she has lived there for one month. Two weeks ago, she had the installer out to repair the A/C, as it was blowing only warm air.

Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency

NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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Revised: January 11, 2010
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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

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Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

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☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons 2.5 x 400 = 1000 CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow 1000 x 0.15 = 150 CFM Actual Leakage = 77 CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ___ x 0.10 = ___ CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
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4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581418**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **8/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA[redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Enter the Duct System Name or Identification/Tag: **System 1**

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Duct Leakage Diagnostic Test - existing duct system

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1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **134** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
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4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Additional QA Questions:

Heating System Method: 21.7 X **51,000** Output Capacity in Thousands of Btu/hr = **1106.7** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1070** CFM

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CalCERTS, Inc.

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Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581418**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/20/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for Installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ ☑ Pass	✔ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			System 1			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 2 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Stockton	07-6398

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E1412015283**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**N4A330**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**8/8/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**54**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**76**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**61**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**44**			
Condensor saturation temperature ($T_{condensor, sat}$)	**93**			
Suction line temperature ($T_{suction}$)	**61**			
Liquid Line Temperature (T_{liquid})	**80**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**22.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.4**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**1.6**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE			CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure			**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398	

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**13.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**17.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581418**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **8/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Additional QA Questions:

Ambiant Temperature: **77°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112015283**			
Outdoor Unit Make	**KeepRite**			
Outdoor Unit Model	**N4A330AKC200**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**10/20/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**66.1**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**74.4**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**64.7**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**37**			
Condensor saturation temperature ($T_{condensor, sat}$)	**94**			
Suction line temperature ($T_{suction}$)	**72.5**			
Liquid Line Temperature (T_{liquid})	**81.7**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**76.9**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**8.30**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-11.7**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**12.3**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**2.3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**35.5**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6398

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

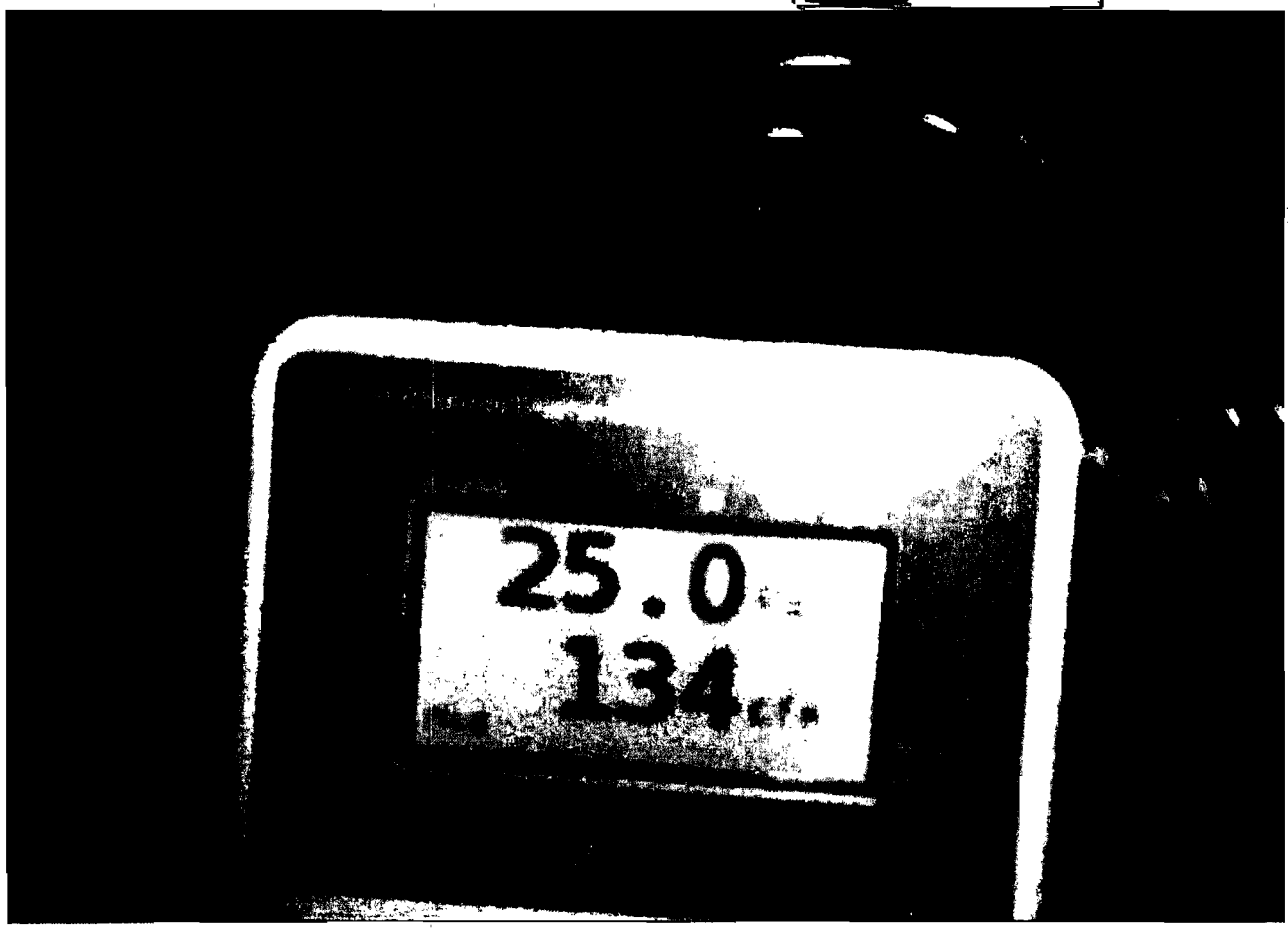
System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581418**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/20/2011**	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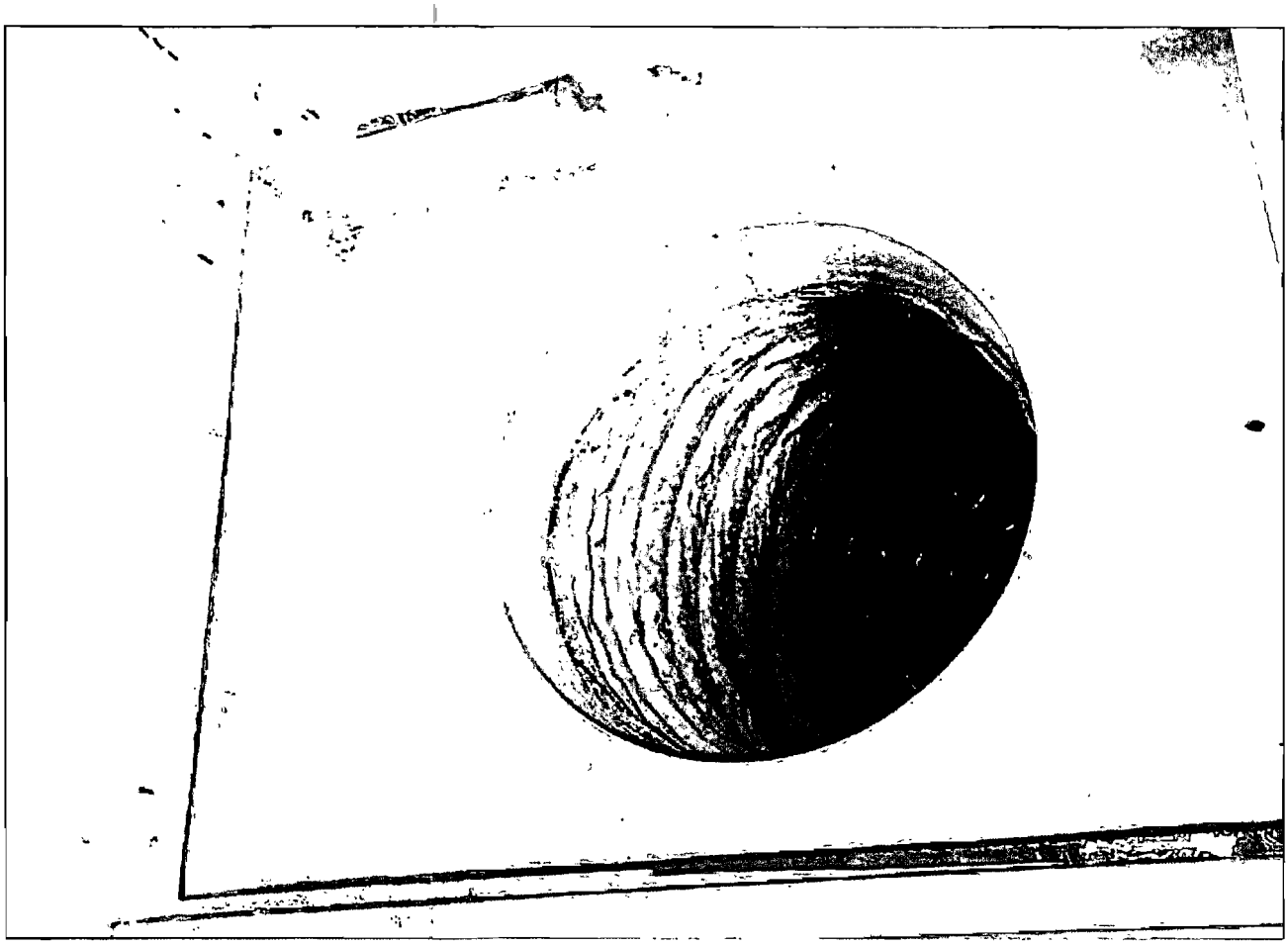

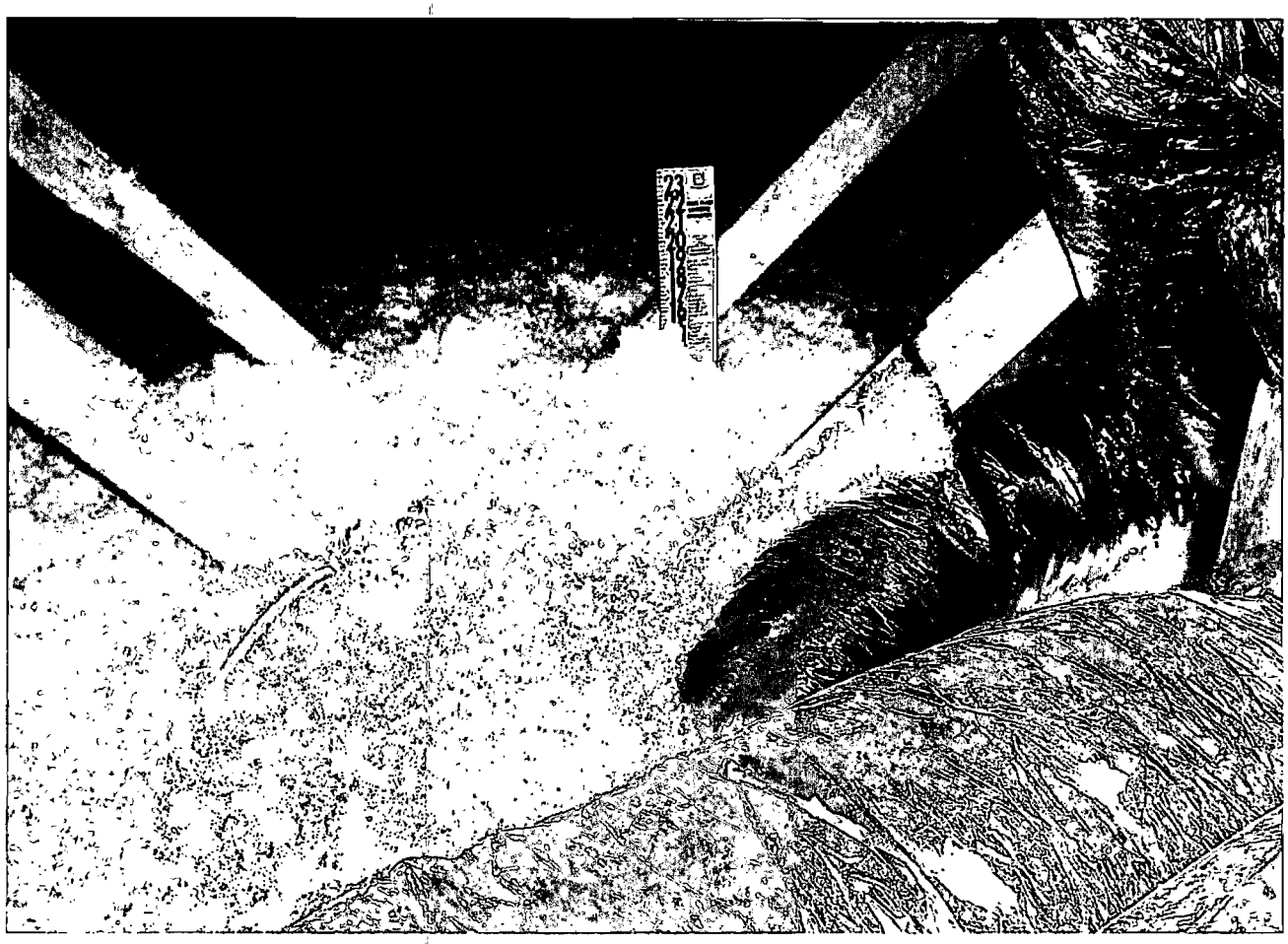

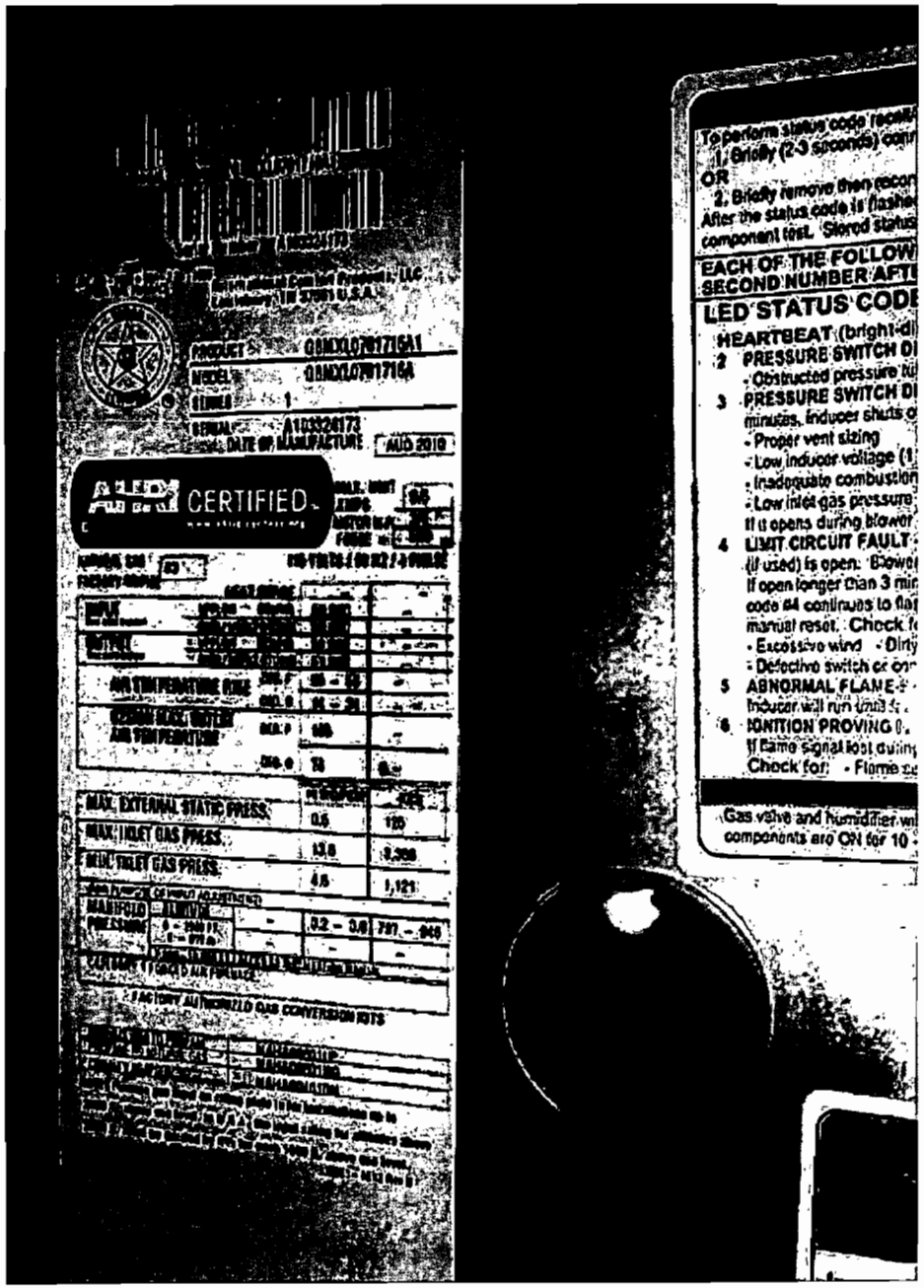
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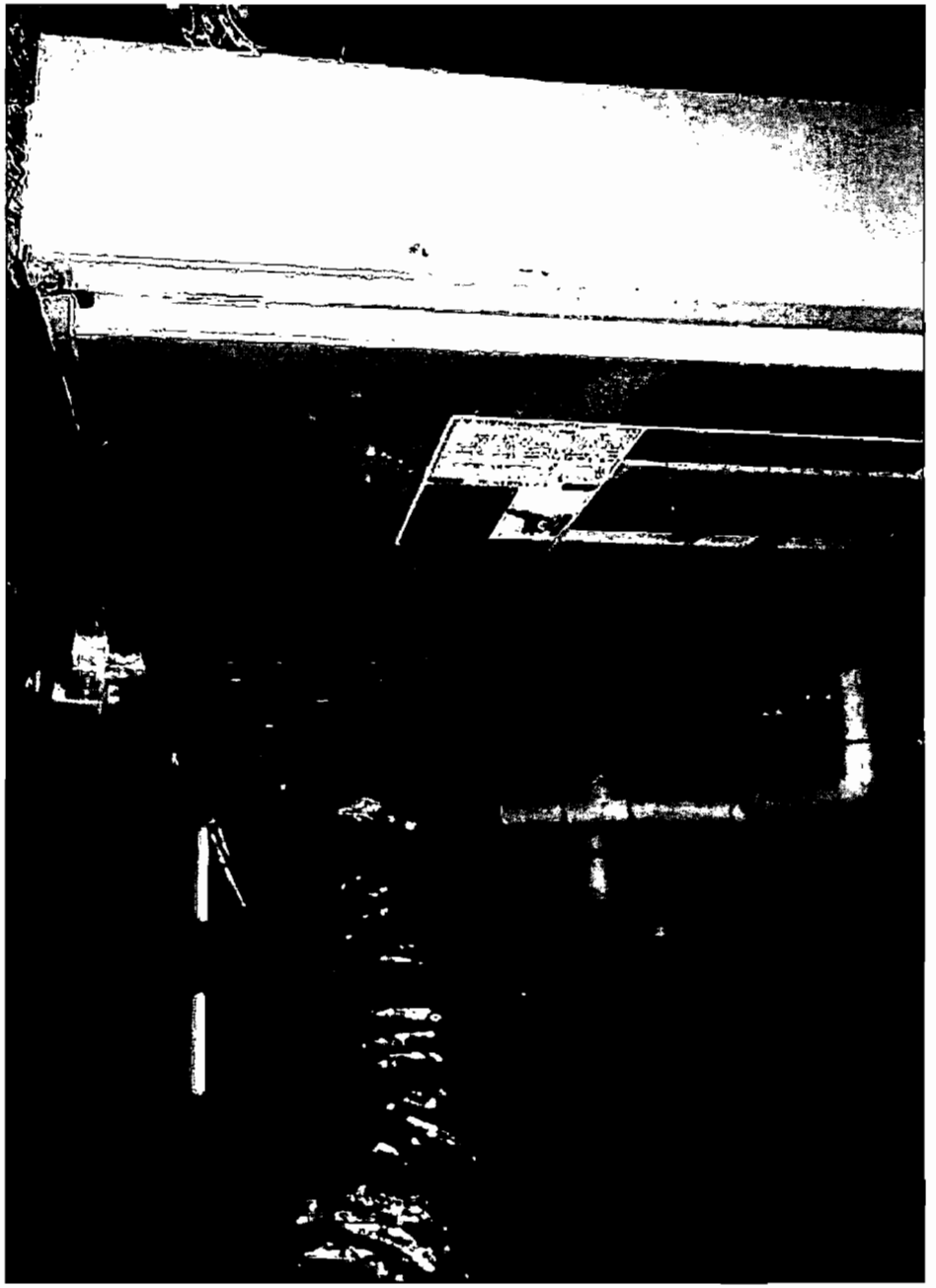
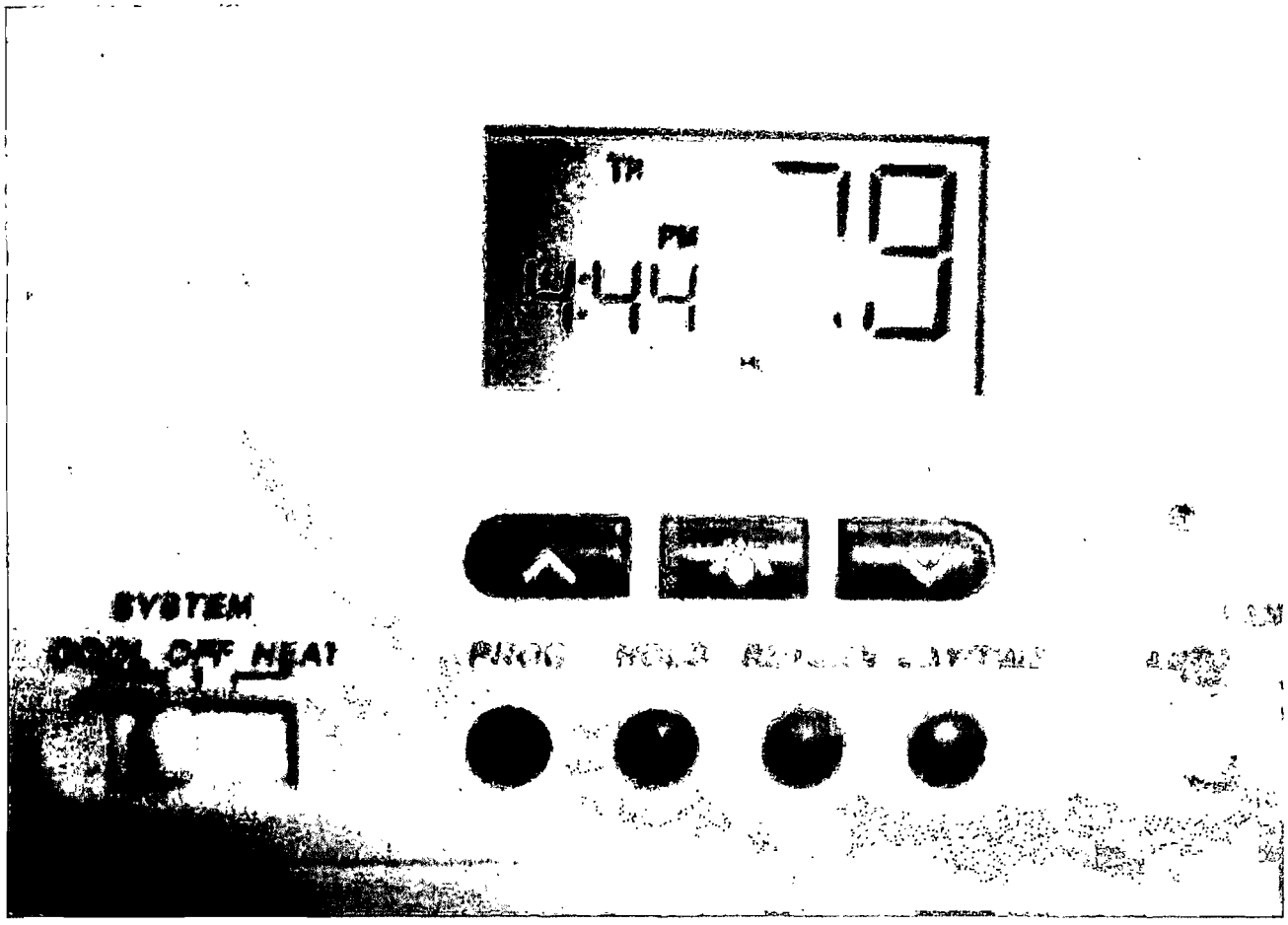
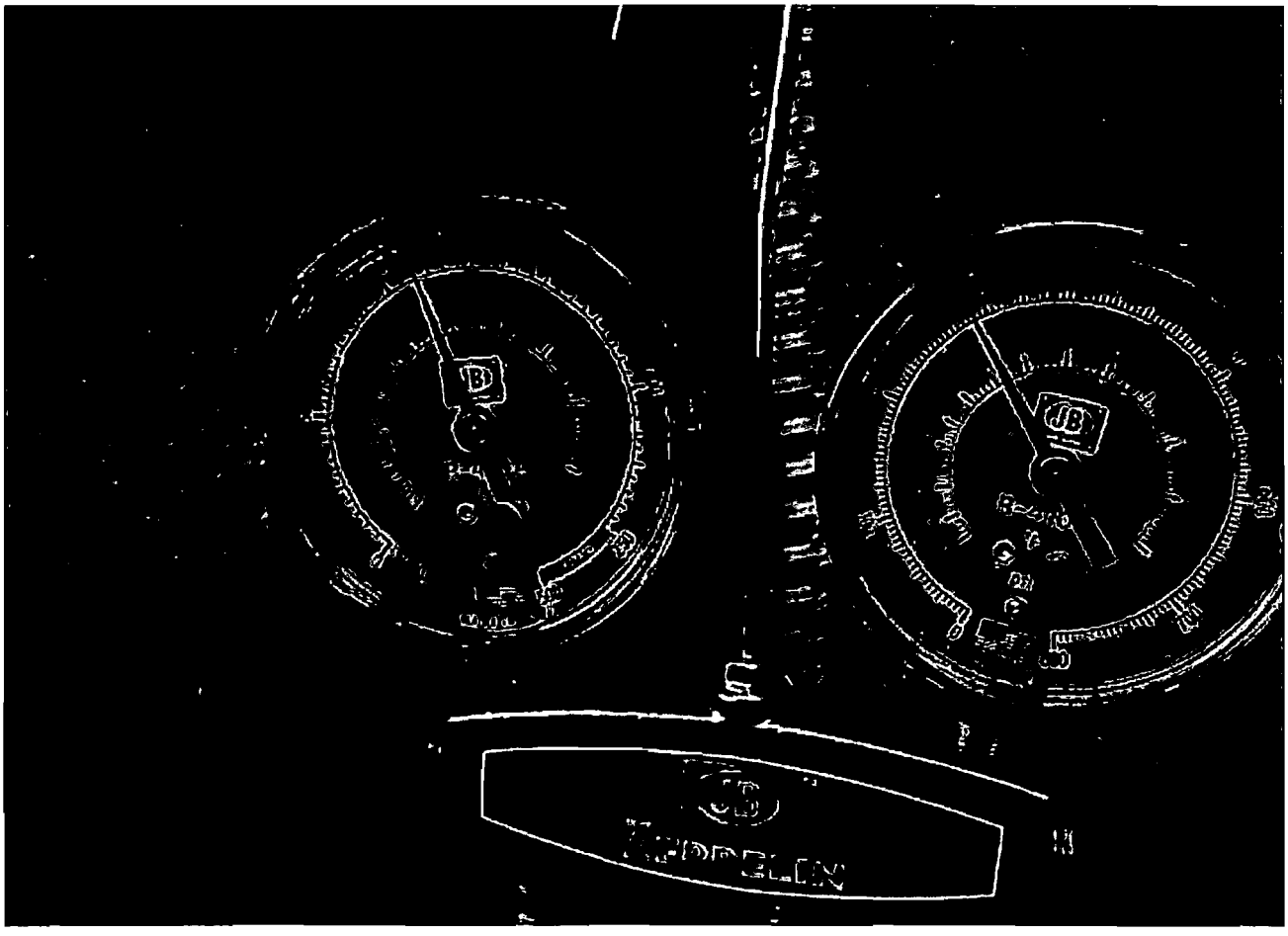
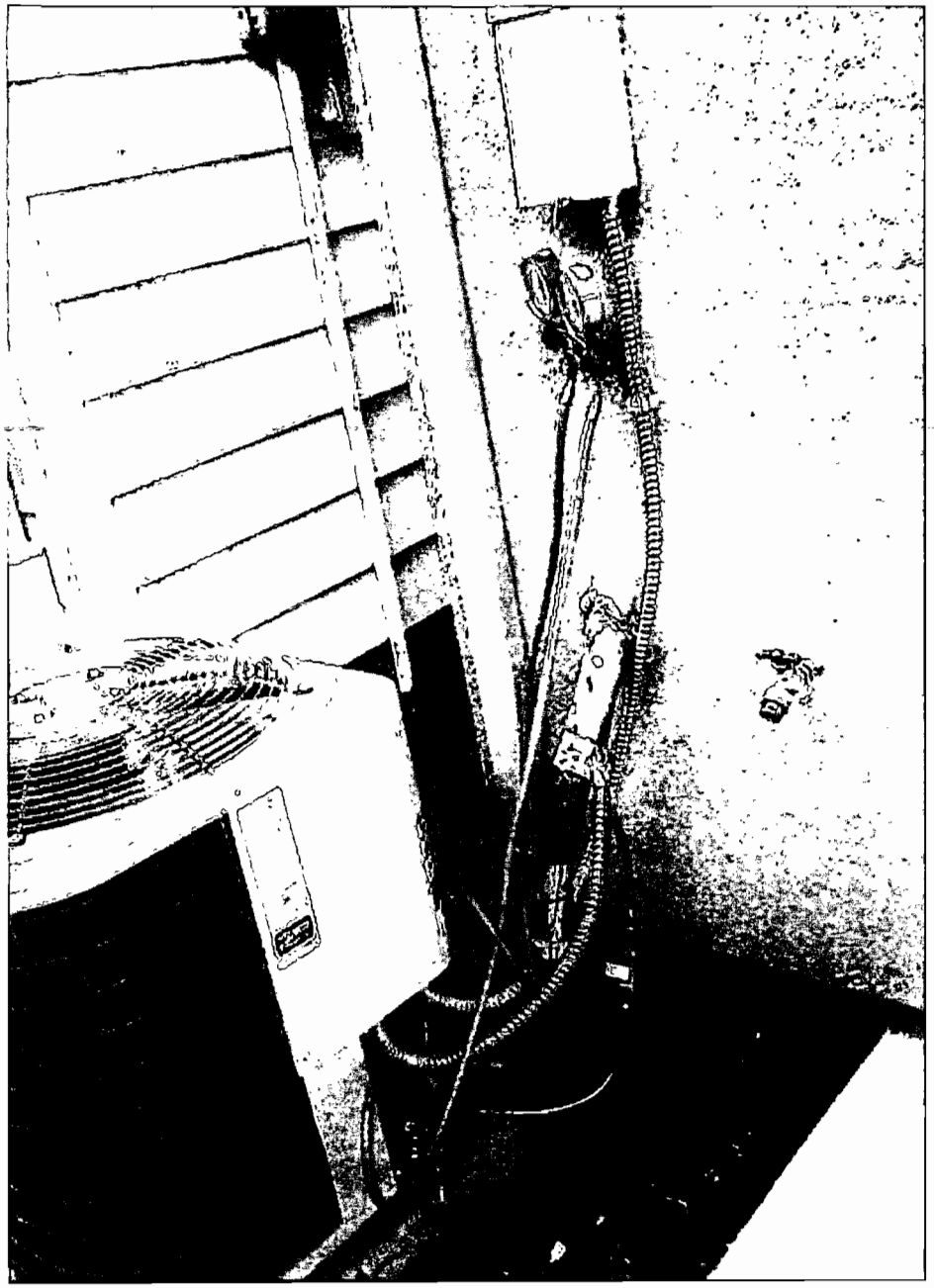
AUG 2019
LED STATUS CODE
HEARTBEAT
PRESSURE SWITCH
PRESSURE SWITCH
LIMIT CIRCUIT FAULT
ABNORMAL FLAME
IGNITION PROVING

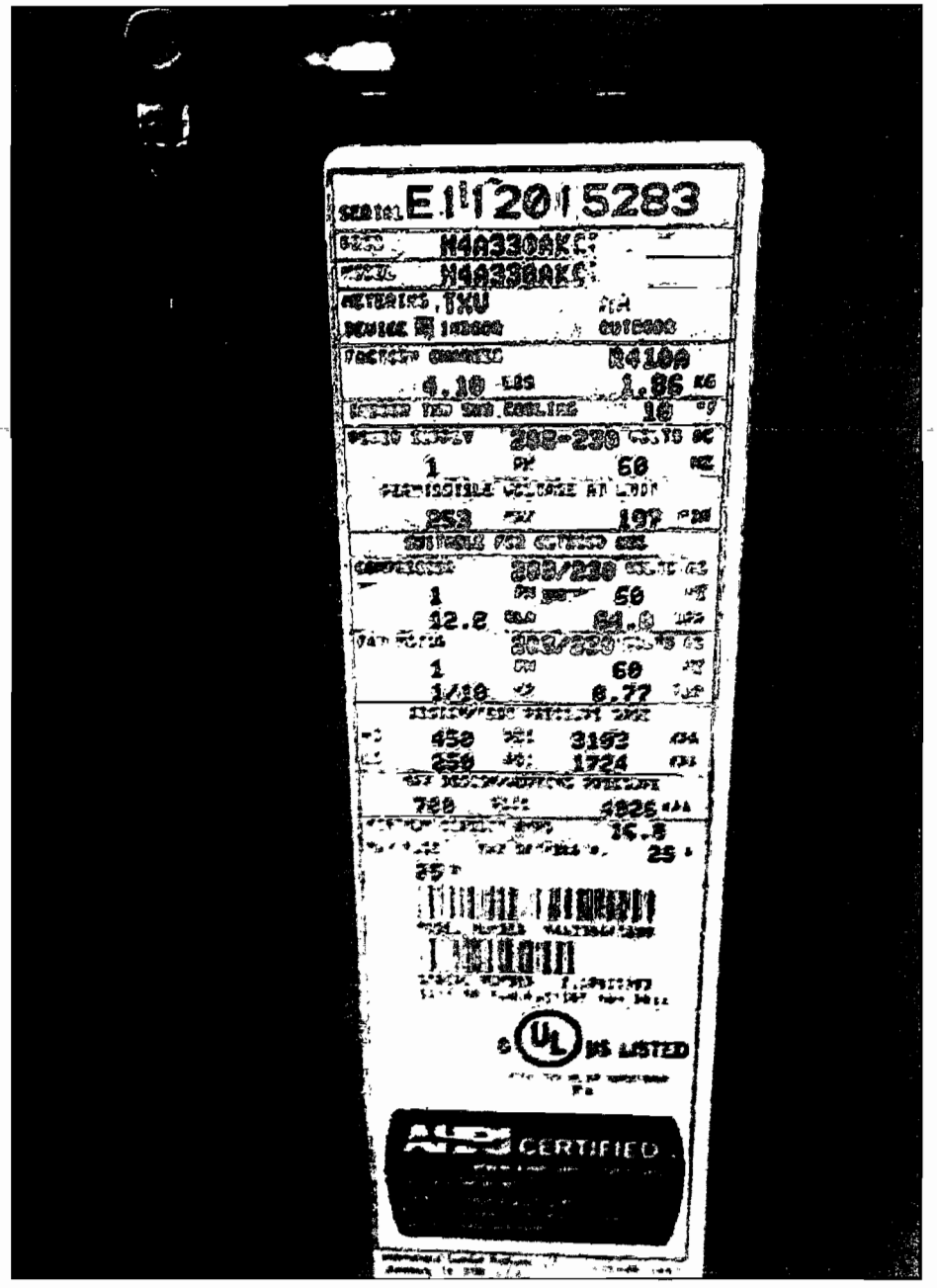


REFRIGERANT
EVAPORATOR
MODEL
REFRIGERANTS
R-410A
TXV INSTALLED
DESIGN PRESSURE
500 PSI
S/N
AHRI
MEMBER
C
US
Intertek


SYSTEM
COOL OFF HEAT






E112015283
R410A
CERTIFIED

QA-ALT TESTED Rater Patrick Davis

Tim O'Neil Logged In [Logout]

QA Data Collection Form: [redacted], CA [redacted]

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/20/20 / 11:00

Cust. Name:* TENANT Cust. Phone:* NONE

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2 up = 4 Down = 4

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

S/N E112015283

Condenser Make:* KEEP RITE Model:* N4A330AKC4DO # of Vents:* 8 # of Returns:* 1

SEER: 13

F.A.U. Make:* DAY & NIGHT Model:* G8MXL070171 6A AFUE: 80 HSPF:

Output BTU:* 51000 Location: Attic

Coil Make:* ASPEN Model:* ACE36C34175L08 EER: TXV INSTALLED

Coil Number:* J10-0000 9569 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

TENANT STATES THAT SHE HAS LIVED HERE 1 MONTH. 2 WEEKS AGO, SHE CALLED THE A/C INSTALLER TO FIX THE A/C. IT WAS JUST BLOWING WARM AIR.

Attic Investigation:* [Select from list] NO TMAH

NEXT..

* *Required Fields*

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Revised: January 11, 2010
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[Class Cancellation Policy]

Valley Duct Testing

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
240831	Phase 1	[redacted]	07-6396	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-RCA
Refrigerant Charge Verification		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6396
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

System 1
Select MECH form used to verify Refrigerant Charge:

- ○ ~~CF-4R-MECH-24~~
- ◉ CF-4R-MECH-25

CF-4R-MECH-25

1) Select method used to determine minimum airflow:
Temperature Split (RA3.2.2.7)

2) What was the method used for determining saturation temperature?
Refrigerant Gauge
Note: *If Refrigerant Gauge is selected, Approving Rater must have completed RCA II course.*

3) Is a TXV installed?
YES ✓

Additional QA Questions:

What was the Ambient Temperature in Farenheit: 77 °

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method. If installation of a CID is utilized as an alternative to refrigerant charge verification for compliance, TMAH and STMS are not required for compliance.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			System 1
System Location or Area Served			Whole House
1	○ Yes	◉ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.
2	○ Yes	◉ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.
Yes to 1 and 2 is a pass.			

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Outdoor Unit Serial #	
Outdoor Unit Make	
Outdoor Unit Model	
Nominal Cooling Capacity Btu/hr	30,000 (No commas)
Date of Verification	(M/D/YYYY)

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	10/1/2011 (M/D/YYYY)	(must be re-calibrated monthly)
Date of Thermocouple Calibration	10/1/2011 (M/D/YYYY)	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	System 1
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	66.1 (Fahrenheit)
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	74.4 (Fahrenheit)
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	64.7 (Fahrenheit)
Evaporator saturation temperature ($T_{evaporator, sat}$)	37 (Fahrenheit)
Condensor saturation temperature ($T_{condensor, sat}$)	94 (Fahrenheit) *Required If TXV*
Suction line temperature ($T_{suction}$)	72.5 (Fahrenheit)
Liquid Line Temperature (T_{liquid})	91.7 (Fahrenheit) *Required if TXV*
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	76.9 (Fahrenheit)

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The ~~temperature split method~~ is specified in Reference Residential Appendix RA3.2.

RATER = 1.6, Pass

CCAF - Nominal Cooling Capacity (ton x 300 cfm/ton)

2.5 x 300 = 750

Actual using Flow Hood

1070 cfm

Pass

System Name or Identification/Tag	System 1
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	74.4 - 66.1 = 8.3
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	20.0
Calculate difference: Actual Temperature Split - Target Temperature Split =	8.3 - 20 = -11.7
Passes if difference is between -4°F and	FAIL

+4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	94 - 81.7 = 12.3
Target Subcooling specified by manufacturer	10 [~~Assumption~~] on ⊘ Condenser
Calculate difference: Actual Subcooling - Target Subcooling =	12.3 − 10 = 2.3
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	PASS

RATER: 3, Pass

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	72.5 - 37 = 35.5
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	3 - 26
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	○ **PASS** ☒ **FAIL**

RATER: 17, Pass

Standard Charge Measurement Summary: System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.	
System Name or Identification/Tag	System 1
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	○ **PASS** ☒ **FAIL**

FINAL TESTED RESULT: ● Pass ☒ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
240831	Phase 1	[redacted]	07-6396	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-MECH-21**
Duct Leakage Test – Existing Duct System		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-6396
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Allowed leakage choose one

◉ Cooling system method:

Nominal capacity of condenser in Tons 2.5 x 400 = CFM

51 x 21.7 x 0.15 = 166.005 (1106.1) / 1000

Select one compliance method from the following four choices.

◉ 1. Measured leakage less than 15% of fan flow

1 **Option 1** used then:
Allowed leakage = Fan Airflow x 0.15 = CFM = 150
Actual Leakage = [redacted] CFM
134
RATER = 77
Pass if Actual Leakage is less than Allowed leakage

2 **Option 2** used then:
Allowed leakage = Fan Airflow x 0.10 = CFM
Actual Leakage to outside = CFM
Pass if Actual leakage to outside is less than Allowed leakage

3 **Option 3** used then:
Initial leakage prior to start of work = CFM
Final leakage after sealing all accessible leaks using smoke test = CFM
Initial leakage - Final leakage = Leakage reduction CFM
((Leakage reduction / Initial leakage) x 100) = **% Reduction.**
Pass if % Reduction > 60%

4 **Option 4** used then:
All accessible leaks repaired using smoke test. HERS rater must verify (No Sampling).
Pass if all accessible leaks have been repaired using smoke ○ **PASS** ○ **FAIL**

○ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

○ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

○ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

○ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

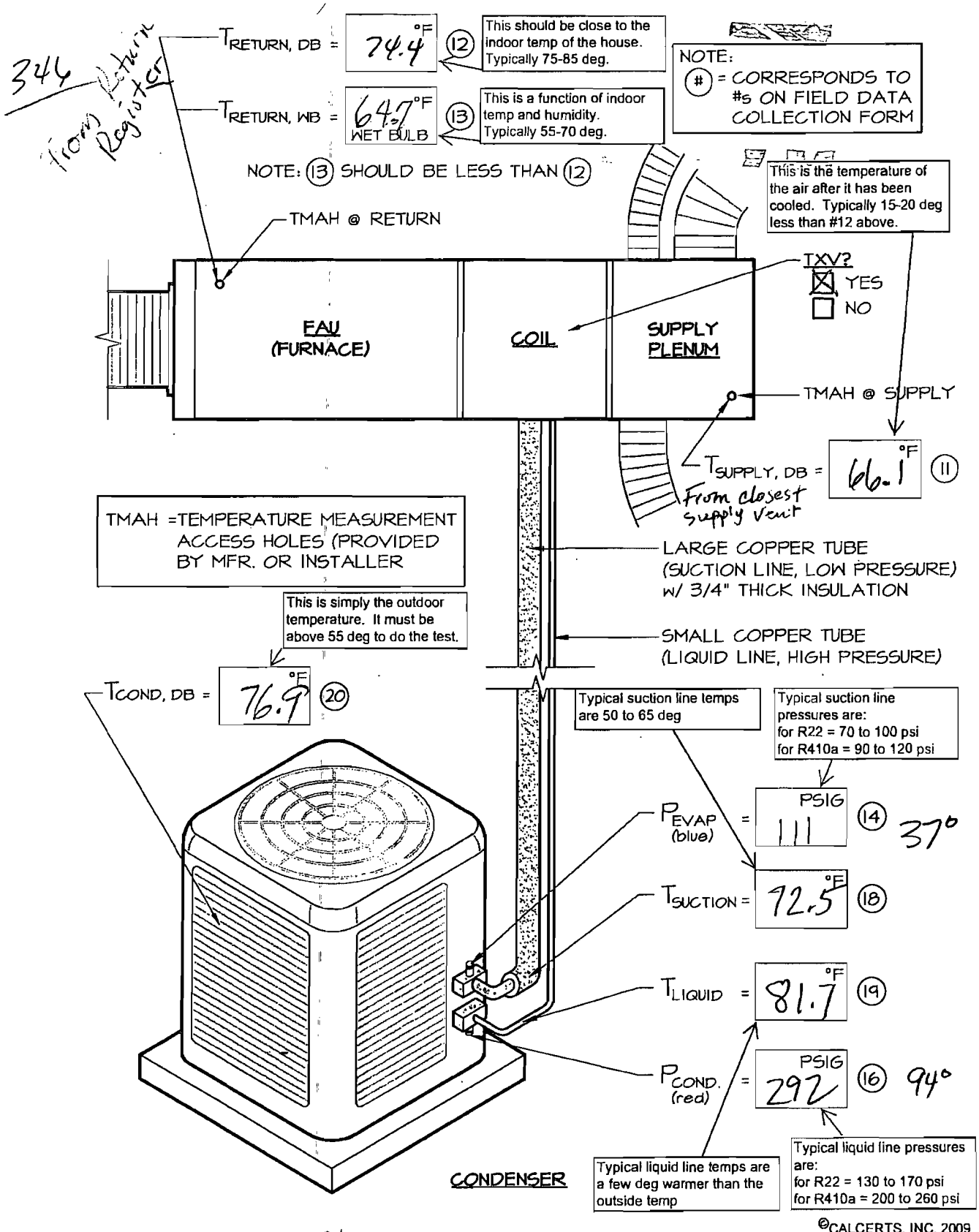
Heating System Method: 51 ,000 Output Capacity in Thousands of Btu/hr

Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here 1010 CFM

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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No TMAH

Airflow = 1070

PATRICK DAVIS

Simplified Prescriptive Certificate of Compliance: 2008 *Residential HVAC Alterations* **CF-1R-ALT-HVAC**

Climate Zones 10 - 15

Site Address:	**Enforcement Agency:**	**Date:**	**Permit #:**
[redacted], CA [redacted]	City of Stockton	Aug 3, 2011	

Equipment Type[1]	List Minimum Efficiency[2]		Duct insulation requirement	Conditioned Floor Area	Thermostat
☐ Package Unit ☑ Furnace ☐ Indoor Coil ☑ Condensing Unit ☑ Other > 40' Ducts	☑ AFUE 78% ☑ SEER 13.0 ☐ EER _____	☐ COP _____ ☐ HSPF _____ ☐ Resistance	☐ R 6 *(CZ 10-13)* ☐ R 8 *(CZ 14-15)*	Served by system 1400 sf	☑ Setback *If not already present, must be installed)*

*1. **Equipment Type:** Choose the equipment being installed; if more than one system, use another CF-1R-ALT-HVAC for each system.*
*2. **Minimum Equipment Efficiencies:** 13 SEER, 78% AFUE, 7.7HSPF for typical residential systems.*

HERS VERIFICATION SUMMARY Listed below are FOUR HVAC alteration Options. The installer decides what work is being done and picks one of the appropriate Options. Each Option lists the HERS measures that must be conducted. A copy of the forms shall be left on site for final inspection and a copy given to the homeowner. At final, the inspector verifies that the work listed on this form was in fact the work completed by the installer. The inspector also verifies that each appropriate CF-6R and registered CF-4R forms (no hand filled CF-4Rs allowed) are filled out and signed.**Beginning October 1, 2010, a registered copy of the CF-1R and CF-6R shall also be on site for final inspection.**

☑ **1. HVAC Changeout**	**Required Forms:**
• All HVAC Equipment replaced	CF-6R forms: MECH-04, MECH-21-HERS and (for split systems) MECH-25-HERS CF-4R forms: MECH-21 and (for split systems) MECH-25
• Condenser Coil and /or • Indoor Coil and /or • Furnace	CF-6R forms: MECH-04, MECH-21-HERS and (for split systems) MECH-25-HERS CF-4R forms: MECH-21 and (for split systems) MECH-25

For Split Systems: Duct leakage < 15 percent; RC, CCA ≤ 300 CFM/ton (Minimum Air Flow Requirement), TMAH
~~**For Packaged Units: Duct leakage < 15 percent**~~
Exempted from duct leakage testing if:
- ☐ 1. Duct system was documented to have been previously sealed and confirmed through HERS verification, or
- ☐ 2. Duct systems with less than 40 linear feet in unconditioned space, or
- ☐ 3. Existing duct systems are constructed, insulated or sealed with asbestos
- ☐ 4. The system will not be Ducted (Ie. Ductless Mini-Split System) (Also Exempt from Refrigerant Charge)

☐ **2. New HVAC System**	**Required Forms:**
• Cut in or Changeout with new ducts: (all new ducting and all new equipment)	CF-6R forms: MECH-04, MECH-20-HERS, and (for split systems) MECH-22-HERS, and MECH-25-HERS CF-4R forms: MECH 20, and (for split systems) MECH-22, and MECH 25

For Split Systems: Duct leakage < 6 percent; RC, CCA ≥ 350 CFM/ton, FWD, TMAH, STMS, and either HSPP or PSPP.
For Packaged Units: Duct leakage < 6 percent

☐ **3. New Ducts with/or without Replacement**	**Required Forms:**
• Includes replacing or installing **all** new ducting and/or outdoor condensing unit and/or indoor coil and/or furnace. No or some equipment changed.	CF-6R forms: MECH-04, MECH-20-HERS, and (for split systems) MECH-25-HERS CF-4R forms: MECH-20 and (for split systems) MECH-25

For Split Systems: Duct leakage < 6 percent; RC, CCA ≥ 300 CFM/ton, TMAH
For Packaged Units: Duct leakage < 6 percent

☑ **4. New Ducting over 40 feet**	**Required Forms:**
• Includes adding or replacing more than 40 linear feet of duct in unconditioned space.	CF-6R forms: MECH-04, MECH-21-HERS CF-4R forms: MECH-21

For split system or packaged units: Duct leakage < 15 percent
☐ EXCEPTION: Existing duct systems constructed, insulated or sealed with asbestos.

Contractor (Documentation Author's /Responsible Designer's Declaration Statement)
- I certify that this Certificate of Compliance documentation is accurate and complete.
- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the design identified on this Certificate of Compliance.
- I certify that the energy features and performance specifications for the design identified on this Certificate of Compliance conform to the requirements of Title 24, Parts 1 and 6 of the California Code of Regulations.
- The design features identified on this Certificate of Compliance are consistent with the information documented on other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with the permit application.

Name: Chuck Barr	Signature: Chuck Barr	
Company: KENYON & SONS HEATING & AIR CONDITIONING		Date: Aug 3, 2011
Address: 5624 FRONTIER WAY		License: 292946
City/State/Zip: SACRAMENTO / CA / 95608		Phone: (916) 338-5757

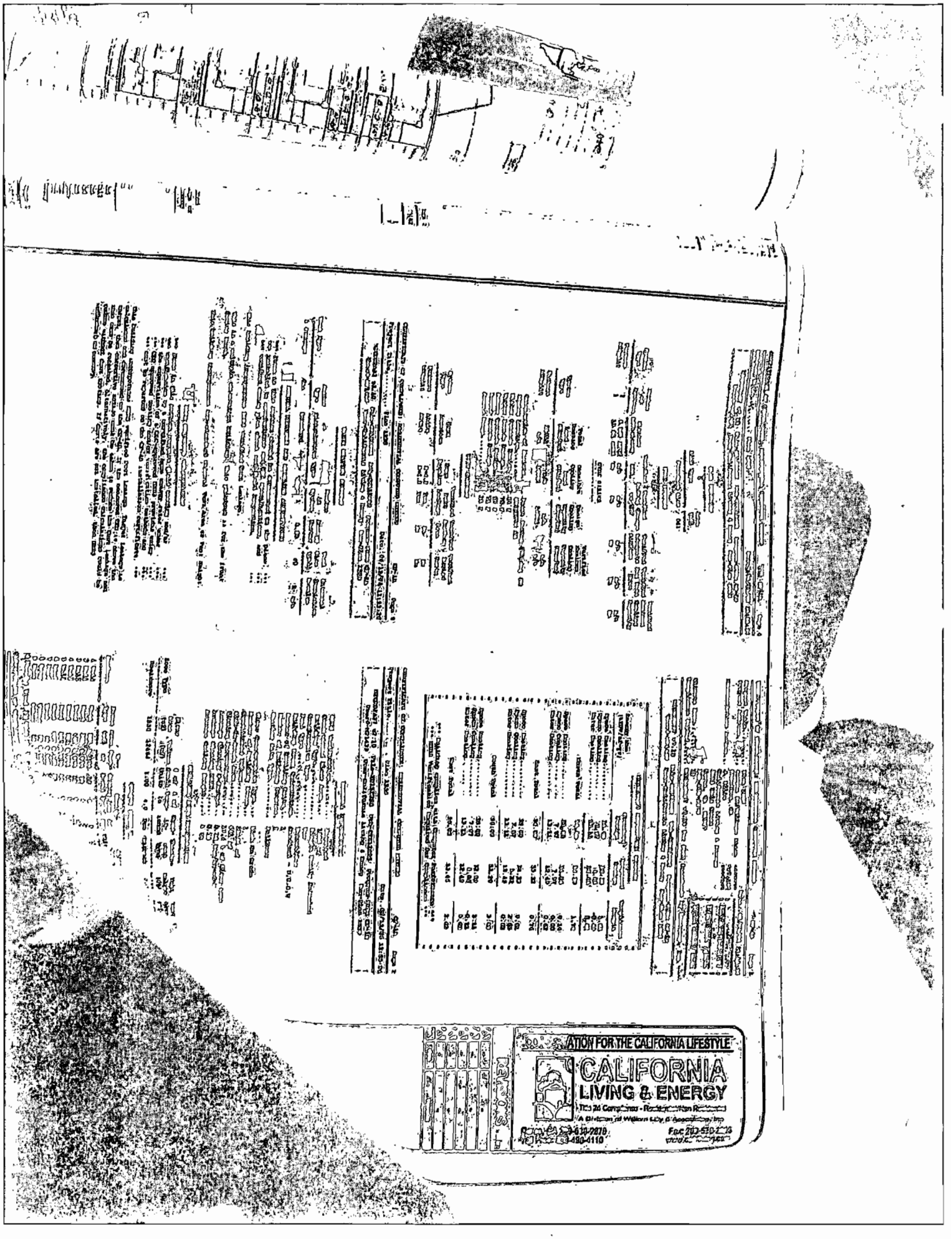
ATION FOR THE CALIFORNIA LIFESTYLE
CALIFORNIA
LIVING & ENERGY

EXHIBIT 4

[redacted]

Mark Wiese Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/28/2011 / 15:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Day & Night **Model:** N4A330AKC200 **# of Vents:** 11 **# of Returns:** 1 **SEER:**
F.A.U. Make:	Day & Night **Model:** G8MXL0701716A **AFUE:** .81 **HSPF:** **Output BTU:** 51,000 **Location:** Attic
Coil Make:	Aspen **Model:** ACE36C34175L087 **EER:**

Coil Number: A11-00001225 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: Ductwork looks new, why 15% leakage?
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798581415	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr
CF-6R-MECH-RCA-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (240833)	TESTED (Davis, Patrick)	TESTED (Davis, Patrick)

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CalCERTS, Inc.

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

DL, Pass 70 cfm; QA, Pass, 102 cfm.
RCA, TMAH Yes, TS 2.1, SC 3, SH 15, All Pass; QA, No TMAH Fail, TS 6.5 Fail (Flow Hood, 1080 cfm Pass), SC 2.3 Pass, SH 27.3 Fail.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]	
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CalCERTS, Inc.

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31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) If those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons 2.5 x 400 = 1000 CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow 1000 x 0.15 = 150 CFM Actual Leakage = 70 CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ____ x 0.10 = ____ CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = ____% Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581415**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **8/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **2.5** x 400 = **1000** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **102** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1000** x 0.10 = **100** CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = **____%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Additional QA Questions:

Heating System Method: 21.7 X **51,000** Output Capacity in Thousands of Btu/hr = **1106.7** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1080** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581415**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** [redacted] 07-3690

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**		
System Location or Area Served			**Whole House**		
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.		
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.		
Yes to 1 and 2 is a pass.			Enter Pass or Fail	✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**		
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.		
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil		
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.		
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail			✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**		
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.		
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil		
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.		
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail			✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 2 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Stockton	07-3690

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112413763**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**N4A330**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**8/8/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**48**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**71**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**53**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**40**			
Condensor saturation temperature ($T_{condensor, sat}$)	**94**			
Suction line temperature ($T_{suction}$)	**55**			
Liquid Line Temperature (T_{liquid})	**81**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** [redacted] 07-3690

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**23.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.9**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.1**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**13.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**15.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581415**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **8/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Additional QA Questions:

Ambiant Temperature: **73°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112413763**			
Outdoor Unit Make	**Night & Day**			
Outdoor Unit Model	**N4A330AKC200**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**10/28/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**58.9**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**71.7**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**58.7**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**40.0**			
Condensor saturation temperature ($T_{condensor, sat}$)	**89.0**			
Suction line temperature ($T_{suction}$)	**67.3**			
Liquid Line Temperature (T_{liquid})	**76.7**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**73.1**			

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**12.80**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**19.3**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-6.5**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**12.3**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**2.3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**27.3**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3 to 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3690

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

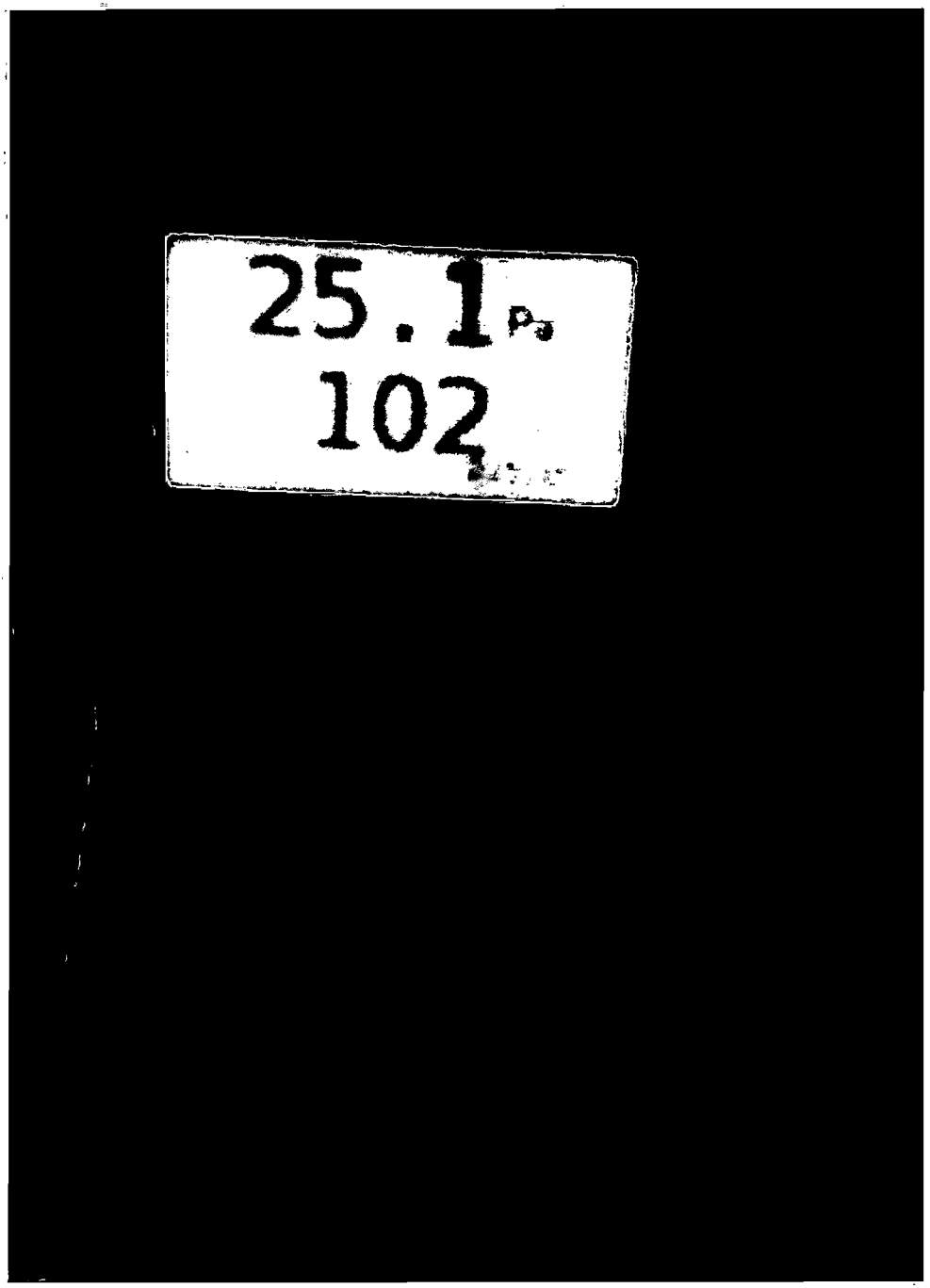
System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581415**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	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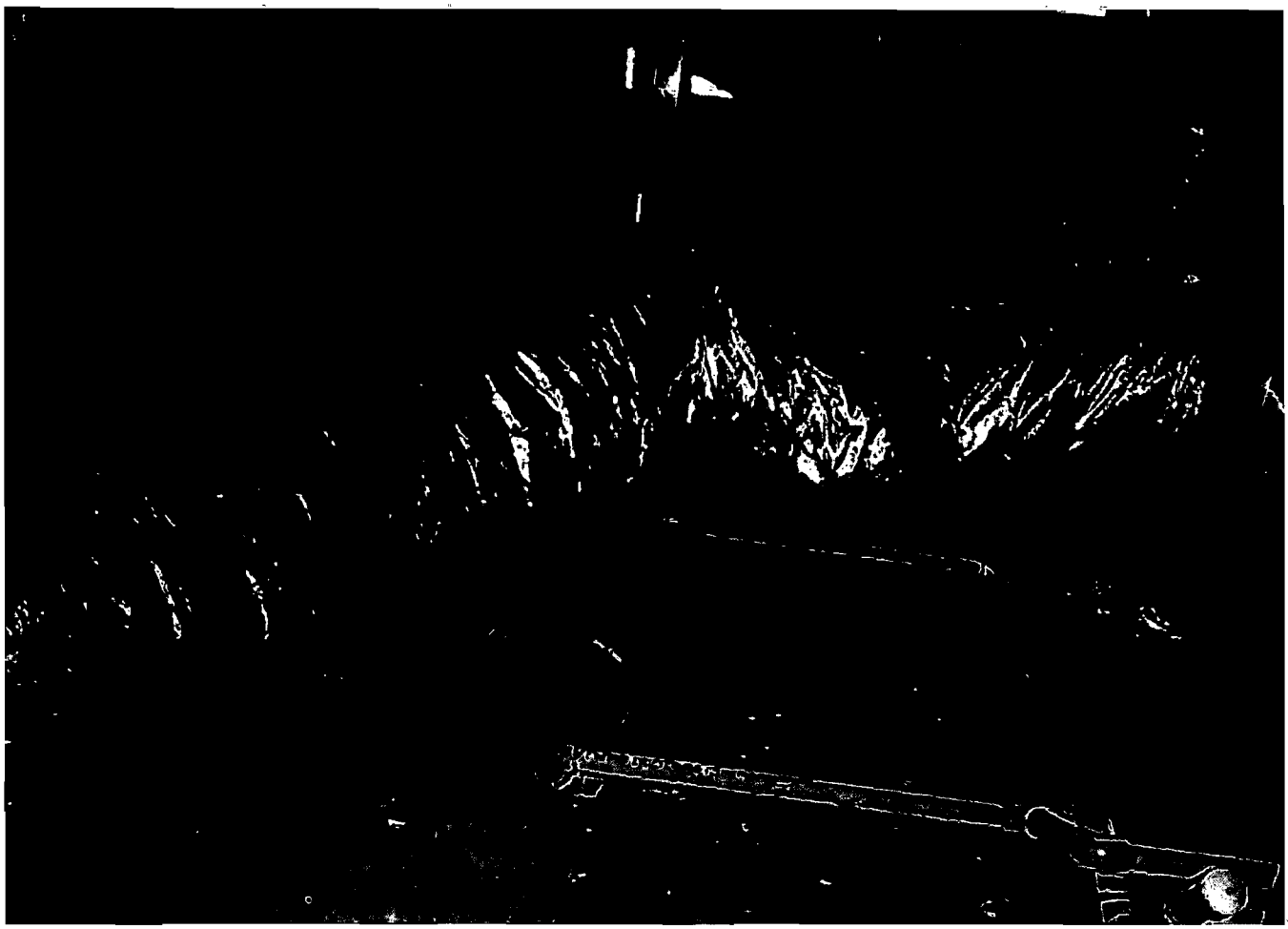
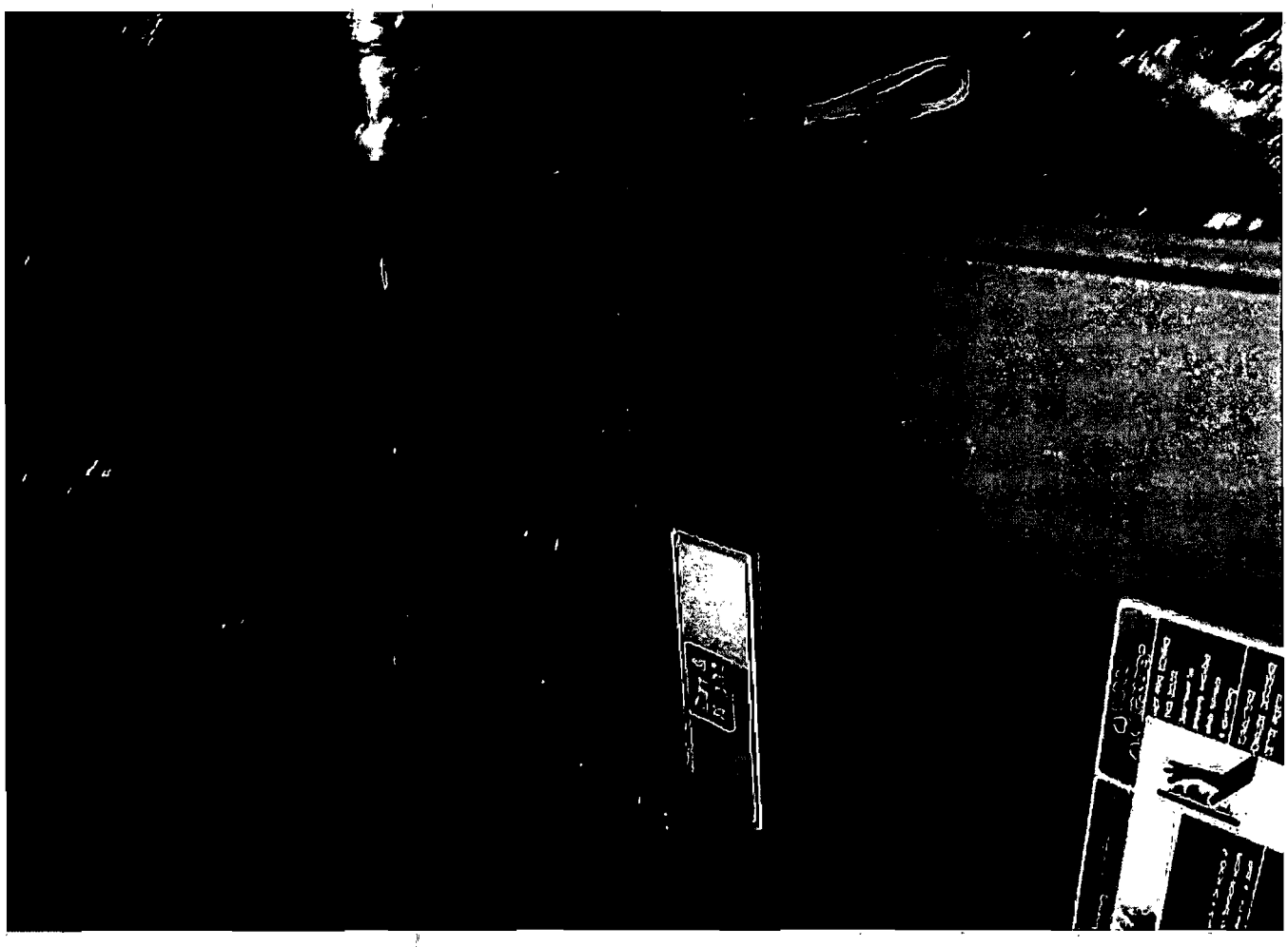
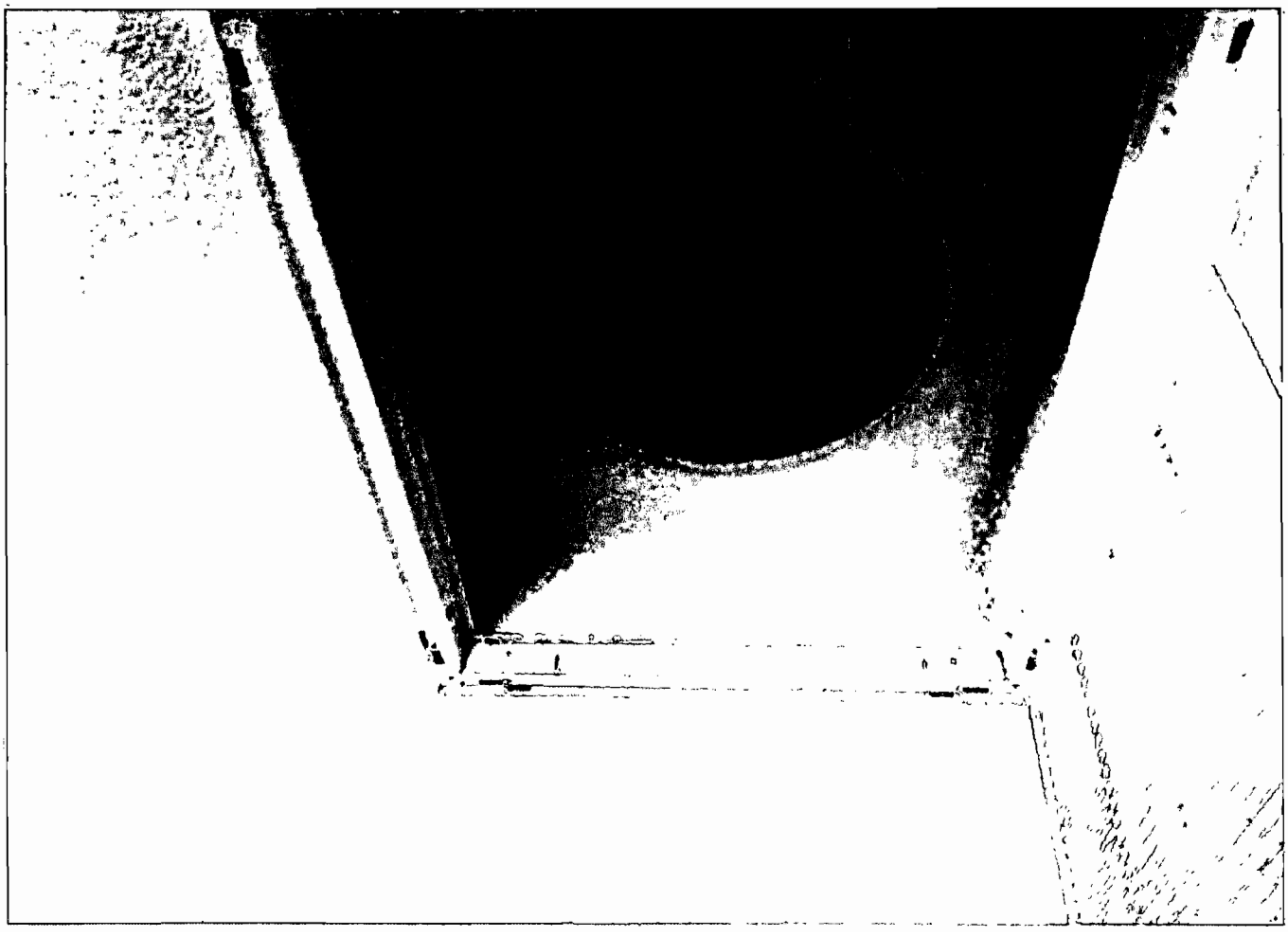
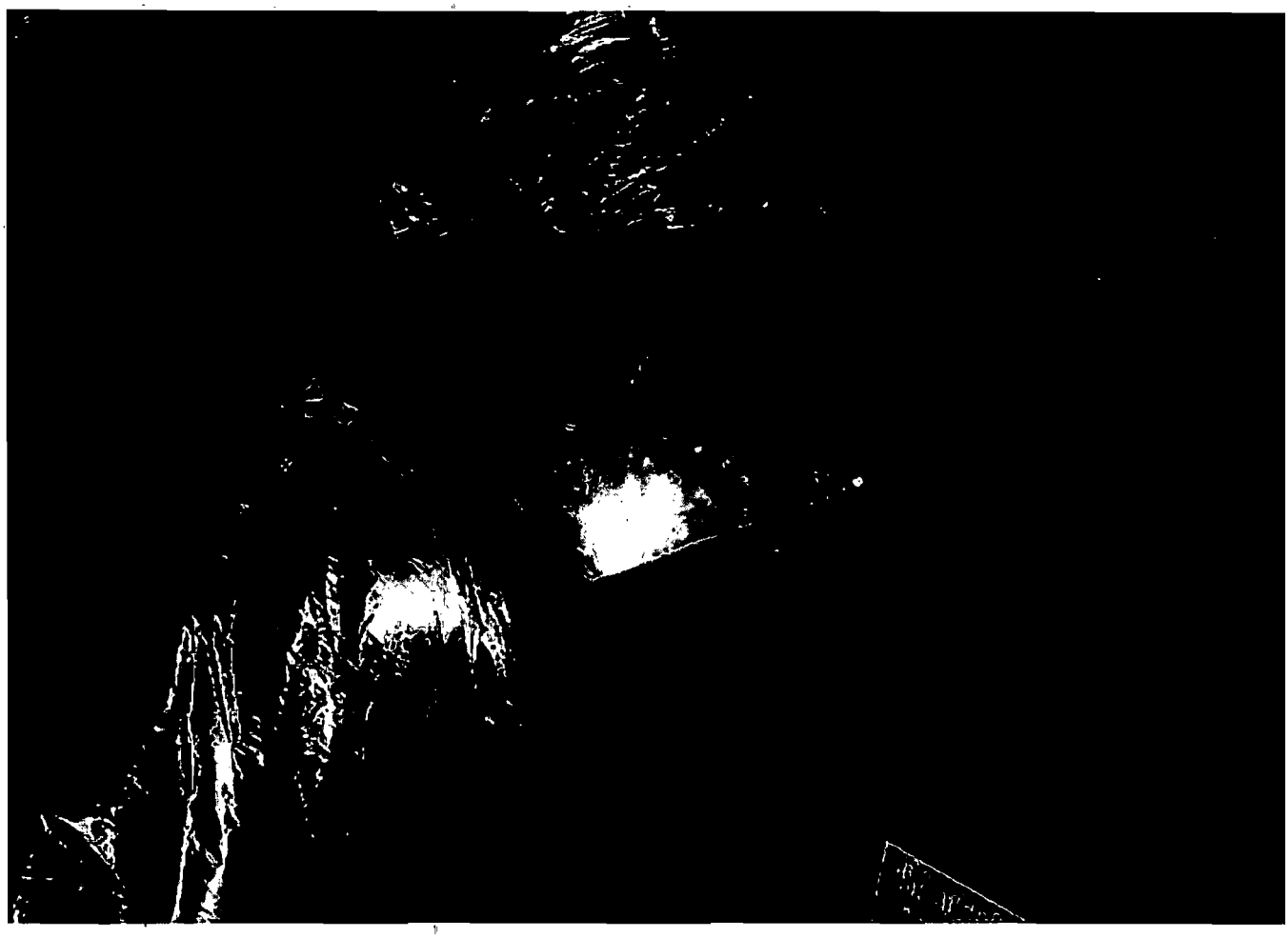
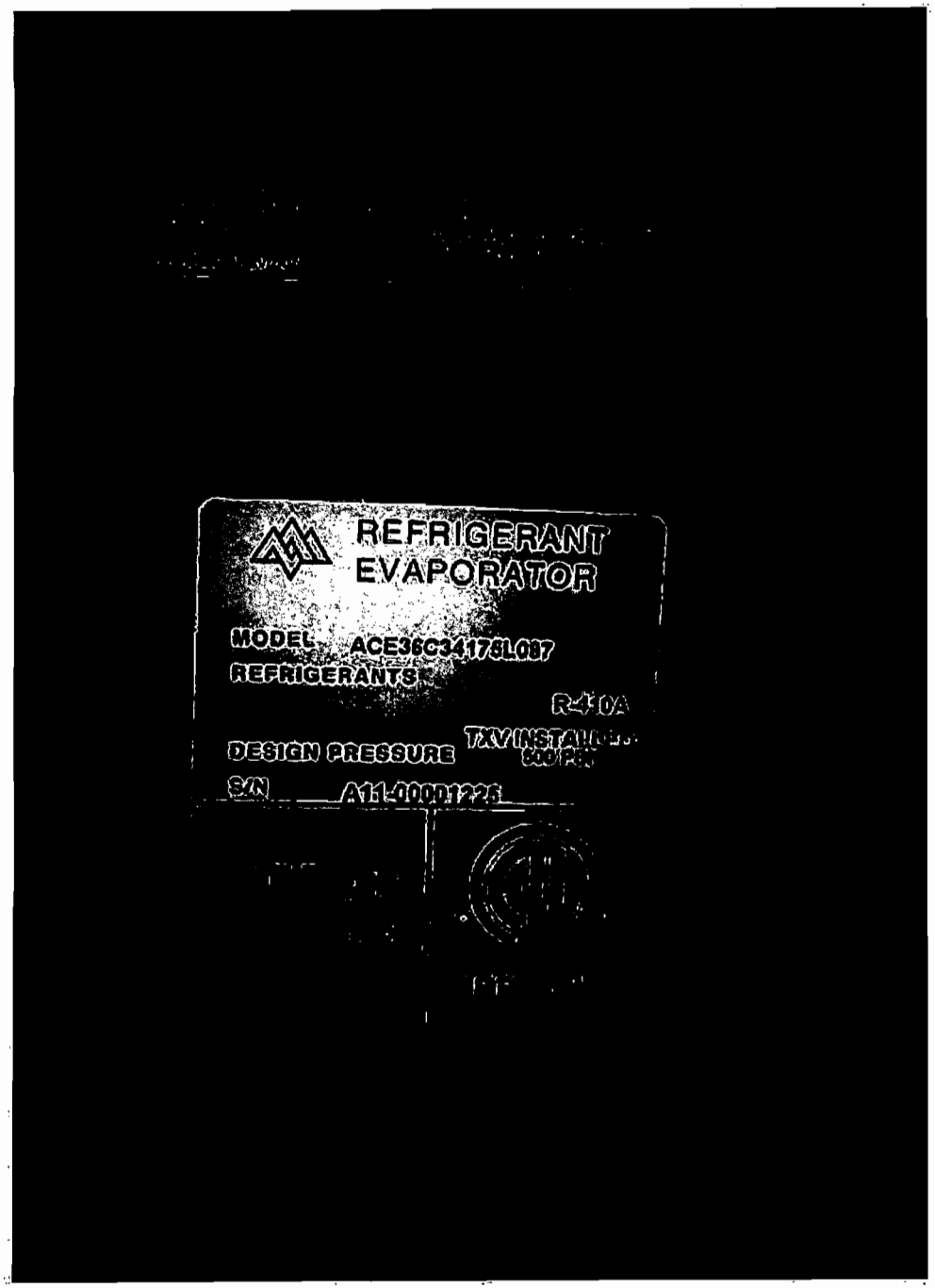
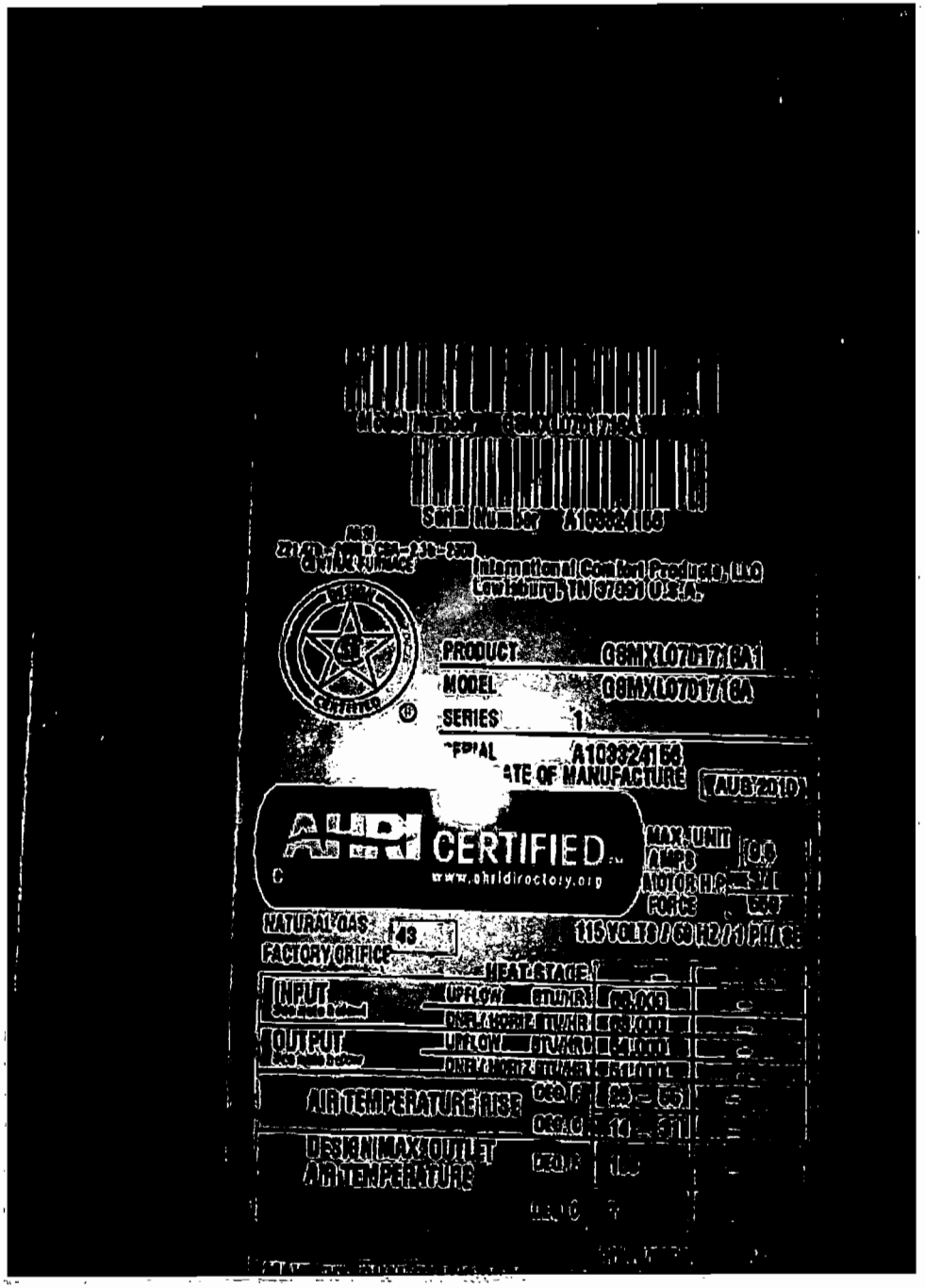


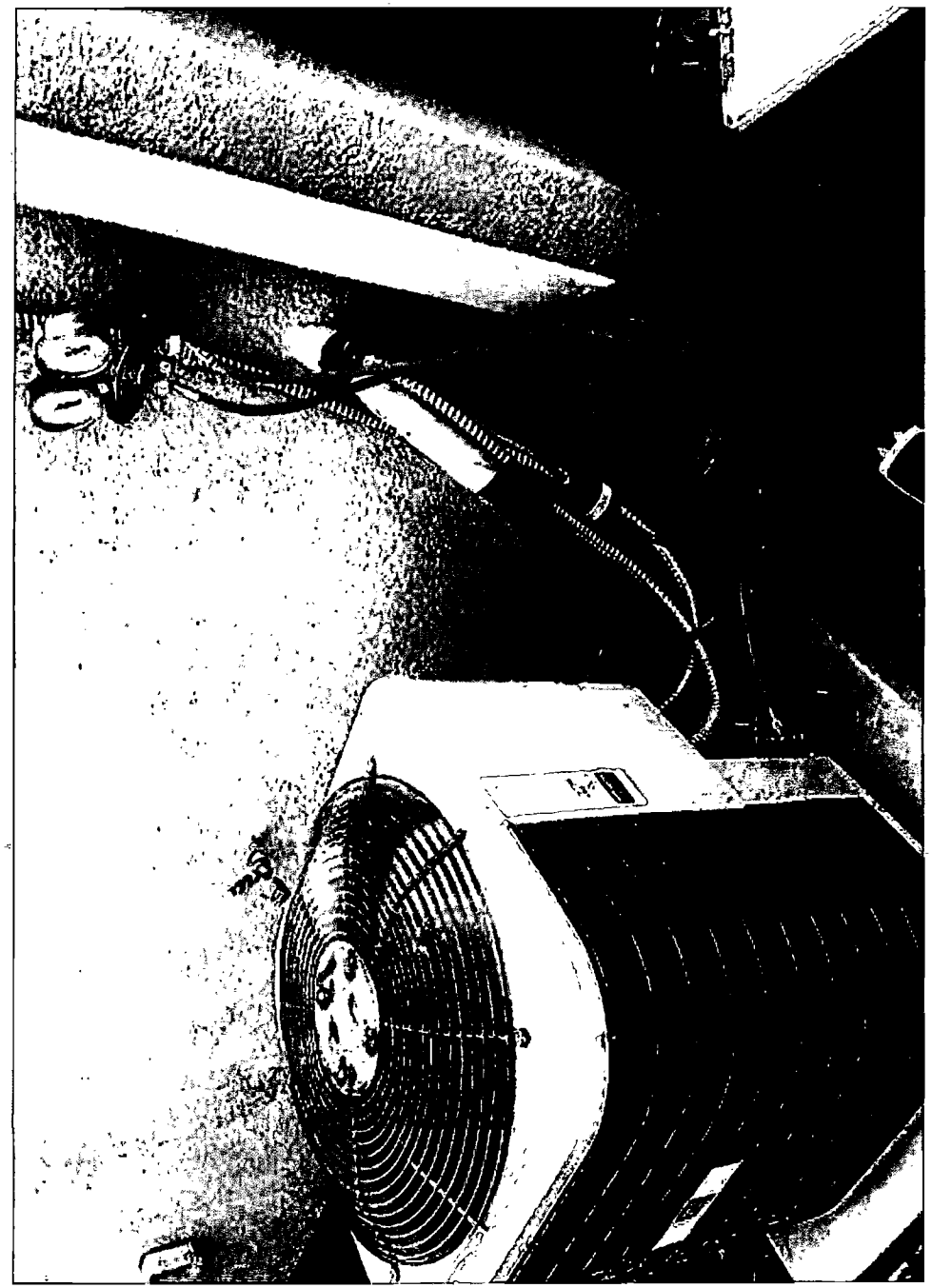


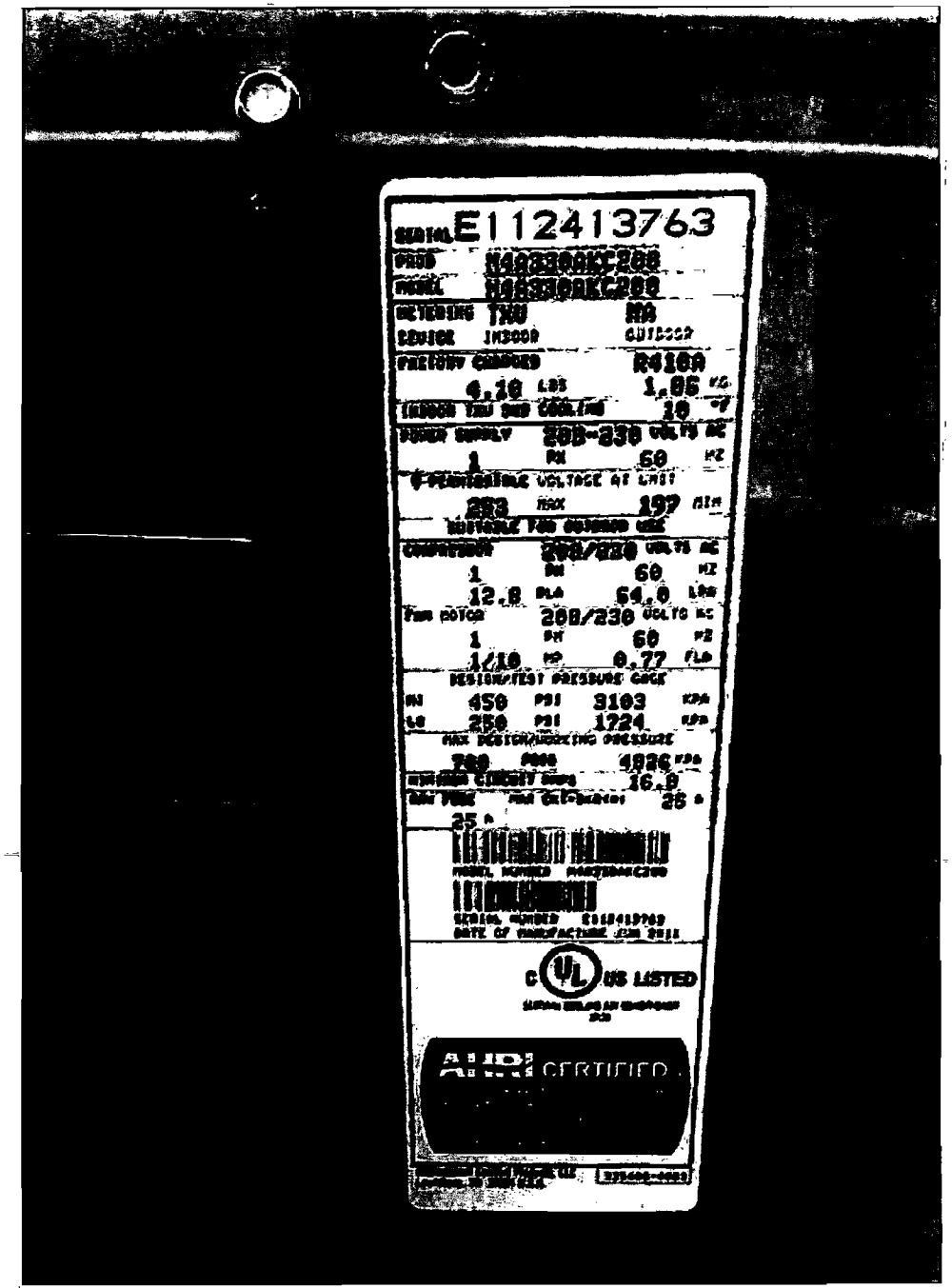





REFRIGERANT
EVAPORATOR
MODEL ACE36C3417SL087
REFRIGERANTS
R-410A
TXV INSTALL
DESIGN PRESSURE
S/N A11-00001226


PRODUCT
MODEL
SERIES
AUG 2010
AHRI CERTIFIED
www.ahridirectory.org
MAX UNIT
NATURAL GAS
FACTORY ORIFICE
HEAT STAGE
INPUT
OUTPUT
AIR TEMPERATURE RISE
DESIGN MAX OUTLET AIR TEMPERATURE




SERIAL E112413763
PROD
MODEL
METERING TXV
DEVICE INDOOR
FACTORY CHARGED R410A
4.10 LBS 1.86 KG
POWER SUPPLY 208-230 VOLTS AC
1 PH 60 HZ
VOLTAGE AT UNIT
MAX 197 MIN
COMPRESSOR 208/230 VOLTS AC
1 PH 60 HZ
12.8 RLA 64.0 LRA
FAN MOTOR 208/230 VOLTS AC
1 PH 60 HZ
1/10 HP 0.77 FLA
DESIGN/TEST PRESSURE GAGE
HI 450 PSI 3103 KPA
LO 250 PSI 1724 KPA
MAX DESIGN/WORKING PRESSURE
700 PSIG 4826 KPA
16.8
25 A
25 A
MODEL NUMBER
SERIAL NUMBER
DATE OF MANUFACTURE
US LISTED
AHRI CERTIFIED

QA ALT Rater Patrick Davis

QA Data Collection Form:

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/28 / 3PM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] # of Floors:* 2

RESULTS FOR SYSTEM 1

UP = 6
Down = 5

Type of System Split

Is the unit a HEAT ONLY unit? No

Condenser Make:* DAY & NIGHT Model:* N4A4330ARC200 # of Vents:* 11 # of Returns:* 1

SEER: ~~13~~ 13 S/N E112413763

F.A.U. Make:* DAY & NIGHT Model:* G8MXL070171 16A AFUE: .80 HSPF: Output

BTU:* 51,000 Location: Attic S/N A103324152

Coil Make:* ASPEN Model:* ACE36C3417 5L087 EER:

Coil Number:* All-00001225 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

DL, 102 CFM @ 25Pa

CCAF = 1080

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Folsom, CA 95630
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Fax: 916-985-3402
Contact Us

Subcool = 10

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: [redacted] CA

NO TMAH

From Return Register

$T_{RETURN, DB}$ = 71.7 °F (12)

This should be close to the indoor temp of the house. Typically 75-85 deg.

$T_{RETURN, WB}$ = 58.7 °F WET BULB (13)

This is a function of indoor temp and humidity. Typically 55-70 deg.

NOTE: (13) SHOULD BE LESS THAN (12)

NOTE: (#) = CORRESPONDS TO #s ON FIELD DATA COLLECTION FORM

TMAH @ RETURN

This is the temperature of the air after it has been cooled. Typically 15-20 deg less than #12 above.

TXV?
- [x] YES
- [ ] NO

FAU (FURNACE)

COIL

SUPPLY PLENUM

TMAH @ SUPPLY

$T_{SUPPLY, DB}$ = 58.9 °F (11)

TMAH =TEMPERATURE MEASUREMENT ACCESS HOLES (PROVIDED BY MFR. OR INSTALLER

LARGE COPPER TUBE (SUCTION LINE, LOW PRESSURE) W/ 3/4" THICK INSULATION

SMALL COPPER TUBE (LIQUID LINE, HIGH PRESSURE)

This is simply the outdoor temperature. It must be above 55 deg to do the test.

$T_{COND, DB}$ = 73.1 °F (20)

Typical suction line temps are 50 to 65 deg

Typical suction line pressures are:
for R22 = 70 to 100 psi
for R410a = 90 to 120 psi

P_{EVAP} (blue) = 118 PSIG (14) 40°

$T_{SUCTION}$ = 67.3 °F (18)

T_{LIQUID} = 76.7 °F (19)

$P_{COND.}$ (red) = 270 PSIG (16) 89°

Typical liquid line temps are a few deg warmer than the outside temp

Typical liquid line pressures are:
for R22 = 130 to 170 psi
for R410a = 200 to 260 psi

CONDENSER

©CALOPTIMA

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db} - T_{supply,db}$	Line 12 - Line 11	71.7 − 58.9 = 12.8		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	19.3	Rater Pass	
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	6.5	2.1	
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	FAIL		
	Note: Temperature Split Method Calculation Is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified In Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300 × 2.5	750 CFM		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1080		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	PASS		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	89 -76.7 12.3		
(37)	Target Subcooling specified by manufacturer	From Condenser	10		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	2.3		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	PASS		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	Line 18 - Line 15	67.3 -40 = 27.3		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3 TO 26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	FAIL		

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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser		NO TMAH	
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes		
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram	58.9		
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	71.7		
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram	58.7		
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	118		
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS	40.0		
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	270		
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS	89.0		
18	Suction line temperature ($T_{suction}$)	See Diagram	67.3		
19	Liquid line temperature (T_{liquid})	See Diagram	96.7		
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram	73.1		

EXHIBIT 6

Mark Wiese Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 12/08/2011 / 12:30
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: Granite Bay, CA 95746 **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Package
Is the unit a HEAT ONLY unit? NO

Condenser Make:	PAYNE **Model:** PY3GNAA36090NA **# of Vents:** 6 **# of Returns:** 2 **SEER:** 13
F.A.U. Make:	PAYNE **Model:** PY3GNAA36090NA **AFUE:** .793 **HSPF:** **Output BTU:** 71370 **Location:** Crawl
Coil Make:	PAYNE **Model:** PY3GNAA36090NA **EER:**

Coil Number: PY3GNAA36090NA **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: There are two systems, an upstairs, which is not part of this QA, and the downstairs unit.

Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency

NO Photos

Registered CF-4R Data

***** ALERT *** ADMIN USE:** [UNTEST QA]

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Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798578499	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 453302 SIERRA PACIFIC HOME & COMFORT INC Mike Baker

Address	Duct Leakage Existing CF-4R-MECH-21
[redacted] (237917)	TESTED (Davis, Patrick)

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA[redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

DL, Target = 180 cfm, Rater recorded 280 cfm, QA recorded 374.5 cfm, both recorded as failed. Rater passed job on all accessible leaks sealed with smoke. QA failed as all accessible leaks were not sealed. Leakeage noted from supply boots, connections, and a hole in the ducting. There was clothed backed tape installed where the ducts attach the boots. I can not determine who installed or when, but the homeowner states that they did not do it and have never been under the house.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	QA FAILED	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: PHOTOS COLLECTED
[CLICK HERE] to view Photos.

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(877-437-7787)
Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Placer	**Permit Number:** 074042666.11

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☐ **1. Measured leakage less than 15% of fan flow**

☐ **2. Measured leakage to outside less than 10% of Fan Flow**

☐ **3. Reduce leakage by 60% and conduct smoke and fix all leaks**

☑ **4. Fix all accessible leaks using smoke and HERS rater verify**

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ **Cooling system method: Size of condenser in Tons** 3 x 400 = **1200** CFM

✓ ☐ **Heating system method: 21.7 x** ___ **Output Capacity in Thousands of Btu/hr** = ___ CFM

✓ ☐ **Measured system airflow using RA 3.3 airflow test procedures:** ___ CFM

1	**Option 1 used then:** **Allowed leakage** = Fan Flow **1200** x 0.15 = **180** CFM **Actual Leakage** = **280** CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
2	**Option 2 used then:** **Allowed leakage** = Fan Flow **1200** x 0.10 = **120** CFM **Actual Leakage to outside** = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3 used then:** **Initial leakage prior to start of work** = ___ CFM **Final leakage after sealing all accessible leaks using smoke test** = ___ CFM **Initial leakage** ___ - **Final leakage** ___ = **Leakage reduction** ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Placer	**Permit Number:** 074042666.11

☑ **Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.**

☑ **All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.**

☑ **New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.**

☑ **Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections**

CalCERTS, Inc.

DECLARATION STATEMENT

- **I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.**
- **I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).**
- **The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.**
- **The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.**

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798578499**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/1/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted], CA [redacted] (System 1)	**Enforcement Agency:** County of Placer	**Permit Number:** 074042666.11

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

1. Measured leakage less than 15% of fan flow
2. Measured leakage to outside less than 10% of Fan Flow
3. Reduce leakage by 60% and conduct smoke and fix all leaks
4. ✓ Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ✓ Cooling system method: Size of condenser in Tons **3** x 400 = **1200** CFM

✓ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1200** x 0.15 = **180** CFM Actual Leakage = **374.5** CFM **Pass if Leakage Actual is less than Allowed**	Pass	Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1200** x 0.10 = **120** CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	Pass	Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = **___%** Reduction **Pass if % Reduction > 60%**	Pass	Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	Pass	✓ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Placer	**Permit Number:** 074042666.11

Additional QA Questions:

Heating System Method: 21.7 X **72,000** Output Capacity in Thousands of Btu/hr = **1562.4** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **0** CFM

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

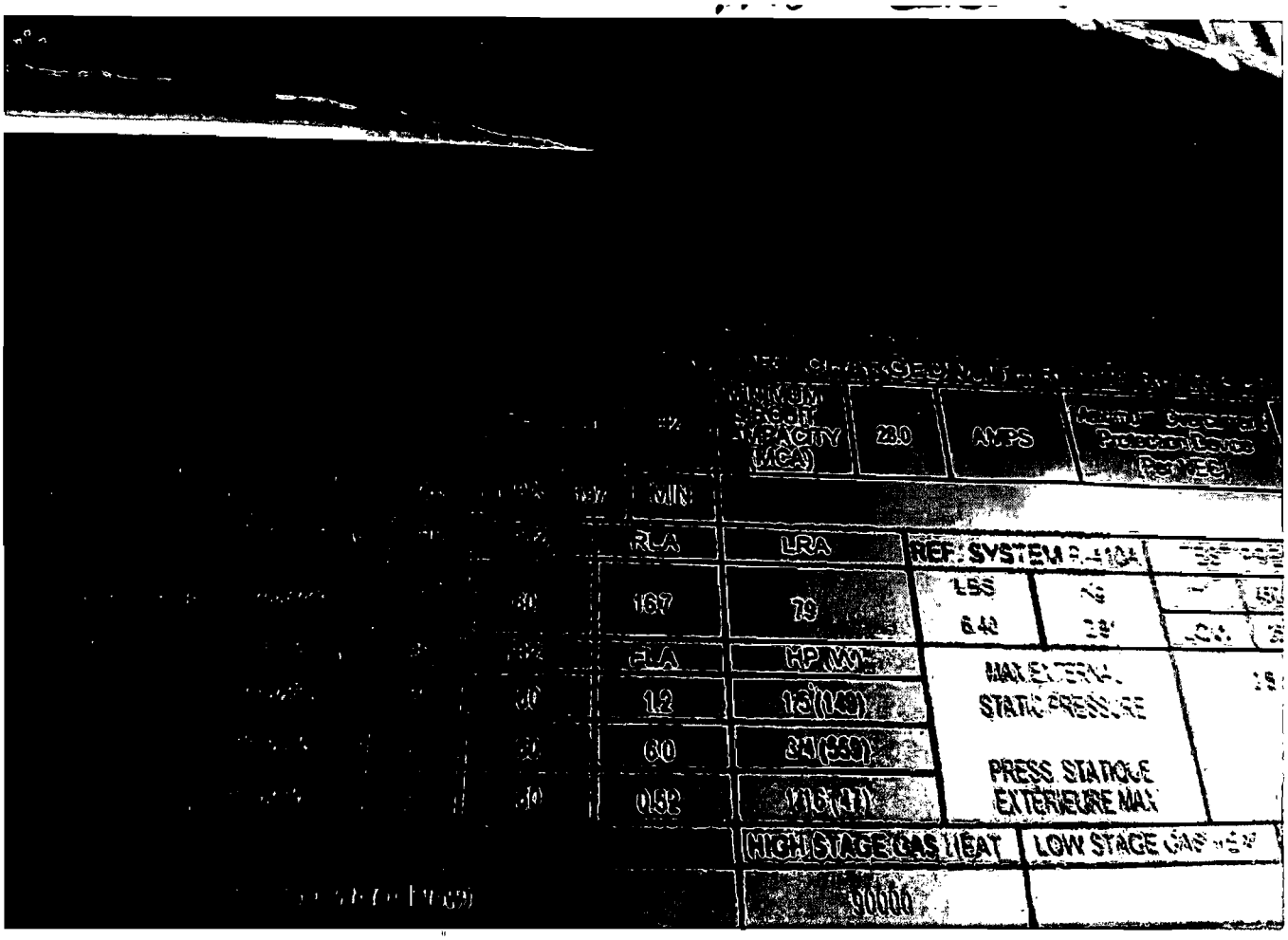
✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

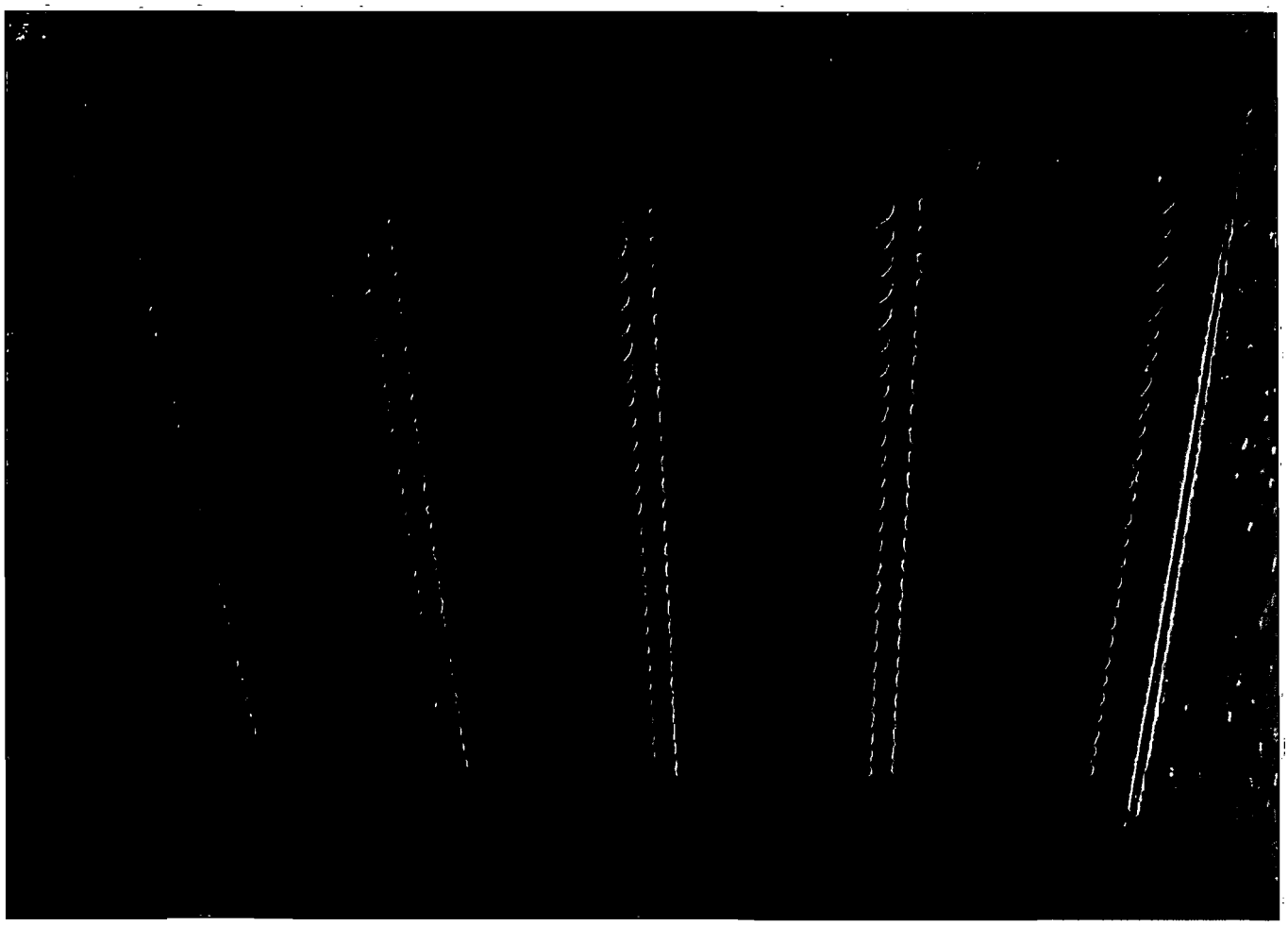
✔ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

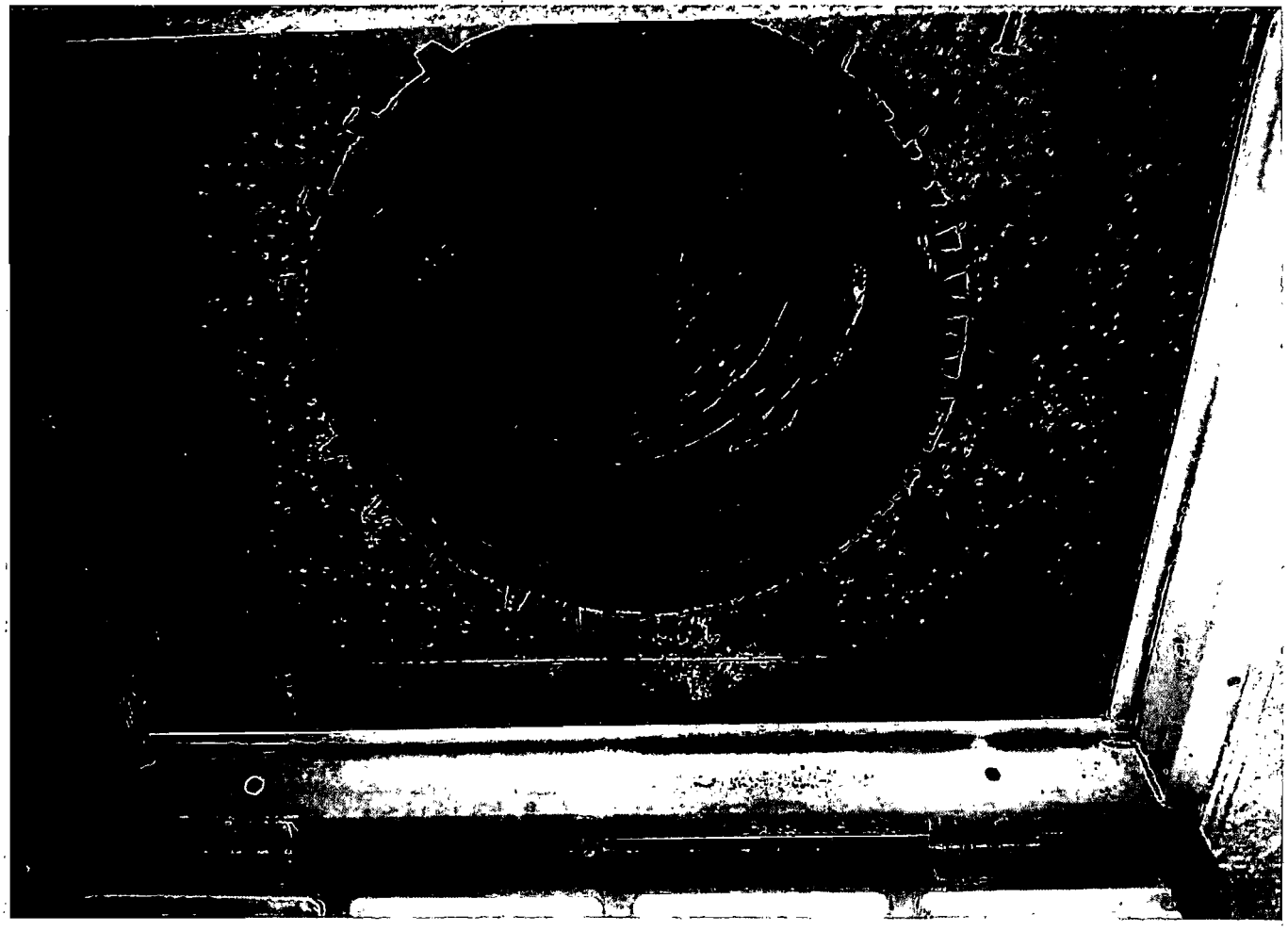
DECLARATION STATEMENT

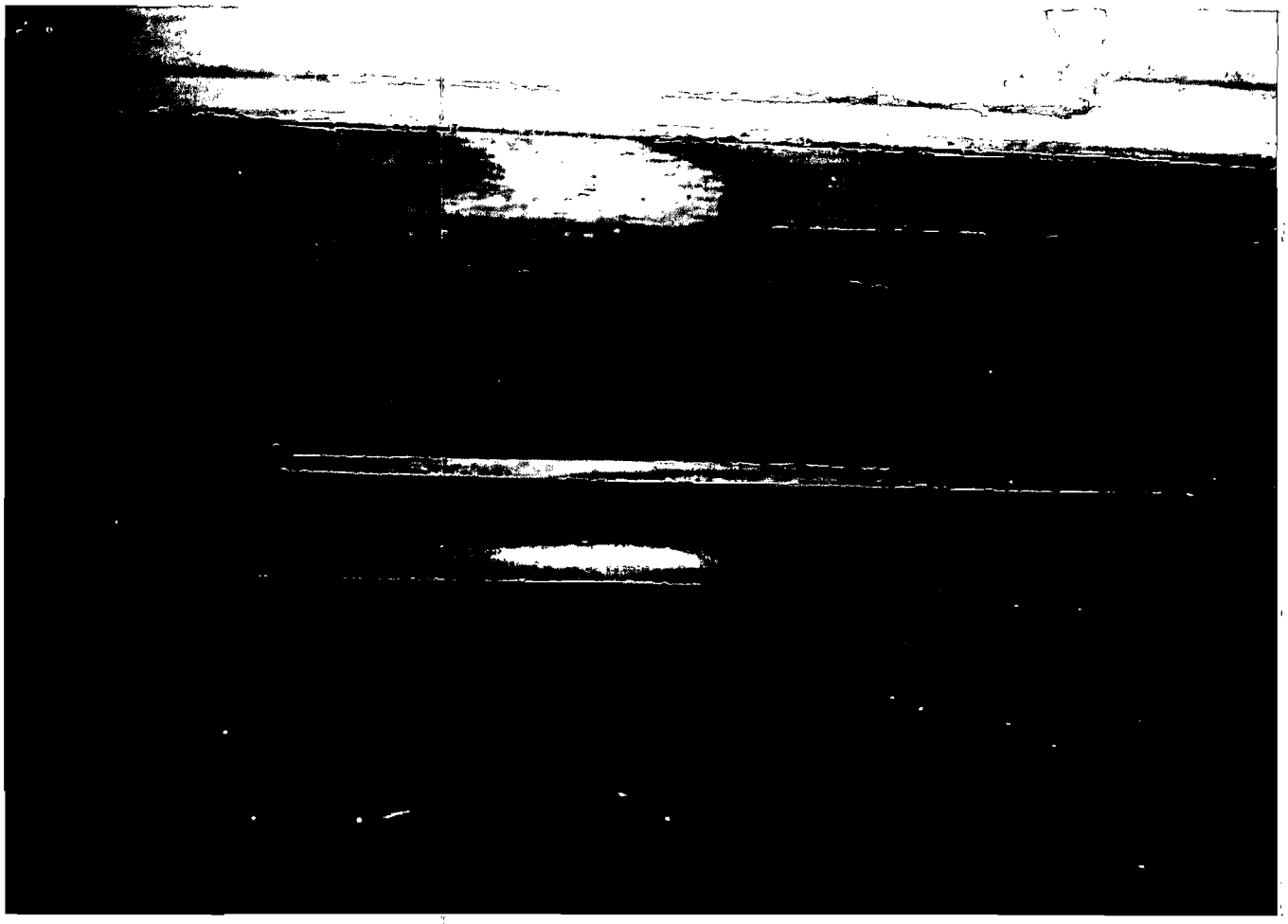
- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

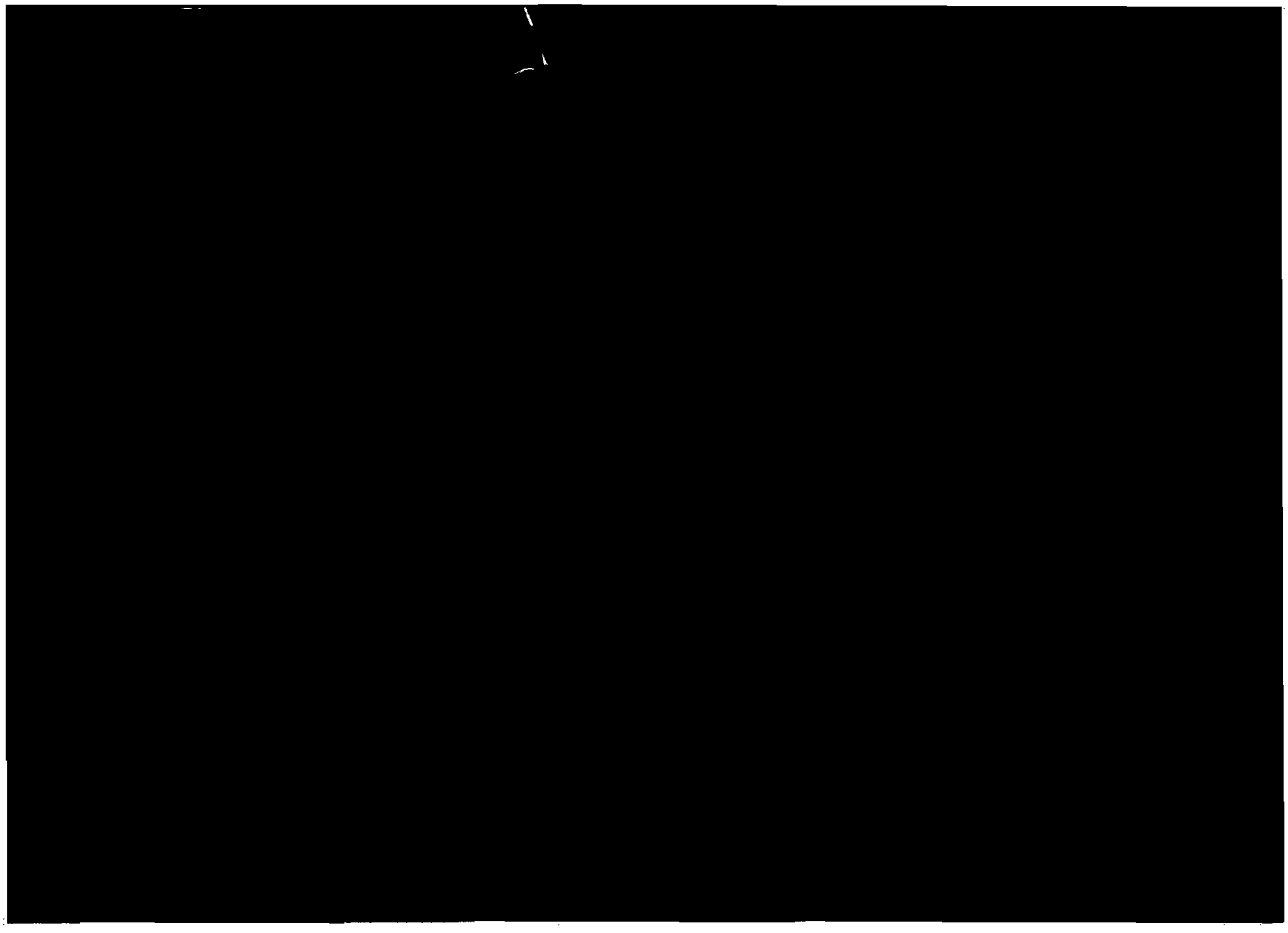
Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798578499**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **12/8/2011**	

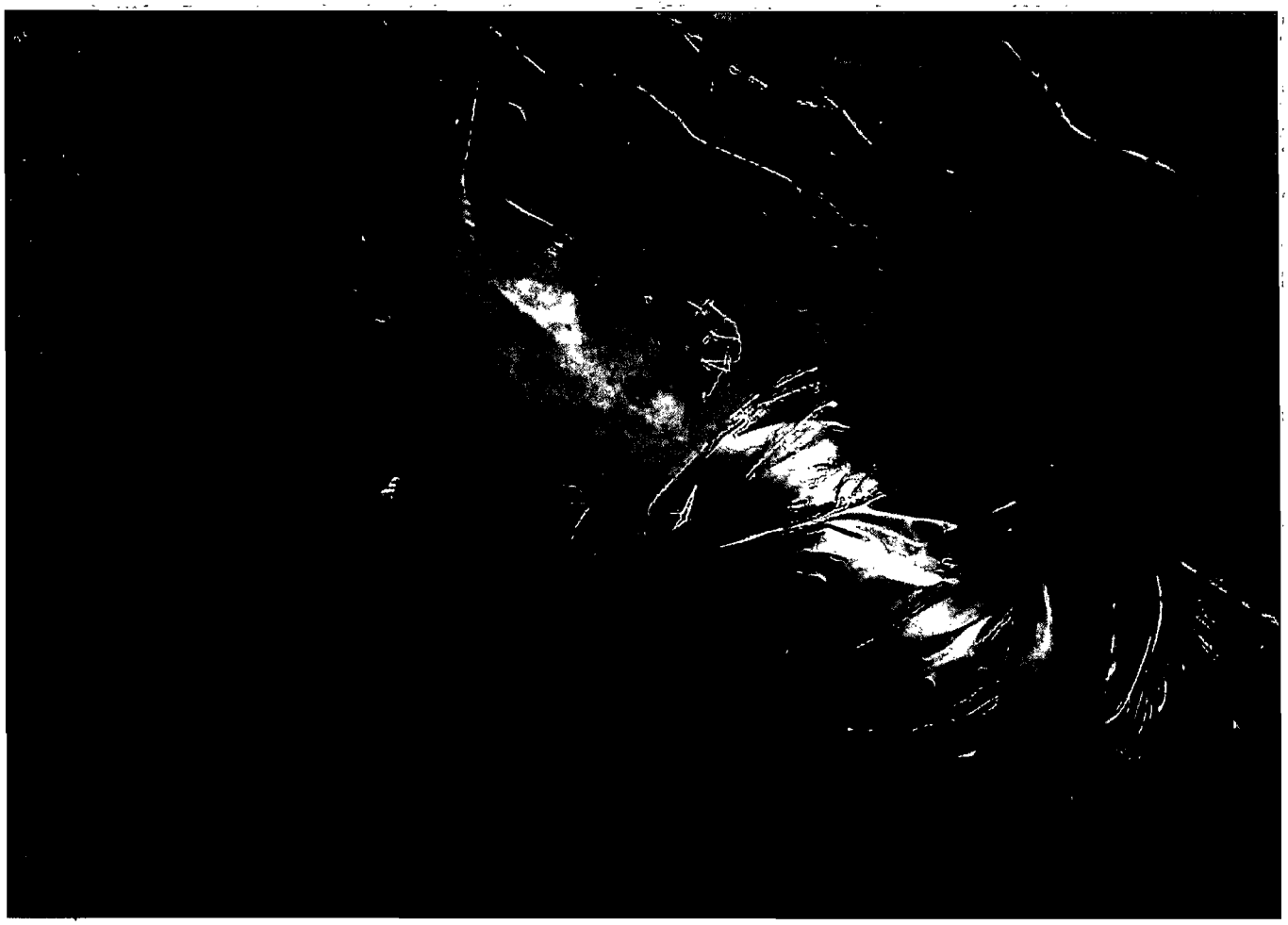

MINIMUM CIRCUIT AMPACITY (MCA)
28.0
AMPS
RLA
LRA
REF: SYSTEM
LBS
6.40
16.7
7.9
FLA
HP (W)
1.2
1.3 (149)
6.0
3.4 (559)
0.52
1.16 (47)
MAX EXTERNAL STATIC PRESSURE
PRESS. STATIQUE EXTÉRIEURE MAX
HIGH STAGE GAS HEAT
LOW STAGE GAS HEAT
90000











QA ALT TESTED

Rater: DAVIS

Tim O'Neil Logged In [Logout]

IMPORTANT NOTICE We will be doing scheduled maintenance on our server tonight. The entire CalCERTS website will be un...

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Data Collection Form: 7755 Capella Drive, Granite Bay, CA 95746

12/8/2017

STEP 1: Collect Information

Date / Time:* 12/8 / 11:30

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

RESULTS FOR SYSTEM 1

Type of System: ~~Split~~ Package M/N PY3GNAA360 90 NA S/N 1911C 205714

Is the unit a HEAT ONLY unit? No

Condenser Make:* Model:* # of Vents:* 7 # of Returns:* 2 SEER: 13.0

F.A.U. Make:* Payne Model:* AFUE: HSPF: 79.3 Output BTU:* INPUT 90,000 Location: Attic

Coil Make:* Model:* EER:

Coil Number:* Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Good — Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	NO — Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Down = 6 Supply 2 Ret

up = 1 Supply 2 Ret

Notes:

Mech?

RATER = 280, TARGET = 180 (3 TON) FAIL

PASS W/ SMOKE.

QA - 374.5 CFM @ 25PA

Original 2 x 400 12 ... 810 ... TAKE FIN OUT

Attic Investigation:* [Select from list]

LIV 2 | KIT 1 | FAM 2 | OFF 1 | Bath 1 = 7

12.5 / 6 = 180

NEXT

* Required Fields

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Toll Free: 877-HERS-RBR
(877-437-7787)
Fax: 916-985-3402
Contact Us

Checked w/ smoke, noted leakage from boots, connections and a hole in the Duct work.

EXHIBIT 7

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Project	Rating Company	Type	QA
052	[redacted] (Mariposa at Sunridge Park)	[redacted]	CA	[redacted]	CC-1798605200	See Below	Mariposa at Sunridge Park	Valley Duct Testing	New Construction SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-ENV-21-HERS	CSLB: 815286 Alcal Arcade Contracting Inc	Robert Becher
CF-6R-ENV-22-HERS	CSLB: 815286 Alcal Arcade Contracting Inc	Robert Becher
CF-6R-MECH-20-HERS	CSLB: 162634 Beutler Corporation	Christina Cochrane
CF-6R-MECH-23-HERS	CSLB: 162634 Beutler Corporation	Christina Cochrane

Address	Certificate Type	CF-4R-ENV-21 QII - Framing	CF-4R-ENV-22 QII - Insulation	CF-4R-MECH-20 Duct Leakage New	CF-4R-MECH-23 High EER
3994 Borderlands Drive	Compliance	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE

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Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

QII(F) not performed, not available, however, sq. footage of attic is entered incorrectly on CF-4R-ENV-21. The sq footage on the CF-6R-ENV-21 was entered wrong as well, the installers stating 10 rulers installed, yet the rater said 12 were present. In QA, only one attic ruler was visible from access.
QII(I) Fail, no insulation certificate posted in attic, two measurements in insulation less than required minimum thickness (13"), Rater also failed to enter minimum thickness and weight requirements correctly.
DL Pass, QA, 63.45 cfm @25.0 Pa (135.41), Rater, 58 (106.16). Rater entered output btu incorrectly.
EER Fail, couldn't verify installed matched equipment on AHRI website.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
QII - Framing	CF-4R-ENV-21	Not Started	QA CF-4R	[Comments]	
QII - Insulation	CF-4R-ENV-22	**QA FAILED**	System 1	[Comments]	
Duct Leakage New	CF-4R-MECH-20	Complete	HOUSE	[Comments]	
High EER	CF-4R-MECH-23	**QA FAILED**	HOUSE	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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(877-437-7787)
Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 01/18/2012 / 13:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: LENNOX **Model:** 14ACX-048-230-11 **# of Vents:** 15 **# of Returns:** 1 **SEER:** 15
F.A.U. Make: LENNOX **Model:** ML193UH110P60C-02 **AFUE:** .93 **HSPF:** **Output BTU:** 104000 **Location:** Attic
Coil Make: ASPEN **Model:** CB60A34000T042 **EER:**
Coil Number: J11-00002998 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: No Notes
Attic Investigation: Investigated and saw something which may decrease system efficiency
NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	**(Page 1 of 1)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Rancho Cordova	7329

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the installed Outdoor Unit	**Lennox 14ACX-048**			
5	Make and Model Number of the installed Inside Coil	**Aspen CB60A34**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Lennox G51MP-60C-090**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			
✔ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure. ✔ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.					
8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **12/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	**(Page 1 of 1)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Rancho Cordova	7329

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**10**			
4	Make and Model Number of the installed Outdoor Unit	**Lennox 14ACX-048-230-11**			
5	Make and Model Number of the installed Inside Coil	**Aspen CB60A34000T042**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Lennox ML193UH110P60C-02**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			
7a	**QA Additional Question:** Website URL confirming LHRI: **HOUSE:** CAN'T VERIFY				
✔ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure. ✔ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.					
8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/18/2012**	

INSTALLATION CERTIFICATE		CF-6R-ENV-21-HERS
Quality Insulation Installation (QII) - Framing Stage Checklist		(Page 1 of 2)
Site Address: [redacted] CA [redacted]	Enforcement Agency: City of Rancho Cordova	Permit Number: 7329

Quality Insulation Installation (QII) Framing Stage Checklist

Air barrier and preparation for insulation verification inspection must be done at framing stage before insulation is installed. If there are any "No" answers rows not filled out or signatures missing then this is not valid form and cannot be accepted by the building department or HERS rater. If spray foam is used, then an air barrier is not required and NA would be checked. QII credit not allowed if any steel framing or structural framing that are in the walls of a ***conditioned*** *space.*

✓ **FLOOR AIR BARRIER**			
Yes	No	✓ NA	All gaps in the raised floor to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
Yes	No	✓ NA	All openings on a second floor including under a tub where the drain penetrates the floor are sealed
✓ **WALLS AIR BARRIER**			
✓ Yes	No	NA	All gaps in wall exterior sheathing to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	No gaps in sheathing against the garage, attic, or covered patio. All gaps larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	All gaps in Rim-joists in interior and exterior walls to the outside including holes drilled for electrical and plumbing larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	Rope caulk, foam gasket, or caulking bead around the entire sole plate of the home
✓ Yes	No	NA	All gaps around the windows are caulked or foamed (stuffing with fiberglass not acceptable)
✓ **ATTIC INSPECTION**			
✓ Yes	No	NA	Attic rulers appropriate to the material installed evenly throughout the attic to verify depth. (NA if SPF or batt)
✓ Yes	No	NA	Attic area (sqft) 2419 ÷ 250 = 9.68 minimum number of rulers installed. Must round up. Number of rulers actually installed 10 (NA if SPF or batt)
✓ Yes	No	NA	ALL rulers visible from attic access. (NA if SPF or batt)
✓ Yes	No	NA	Eave vents baffles installed at all eave vents to prevent air movement under or into insulation. (NA if SPF)
✓ Yes	No	NA	Area of eave vent baffle is the same or larger than the net free-ventilation area of the eave vent. (NA if SPF)
✓ **CEILING AIR BARRIER**			
✓ Yes	No	NA	All draft stops in place to form a continuous ceiling air barrier no gaps larger than 1/8". (NA if SPF)
✓ Yes	No	NA	**All** drops covered with hard covers. Gaps around or in the hard cover larger than 1/8" filled with foam or caulk. (NA if SPF).
✓ Yes	No		All recessed light fixtures in non conditioned space are IC rated and air tight (AT)
✓ Yes	No		All recessed light fixtures are sealed with a gasket or caulk between the housing and the ceiling
✓ Yes	No		Openings around flue shafts fully sealed with solid ing or flashing and any remaining gaps sealed with fire-rated caulk or sealant.
✓ Yes	No		Piping shaft openings fully sealed and caulked
✓ Yes	No		Penetrations from wiring in interior walls, electrical boxes, fire alarms etc. sealed with caulk or sealant
✓ Yes	No		All duct chases, fireplace chases, and double walls sealed air tight at the ceiling level. All gaps into shafts larger than 1/8" filled with foam or caulk. Special attention paid to ducts entering shafts from ceiling.

INSTALLATION CERTIFICATE			CF-6R-ENV-21-HERS
Quality Insulation Installation (QII) - Framing Stage Checklist			**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]		**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

✓ GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (no conditioned space over garage)			
Yes	No	✓ NA	Air barrier installed at joists in garage to house transition (between floors). No gaps larger than 1/8" allowed. Use of SPF satisfies the requirement to seal the gaps.
✓ GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)			
Yes	No	✓ NA	If insulation is to be installed at subfloor then subfloor has no gaps over 1/8". Air barrier installed at joists in garage to house transition (between floors). Use of SPF satisfies the requirement to seal the gaps.
Yes	No	✓ NA	If insulation is to be installed at ceiling of garage then ceiling and joists to the outside have no gaps over 1/8". (NA if SPF or no conditioned space over garage.)

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- All rows in this document have been checked and all answers are yes or NA
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I understand that a HERS rater will check the installation to verify compliance, and that that if such checking identifies defects, I am required to take corrective action at my expense. I understand that Energy Commission and HERS provider representatives will also perform quality assurance checking of installations, including those approved as part of a sample group but not checked by a HERS rater, and if those installations fail to meet the requirements of such quality assurance checking, the required corrective action and additional checking/testing of other installations in that HERS sample group will be performed at my expense.
- I reviewed a copy of the Certificate of Compliance (CF-1R) form approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the CF-1R that apply to the installation have been met.
- **I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.** I will ensure that all Installation Certificates will come from a HERS provider data registry for multiple orientation alternatives, and beginning October 1, 2010, for all low-rise residential buildings.

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Alcal Arcade Contracting Inc**		
Responsible Person's Name: **Robert Becher**		Responsible Person's Signature: **Robert Becher**
CSLB License: **815286**	Date Signed: **12/9/2011**	Position With Company (Title): **Owner**
Is this installation monitored by a Third Party Quality Control Program (TPQCP)? Yes No		Name of TPQCP (if applicable):

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-21
Quality Insulation Installation (QII) - Framing Stage Checklist		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

1. Quality Insulation Installation (QII) - Framing Stage Checklist

Air barrier and preparation for insulation verification inspection must be done at framing stage before insulation is installed. If there are any "No" answers rows not filled out or signatures missing then this is not valid form and cannot be accepted by the building department or HERS rater. If spray foam is used an air barrier is not required NA would be checked. QII credit not allowed if any steel framing or structural framing in the walls of a ***conditioned*** *space.*

✓ **FLOOR AIR BARRIER**			
Yes	No	✓ NA	All gaps in the raised floor to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
Yes	No	✓ NA	All openings on a second floor including under a tub where the drain penetrates the floor is sealed
✓ **WALLS AIR BARRIER**			
✓ Yes	No	NA	All gaps in wall exterior sheathing to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	No gaps in sheathing against the garage, attic, or covered patio. All gaps larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	All gaps in Rim-joists in interior and exterior walls to the outside including holes drilled for electrical and plumbing larger than 1/8" filled with foam or caulk. (NA if SPF)
✓ Yes	No	NA	Rope caulk, foam gasket, or caulking bead around the entire sole plate of the home
✓ Yes	No	NA	All gaps around the windows are caulked or foamed (stuffing with fiberglass not acceptable)
✓ **ATTIC INSPECTION**			
✓ Yes	No	NA	Attic rulers appropriate to the material installed evenly throughout the attic to verify depth. (NA if SPF or batt)
✓ Yes	No	NA	Square foot of attic **2983** / 250 = **11.93** minimum number of rulers installed. Must round up. Number of rulers actually installed **12** (NA if SPF or batt)
✓ Yes	No	NA	ALL rulers visible from attic access.(NA if SPF or batt)
✓ Yes	No	NA	Eave vents baffles installed at all eave vents to prevent air movement under or into insulation. (NA if SPF)
✓ Yes	No	NA	Area of eave vent baffle is the same or larger than the net free-ventilation area of the eave vent. (NA if SPF)
✓ **CEILING AIR BARRIER**			
✓ Yes	No	NA	All draft stops in place to form a continuous celling air barrier no gaps larger than 1/8". (NA if SPF)
✓ Yes	No	NA	**All** drops covered with hard covers. Gaps around or in the hard cover larger than 1/8" filled with foam or caulk. (NA if SPF).
✓ Yes	No		All recessed light fixtures in non conditioned space IC and air tight (AT)
✓ Yes	No		All recessed light fixtures are sealed with a gasket or caulk between the housing and the ceiling
✓ Yes	No		Openings around flue shafts fully sealed with solid ing or flashing and any remaining gaps sealed with fire-rated caulk or sealant.
✓ Yes	No		Piping shafts openings fully sealed and caulked
✓ Yes	No		Penetrations from wiring in interior walls, electrical boxes, fire alarms etc. sealed with caulk or sealant
✓ Yes	No		All duct chases, fireplace chases, and double walls sealed air tight at the ceiling level. All gaps into shafts larger than 1/8" filled with foam or caulk. Special attention paid to ducts entering shafts from ceiling.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING			CF-4R-ENV-21
Quality Insulation Installation (QII) - Framing Stage Checklist			**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329	

✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (no conditioned space over garage)**			
✓ Yes	No	NA	Air barrier installed at joists in garage to house transition (between floors). No gaps larger than 1/8". If SPF used then air barrier installed gaps not required to be filled. (NA if SPF or conditioned space over garage)
✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**			
✓ Yes	No		If insulation is to be installed at subfloor then subfloor has no gaps over 1/8". Air barrier installed at joists in garage to house transition (between floors). (NA if SPF or no conditioned space over garage)
✓ Yes	No		If insulation is to be installed at ceiling of garage then ceiling and joists to the outside have no gaps over 1/8". (NA if SPF or no conditioned space over garage.)

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Alcal Arcade Contracting Inc**		
Responsible Person's Name: **Robert Becher**	CSLB License: **815286**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✓ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **12/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

			FLOOR INSULATION
Yes	No	✓ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
Yes	No	✓ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
Yes	No	✓ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
Yes	No	✓ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
Yes	No	✓ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
Yes	No	✓ NA	Insulation R-value same or greater that listed on CF-1R.
Yes	No	✓ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
Yes	No	✓ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
Yes	No	✓ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
Yes	No	✓ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
✓ Yes	No	NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
✓ Yes	No	NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
✓ Yes	No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
Yes	No	✓ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
Yes	No	✓ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
✓ Yes	No	NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
✓ Yes	No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
✓ Yes	No		All Rim-joists to the outside insulated.
✓ Yes	No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
✓ Yes	No	NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
✓ Yes	No	NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
✓ Yes	No		Wall insulation same or better than what is listed on the CF-1R.
Yes	No	✓ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING			CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist			**(Page 2 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329	

Yes	No	✔ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
Yes	No	✔ NA	**SPF** list the required floor cavity R-value from CF-1R, R- 13. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
✔ Yes	No	NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
Yes	No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
Yes	No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
✔ Yes	No	NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
✔ Yes	No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
✔ Yes	No		Insulation in full contact with the ceiling, NO gaps.
✔ Yes	No		Insulation in contact with air barrier on all five sides.
Yes	No	✔ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
Yes	No	✔ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF).
Yes	No	✔ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts).
✔ Yes	No	NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks)
✔ Yes	No	NA	Attic access gasketed
✔ Yes	No	NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
✔ Yes	No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
✔ Yes	No		Wall insulation same or better than what is listed on the CF-1R
✔ Yes	No	NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
✔ Yes	No	NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
✔ Yes	No	NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value 30 Manufacturer's minimum required weight for the target R-value .462 (pounds-per-square foot). Sample weight .610 (pounds per square foot).
✔ Yes	No	NA	Manufacturer's minimum required thickness at time of installation 15.5 (inches) Manufacturer's minimum required settled thickness 11.75 (inches). Number of days since loose-fill insulation was installed 1 (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING			CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist			**(Page 3 of 3)**
Site Address: [redacted] CA	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329	

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
✔ Yes	No	NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
✔ Yes	No	NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
✔ Yes	No	NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
Yes	No	✔ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
Yes	No	✔ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
Yes	No	✔ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
✔ Yes	No	NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Alcal Arcade Contracting Inc**		
Responsible Person's Name: **Robert Becher**	CSLB License: **815286**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **12/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ In X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☐ Yes	☐ No	☑ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☐ Yes	☐ No	☑ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☐ Yes	☐ No	☑ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☐ Yes	☐ No	☑ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☐ No	☑ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☐ Yes	☐ No	☑ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☐ Yes	☐ No	☑ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	**(Page 2 of 3)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Rancho Cordova	7329

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- **13**. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☐ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☐ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☐ Yes	☐ No	☑ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts).
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks)
☑ Yes	☐ No	☐ NA	Attic access gasketed
☐ Yes	☑ No	☐ NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☐ Yes	☑ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **38** Manufacturer's minimum required weight for the target R-value **.591** (pounds-per-square foot). Sample weight **.648** (pounds per square foot).
☐ Yes	☑ No	☐ NA	Manufacturer's minimum required thickness at time of installation **14.5** (inches) Manufacturer's minimum required settled thickness **14.5** (inches). Number of days since loose-fill insulation was installed **11** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING			CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist			**(Page 3 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329	

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☐ Yes	☐ No	☑ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☐ Yes	☐ No	☑ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Alcal Arcade Contracting Inc**		
Responsible Person's Name: **Robert Becher**	CSLB License: **815286**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/18/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ✔ Heating system method: 21.7 x **82** Output Capacity in Thousands of Btu/hr x *leakage factor* = **106.76** CFM Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**58**
Pass if Actual Leakage is less than Allowed Leakage ✔ **Pass** **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke **Pass** **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall

✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

✔ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **12/8/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **WHOLE HOUSE**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ✔ Heating system method: 21.7 x **104** Output Capacity in Thousands of Btu/hr x *leakage factor* = **135.41** CFM Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**63.45**
Pass if Actual Leakage is less than Allowed Leakage ✔ **Pass** **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke **Pass** **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 7329

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Cooling System Method: Nominal capacity of condenser in Tons **4** x 400 x 6% = **9600** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1870** x **6%** = **11220** CFM

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall.

✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

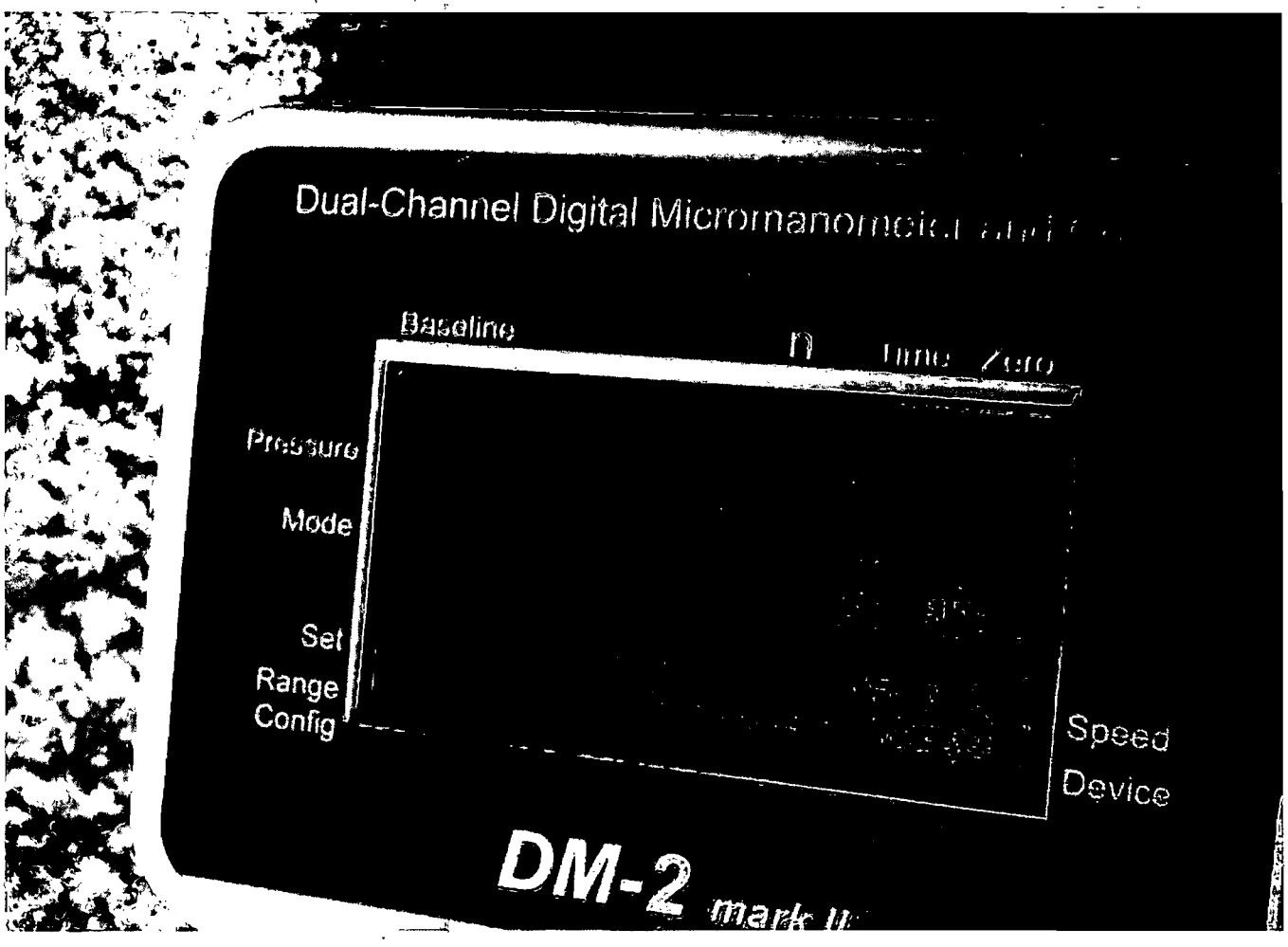
✔ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

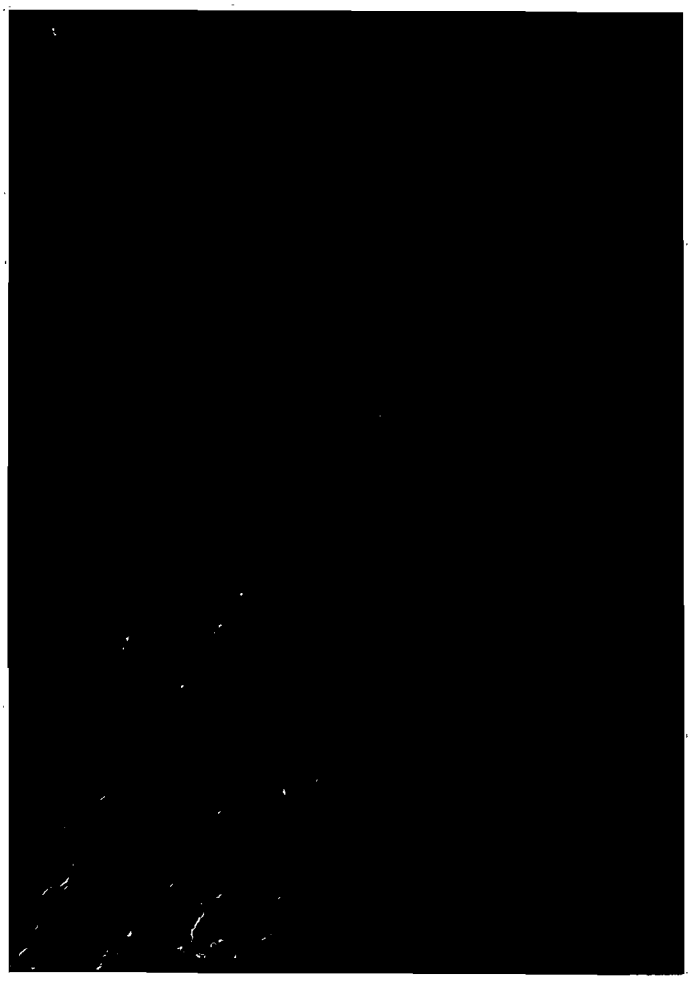
DECLARATION STATEMENT

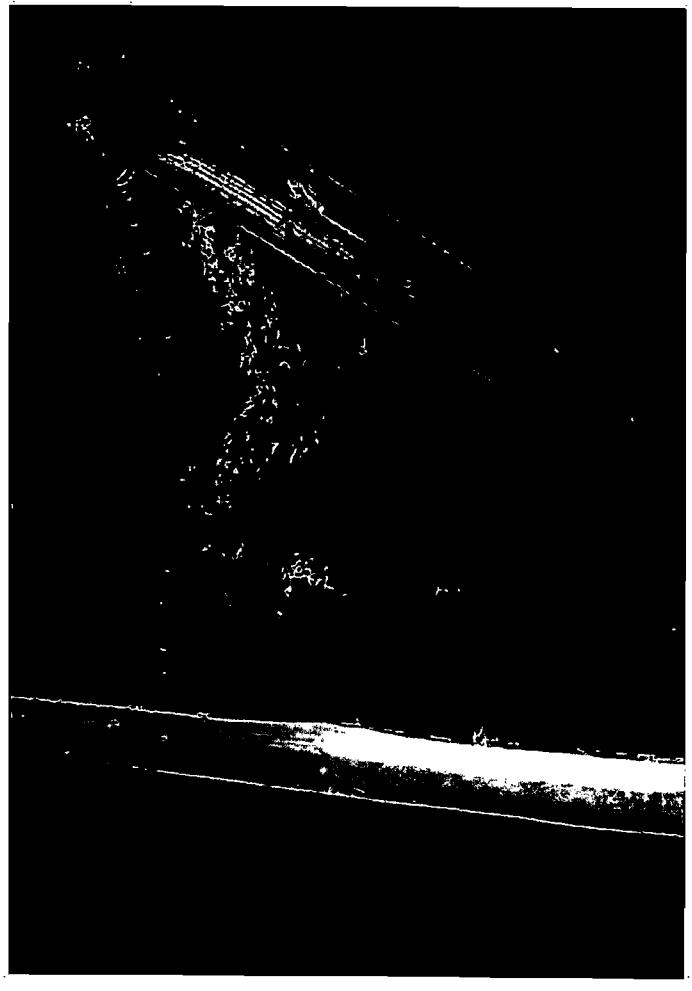
- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

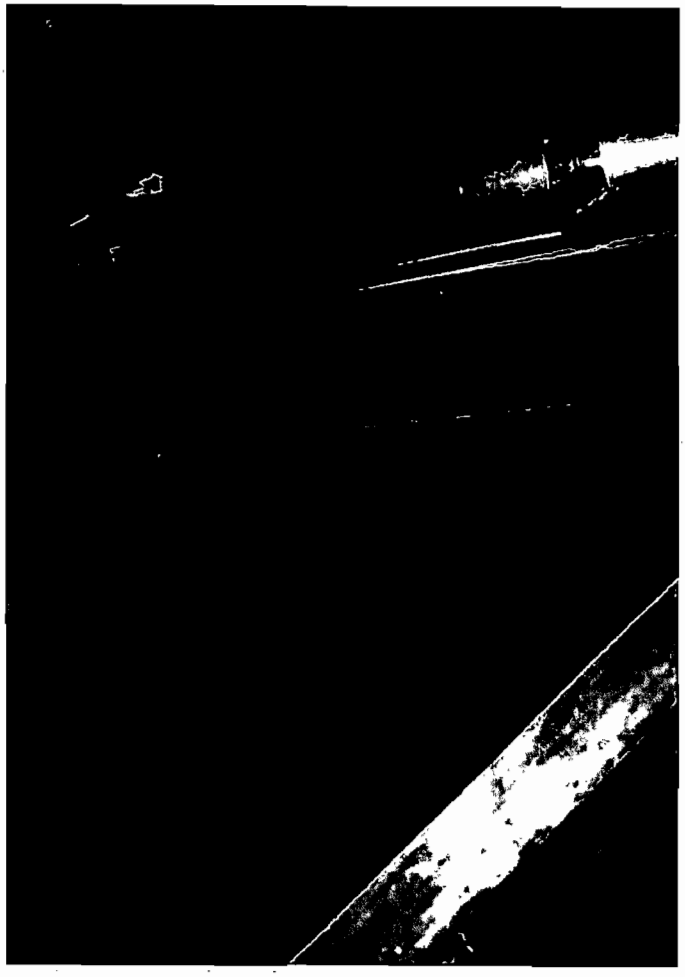
Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798605200**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/18/2012**	

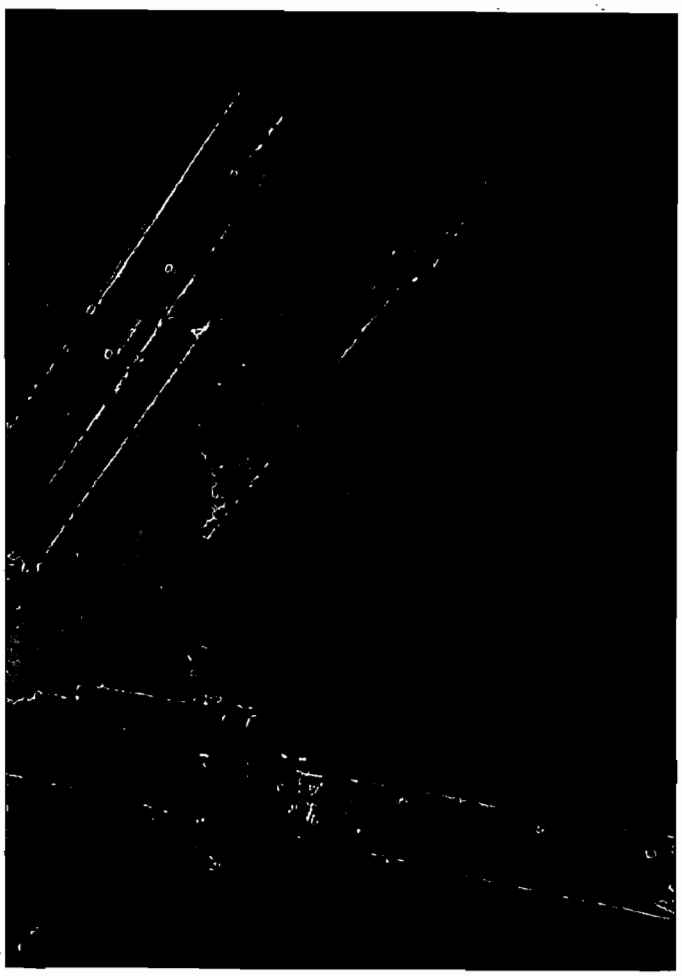
AVAILABLE

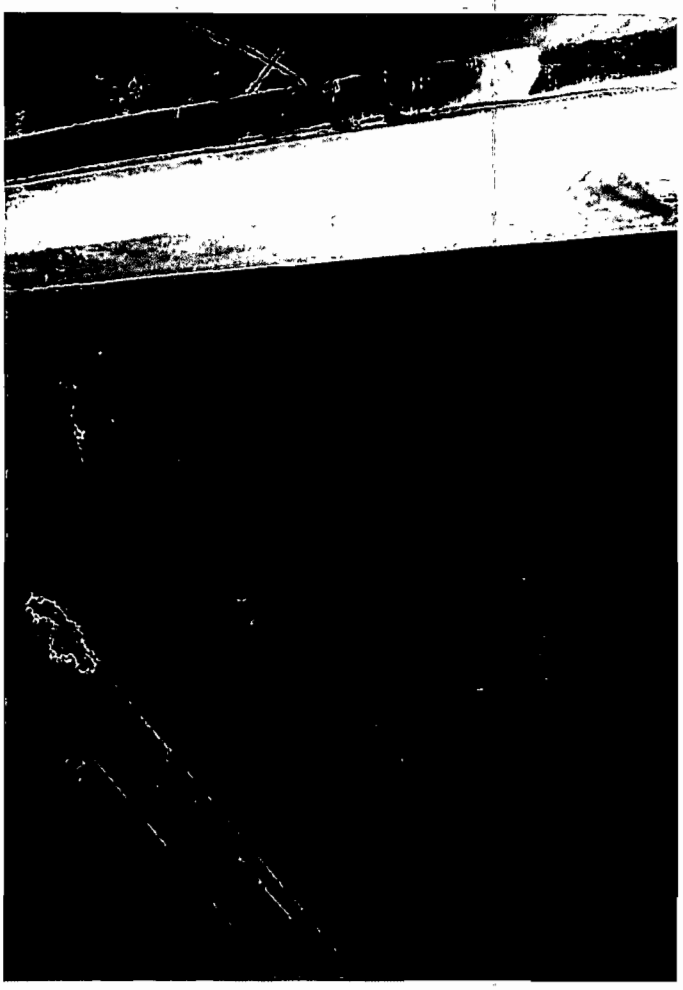

Dual-Channel Digital Micromanometer
Baseline
Time Zero
Pressure
Mode
Set
Range
Config
Speed
Device
DM-2 mark II

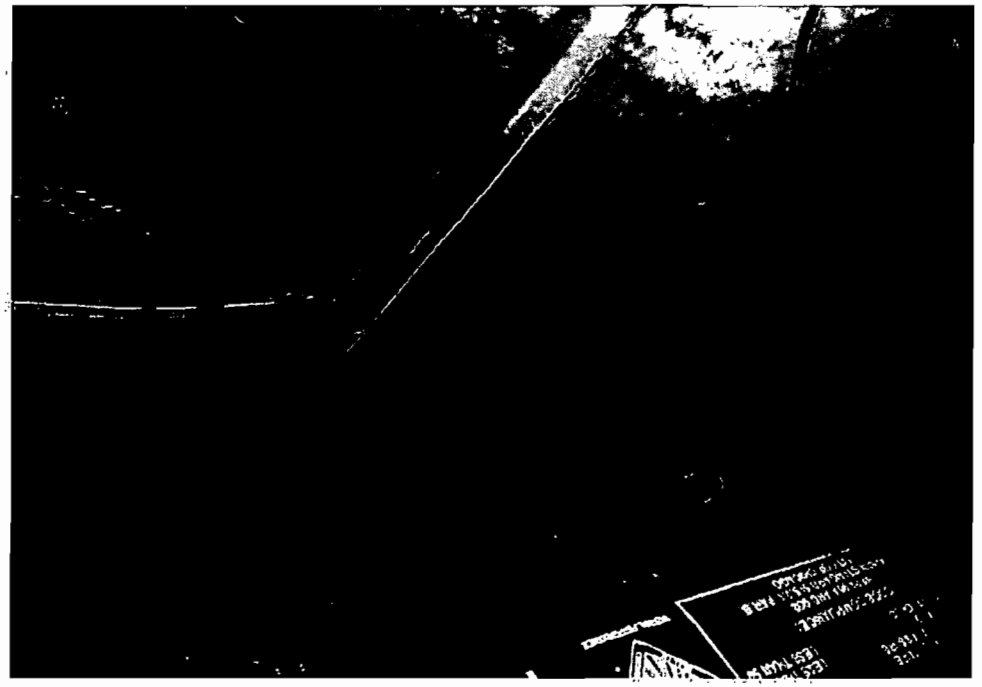


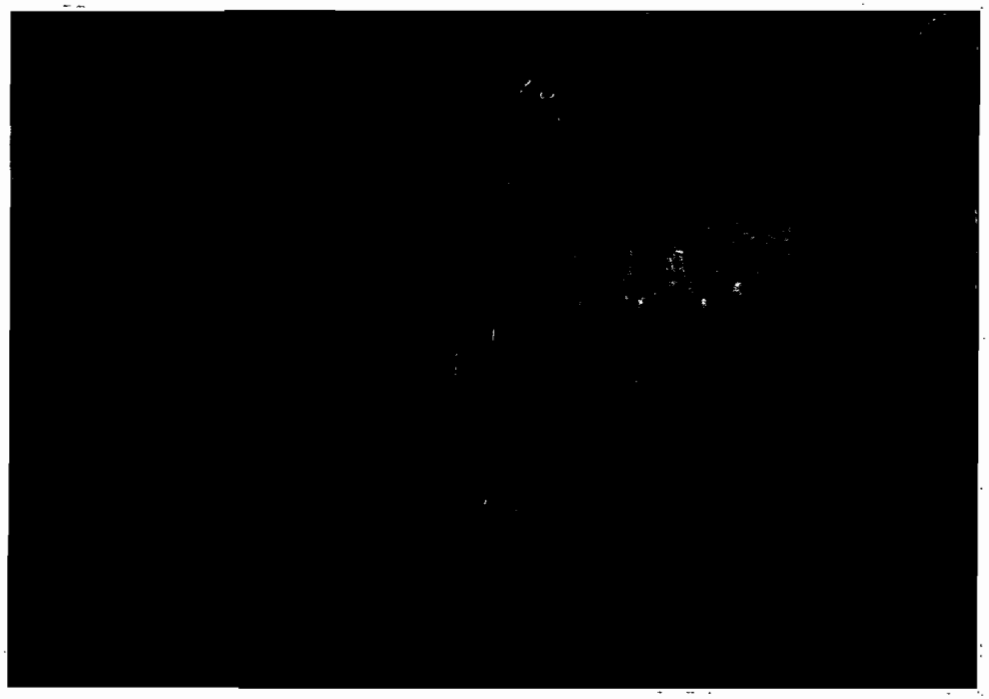


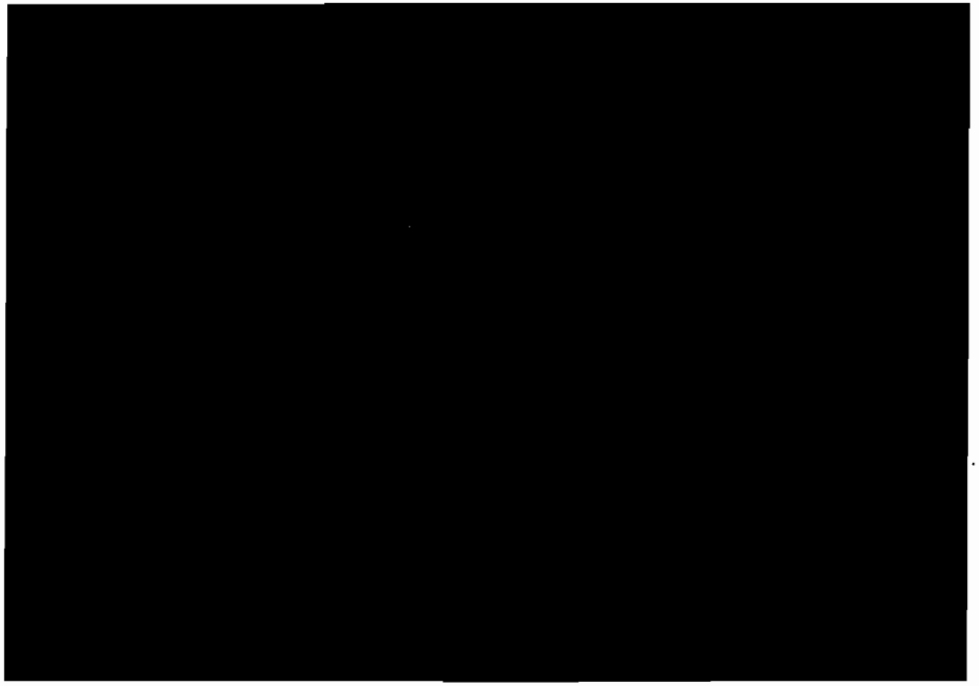


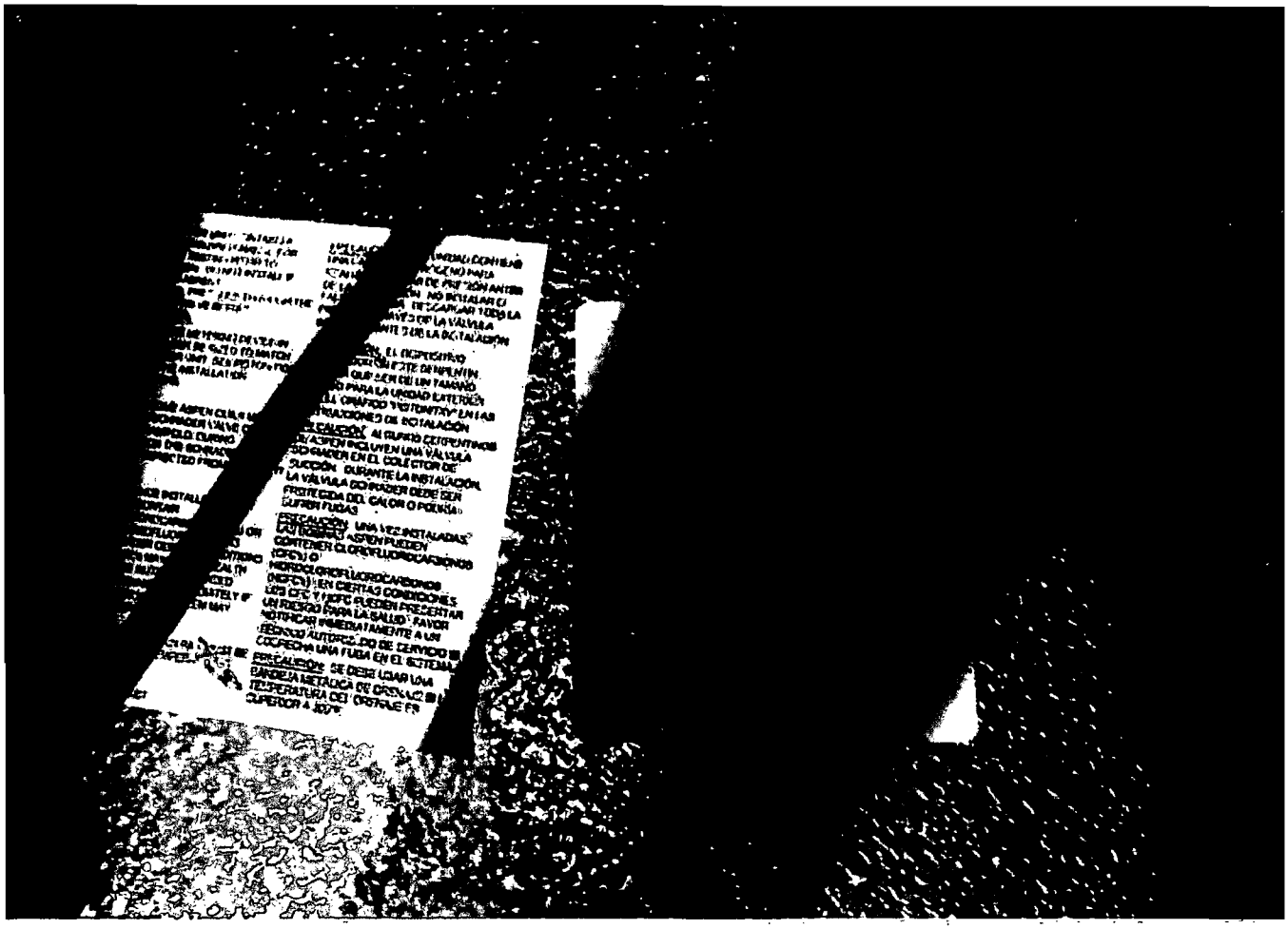


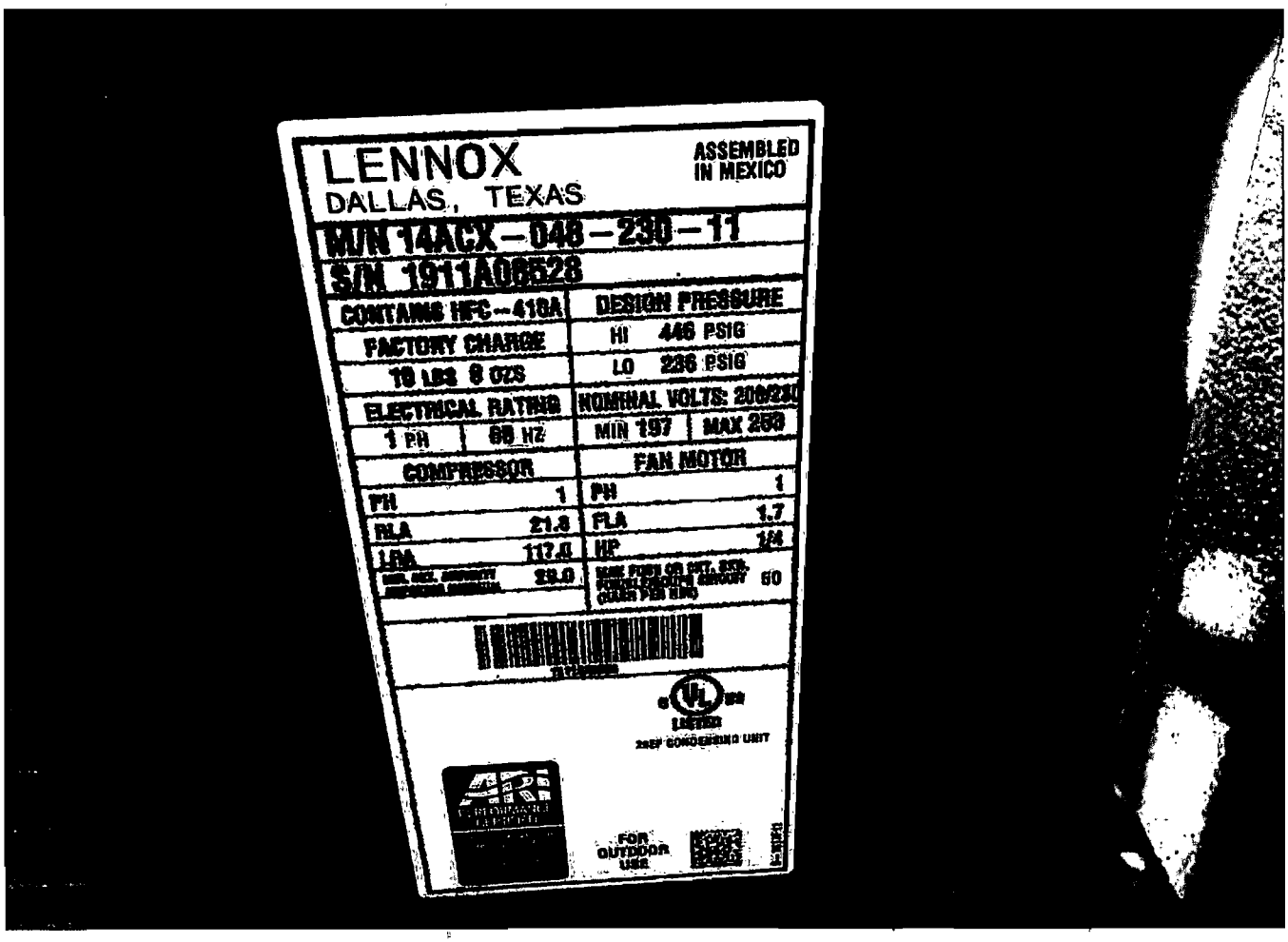




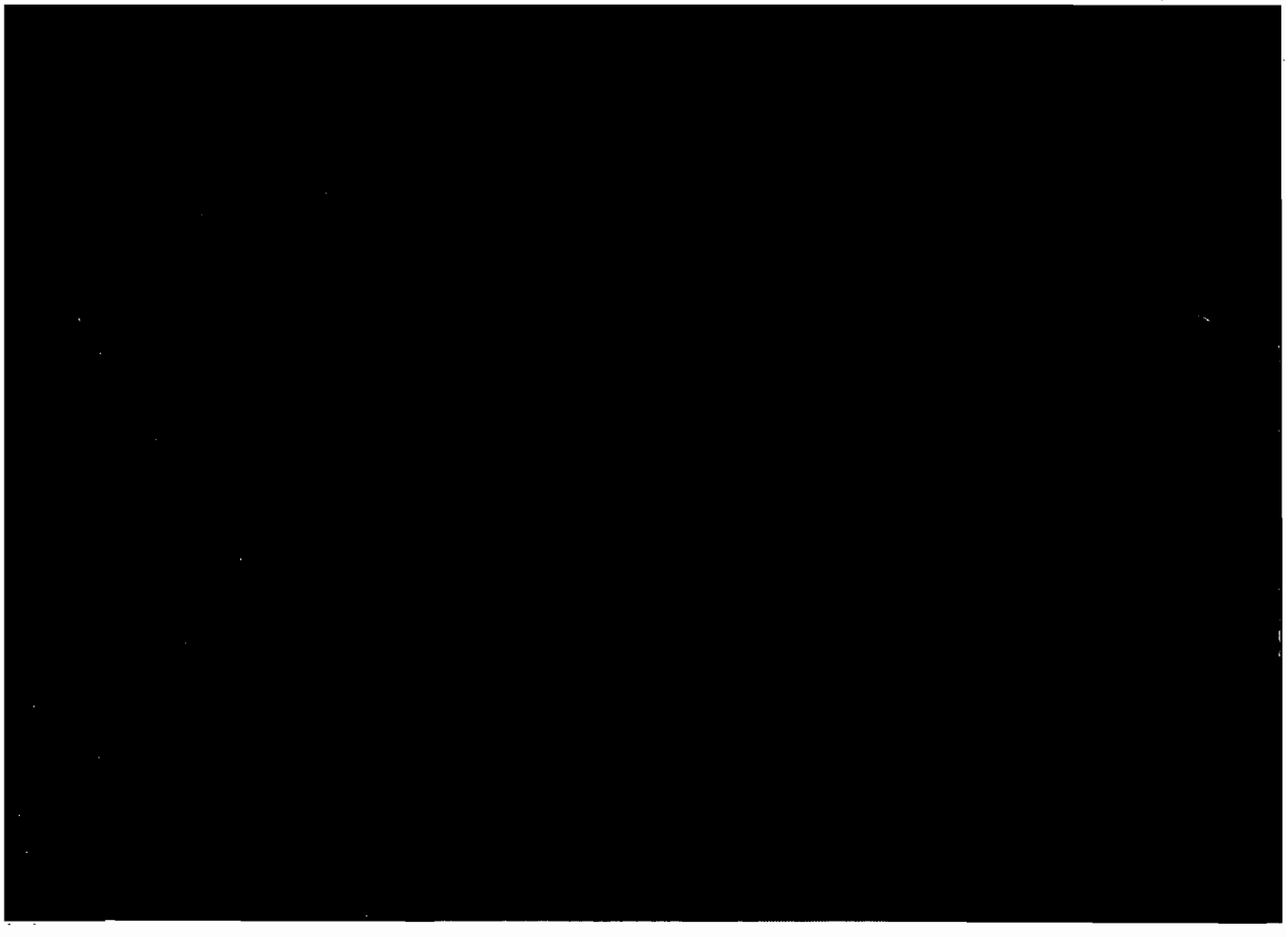







LENNOX
DALLAS, TEXAS
ASSEMBLED IN MEXICO
MUN14ACX-048-230-11
S/N 1911A06528
CONTAINS HFC-410A
FACTORY CHARGE
10 LBS 8 OZS
DESIGN PRESSURE
HI 446 PSIG
LO 236 PSIG
ELECTRICAL RATING
1 PH
60 HZ
NOMINAL VOLTS: 208/230
MIN 197
MAX 253
COMPRESSOR
FAN MOTOR
PH 1
RLA 21.8
LRA 117.0
PH 1
FLA 1.7
HP 1/4
60
LISTED
2REF CONDENSING UNIT
FOR OUTDOOR USE

MIL-183UH-10P60C-02



Mariposa @ Sunridge Park

Tim O'Neil Logged In [Logout]

+2

QA Data Collection Form: [redacted] **Rancho Cordova, CA 95742**

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Plan 2 2983

[redacted]

Date / Time:* 1/18/10 / 8:00

Cust. Name:* [redacted] Cust. Phone:*

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

S/N 1911AC8528

Condenser Make:* LENNOX Model:* 14ACX-048-230-11 # of Vents:* 15 # of Returns:*

1 SEER:

S/N 5911H24166

F.A.U. Make:* Model:* ML193UH113P60 1-02 AFUE: 93.0 HSPF:

Output BTU:* 104,000 Location: Attic

Coil Make:* ASPEN Model:* CB60A34000 T042 EER:

Coil Number:* J11-00002948 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Aloal Arcade Robert Becher certainteed insulsafe - 0.591/14.5"

WT = 5.6502/16/.. = .648 lbs FT2

Notes:

Measurements ① 14.75 ② 13.0 ③ 13.0

QII(I) - No Insul Cert posted in Attic only 1 Attic Ruler Visible from landing
DL = 63.45 @ 25 Pa Rater - 58
EER - Can't Verify on AHRI website
RLA - FLOWHOOD 1870 CFM

CF-1R 92 AFUE 14 seer 12 eer R-4 R-38

2983

Attic Investigation:* [Select from list]

NEXT

* Required Fields

Paul (Woodside Homes) Says Raters have been thorough, has failed him on occasion, Happy w/ the service.

2419 - 9.68 CF-6R

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Ret = 1

Vents = 15 K-1, D-1, G-2, FD-2, H-1, O-0 (?), FBD/Ba-2
Ba-1, W-1, 2Bd-1, 3BD-1, MBd-2

The California ENERGY COMMISSION APPLIANCE EFFICIENCY DATABASE

Advanced Search - Results

Export to CSV | Export to Excel

Display all fields

Display: 10 per page

Compare Checked Results <<previous Page: 40 of 44 next>> Records 391 - 400 of 432

Manufacturer Name	Brand Name	Model Number	Pilot Light (T/F)	Rated Output BTUH	Annual Fuel Utllization Effic. (AFUE)	Thermal Efficiency %
Lennox	Lennox	ML193UH110P60C-*	False	104000	93.0	
Lennox	Lennox	ML193UH110XP48C-*	False	104000	93.0	
Lennox	Lennox	ML193UH110XP60C-*	False	104000	93.0	
Lennox	Lennox	ML193UH135P60D-*	False	124000	93.0	
Lennox	Lennox	ML193UH135XP60D-*	False	124000	93.0	
Lennox	Lennox	SL280DF070V36A-*	False	52000	80.0	
Lennox	Lennox	SL280DF090V48B-*	False	69000	80.0	
Lennox	Lennox	SL280DF090V60C-*	False	70000	80.0	
Lennox	Lennox	SL280DF110V60C-*	False	87000	80.0	
Lennox	Lennox	SL280UH070V36A-*	False	52000	80.0	

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1.0.4401.21131

AHRI Air-Conditioning, Heating, and Refrigeration Institute

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Double click on a row to view/print AHRI certificate.
AHRI certificates are not available for Obsolete AC and HP equipment.
Model Status of 'Active' means models are currently in production. 'Discontinued' means that the manufacturer has elected to stop producing, yet stock is still available. 'Obsolete' means that the manufacturer is required to stop manufacturing due to a test failure in the AHRI Certification Programs.

				Outdoor Unit		Indoor Unit			Cooling								
AHRI Certified Ref #	Model Status	Manufacturer Type	Trade/Brand Name	Manufacturer	Model	Manufacturer(Mix-Match)	Model	Furnace Model	Capacity (Btuh)	EER	SEER	Phase	AHRI Type	HSVTC	Exclusively for Export	Est. National Avg. Annual Operating Cooling Cost ($)	Eligible for Federal Tax Credit
4681869	Discontinued	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	14ACX-048-230-11	ASPEN MANUFACTURING	C(B,P)60A34+TDR	G71MPP-60C-110*	47500	12.00	15.00	1	RCU-A-CB			369	
4681881	Discontinued	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	14ACX-048-230-11	ASPEN MANUFACTURING	C(B,P)60A34+TDR	G61MPV-60C-111*	48000	12.00	15.00	1	RCU-A-CB			373	
4681853	Discontinued	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	14ACX-048-230-11	ASPEN MANUFACTURING	C(B,P)60A34+TDR	G61MPV-60C-110*	47500	12.00	15.00	1	RCU-A-CB			369	

Now displaying records 1 - 3 of 3 total

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CAN NOT VERIFY — NONE W/ 2 components, 3RD Component (Furnace) Does not match any of the 3 Listed.

[redacted] PATRICK DAVIS

Project Title..... Plan 2/2983 Date..08/03/10 16:17:52

MICROPAS8 v8.1 File-MSP2983 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2/2983

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-factor	Cavity R-val	Sheathing R-val	Act Azm	Tilt	Solar Gains	Appendix JA4 Reference	Location/ Comments
1 Wall	Wood	188	0.072	13	4	0	90	Yes	4.3.1 C3	Front Wall
2 Wall	Wood	312	0.102	13	0	0	90	No	4.3.1 A3	Garage Wall
3 Wall	Wood	607	0.072	13	4	90	90	Yes	4.3.1 C3	Left Wall
4 Wall	Wood	361	0.072	13	4	180	90	Yes	4.3.1 C3	Back Wall
5 Wall	Wood	495	0.072	13	4	270	90	Yes	4.3.1 C3	Right Wall
6 Attic	Wood	2883	0.025	38	0	n/a	0	Yes	4.2.1 A21	Attic Space
7 Attic	Wood	100	0.048	19	0	n/a	0	Yes	4.2.1 A16	Attic Space
8 Door	Wood	28	0.500	0	0	315	90	Yes	4.5.1 A4	Entry Door
9 Door	Wood	18	0.500	0	0	0	90	No	4.5.1 A4	Garage Entry

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix JA4 Reference	Location/ Comments
10 SlabEdge	51	0.730	R-0/0in	No	4.4.7 A1	Exposed edge
11 SlabEdge	202	0.730	R-0/0in	No	4.4.7 A1	Covered edge

CalCERTS, Inc.®

FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	40.0	0.350	0.360	0	90	Standard	FGLASS/Vinyl/Wood Operab
2 Wind Front (N)	20.5	0.350	0.360	0	90	Standard	F2/Vinyl/Wood Operable L
3 Wind Left (E)	6.0	0.350	0.360	90	90	Standard	LGLASS/Vinyl/Wood Operab
4 Wind Left (E)	24.0	0.350	0.360	90	90	Standard	L2/Vinyl/Wood Operable L
5 Wind Left (E)	36.0	0.350	0.360	90	90	Standard	L3/Vinyl/Wood Operable L
6 Wind Left (E)	6.8	0.330	0.360	90	90	Standard	L4/Vinyl/Wood Fixed Low
7 Wind Back (S)	72.0	0.350	0.360	180	90	Standard	BGLASS/Vinyl/Wood Operab
8 Door Back (S)	64.0	0.370	0.330	180	90	Standard	B2/Vinyl/Wood Sliding Do
9 Wind Back (S)	25.0	0.330	0.360	180	90	Standard	B3/Vinyl/Wood Fixed Low
10 Wind Back (S)	30.0	0.350	0.360	180	90	Standard	B4/Vinyl/Wood Operable L
11 Door Back (S)	48.0	0.370	0.330	180	90	Standard	B5/Vinyl/Wood Sliding Do
12 Wind Right (W)	6.8	0.330	0.360	270	90	Standard	RGLASS/Vinyl/Wood Fixed
13 Wind Right (W)	50.0	0.350	0.360	270	90	Standard	R2/Vinyl/Wood Operable L
14 Door Right (W)	48.0	0.370	0.330	270	90	Standard	R3/Vinyl/Wood Sliding Do
15 Wind Right (NW)	3.0	0.330	0.360	315	90	Standard	315GLASS/Vinyl/Wood Fixe

PATRICK DAVIS

Tim O'Neil Logged In [Logout]

CF-6R Submission Process: Select Tested Lot for Project "Mariposa at Sunridge Park":

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Please select the Lot you wish to provide CF-6R Information:

Open | Not Started | Partial | Completed

ID	Phase	Lot Name	Permit	Address	Plan	Group	CF-6R Status	Select
193339	Phase 1	001	2010-7075	4032 Borderlands Drive	Plan 4 (2246)		Complete	
264616	Phase 1	0031	7338	12429 Kibble Lake Way	Plan 1 (2597)		Complete	
166149	Phase 1	014	2010-6934	4037 Quarter Dome Circle	Plan 5001 (Eclipse Plan)		Complete	
264614	Phase 1	027	7339	12424 Kibble Lake Way	Plan 1 (2597)		Complete	
235193	Phase 1	028	7261	3990 Machias Place	Plan 2 (2983)	235190	Complete	
264615	Phase 1	029	7324	3994 Machias Place	Plan 1 (2597)		Complete	
235190	Phase 1	030	7254	3997 Machias Place	Plan 2 (2983)	235190	Complete	
201754	Phase 1	031	N/A	1101 Lavender Drive	Plan 1 (2597)		Complete	
164212	Phase 1	037	533547	12405 Kibble Lake Way	Plan 5001 (Eclipse Plan)		Complete	
172093	Phase 1	047	2010-6965	3997 Quarter Dome Circle	Plan 2 (2983)		Complete	
226033	Phase 1	048	7137	12456 Kibble Lake Way	Plan 1 (2597)	218839	Complete	
219109	Phase 1	049	2010-7138	12460 Kibble Lake Way	Plan 1 (2597)	218839	Complete	
220688	Phase 1	050	7139	12464 Kibble Lake Way	Plan 4 (2246)	218839	Complete	
264617	Phase 1	051	7328	3988 Borderlands Drive	Plan 1 (2597)		Complete	
264618	Phase 1	052	7329	3994 Borderlands Drive	Plan 2 (2983)		Complete	
250732	Phase 1	053	7284	4000 BorderLands Dr.	Plan 1 (2597)		Complete	
255057	Phase 1	054	7304	4008 Borderlands Dr.	Plan 2 (2983)		Complete	
264619	Phase 1	055	7325	4014 Borderlands Drive	Plan 1 (2597)		Complete	
181002	Phase 1	060	2010-7055	3991 Machias Place	Plan 1 (2597)		Complete	
218839	Phase 1	061	2010-7140	3995 Machias Place	Plan 1 (2597)	218839	Complete	
172094	Phase 1	063	2010-6966	4010 Quarter Dome Circle	Plan 1 (2597)		Complete	
175812	Phase 1	065	2010-6967	4017 Quarter Dome Circle	Plan 2 (2983)		Complete	
209419	Phase 1	067	N/A	4026 Borderlands Drive	Plan 1 (2597)		Complete	
186356	Phase 1	068	2010-706S	4022 Borderlands Drive	Plan 1 (2597)		Complete	
250734	Phase 1	069	7266	4018 BorderLands Dr.	Plan 4 (2246)		Complete	

Next>

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Valley Duct Testing

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

EXHIBIT 8

Tim O'Neil Logged In [Logout]

Test Results for 303 Russi Court

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798607055	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS | CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (266473)	TESTED (Davis, Patrick)	TESTED (Davis, Patrick)

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Tim O'Neil Logged In [Logout]

QA Report Results: [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - PASS Effective Year: 2011

Comments:

Duct Leakage: Pass. Rater recorded 231 and a target of 240. QA recorded 230.0 @ 25.0 Pa.
Refrigerant Charge: Not tested.
No other information was gathered and no other tests were performed.
Customer seemed uncomfortable with me being there, and asked me on two occasions if I was almost finished. I made the decision to end the QA testing after the second comment, when she claimed no one told her how long the testing would take.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA		QA CF-4R	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Tim O'Neil Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 01/27/2012 / 08:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Goodman **Model:** ASX130481C8 **# of Vents:** 12 **# of Returns:** 1 **SEER:**
F.A.U. Make: Unknown **Model:** Unknown **AFUE:** 0000 **HSPF:** **Output BTU:** 00000 **Location:** Attic
Coil Make: Unknown **Model:** Unknown **EER:**
Coil Number: Unknown **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Not Investigated
NO Photos

Registered CF-4R Data

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) If those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons 4 x 400 = 1600 CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow 1600 x 0.15 = 240 CFM Actual Leakage = 231 CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ___ x 0.10 = ___ CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798607055**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/11/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons 4 x 400 = 1600 CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow 1600 x 0.15 = 240 CFM Actual Leakage = 230.0 CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow 1600 x 0.10 = 160 CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Additional QA Questions:

Heating System Method: 21.7 X **unk,000** Output Capacity in Thousands of Btu/hr = **N/A**

Measured Airflow Method (RA3.3): Measured fan flow is **0** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798607055**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/27/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted], CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1107613666**			
Outdoor Unit Make	**AMANA**			
Outdoor Unit Model	**ASX13048**			
Nominal Cooling Capacity Btu/hr	**48000**			
Date of Verification	**11/11/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**11/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**11/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**48**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**59**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**28**			
Condensor saturation temperature ($T_{condensor, sat}$)	**76**			
Suction line temperature ($T_{suction}$)	**48**			
Liquid Line Temperature (T_{liquid})	**68**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**57**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** [redacted] 11-00002854

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**22.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**19.1**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.9**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**8.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-2**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**20.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002854

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798607055**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Patrick R Davis**	Responsible Rater's Signature: **Patrick R Davis**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005018**	Date Signed: **11/11/2011**	

QA - ALT Tested

Tim O'Neil Logged In [Logout]

QA Data Collection Form: 303 Russi Court , Folsom, CA 95630

[redacted] 11/11/2011

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect Information

Date / Time:* 3 22 2011 / XAM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No S/N 1107513664

Condenser Make:* GOODMAN Model:* ASX13048IC8 # of Vents:* 12 # of Returns:* 1 SEER:

Amanda

F.A.U. Make:* Model:* AFUE: HSPF:

Output BTU:* Location: Attic

Coil Make:* Model:* EER:

Coil Number:* Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL - 230.0 @ 25 pa (240), Rater - 231

RC - TMAH (yes) RCV (-3)

RLA (2.9) TXV (20)

Attic Investigation:* [Select from list]

Flow Hood -

NEXT

* Required Fields

* Customer Seemed Annoyed w/ me being there - (Maybe I was distracting) Said that I didn't tell her how long the testing would Take

System 1 Down -

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Revised: January 11, 2010
[Terms and Conditions]
[Privacy Statement]
[Class Cancellation Policy]

CalCERTS, Inc.
CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Vents - L-1, D-1, F-2, N-1, K-1, FrDr-1, W-1, B-1, MBd-1, MBa-2, Ret 1 (Fan)

EXHIBIT 9

Mark Wiese

From: Charlie Bachand
Sent: Friday, December 16, 2011 3:49 PM
To: prdavis@liberty.edu; Mark Wiese
Subject: QA Review

Patrick Davis,

This letter is to inform you that you failed a QA review. As a result you have been placed on a 15 day suspension. Please contact CalCERTS within this 15 day period to schedule a meeting to discuss this matter. Failure to contact CalCERTS within this timeframe will result in decertification.

You failed QA inspections at the following addresses:

346 Malbec Ct, Stockton, CA

519 Merlot, Stockton, CA

425 Merle, Stockton, CA

In addition, we will need to discuss all of your rating activity on 4/20/2011.

You will be given the opportunity to present your records and documentation when meeting with CalCERTS.

Sincerely,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

EXHIBIT 10

Valley Duct Testing

Division of JaaR Sales, Inc

To Patrick Davis, Jan. 2, 2012

This letter is to inform you of the Confidentiality and Proprietary Information Agreement that you signed when coming to work for JaaR Sales, Inc., DBA Valley Duct Testing. I take this agreement very seriously and will terminate your employment if you do not abide by this agreement.
I have not included all of the agreement but here is a part of it. For this purpose, the Term "proprietary information" includes all ideas, information and materials, tangible or intangible, that are not generally known to the public and that relate, in any manner, to the business of the Company. The term "Proprietary information" includes, but is not limited to, manuals, documents, business practices and work in progress, and other technical or business information. The Employee agrees to hold in trust and in confidence all proprietary information during and after the period of the Employee's employment with the Company. The Employee shall not disclose any proprietary information to anyone outside of the Company without the prior written approval of an authorized officer of the Company and may not use any proprietary information for any purpose other than the clear and specific benefit of the Company, as required by the Employee's duties for the Company.
I as President of JaaR Sales, Inc., DBA Valley Duct Testing agree to allow you to communicate with Employees and Officers of CalCerts about only what they allege you have done wrong. This authorization will be for the following addresses.

346 Malbec Ct., Stockton, Ca. 95203

519 Merlot Ln., Stockton, Ca. 95203

425 Merle Rd., Stockton, Ca. 95210

Rating Activity on 4/20/2011
8861 Vintage Park Dr. #102 – Sample Group
8861 Vintage Park Dr. #109 – Sample Group
8861 Vintage Park Dr. #131 – Sample Group
8861 Vintage Park Dr. #225 – Sample Group
8861 Vintage Park Dr. #128 – Sample Group
8861 Vintage Park Dr. #203 – Sample Group
8861 Vintage Park Dr. #211 – Sample Group
8861 Vintage Park Dr. #209 – Sample Group
8861 Vintage Park Dr. #210 – Sample Group
8861 Vintage Park Dr. #212 - By Itself

If you have any questions about this letter please talk to me.

Thanks,

John Flores
President
JaaR Sales, Inc., DBA Valley Duct Testing

2272 Sierra Meadows Dr. Suite A • Rocklin, Ca. 95677 • Phone: 916-624-2092 Fax: 916-624-3352
www.valleyducttesting.com

EXHIBIT 11

QA ACTION REPORT

To be used in conjunction with QA Summary Report

RATER INFORMATION

Rater : Patrick Davis
Company : Valley Duct Testing
Street Address: 6245 Rainier Ave, Rocklin CA 95677
Phone: 916-624-0902 **Mobile:** **Fax:**
Email: Prdavis31@gmail.com

Complaint # (If applicable):
Certification #: CC2005018 **Date:** 01-17-12

FAILURE SUMMARY Note: See QA Summary report for more Data and Details.

This rater has had five QAs completed and has fails in 4 of them, with an issue in the fifth. Even though QA passed the Building Envelope Sealing (ENV) at 425 Merle, there was a difference of 251 cfm. Fails include visual inspections, such as verifying TMAHs although none were present; and Duct Leakage Sealing with the use of smoke. Fails were recorded in measuring device tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV).

RATER INTERVIEW

Date of Interview: 01-04-12 **Location:** CalCERTS, Folsom **Recorded?** No
Persons Present: Patrick Davis, Charlie Bachand, Mark Wiese
Summary or Interview:

Patrick Davis was asked, and did not want the conversation recorded. Told not to record or transmit. Charlie briefly explained the suspension and how we found gross failures, and it is CalCERTS responsibility to stop them continuing.

Patrick said he did 60-80 inspections a month, up to 25 a week in the summer months. Patrick said that he does feel he has time to complete all of his work.

Patrick claims to enter all his own information for alterations, and the office does it for new construction. Patrick said he never verifies the accuracy of the information the office enters.

When asked, Patrick said he was confident in his knowledge and abilities as a Rater.

Patrick provided a letter from John Flores regarding confidentiality.

When asked about the April 20th addresses, Patrick said had not been in Gilroy. He had only been in Vintage park, and didn't even do all of those; Patrick supplied some documentation. Our follow-up is to find additional dates with suspiciously high activity. Follow-up: Discuss dates with Mike

He said he his equipment was calibrated by someone at the office in the last three months, and is calibrated yearly as required.

[redacted]

Davis said he was given paperwork stating that the testing was for alterations. Upon discussion, he acknowledges that duct testing as Alterations rather that new was his fault. Patrick said that he had done alterations in the past for the same installer, and there were equipment change-outs, and he thought this was the same. When asked if all new ductwork and new equipment didn't make him question whether it was should be considered a new system.

No explanation for QA duct testing failure.

VDT does not typically use heating output to determine nominal airflow, because they typically hit leakage targets easily with cooling. – Follow-up: check for incidents of heating method.

He claimed the TMAHs were there – he is sure he put them in. He acknowledged putting TMAHs in for contractors in the past. When asked if he was aware that he is not allowed to install the TMAHs, he said he meant that he put the stickers in. He was then asked how he got a temperature split reading without TMAHs, he said he must have used the grills.

[redacted]
No explanation for blower door discrepancies.

[redacted]
There were two systems on the home.
No explanation for duct leakage failures
No explanation for RCA failure
There was some initial confusion, but when CF-4Rs were printed out, this was clarified.

[redacted]
No explanation for duct leakage discrepancies
Patrick admitted that he did not complete sealing of all accessible leaks or visual verification, as part of smoke testing. Patrick said he "poked his head in" and did not know in general that he might be expected to go under a house. Follow-up: paper audit number of tests Patrick has done on the same day as smoke tests.

Patrick, unsolicited, explicitly stated that he does not do drive bys and that he went to all of these addresses himself.

Patrick did not know that failures had to be entered into the registry during 100% testing.

Patrick said that smart vents the blade was not taped, but that the housing was sealed by the installer with butyl tape.

ACTION PLAN

QA ACTION REPORT

To be used in conjunction with QA Summary Report

1. Verify with City of Stockton that Malbec and Merlot were truly new construction
    a. MW contacted head building inspector on 01-31-12 and confirmed that Malbec and Merlot were "from the ground up" new construction.
2. Review "Untest" information
3. Review testing done on 4/20/11, 5/9/11, and 6/14/11
4. Additional QA
5. Check Frequency of heating method being used to determine total system fanflow

DISPOSITION

EXHIBIT 12

From: Charlie Bachand
Sent: Tuesday, January 17, 2012 4:34 PM
To: 'Patrick Davis'; Mark Wiese
Subject: RE: QA Review

Hi Patrick,
We will have an update for you by Friday. In the meantime:
1. Do you have any questions or comments to make based on our interview?
2. Could you send your scheduling information for 5/9/2011 and 6/14/2011? The same format used to send your scheduling information for 4/20/2011 would be fine, and the reason for our request is identical.

Let me know if you'd like to discuss the above or any other concerns.
Regards,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

From: Patrick Davis [mailto:prdavis31@gmail.com]
Sent: Tuesday, January 17, 2012 11:22 AM
To: Charlie Bachand
Subject: Re: QA Review

Hey Charlie
I just wanted to check and see if there was any update on my suspension.... I haven't worked in about a month and I have my first kid due in a month and a half, so I was just wanting to check an see when I can expect something..... Thanks
Patrick Davis

On Jan 2, 2012, at 1:39 PM, Charlie Bachand <Charlie@calcerts.com> wrote:

> Hi Patrick,
> Please check your email for scheduling information from Mark Wiese at CalCERTS. It is urgent that we complete the QA process in as timely a manner as possible. If you have any

questions regarding how and when to schedule an appointment please include both myself and Mark in the email.
Per our letter below, failure to contact CalCERTS will result in decertification. Please contact us before close of business on Jan. 6, 2012.

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

From: Patrick Davis [mailto:prdavis31@gmail.com]
Sent: Wednesday, December 21, 2011 5:42 PM
To: Charlie Bachand
Cc: John Flores
Subject: Re: QA Review

I am currently on vacation until after January 1st..... So I won't be able to schedule my meeting until after that. Can you let me let me know a date and a time after the first that we can meet?
Thanks
Patrick Davis

Sent from my iPhone

On Dec 21, 2011, at 5:02 PM, Charlie Bachand <Charlie@calcerts.com> wrote:

> Patrick,
> You should always ensure that CalCERTS, Inc. has an accurate and up-to-date email address to communications.
>
> Charlie Bachand
> Senior Analyst
> CalCERTS, Inc.
> Email: charlie@calcerts.com
> Office: 916-985-3400
> Fax: 916-985-3402
>
> ---
>
> **From:** Charlie Bachand
> **Sent:** Friday, December 16, 2011 3:49 PM
> **To:** 'prdavis@liberty.edu'; Mark Wiese
> **Subject:** QA Review
>
> Patrick Davis,
>
> This letter is to inform you that you failed a QA review. As a result you have been placed on a 15 day suspension. Please contact CalCERTS within this 15 day period to schedule a meeting to discuss this matter. Failure to contact

CalCERTS within this timeframe will result in decertification.

You failed QA inspections at the following addresses:

346 Malbec Ct, Stockton, CA

519 Merlot, Stockton, CA

425 Merle, Stockton, CA

In addition, we will need to discuss all of your rating activity on 4/20/2011.

You will be given the opportunity to present your records and documentation when meeting with CalCERTS.

Sincerely,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

EXHIBIT 13

January 30, 2012

Patrick Davis
6345 Rainier Ave
Rocklin, CA 95677

Dear Mr. Davis,

A Quality Assurance investigation by CalCERTS, Inc. has determined that your actions as a California HERS Rater are in violation of Title 24 and/or Title 20. Therefore CalCERTS, Inc. is decertifying you as a rater, effective immediately. This will not prevent you from accessing the registry as an installer if you are also an installer.

Our QA process found multiple failures at multiple addresses concerning verification of Duct Leakage and Refrigerant Charge. Failures include:

1. Duct Leakage Verification – multiple failures
    a. Failure to correctly measure Duct Leakage.
    b. Failure to correctly determine Duct Leakage target.
    c. Failure to verify Sealing of All Accessible Leaks and Visual Verification when required.
2. Refrigerant Charge verification – multiple failures.
    a. You incorrectly certified homes as compliant with Title 24 by verifying the presence of TMAHs. Our QA Rater was able to determine that, in some cases, the TMAHs you certified as present were, in fact, not there.
    b. Stickers were placed indicating TMAHs where none were drilled.
    c. You verified airflow using Temperature Split when no TMAHs were present to do so. Our QA Rater determined that there was inadequate airflow using a flow hood.
    d. Failure to correctly verify functioning TXV.

We have determined that these failures are egregious, establish a pattern, and are not rectifiable.

As required by Title 20, CalCERTS, Inc. will also notify the California Energy Commission that you have been decertified, along with the details of our investigation.

Regards,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.

EXHIBIT 14

QA DISPOSITION

Patrick Davis- Rater since 07-19-07, RCA 01-08-10

This rater has had four addresses fail QA, with multiple failures at some addresses. Fails include visual inspections, such as verifying TMAHs although none were present; and Sealing all Accessible Leaks with the use of smoke. Fails were recorded in diagnostic tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV). Based on statements provided by the rater, the data entry procedures at Valley Duct Testing are, at least, contributing to failures to correctly verify Title 24.

[redacted] – Results for both addresses were very similar, with the same failures.

Duct Leakage: Fail

Rater recorded a duct leakage value that would pass at 15% (Alteration) but would not have passed 6% (New Construction). QA recorded duct leakage well above rater's.

Note:

Ratings were done as Alterations. Buildings and ductwork all appeared to be new. When asked, the homeowner stated the homes were new. We contacted the City of Stockton lead building official, who confirmed that the project was new construction, from the ground up, and plans with the CF-1R are on file.

When asked, Mr. Davis said he was given paperwork from Valley Duct Testing stating that the testing was for alterations. When asked if he looked at the ductwork in the attic, he said, "Yes". When asked if all new ductwork and new equipment didn't make him question whether it should be considered a new system, Mr. Davis asked if that was his responsibility. When told yes it was, he said that he had done alterations in the past for the same installer, and there were equipment change-outs and he thought this was the same. Upon discussion, he acknowledges that duct testing as Alterations rather that new was his fault.

Refrigerant Charge: Fail

TMAHs: Fail

No TMAHs are present in accessible plenums

When asked, Mr. Davis claimed the TMAHs were there – he is sure he put them in. To follow up, we asked if he is sure he put them in, he said yes. When asked if he was aware that he is not allowed to install the TMAHs, he said he meant that he put the stickers on. He was then asked how he got a temperature split reading without TMAHs, he said he must have used the grills. Mr. Davis acknowledged putting TMAHs in for contractors in the past.

RCA: Fail

Rater passed Airflow using temperature split. QA could not verify RCA using the Temperature/Split Method because no TMAHs were present. Using the Flow Hood, QA recorded adequate airflow.

RCV: Pass

TXV: Fail

Rater passed with a recorded Superheat of 17°
QA failed TXV with superheat outside target range.

[redacted]

*Owner's fiancée states that the rater was in the house for a **1/2 hour or less**. She let him in at 8 am, left at 8:10 to take son to school, and returned home at 8:30, and no one was there or came back. It is unlikely the rater was able to do DL tests on two systems and RCV on System 1.*

System 1
Duct Leakage: Pass

Refrigerant Charge: Fail
TMAHs: Fail
System 1 has the labels verifying TMAHs, but no actual holes were found..
RCA: Fail
Rater passed Airflow using temperature split. QA could not do temp/split to test air flow because no TMAHs were present.
QA failed RCA using a flow hood, measuring airflow well below the target of 600 cfm.

System 2
Duct Leakage: Fail
Rater recorded 146 cfm, and a target of **150**.
QA recorded leakage well above the target of 150 cfm.

[redacted] **(11/01/2011 QA- 12/08/2011)**
Duct Leakage: Fail
Rater properly failed DL, recording 280 cfm leakage with a target of **180**, then passed it on "all accessible leaks sealed with smoke".
QA recorded *leakage well above the rater's*, and *failed on smoke test*. Ducts **were accessible** under the house. Most of the leakage was under the house at the boots or holes in the ducts, which could have easily been sealed. In some areas, the ducts were sealed with cloth-backed duct tape – some of those with UL-181 over the top.

Mr. Davis had no explanation for duct leakage discrepancies. He said he did not go under the house because he did not have coveralls. Mr. Davis said he "poked his head in" while the installer was sealing leaks.
Additional Notes from the January 4th, 2012
Meeting between Patrick Davis, Charlie Bachand, and Mark Wiese

Mr. Davis was asked, and did not want the conversation recorded. Mr. Davis was told we do not give him permission to record the conversation and he said he understood.

Charlie briefly explained the suspension and how we found gross failures, and that it is CalCERTS responsibility take action to keep them from continuing.

Mr. Davis said he did 60-80 inspections a month, up to 25 a week in the summer months. Mr. Davis said that he does feel he has time to complete all of his work.

Mr. Davis stated he enters all his own information for alterations, and the office does it for new construction. Mr. Davis said he never verifies the accuracy of the information the office enters.

When asked, Mr. Davis said he was confident in his knowledge and abilities as a Rater.

Mr. Davis provided a letter from John Flores regarding confidentiality.

When asked about a large number of addresses entered in the registry in his name on April 20th, Mr. Davis said had not been in Gilroy. He had only been in Vintage park, and didn't even do all of those; Mr. Davis supplied some documentation. To follow-up, we asked for any documentation of which addresses he did do.

Mr. Davis said his equipment was calibrated by someone at the office in the last three months, and is calibrated yearly as required.

Mr. Davis did not know that failures had to be entered into the registry during 100% testing.

Mr. Davis said that smart vents the blade was not taped, but that the housing was sealed by the installer with butyl tape.

Mr. Davis, unsolicited, explicitly stated that he does not do drive-bys and that he went to all of these addresses himself.

EXHIBIT 15

Erik Hoover - Rater since 08/20/08 - RCA 1/11/10

This rater has had four QAs completed and has fails on all four. Fails include visual inspections, such as verifying TMAHs although none were present. Failure to determine minimum insulation requirements for QII, or properly verify High EER. Fails were recorded in measuring device tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV).

[redacted] (08/08/2011 QA- 10/28/2011)

(This QA mirrors [redacted] and [redacted], with the same passes and fails)

Duct Leakage: Fail

Rater recorded duct leakage of 78 cfm, and a target of **150**.

QA recorded DL of 99 cfm, with a target of **60**.

According to the CF-1R at the Stockton Building Department, this is new Construction and should have had a 6 percent target. The leakage the rater recorded was 21 cfm less than the QA. The Heating Method could have raised the target to **66** cfm.

Refrigerant Charge: Fail

TMAHs: Fail

No TMAHs present. Both supply and return plenums were accessible.

RCA: Fail

Rater passed Airflow using temperature split. QA could not verify RCA using the Temperature/Split Method because no TMAHs were present.

RCA passed with

RCV: Pass

The Rater passed RCV with a difference of -1.0°

QA Passed RVC with a difference of 2.5°

TXV: Fail

The Rater passed with a recorded 15°.

QA failed with a recorded superheat of 34.6°.

[redacted] (09/12/2011 QA- 11/15/2011)

Building Envelope: Pass

Rater recorded leakage of 1289 cfm, with a target range of 775-1551 cfm.

QA recorded leakage of 927cfm

Pass, but with a 350 cfm difference between the QA and rater's test results.

QII (I): Fail

- No insulation certificate posted in the attic.
    - Since no certificate was posted, QA contacted the installing company and spoke with Sean Archuleta. Sean said the installed insulation was Owens Corning PROPINK L77 (see spec sheet)

- Rater recorded incorrect target insulation depth of 14.75" and a pass
- QA recorded target insulation depth of **12.75.**" Various measurements were taken, a couple above the 12.75", but others below. There were no measurements above 14.75"
- Rater recorded insul. weight at .615 lb./sq. ft. with an incorrect target of .635
- QA recorded insul. Weight at .430 lb./sq. ft. with a target of **.555**

- No gasket around access

Duct Leakage: Pass
Rater recorded duct leakage of 84 cfm, and a target of **96.35.**
QA recorded DL of 94 cfm.

High EER: Fail
No documentation available on High EER for installed equipment.

[redacted] (09/12/2011 QA- 11/15/2011)

Building Envelope: Pass
Rater recorded leakage of 1302 cfm, with a target range of 775-1551 cfm.
QA recorded leakage of 833.5cfm
Pass, but with a 468.5 cfm difference between the QA and rater's test results.

QII (I): Fail

- No insulation certificate posted in the attic.
  - Since no certificate was posted, QA contacted the installing company and spoke with Sean Archuleta. Sean said the installed insulation was Owens Corning PROPINK L77 (see spec sheet)
  - Rater recorded incorrect target insulation depth of 14.75" and a pass
  - QA recorded target insulation depth of 12.75." Various measurements were taken, a couple above the 12.75", but others below. There were no measurements above 14.75"
  - Rater recorded insul. weight at .615 lb./sq. ft. with an incorrect target of .635
  - QA recorded insul. Weight at .430 lb./sq. ft. with a target of .555

Duct Leakage: Pass
Rater recorded duct leakage of 77 cfm, and a target of **96.35.**
QA recorded DL of 91.5 cfm.

High EER: Pass

[redacted] (10/13/2011 QA- 10/27/2011)

System 1:
Duct Leakage: Fail
Rater recorded 71 cfm, and a target of **72.**
QA recorded 165 cfm.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs present.
RCA: Pass
Rater recorded airflow of 1080cfm, with a target of 900
QA recorded airflow of 1055 cfm
RCV: Fail
The Rater passed RCV with a difference of -3.0°
QA Passed RVC with a difference of -7.0°
TXV: Pass
The Rater recorded superheat of 19°.
QA recorded superheat of 15.3°.

CCAF: Fail
No HSPP or PSPP
Rater recorded airflow of 1080 cfm, with a target of 1050
QA recorded airflow of 1055 cfm.

FWD: Pass
Rater recorded 315 watts, with a target of **626.4**
QA recorded 379 watts, with a target of **611.9**

System 2:
Duct Leakage: Fail
Rater recorded 47 cfm, and a target of **48.**
QA recorded 121 cfm.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs present.
RCA: Pass
Rater recorded airflow of 868 cfm, with a target of 600
QA recorded airflow of 1120 cfm
RCV: Pass
The Rater passed RCV with a difference of -3.0°
QA Passed RVC with a difference of -3.9°
TXV: Fail
The Rater recorded superheat of 21°.
QA recorded superheat of 26.1°.

CCAF: Fail

No HSPP or PSPP
Rater recorded airflow of 868 cfm, with a target of 700
QA recorded airflow of 1120 cfm.

FWD: Pass
Rater recorded 228 watts, with a target of **503.44**
QA recorded 418 watts, with a target of **649.6**

EXHIBIT 16

Tim O'Neil Logged In [Logout]

Test Results for [redacted] System 1

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798590049	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-20-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-22-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-22-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-RCA-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (249467)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)

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Valley Duct Testing

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

This is the 1st system at [redacted] It serves the left side of the house, Family room, office,bedrooms, and baths. DL, rater passed with 71 cfm (72), QA, failed with 165 cfm (72).The Heating Method would have increased the target to 83 cfm (64,000 btu). CCAF failed because I didn't see any PSPP or HSPP. RCA failed as there were no TMAHs and failed Subcooling with 6.9 degrees.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage New	CF-4R-MECH-20	**QA FAILED**	System 1	[Comments]
Cooling Coil Airflow	CF-4R-MECH-22	**QA FAILED**	System 1	[Comments]
Fan Watt Draw	CF-4R-MECH-22	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Valley Duct Testing

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(877-437-7787)
Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 10/27/2011 / 15:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Trane XR15 **Model:** 4TWR5036E1000BA **# of Vents:** 7 **# of Returns:** 2 **SEER:** 15.25
F.A.U. Make:	Trane XT80 **Model:** TUD1B080A9H31BB **AFUE:** .80 **HSPF:** 8.5 **Output BTU:** 64,000 **Location:** Attic
Coil Make:	Comfort Co. **Model:** 4TXCB0368C3HCBA **EER:**

Coil Number: 11171TA65G **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

	Allowed Leakage (CFM)
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons **3** x 400 x *leakage factor* = **72** CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**71**
Pass if Actual Leakage is less than Allowed Leakage	☑ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590050**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Left Side**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa). List **Actual** Leakage from duct leakage test(CFM)	Actual Leakage (CFM) **165**
Pass if Actual Leakage is less than Allowed Leakage ☐ **Pass** ☑ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **64,000** Output Capacity in Thousands of Btu/hr x **6%** = **83.33** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1055** x **6%** = **6330** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590050**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1					
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2					
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3					
System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**3**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**1050**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1080**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of Sacramento	MISR2011-5042

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☑ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**1080**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**626.4**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**315**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)
BROWER MECHANICAL INC

Responsible Person's Name:	CSLB License:
Kaye Thornton	**686451**

HERS Provider Data Registry Information

Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group

HERS Rater Information **CalCERTS Certificate # CC1-1798590050**

HERS Rater Company Name:
Valley Duct Testing

Responsible Rater's Name:	Responsible Rater's Signature:
Erik K Hoover	**Erik K Hoover**
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☐	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**FAIL**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**System 1**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**3**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**1050**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1055**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test	(Page 2 of 2)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of Sacramento	MISR2011-5042

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**1055**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**611.9**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**379**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590050**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1127454M2F**			
Outdoor Unit Make	**TRANE**			
Outdoor Unit Model	**4TWR5036**			
Nominal Cooling Capacity Btu/hr	**36000**			
Date of Verification	**10-13-2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10-1-2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10-1-2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)				
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)				
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)				
Evaporator saturation temperature ($T_{evaporator, sat}$)	**40**			
Condensor saturation temperature ($T_{condensor, sat}$)	**92**			
Suction line temperature ($T_{suction}$)	**59**			
Liquid Line Temperature (T_{liquid})	**85**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**69**			

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag				
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$				
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$				
Calculate difference: Actual Temperature Split - Target Temperature Split =				
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**				

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	System 1			
Calculated Minimum Airflow Requirement (CFM)	900			
Measured Airflow using RA3.3 procedures (CFM)	1080			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	PASS			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**7.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**19.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590050**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Additional QA Questions:

Ambiant Temperature: **66.8°F**

Note: If Installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (Instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Left Side**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 2**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 2**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Left Side**			
Outdoor Unit Serial #	**1127454M2F**			
Outdoor Unit Make	**Trane XR15**			
Outdoor Unit Model	**4TWR5036E1000BA**			
Nominal Cooling Capacity Btu/hr	**36000**			
Date of Verification	**10/27/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 2**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)				
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)				
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)				
Evaporator saturation temperature ($T_{evaporator, sat}$)	**38**			
Condensor saturation temperature ($T_{condensor, sat}$)	**77**			
Suction line temperature ($T_{suction}$)	**53.3**			
Liquid Line Temperature (T_{liquid})	**77**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**71**			

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 3 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of Sacramento	MISR2011-5042

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag				
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$				
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$				
Calculate difference: Actual Temperature Split - Target Temperature Split =				
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**				

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	System 1			
Calculated Minimum Airflow Requirement (CFM)	900			
Measured Airflow using RA3.3 procedures (CFM)	1055			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	PASS			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**0.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-7**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**FAIL**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**15.3**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3- 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

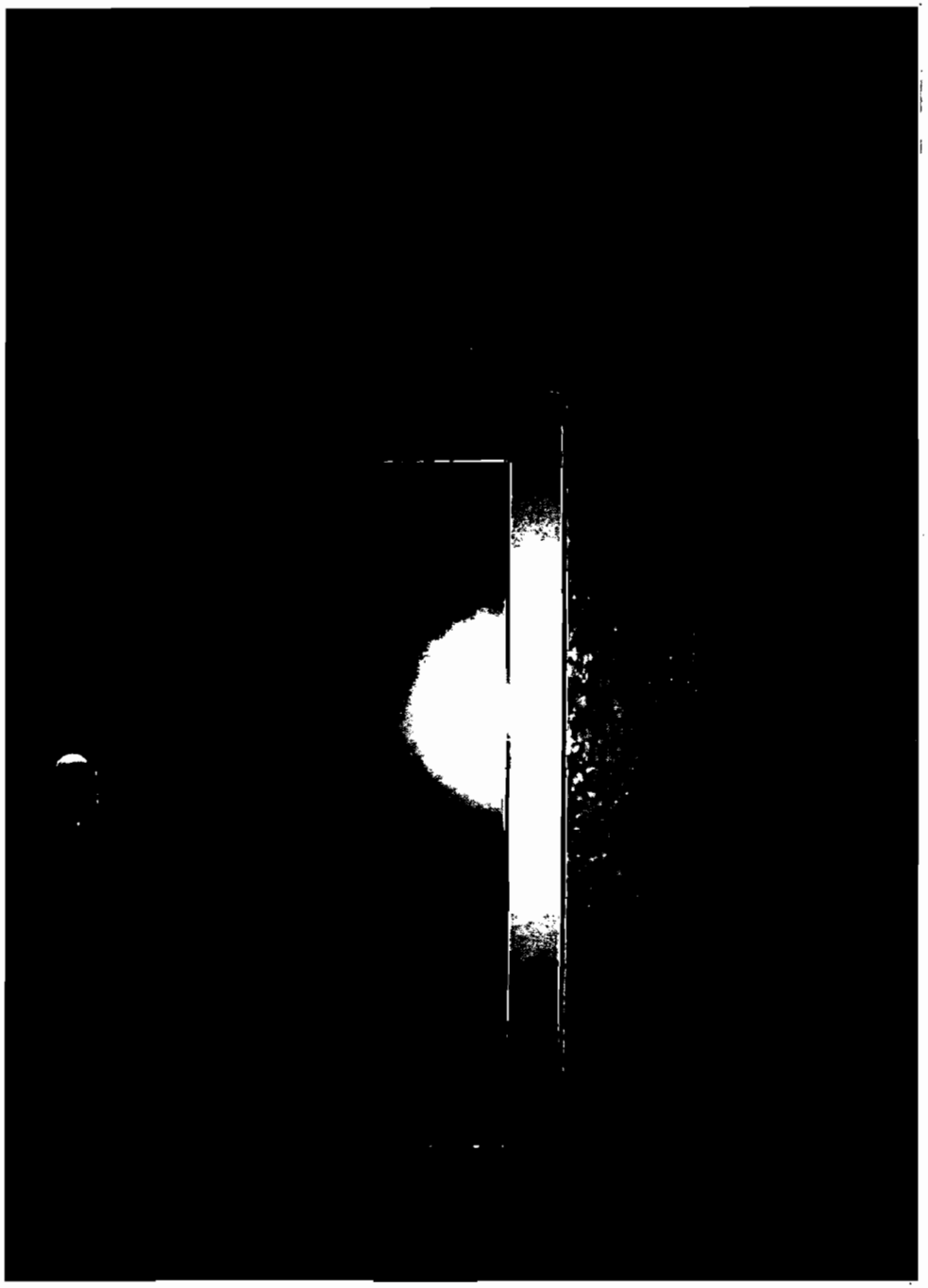
CalCERTS, Inc.®

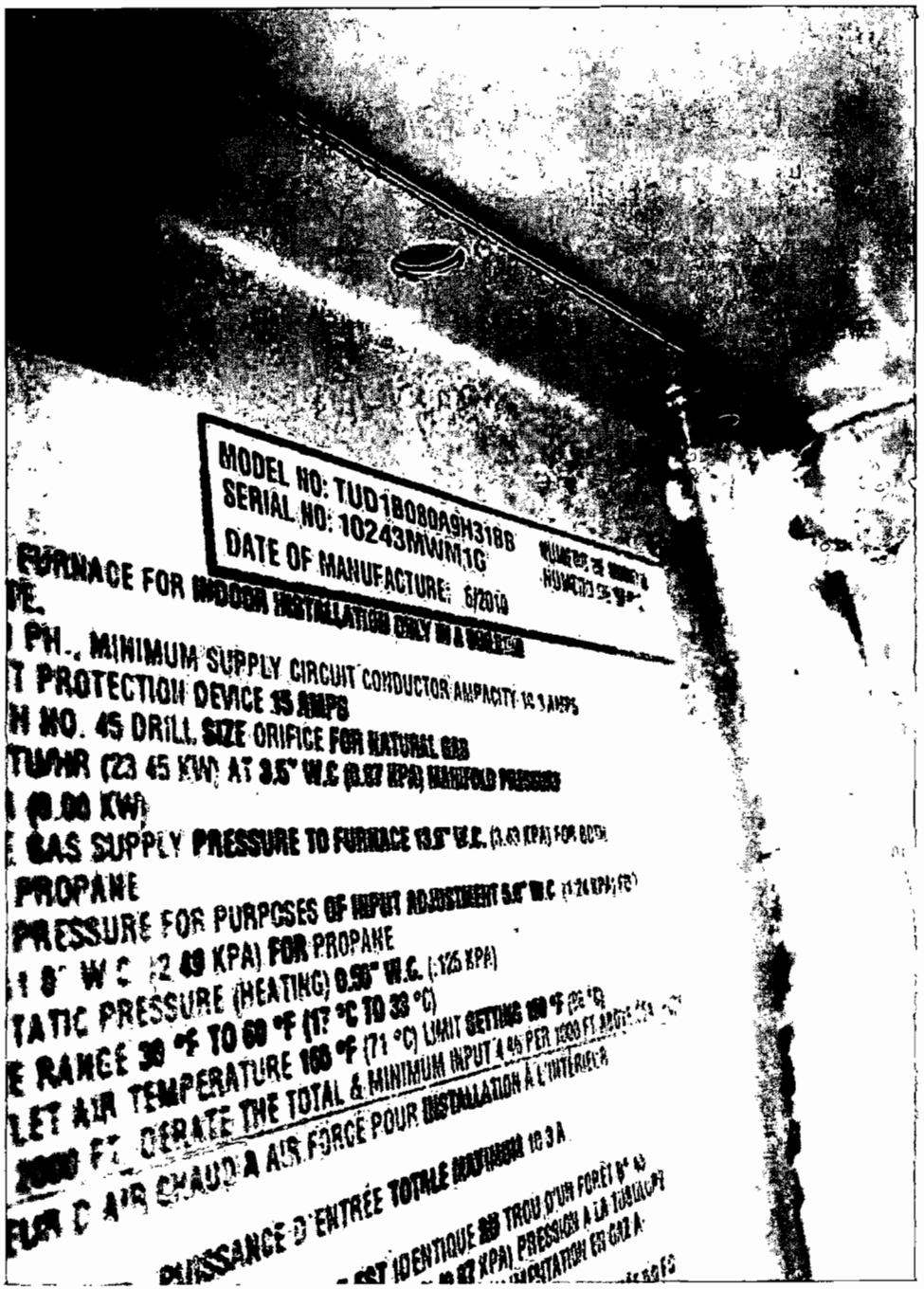
DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590050**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	

25

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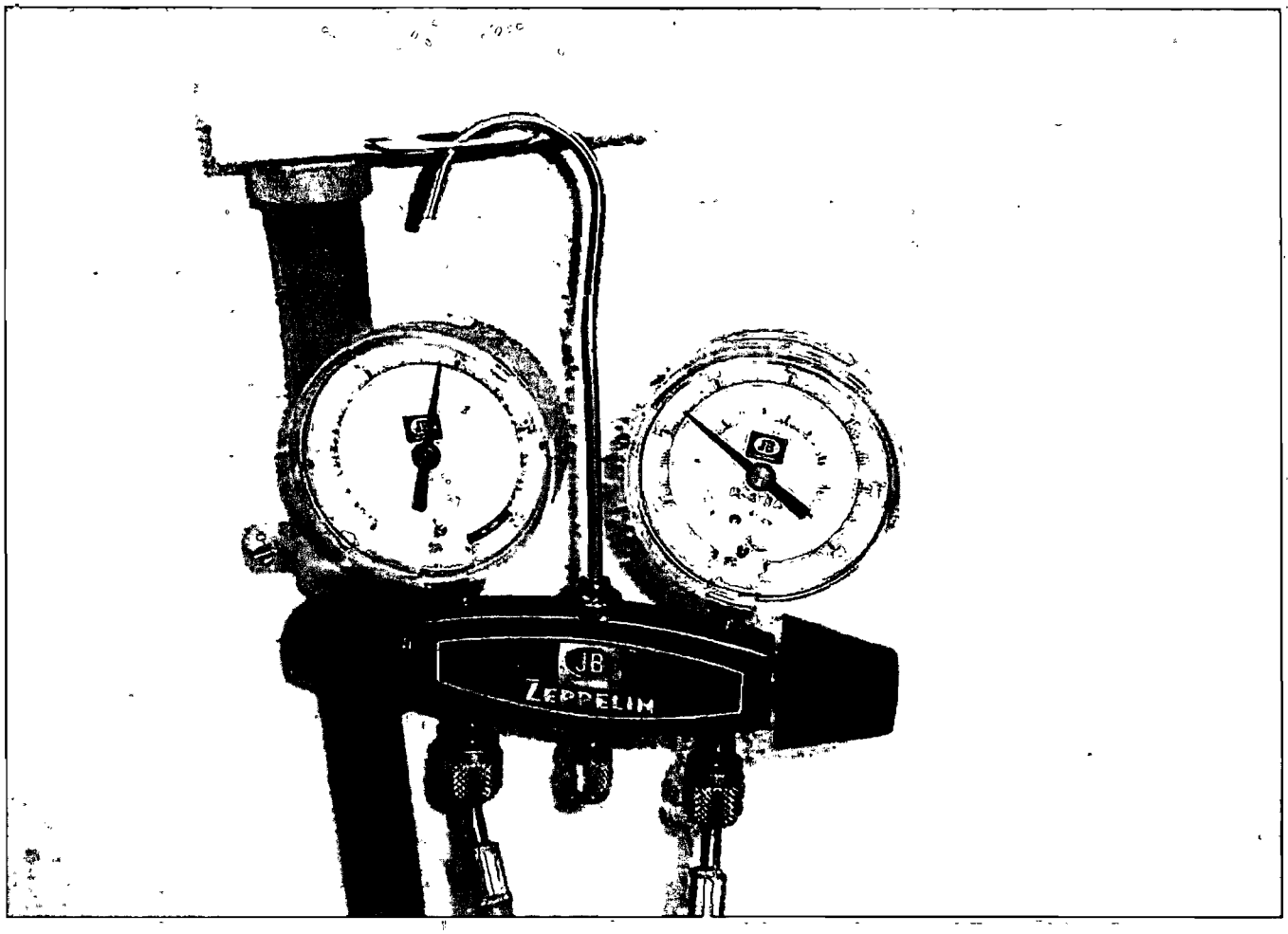
PE.
PH., MINIMUM SUPPLY CIRCUIT CONDUCTOR AMPACITY 10.3 AMPS
T PROTECTION DEVICE 15 AMPS
H NO. 45 DRILL SIZE ORIFICE FOR NATURAL GAS
TUYAU (23.45 KW) AT 3.5" W.C (0.87 KPA) MANIFOLD PRESSURE
(18.00 KW)
E GAS SUPPLY PRESSURE TO FURNACE 13.5" W.C. (3.43 KPA) FOR BOTH
PROPANE
PRESSURE FOR PURPOSES OF INPUT ADJUSTMENT 5.5" W.C (1.24 KPA) FOR
11.8" W.C. (2.49 KPA) FOR PROPANE
TATIC PRESSURE (HEATING) 0.50" W.C. (.125 KPA)
E RANGE 30 °F TO 60 °F (17 °C TO 33 °C)
LET AIR TEMPERATURE 160 °F (71 °C) LIMIT SETTING 200 °F (93 °C)
2000 FT. OPERATE THE TOTAL & MINIMUM INPUT 4.5% PER 1000 FT ABOVE
FUR D AIR CHAUD À AIR FORCÉ POUR INSTALLATION À L'INTÉRIEUR
PUISSANCE D'ENTRÉE TOTALE MAXIMUM 10.3 A
EST IDENTIQUE AU TROU D'UN FORET N° 45
.87 KPA) PRESSION À LA TUBULURE
INSTALLATION EN CAS A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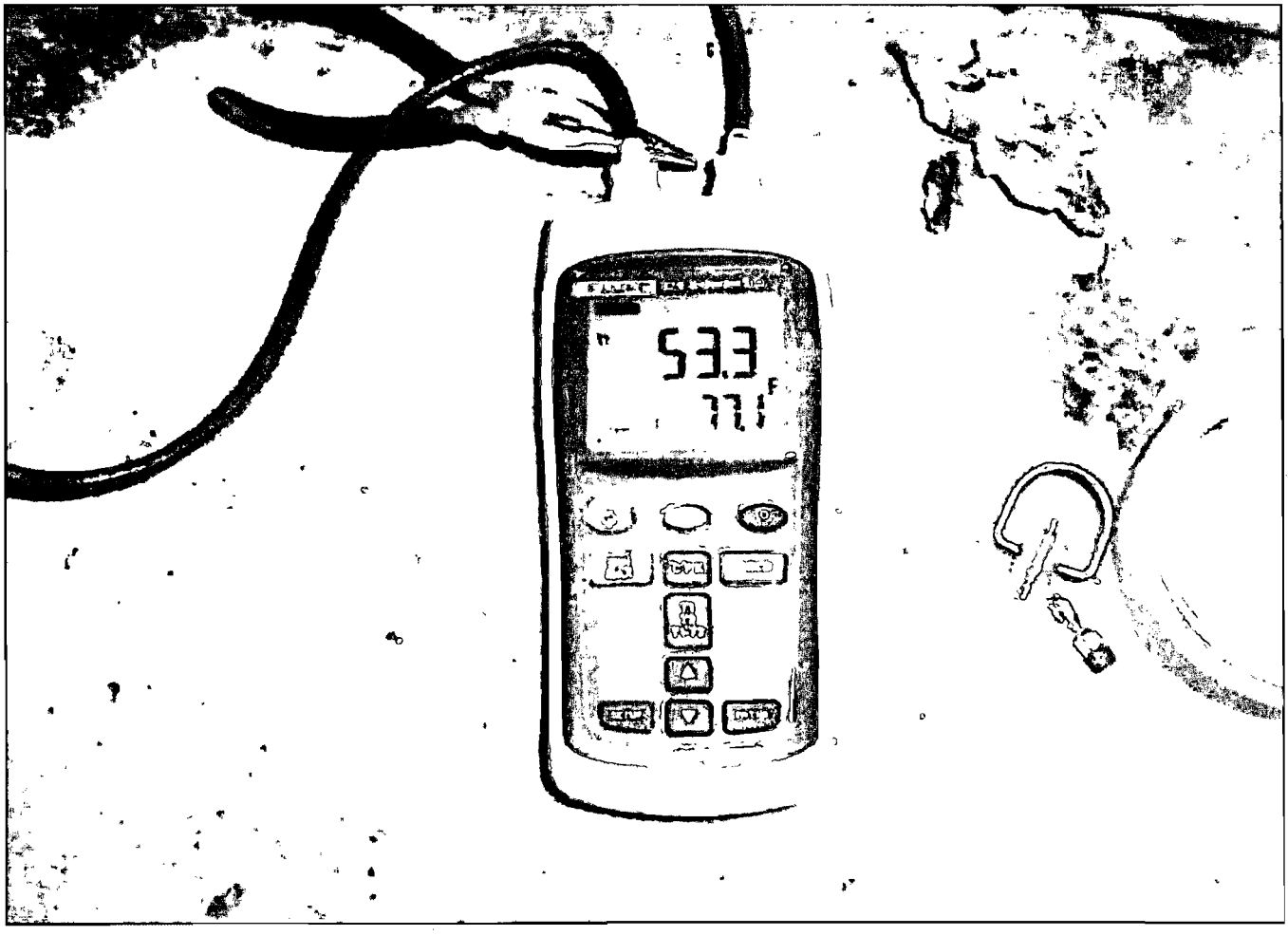
ZEPPELIN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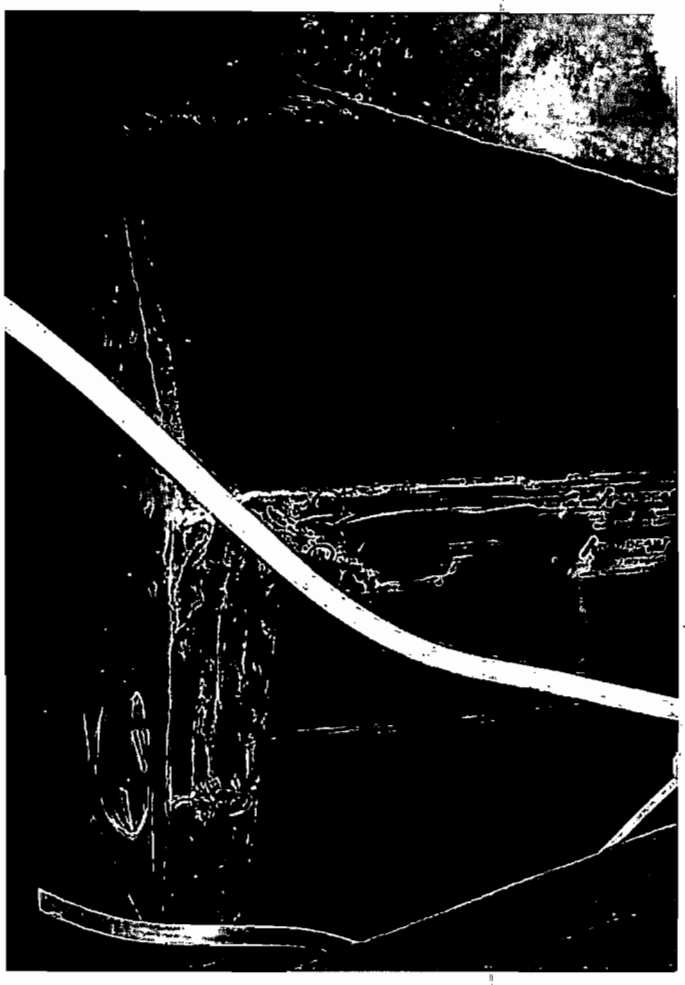
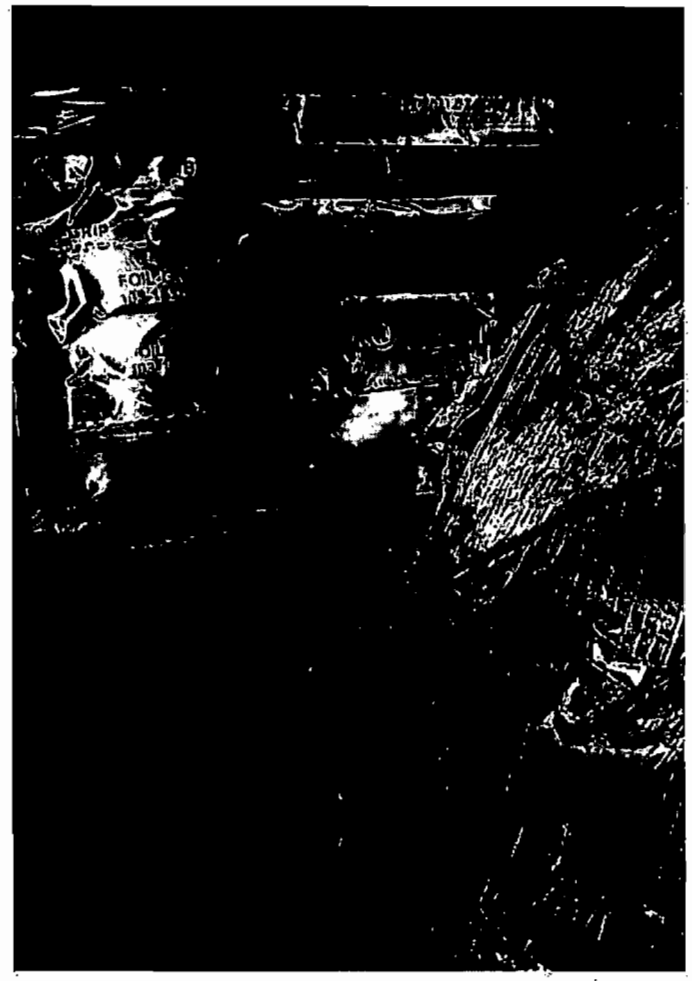
77.1

watts up?
WATTS
SELECT
MODE



SOLUTIONS



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Tim O'Neil Logged In [Logout]

Test Results for [redacted] SYSTEM 2

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798590049	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-20-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-22-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-22-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton
CF-6R-MECH-RCA-HERS CSLB: 686451 BROWER MECHANICAL INC Kaye Thornton

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (249467)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)

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[Class Cancellation Policy]

Valley Duct Testing

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R (877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/27/2011 / 15:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 2

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Trane XR15 **Model:** 4TWR5024E1000AB **# of Vents:** 7 **# of Returns:** 1 **SEER:** 15.25
F.A.U. Make:	Trane XT80 **Model:** TUD1B080A9H31BB **AFUE:** .80 **HSPF:** 8.50 **Output BTU:** 64,000 **Location:** Attic
Coil Make:	Comfort Co. **Model:** 4TXCB032BC3HCAA **EER:**

Coil Number: 1117TA65G **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: New ducts were installed in the attic. All floor vents have been closed off. Rep from Valley Ducttesters Inc. came by during QA inquiring about Solar P.V.

Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency

NO Photos

Registered CF-4R Data

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Tim O'Neil Logged In [Logout]

QA Report Results: [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

There are two systems in this house. This is System 2, servicing the right side of the house (Br, Liv, Kit, Lau, Ba). DL: Fail. Rater, 47 cfm (48); QA, 121 cfm (48).
CCAF: Fail. No HSPP.
Refrigerant Charge: Fail. No TMAHs and supply plenum present. RCA, RCV, TXV all Pass.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage New	CF-4R-MECH-20	**QA FAILED**	System 1	[Comments]
Cooling Coil Airflow	CF-4R-MECH-22	**QA FAILED**	System 1	[Comments]
Fan Watt Draw	CF-4R-MECH-22	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Enter the Duct System Name or Identification/Tag: **System 2**

Enter the Duct System Location or Area Served: **Right Side**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons **2** x 400 x *leakage factor* = **48** CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**47**
Pass if Actual Leakage is less than Allowed Leakage	☑ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Enter the Duct System Name or Identification/Tag: **System 2**
Enter the Duct System Location or Area Served: **right side(bed, kit, bath)**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.

Allowed Leakage (CFM)

Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below.

☑ Cooling system method:
Nominal capacity of condenser in Tons 2 x 400 x *leakage factor* = 48 CFM

☐ Heating system method:
21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM

☐ Measured airflow method (RA3.3):
Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM

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Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).

Actual Leakage (CFM)

List **Actual** Leakage from duct leakage test(CFM) **121**

Pass if Actual Leakage is less than Allowed Leakage ☐ **Pass** ☑ **Fail**

For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed).

List **Actual** Leakage from smoke test(CFM)

Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **64,000** Output Capacity In Thousands of Btu/hr x **6%** = **83.33** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1120** x **6%** = **6720** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.1.3				
System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**700**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**868**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**868**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**503.44**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**228**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☐	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**FAIL**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.0**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**700**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1120**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.				
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**649.6**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**418**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 2**			
System Location or Area Served			**right side**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.				Enter Pass or Fail	✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 2**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☑ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 2**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 2**			
System Location or Area Served	**right side**			
Outdoor Unit Serial #	**11302w3m2f**			
Outdoor Unit Make	**trane**			
Outdoor Unit Model	**4TWR5024**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**10/13/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 2**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)				
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)				
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)				
Evaporator saturation temperature ($T_{evaporator, sat}$)	**43**			
Condensor saturation temperature ($T_{condensor, sat}$)	**89**			
Suction line temperature ($T_{suction}$)	**64**			
Liquid Line Temperature (T_{liquid})	**82**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**69**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag				
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$				
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$				
Calculate difference: Actual Temperature Split - Target Temperature Split =				
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**				

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	System 2			
Calculated Minimum Airflow Requirement (CFM)	600			
Measured Airflow using RA3.3 procedures (CFM)	868			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	PASS			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 2**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**7.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 2**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**21.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 2**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **10/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Additional QA Questions:

Ambiant Temperature: **70.3°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for Installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 2**			
System Location or Area Served			**Right Side**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☑ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Right Side**			
Outdoor Unit Serial #	**11302W3M2F**			
Outdoor Unit Make	**Trane XR15**			
Outdoor Unit Model	**4TWR5024E1000AB**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**10/27/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 2**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)				
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)				
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)				
Evaporator saturation temperature ($T_{evaporator, sat}$)	**39**			
Condensor saturation temperature ($T_{condensor, sat}$)	**80**			
Suction line temperature ($T_{suction}$)	**65.1**			
Liquid Line Temperature (T_{liquid})	**76.9**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**70.3**			

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag				
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$				
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$				
Calculate difference: Actual Temperature Split - Target Temperature Split =				
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**				

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	System 2			
Calculated Minimum Airflow Requirement (CFM)	600			
Measured Airflow using RA3.3 procedures (CFM)	1120			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	PASS			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 2**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**3.1**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3.9**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 2**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**26.1**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3- 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

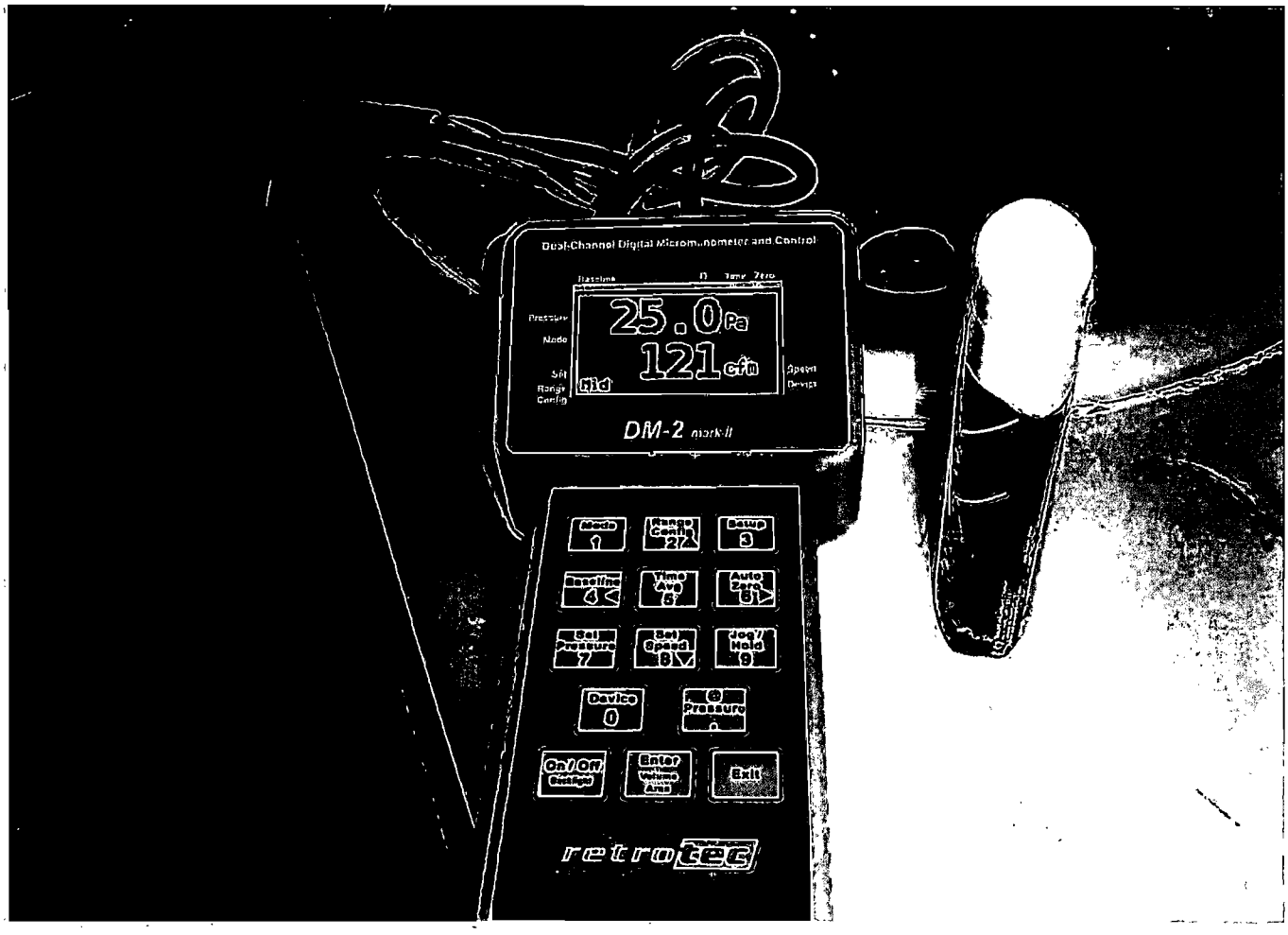
System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BROWER MECHANICAL INC**		
Responsible Person's Name: **Kaye Thornton**	CSLB License: **686451**	
HERS Provider Data Registry Information		
Sample Group # (If applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798590049**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/27/2011**	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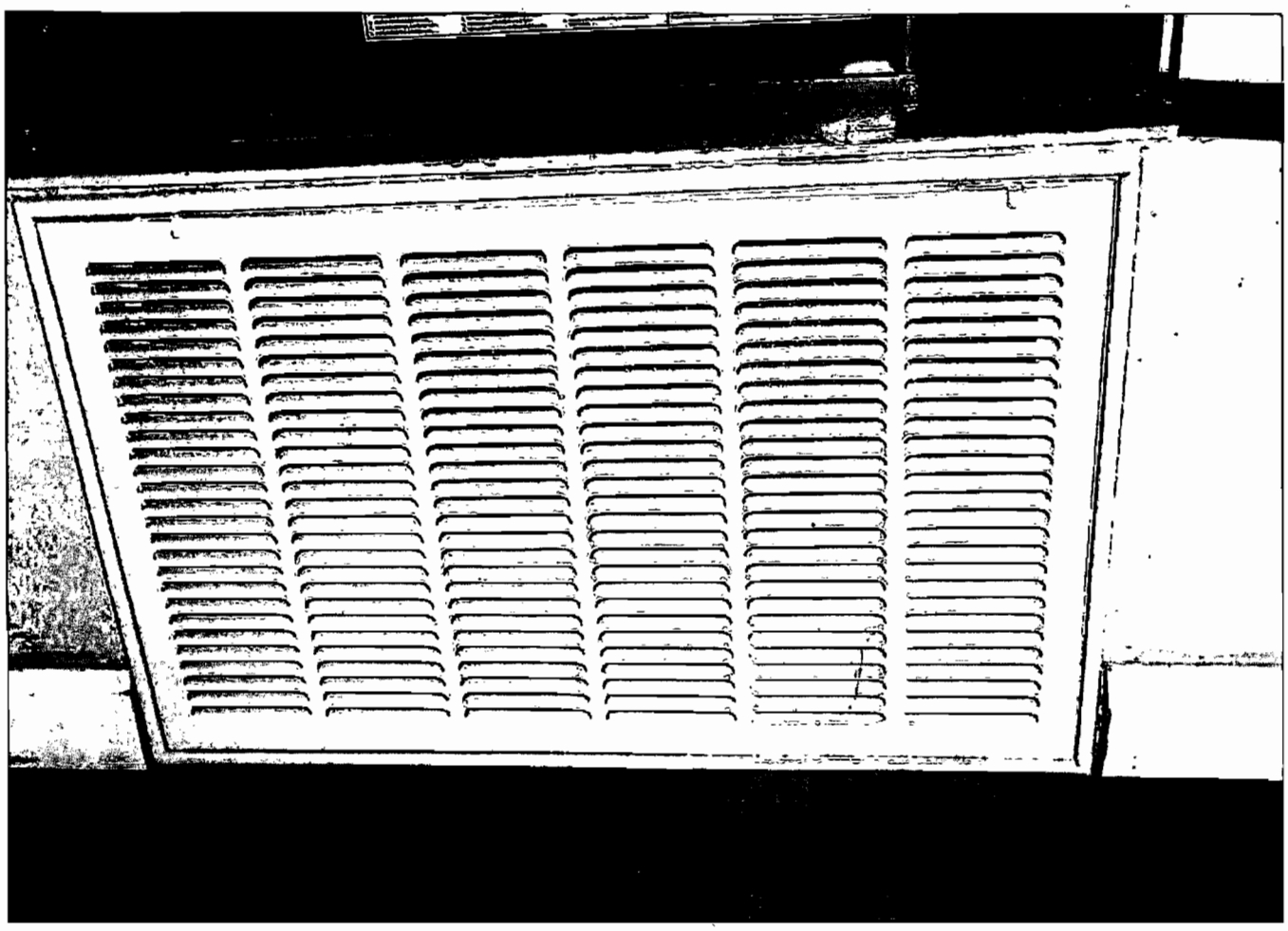

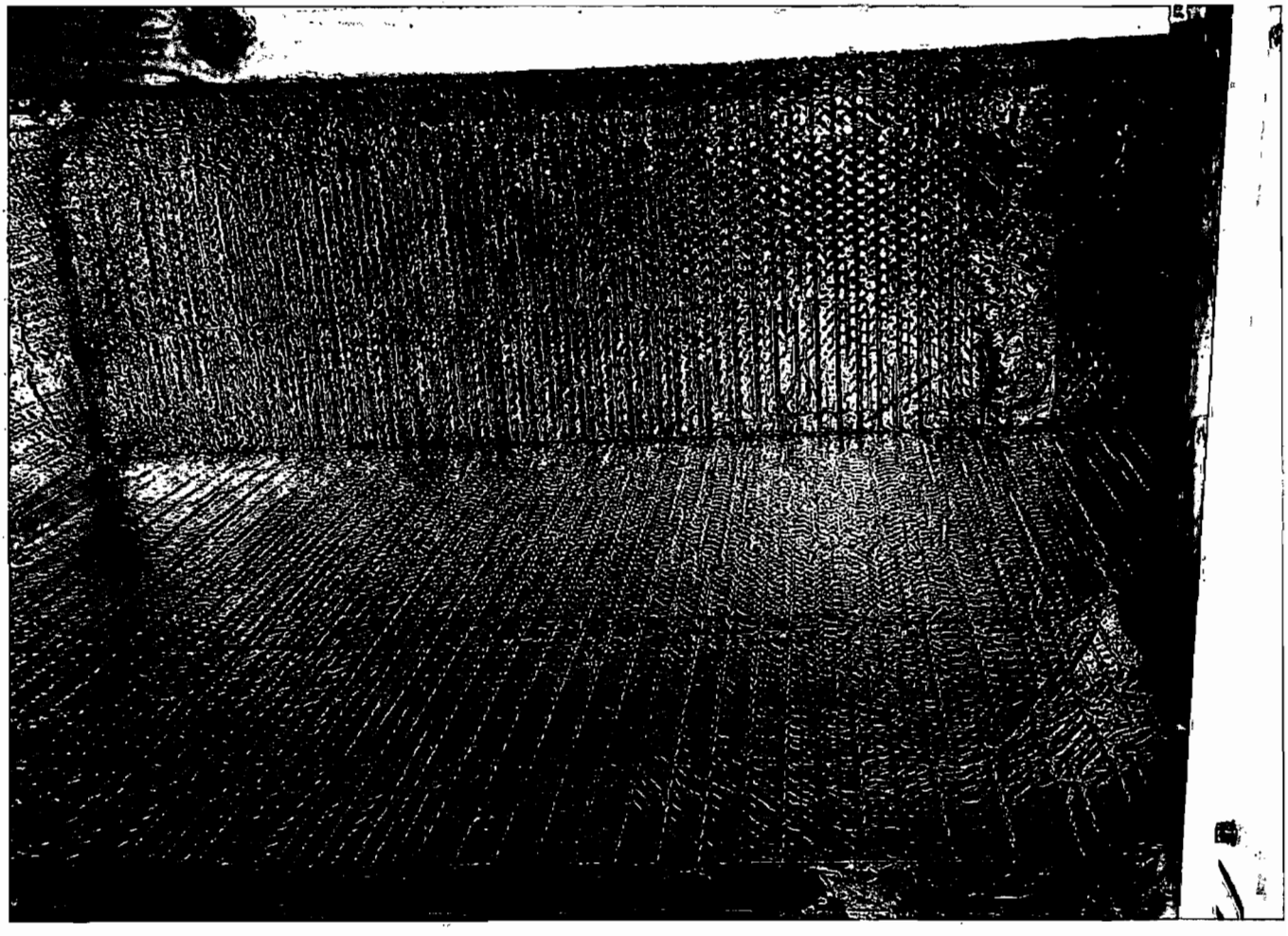

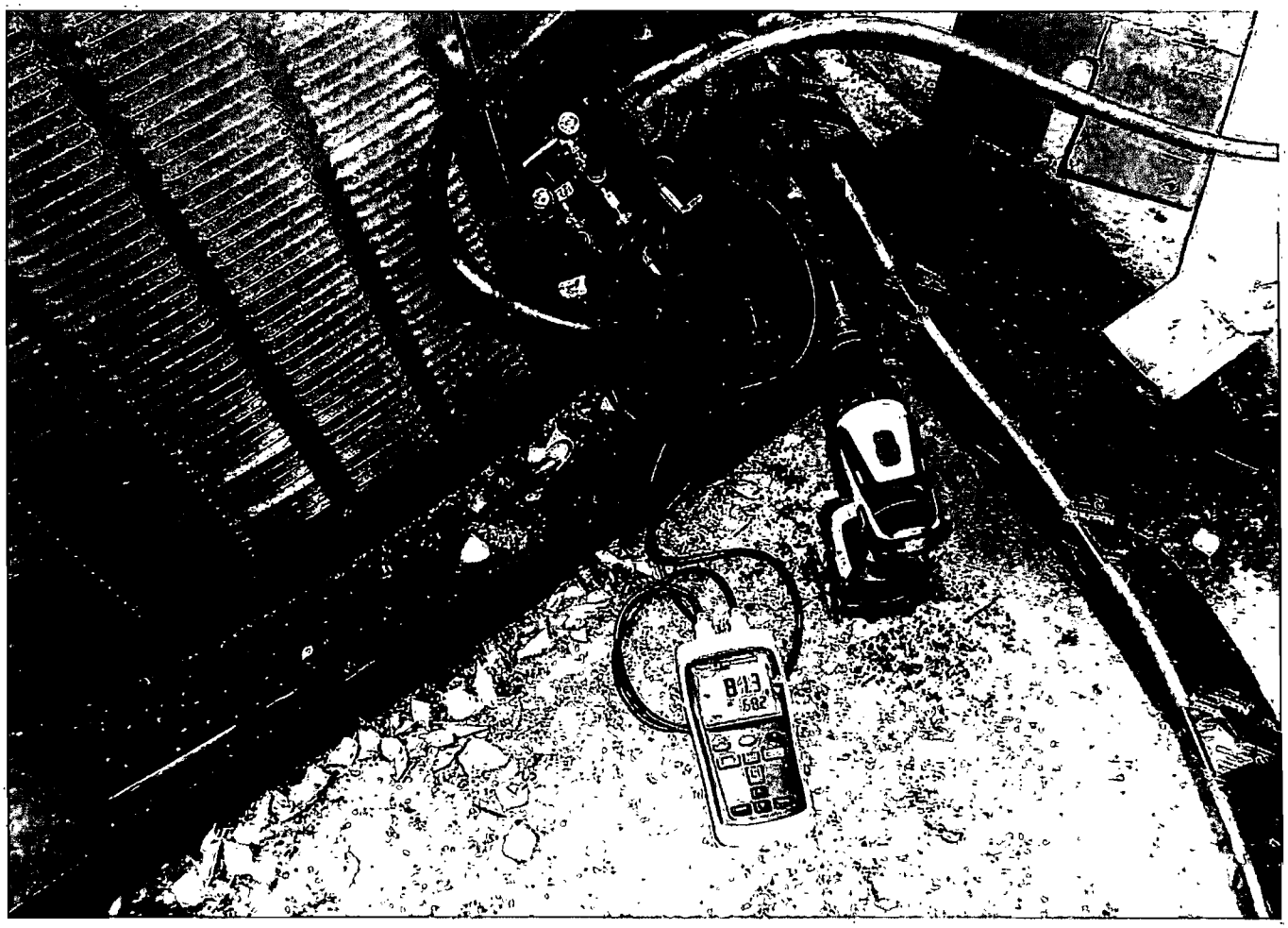

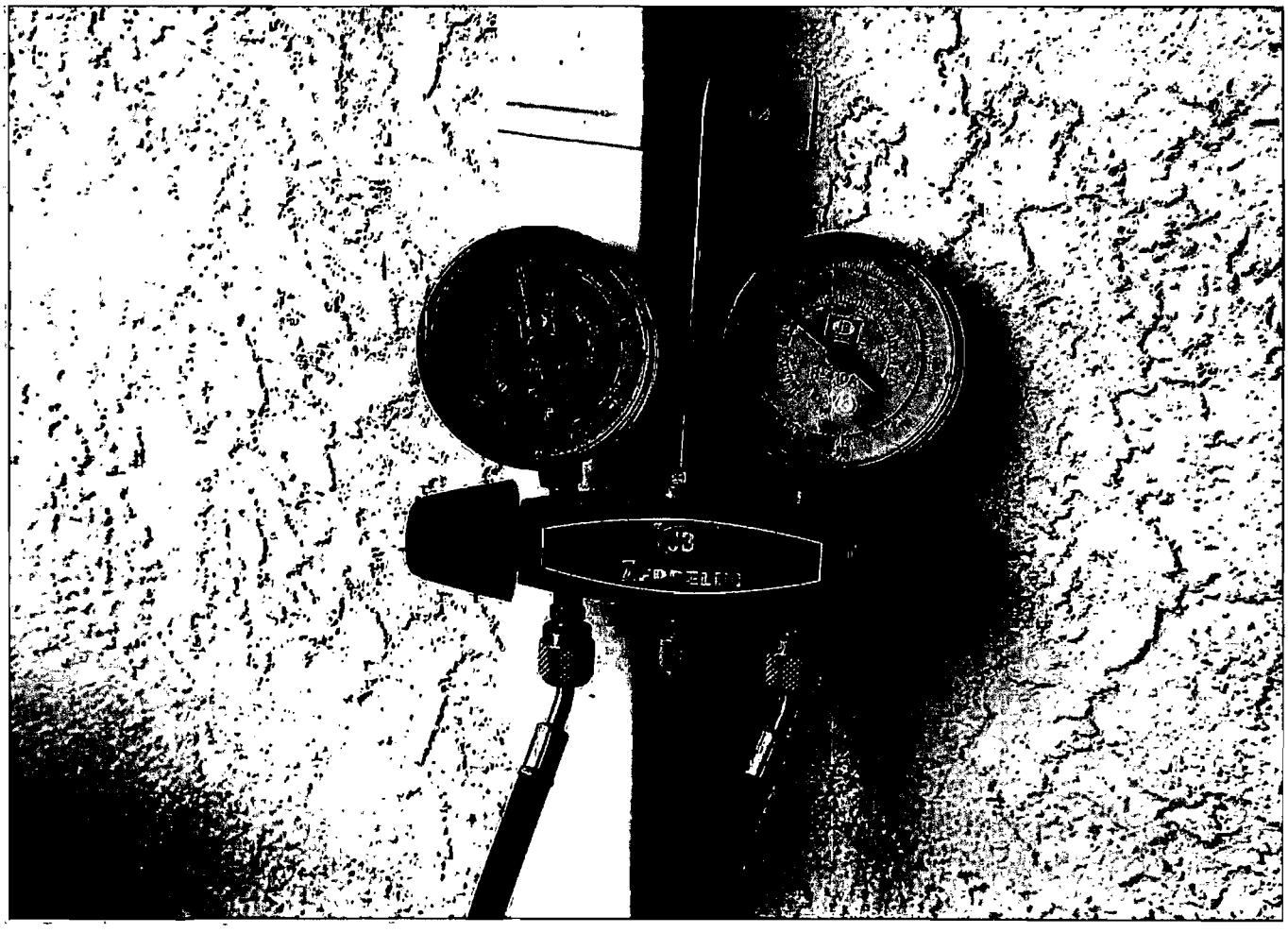

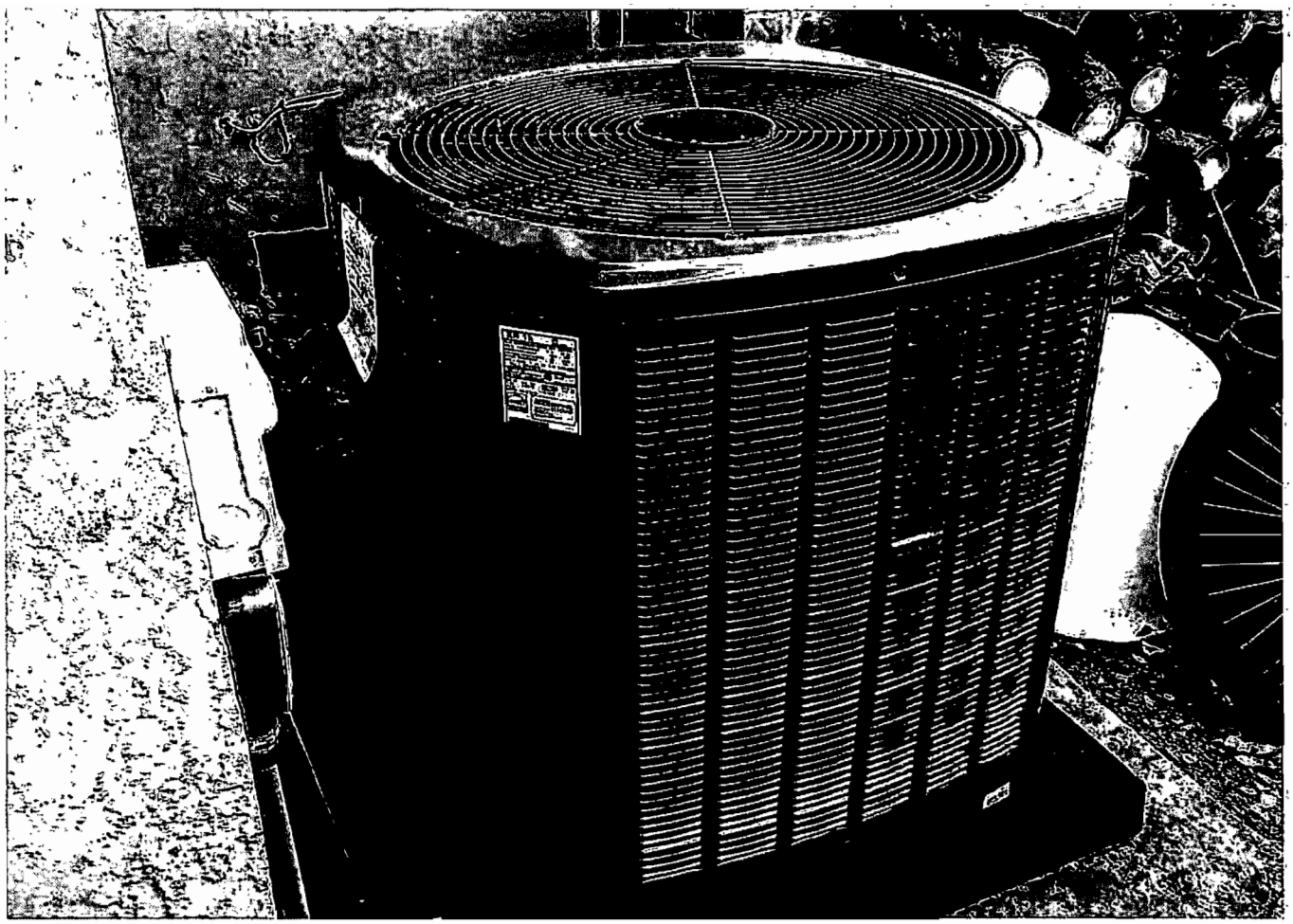

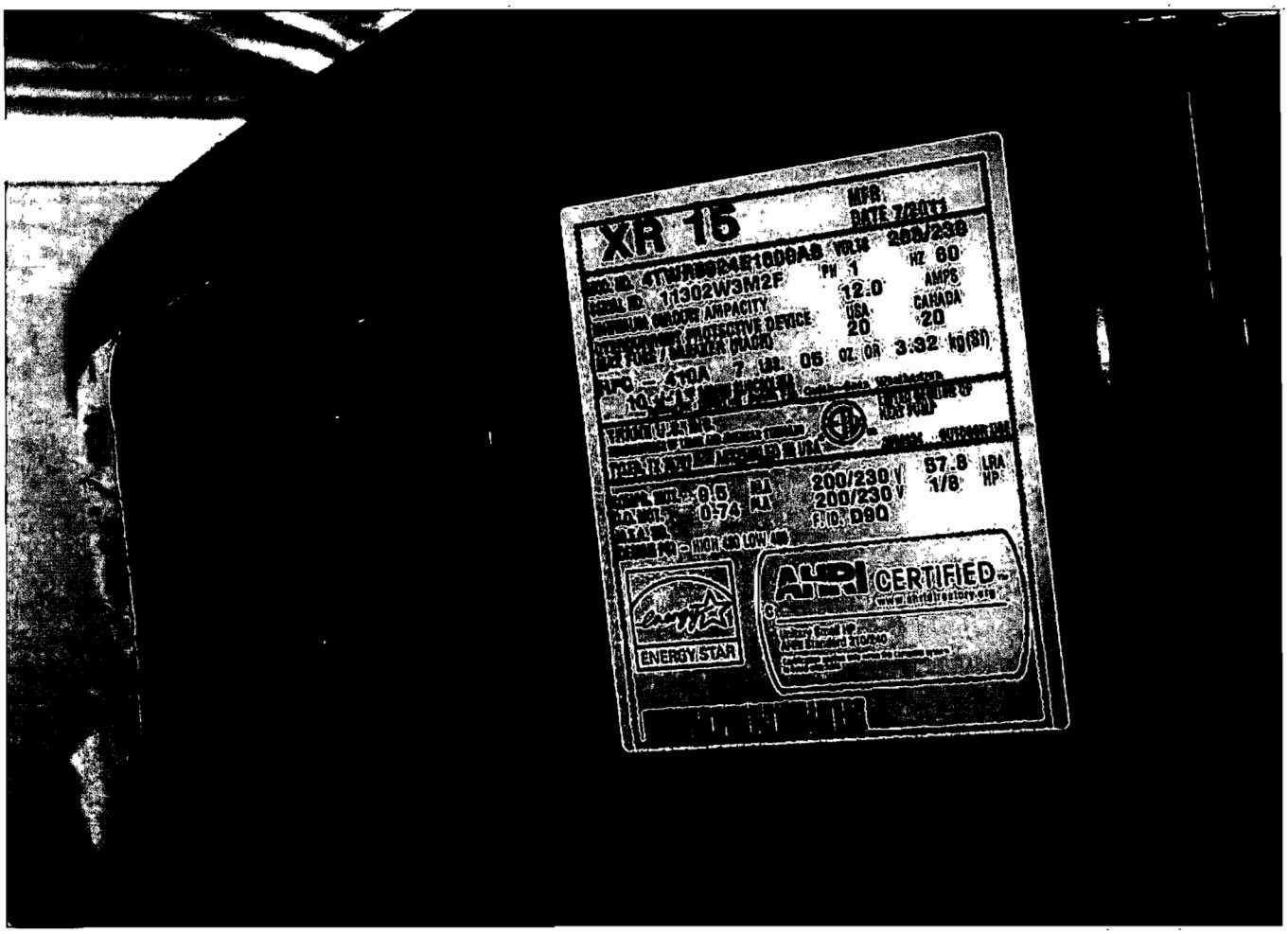
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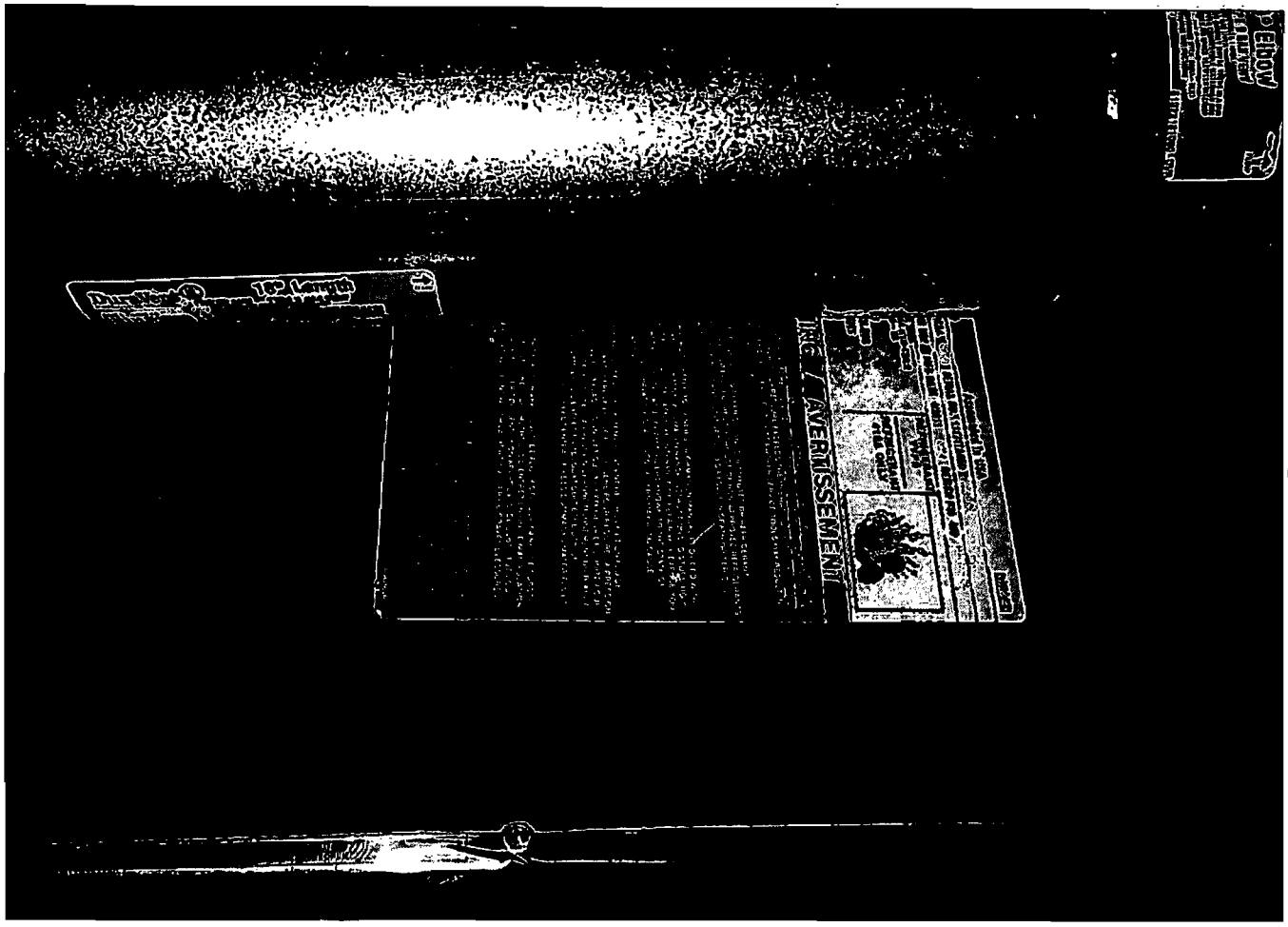

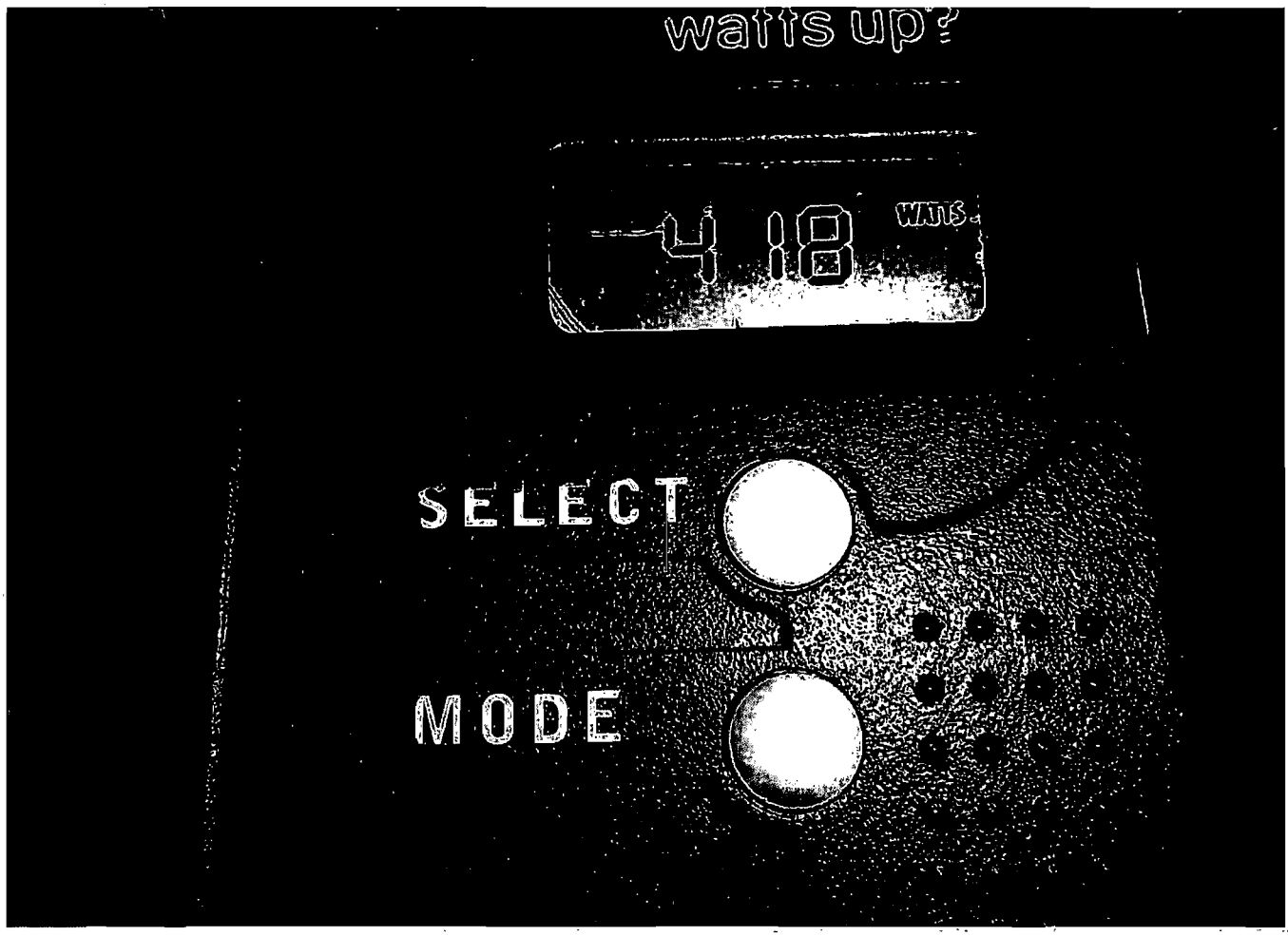
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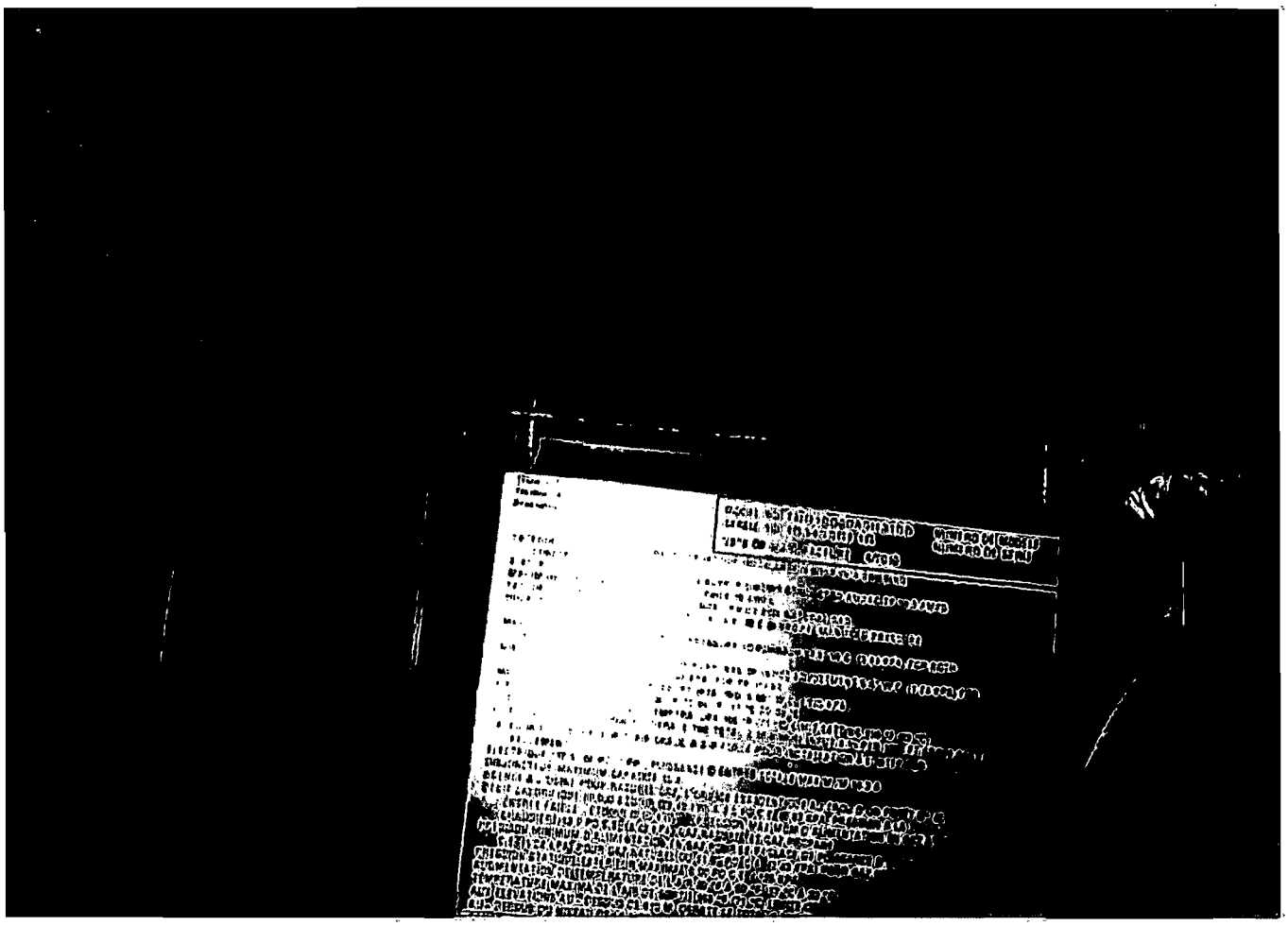
MODE



QA TESTED ALT

Hoover

Tim O'Neil Logged In [Logout]

QA Data Collection Form: [redacted] CA [redacted]

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/27 / 3PM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1 RT SIDE OF House (Beds, Living, bath Kitchen, laundry)

Type of System Split SYS2 = LEFT (Family Office, Beds, Baths)

Is the unit a HEAT ONLY unit? No

Condenser Make:* Trane XT80 Model:* TUD1B080A9H31BB S/N 10345 SGF1G # of Vents:* 7 # of Returns:* 1

SEER: 15.25

F.A.U. Make:* TRANE XR15 Model:* 4TWR5036E1000AB AFUE: .80 HSPF: 8.50

NO FILTER

Output BTU:* 64,000 Location: Attic 11302W3M2F

Coil Make:* Comfort Co ? Model:* 4TXCB032BC3HCAA EER:

Coil Number:* 1117ITA65G 410A Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

SYSTEM 2

Cond = 4TWR5036E1000BA S/N 11274 54M2F

FAN = TUD1B080A9H31BB S/N 10243MWM1Q

Coil = 4TXCB036BC3H S/N 11503NOF5G

Notes:

Homeowner - SYSTEM 1 7 VENTS / 1 RET
SYSTEM 2 7 VENTS / 2 RET

Rep from Valley Duct Testers came by inquiring about Solar PV.

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

5

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Contact Us

DL SYS 1
121 @ 25 PA
FW 418

DL = SYS 2
165 @ 25PA
FW 379

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
249468	Phase 1	[redacted]	MISR2011-5042	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-MECH-22**
HSPP/PSPP Installation: Fan Watt Draw Test		Clear Results
Site Address: [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.		
○	Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1	
○	Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2	
System Name or Identification/Tag	System 1	SYSTEM 2
System Location or Area Served	Whole House	505 + 550
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	1120	1055
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	.58	
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (Watt)**	649.6	611.9
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	418	379
The system complies if Tested (Watt) is less than or equal to Target (Watt). **Enter Pass or Fail**	Pass	Pass

FINAL TESTED RESULT for System 1: ☒ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
249468	Phase 1	[redacted]	MISR2011-5042	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		Clear Results
Site Address: [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater. DIDN'T SEE

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
○	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
○	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.	
○	Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1
○	Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2
✗	Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3

Nominal Cooling Capacity (ton) of the outdoor unit.	2 X 350 = 700 SYSTEM 2 3 X 350 = 1050
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	700 350 CFM/ton Standard
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor	700 1050

Rater 868

unit (ton). **Target (CFM)**	SYSTEM 1 1120	SYSTEM 2 Return 1 ~~505~~ 550 Return 2 1055
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	1120	
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	Pass	Pass

FINAL TESTED RESULT for System 1: (X) Pass ( ) Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: ---SELECT RATER---

SAVE INFO | CERTIFY RESULTS

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Sys 2 DL = 47 Pass (48)
Rater 868 HSPP (Y)
.58
T = 503.44
A = 228
FCA TMAH Yes
FH 868 Pass (600)
SC -3 Pass
SH 21 Pass

Sys 1 DL = 71 Pass (72)
CCAF HSPP (Y)
1080 Pass (1050)
T = 626.4
A = 315
FW
RCA TMAH (Y)
FH 1080 (900)
SC -3 Pass
SH 18 Pass

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
249468	Phase 1	[redacted]	MISR2011-5042	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		[Clear Results]
Site Address: [redacted] CA	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-5042
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Rater = 47 CFM

Rater = 71 CFM

Allowed leakage choose one

Sys 1 Sys 2

● Cooling system method:

Nominal capacity of condenser in Tons [2] x 400 x **6%** = CFM = 48 CFM

3 x 400 = 1200 x .06 = 72 CFM

Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).

Heating Method 64,000 x 21.7 x .06 = 83 CFM

List Actual Leakage from duct leakage test: [ ] CFM 83 CFM

Actual Leakage = 121 CFM ← QA → 165 CFM

☒ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☒ All supply and return register boots must be sealed to the drywall

☒ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☒ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

Ring Size Used: 1

Where Supply Boots Taped? No

Heating System Method: [64],000 Output Capacity in Thousands of Btu/hr

Sys 1

Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here [1120]

Sys 2 [1055]

FINAL TESTED RESULT for System 1: ● Pass ○ Fail

DECLARATION STATEMENT

- ☑ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☑ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☑ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☑ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person (s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

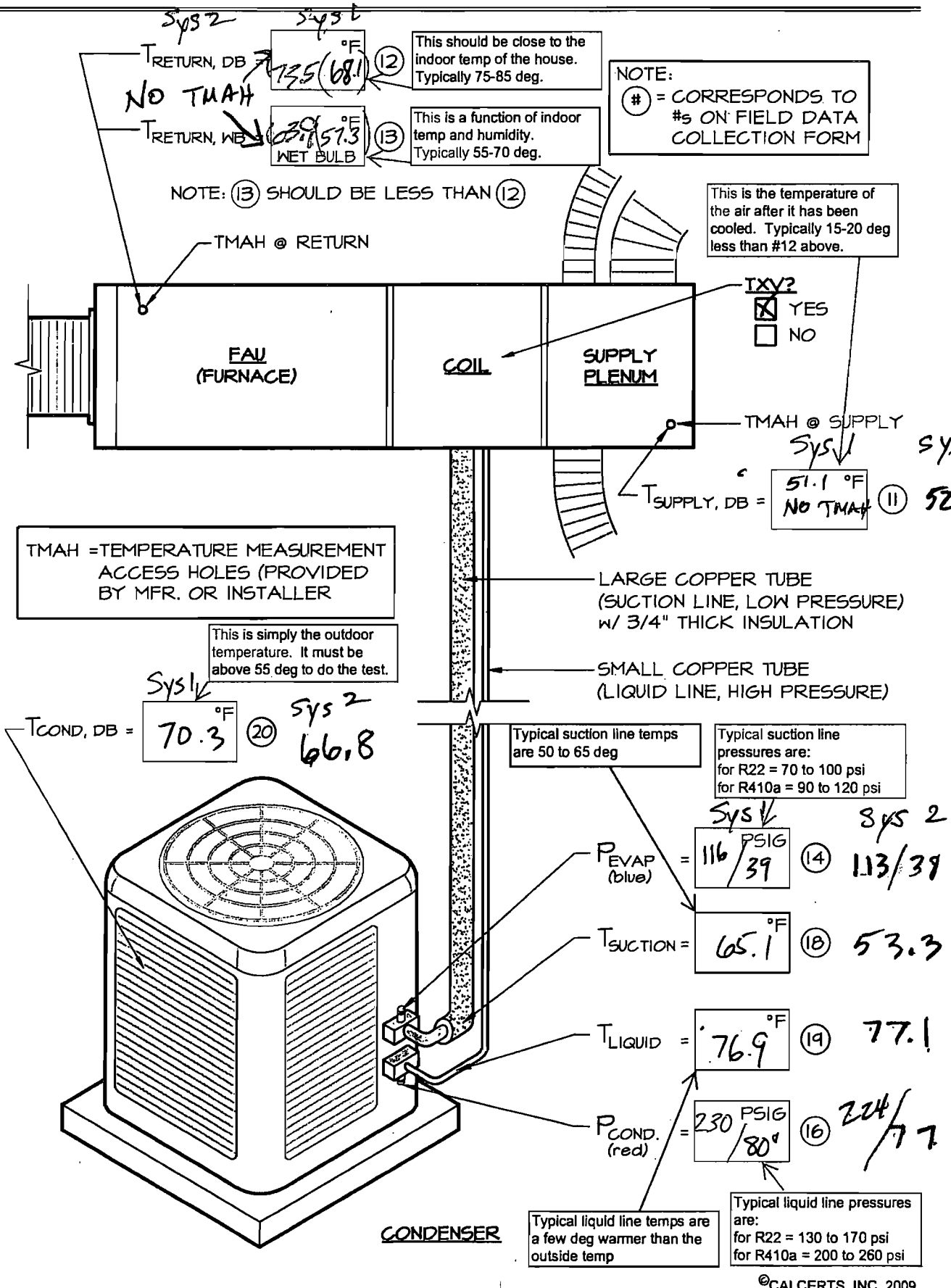
QA Rater: ---SELECT RATER---

[SAVE INFO] [CERTIFY RESULTS]

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes	Sys 1	Sys 2	
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram NO TMAH	(51.1)	(52.9)	
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	(68)	(73.5)	
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram ↓	(58.3)	(63.9)	
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	116	113	
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS	39	38	
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	230	224	
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS	80	77	
18	Suction line temperature ($T_{suction}$)	See Diagram	65.1	53.3	
19	Liquid line temperature (T_{liquid})	See Diagram	76.9	77.1	
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram	70.3	66.8	71

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1	Sys 1	Sys 2	
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	17.0	20.6	
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	17.5	17.1	
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	-0.5	3.5	
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Pass	Pass	
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag		2 Ton	3 Ton	
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300	600	900	
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1120	1055	
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass	Pass	

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1	80-76.9	77-77.1	
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	3.1	-0.1	
(37)	Target Subcooling specified by manufacturer	From Condenser	10 ± 3°	10 ± 3°	
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	7 - 13	7-13	
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	3.9 PASS	6.9 FAIL	

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	Line 18 - Line 15	15.1	15.3	
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26	3-26	
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	PASS	PASS	

EXHIBIT 17

Tim O'Neil Logged In [Logout]

Test Results for 334 Malbec Ct

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798581416	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-21-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr

CF-6R-MECH-RCA-HERS CSLB: 292946 KENYON & SONS HEATING & AIR CONDITIONING Chuck Barr

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (240834)	TESTED (Hoover, Erik)	TESTED (Hoover, Erik)

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QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL | Effective Year: 2011

Comments:

This may have been misclassified as an alteration. Tenant says the builders got behind and were rushing to complete the job, sometimes working 12 hour days.
DL, Rater = 78 cfm, QA = 99 cfm, both pass target of 166 (heating) and 150 (cooling). If this is new, it fails as the targets are 66 (heating) and 60 (cooling). Fail RCA, No TMAH, Fail Temp/Split and Metering Device Refrigerant Charge.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/28/2011 / 13:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Day & Night **Model:** N4A330AKC200 **# of Vents:** 8 **# of Returns:** 1 **SEER:** 13
F.A.U. Make:	Day & Night **Model:** G8MXL0701716A1 **AFUE:** .81 **HSPF:** **Output BTU:** 51,000 **Location:** Attic
Coil Make:	Aspen **Model:** ACE36C34175L087 **EER:**

Coil Number: J10-00009567 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **2.5** x 400 = **1000** CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **78** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ___ x 0.10 = ___ CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581416**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **8/8/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **2.5** x 400 = **1000** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1000** x 0.15 = **150** CFM Actual Leakage = **99** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1000** x 0.10 = **100** CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = ____ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Additional QA Questions:

Heating System Method: 21.7 X **51,000** Output Capacity in Thousands of Btu/hr = **1106.7** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1020** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581416**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	✔ Yes	No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	✔ Yes	No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ ✔ Pass	✔ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ✔ N/A	✔ Pass	✔ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ✔ N/A	✔ Pass	✔ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E115015254**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**N4A330**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**8/8/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**55**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**75**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**56**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**45**			
Condensor saturation temperature ($T_{condensor, sat}$)	**89**			
Suction line temperature ($T_{suction}$)	**60**			
Liquid Line Temperature (T_{liquid})	**80**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**20.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**22.2**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-2.2**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**9.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**15.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-2**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581416**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **8/8/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Additional QA Questions:

Ambiant Temperature: **71°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail	✓ ☐ Pass		✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☑ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**E112015254**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**N4A330AKC200**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**10/28/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**60.6**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**73.5**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**62.5**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**37.0**			
Condensor saturation temperature ($T_{condensor, sat}$)	**89.0**			
Suction line temperature ($T_{suction}$)	**71.6**			
Liquid Line Temperature (T_{liquid})	**76.5**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**71.0**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return,\ db} - T_{supply,\ db}$	**12.90**			
Target Temperature Split from Table RA3.2-3 using $T_{return,\ wb}$ and $T_{return,\ db}$	**18.2**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-5.3**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$				
Target Superheat from Table RA3.2-2 using $T_{return,\ wb}$ and $T_{condenser,\ db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**12.5**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**2.5**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**34.6**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3 - 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 07-3697

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **KENYON & SONS HEATING & AIR CONDITIONING**		
Responsible Person's Name: **Chuck Barr**	CSLB License: **292946**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581416**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

QA - ALL TESTED

Rater - Erik Hoover

Mark Wiese Logged In [Logout]

CalCERTS

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Data Collection Form:

STEP 1: Collect information

Date / Time:* 10/28 / 1 pm

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA # of Floors:* 2

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No S/N E112015254 4 up 4 Down

Condenser Make:* DAY & NIGHT Model:* N4A330AKC200 # of Vents:* 8 # of Returns:* 1

SEER:

F.A.U. Make:* DAY & NIGHT Model:* G8MXL0701716 A1 AFUE: .81 HSPF: Output

63,000/57,000 BTU:* 57,000 Location: Attic

Coil Make:* ASPEN Model:* ACE36C34175 L087 EER:

Coil Number:* J10-00004567 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable	New
Has anyone done work near the ducts?	Not Applicable	NO
Have you stored or removed anything from the duct area?	Not Applicable	NO
Any new work on Heater or A/C?	Not Applicable	NO
Any new construction?	Not Applicable	NO
Have you replaced the FURNACE filter?	Not Applicable	NO
Have you replaced the RETURN filter?	Not Applicable	NO

Notes:

Owner - Delayed - 2 mos. - Ducts, vent covers installed wrong. Moved in 8/26. Visionary came to check on progress, may have rushed to finish, working 12 hr days.

Attic Investigation:* [Select from list]

DL = 99 @ 25 PA

NEXT

* *Required Fields*

CCAF = 1020 CFM

Flowhood

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Revised: January 11, 2010

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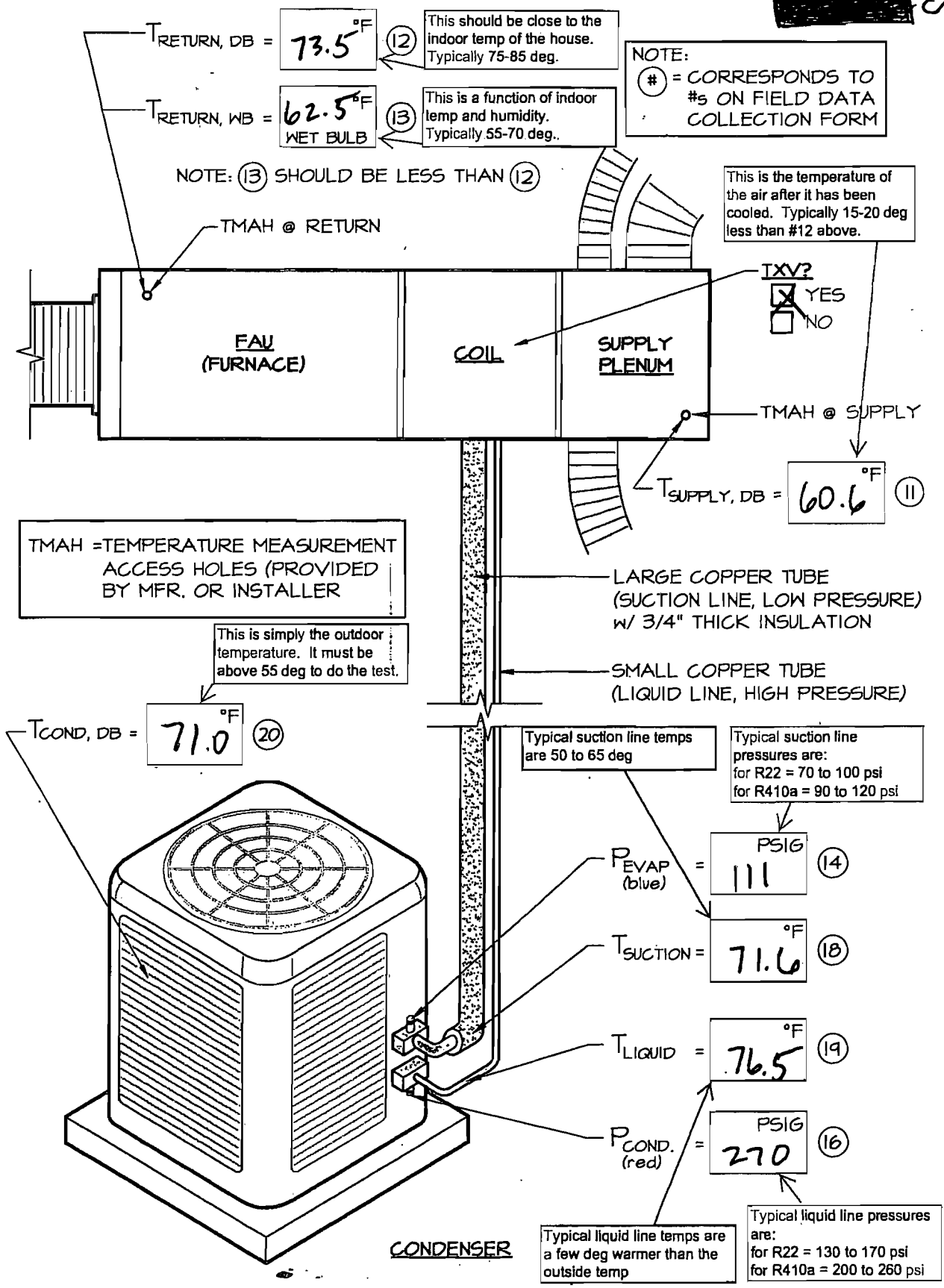
(877-437-7787)
Fax: 916-985-3402
Contact Us

27,200 13

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: [redacted] CA



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

NO TMAH

	Calibration of Diagnostic Instruments	Notes		
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram	60.6		
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	73.5		
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram	62.5		
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	111		
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS	37		
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	270		
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS	89		
18	Suction line temperature ($T_{suction}$)	See Diagram	71.6		
19	Liquid line temperature (T_{liquid})	See Diagram	76.5		
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram	71.0		

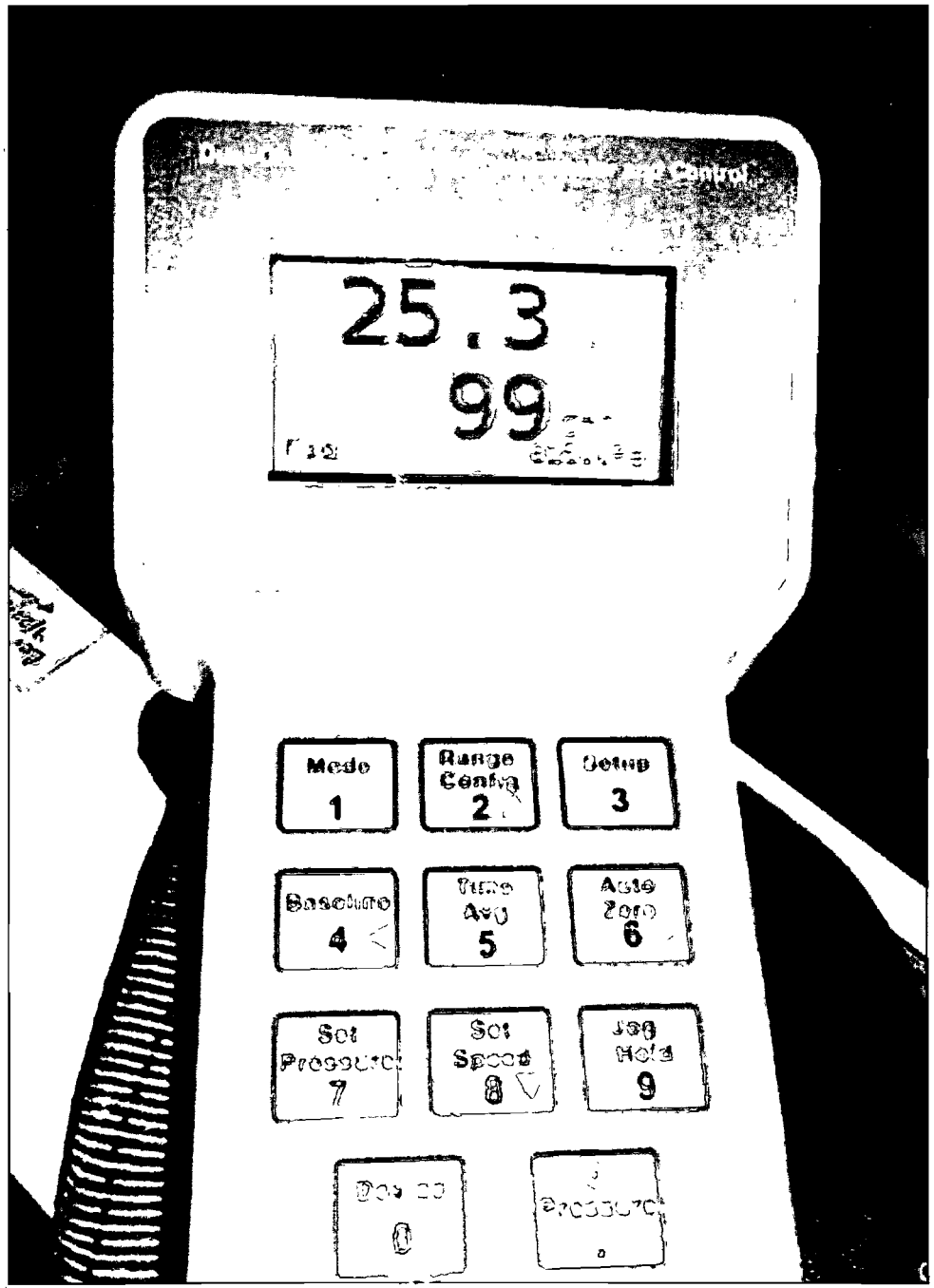
	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	73.5 − 60.6 = 12.9		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table 73.5 62.5	18.2		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	-5.3		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	FAIL		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow Is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

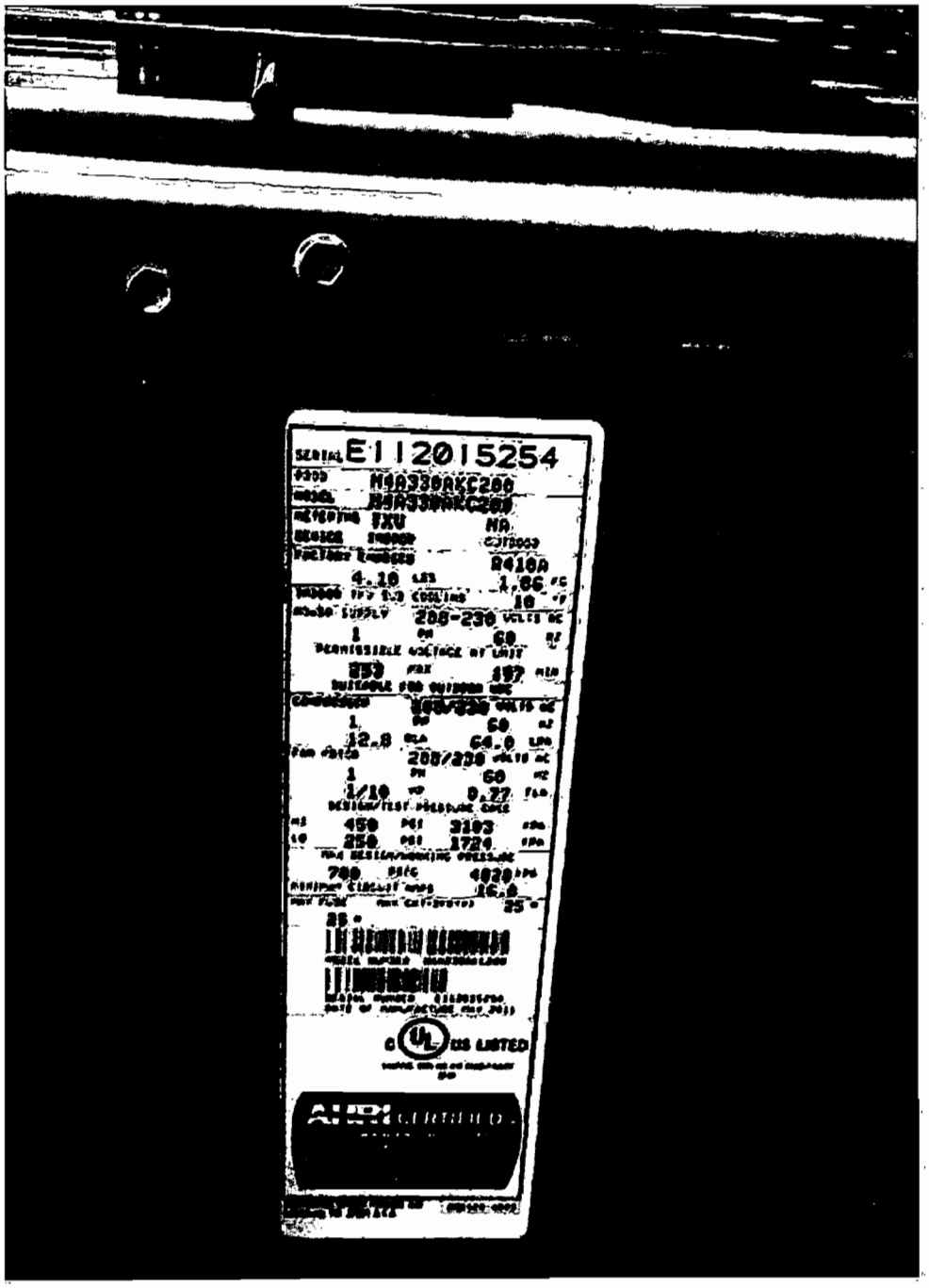
	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300 × 2.5	750		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1020		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	PASS		

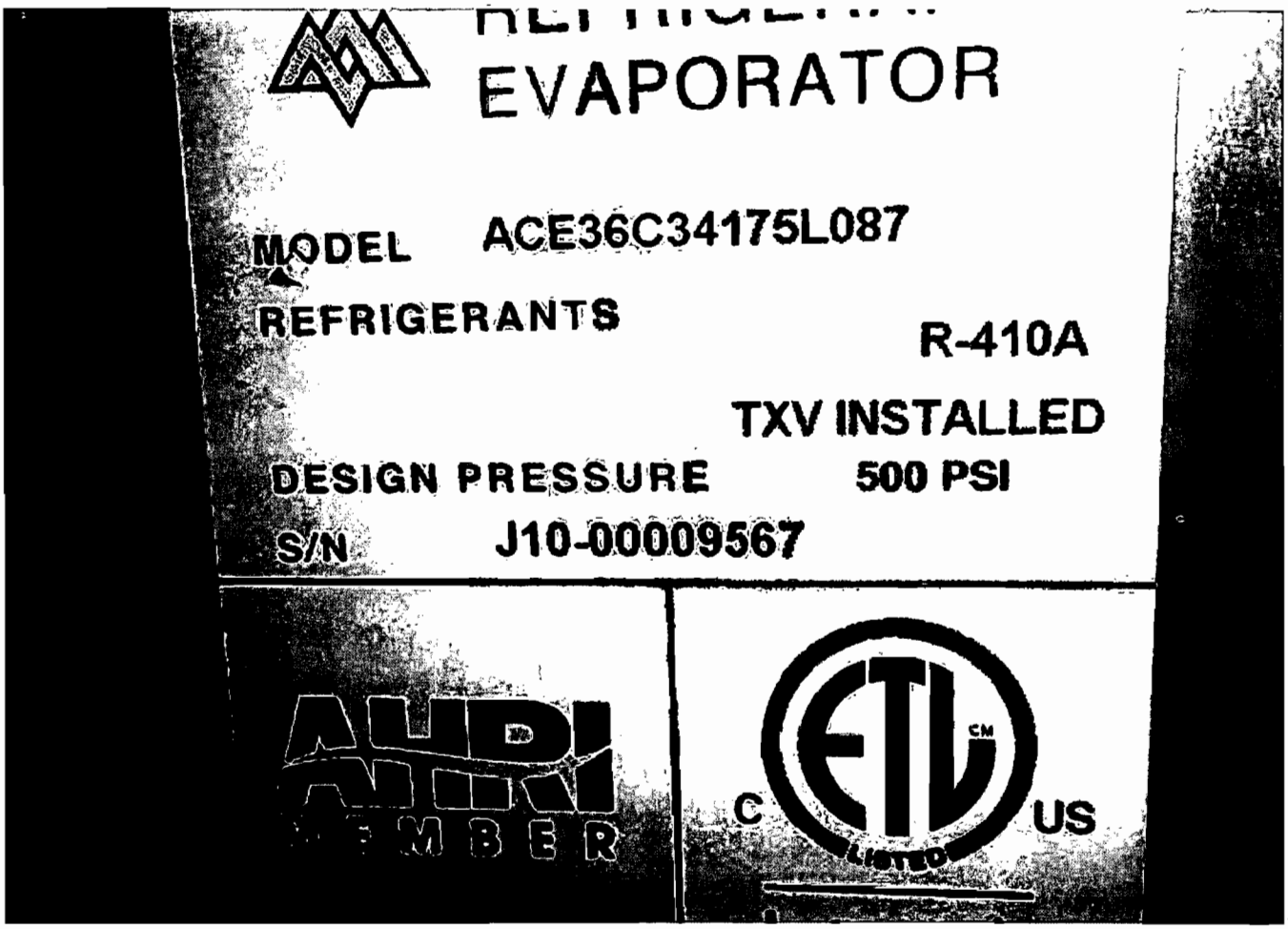
	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

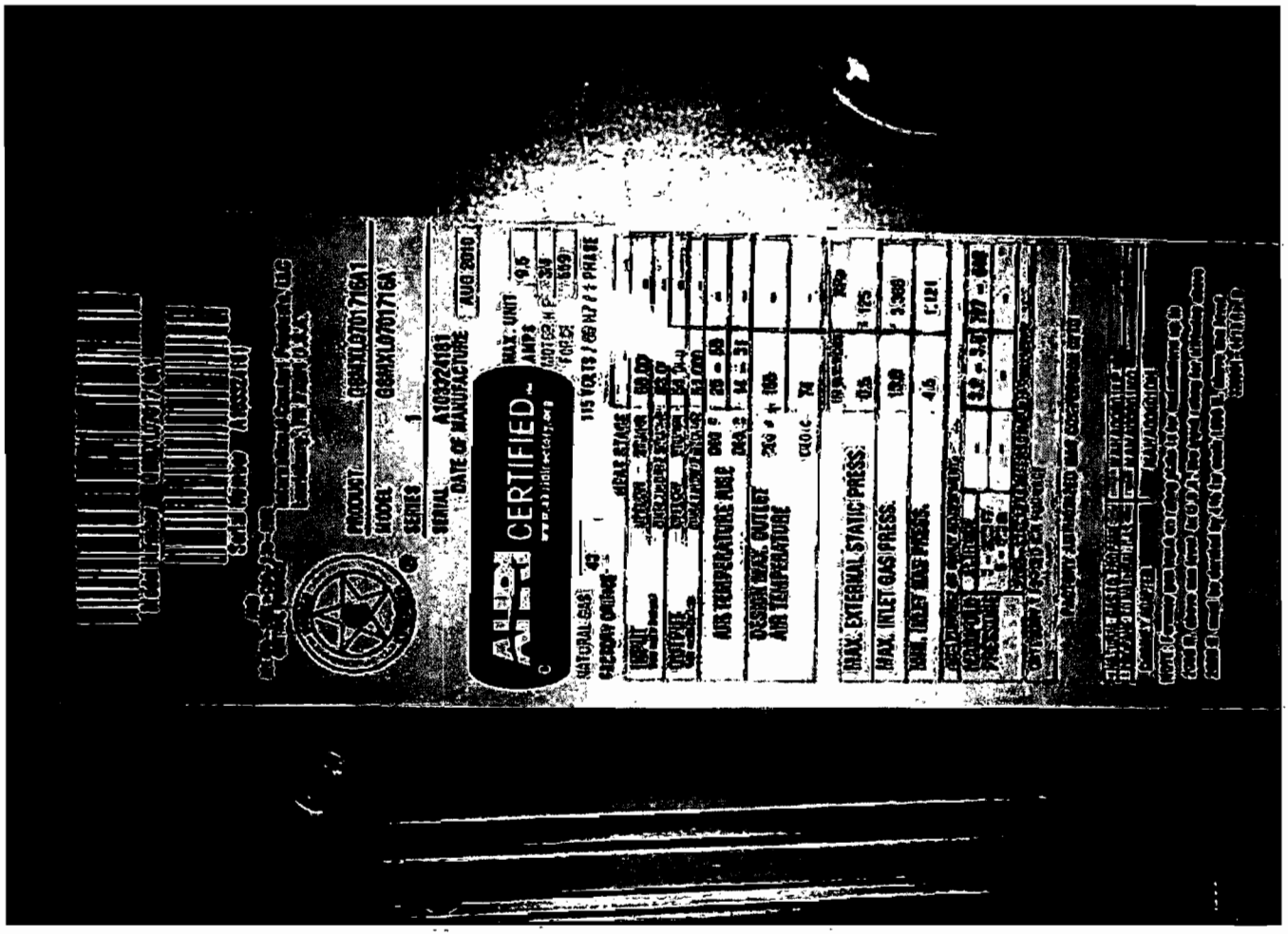
	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	89 −76.5 = 12.5		
(37)	Target Subcooling specified by manufacturer	From Condenser	10		
(38)	Calculate difference: Actual Subcooling - Target Subcooling =	Line 36 - Line 37	2.5		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	PASS		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	Line 18 - Line 15	71.6 −37.0 = 34.6		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3 to 26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	FAIL		


25.3
99
Mode
1
Range
Config
2
Setup
3
Baseline
4
Time
Avg
5
Auto
Zero
6
Set
Pressure
7
Set
Speed
8
Jog
Hold
9


E112015254
R410A
208-230
US LISTED


REFRIGERANT
EVAPORATOR
MODEL ACE36C34175L087
REFRIGERANTS R-410A
TXV INSTALLED
DESIGN PRESSURE 500 PSI
S/N J10-00009567
AHRI
MEMBER
ETL
LISTED
C US


AHRI CERTIFIED

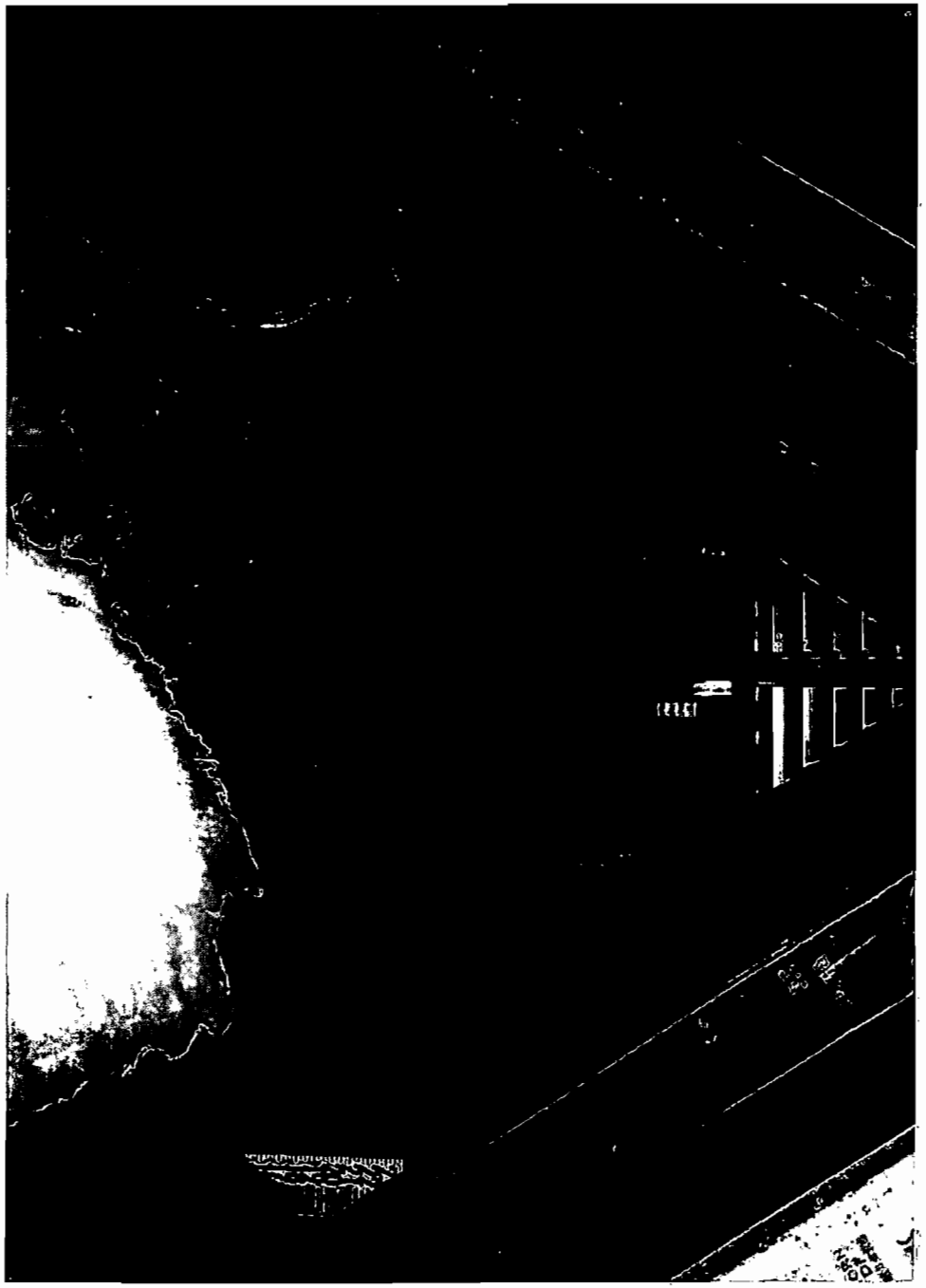


EXHIBIT 18

Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Project	Rating Company	Type	QA
010	[redacted] (Liberty at Moss Landing)	[redacted]	CA	[redacted]	CC-1798591699	See Below	Liberty at Moss Landing	Valley Duct Testing	New Construction SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-ENV-20-HERS	CSLB: N/A	D.R. Horton - Northern CA	John P Arcidiacono
CF-6R-ENV-21-HERS	CSLB: 886354	Goldstar Insulation L.P.	Sean Archuleta
CF-6R-ENV-22-HERS	CSLB: 886354	Goldstar Insulation L.P.	Sean Archuleta
CF-6R-MECH-20-HERS	CSLB: 638992	Signal Heating & Air Cond.	Robert L McMurtrie
CF-6R-MECH-23-HERS	CSLB: 638992	Signal Heating & Air Cond.	Robert L McMurtrie

Address	Certificate Type	CF-4R-ENV-20 Envelope	CF-4R-ENV-21 QII - Framing	CF-4R-ENV-22 QII - Insulation	CF-4R-MECH-20 Duct Leakage New	CF-4R-MECH-23 High EER
[redacted]	Compliance	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE

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CalCERTS, Inc.

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Folsom, CA 95630
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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted], [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Rater DL = 80 cfm, QA = 94 cfm, Target = 96. No insulation install information in the attic. No gasket around the attic access. Voids/ depressions present. Not able to verify batt insulation under catwalk. Insulation depth, density not sufficient. Numerous measurments under 12.75". Rater lists minimum weight at .615 ft2, and depth at 14.75 ". The data sheet says .555 ft2 and 12.75" This house had 5 jumper vents to equalize temperature in the rooms, and fresh air ventilation within the HVAC system.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Envelope	CF-4R-ENV-20	Complete	HOUSE	[Comments]
QII - Framing	CF-4R-ENV-21	Not Started	QA CF-4R	[Comments]
QII - Insulation	CF-4R-ENV-22	**QA FAILED**	System 1	[Comments]
Duct Leakage New	CF-4R-MECH-20	Complete	HOUSE	[Comments]
High EER	CF-4R-MECH-23	Complete	HOUSE	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Tim O'Neil Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/15/2011 / 15:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Carrier **Model:** 24A63BC0A0030010 **# of Vents:** 11 **# of Returns:** 1 **SEER:** 14.5
F.A.U. Make:	Carrier **Model:** 58MCB080-16 **AFUE:** .90 **HSPF:** **Output BTU:** 72,000 **Location:** Attic
Coil Make:	ADP **Model:** C36H175D156 **EER:** 12

Coil Number: 7111F31829 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: CF-1R calls for .92 AFUE, the installed unit is .90. This house had 5 jumper vents to equalize temperature.

Attic Investigation: Investigated and saw something which may decrease system efficiency

NO Photos

Registered CF-4R Data

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Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		**(Page 1 of 1)**
Site Address: [redacted], [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

Building Envelope Sealing

Diagnostic Testing Results			
CFM50H = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x (CFM50 H / Conditioned Floor Area in ft2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✓	✓
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	**1289**	
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row 3 is less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail	☑ Pass	☐ Fail
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter ≥1.5 SLA	☐ < 1.5 SLA*	☑ ≥ 1.5 SLA

*Advisory note to builder and enforcement agency: If row 5 indicates "< 1.5 SLA", it is critical to ensure that combustion and solid-fuel burning appliances in the dwelling are provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions and all applicable codes as specified by ASHRAE Standard 62.2 Section 6.4. Additional information about compliance with this requirement is given in Section 4.6.5 of the Residential Compliance Manual under the topic of Combustion and Solid-Fuel Burning Appliances.

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **D.R. Horton - Northern CA**		
Responsible Person's Name: **John P Arcidiacono**	CSLB License: **N/A**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		**(Page 1 of 1)**
Site Address: [redacted], [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

Building Envelope Sealing

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft²) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✓	✓
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	**927**	
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail	☑ Pass	☐ Fail
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter ≥1.5 SLA	☐ < 1.5 SLA*	☑ ≥ 1.5 SLA

*Advisory note to builder and enforcement agency: If row 5 indicates "< 1.5 SLA", it is critical to ensure that combustion and solid-fuel burning appliances in the dwelling are provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions and all applicable codes as specified by ASHRAE Standard 62.2 Section 6.4. Additional information about compliance with this requirement is given in Section 4.6.5 of the Residential Compliance Manual under the topic of Combustion and Solid-Fuel Burning Appliances.

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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **D.R. Horton - Northern CA**		
Responsible Person's Name: **John P Arcidiacono**	CSLB License: **N/A**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **11/15/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☑ Yes	☐ No	☐ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No	☐ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☑ Yes	☐ No	☐ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☑ Yes	☐ No	☐ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☑ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☑ Yes	☐ No	☐ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 2 of 3)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) Insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- 13 . List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☑ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☑ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☑ Yes	☐ No	☐ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☑ Yes	☐ No	☐ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks)
☑ Yes	☐ No		Attic access gasketed
☑ Yes	☐ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value 38 Manufacturer's minimum required weight for the target R-value .615 (pounds-per-square foot). Sample weight .635 (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation 15 (inches) Manufacturer's minimum required settled thickness 14.75 (inches). Number of days since loose-fill insulation was installed 1 (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☑ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☑ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☑ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Goldstar Insulation L.P.**		
Responsible Person's Name: **Sean Archuleta**	CSLB License: **886354**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	**(Page 1 of 3)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Lathrop	10-00412

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☐ Yes	☐ No	☑ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☐ Yes	☐ No	☑ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☐ Yes	☐ No	☑ NA	**BATTS,** not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☐ Yes	☐ No	☑ NA	**BATTS,** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☐ No	☑ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☐ Yes	☐ No	☑ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☐ Yes	☐ No	☑ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	**(Page 2 of 3)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], CA [redacted]	City of Lathrop	10-00412

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- **13**. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☐ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☐ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☑ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☐ Yes	☐ No	☑ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☐ Yes	☐ No	☑ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks)
☐ Yes	☑ No	☐ NA	Attic access gasketed
☑ Yes	☐ No	☐ NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☐ Yes	☑ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☐ Yes	☐ No	☑ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☐ Yes	☑ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **38** Manufacturer's minimum required weight for the target R-value **.555** (pounds-per-square foot). Sample weight **.430** (pounds per square foot).
☐ Yes	☑ No	☐ NA	Manufacturer's minimum required thickness at time of installation **12.75** (inches) Manufacturer's minimum required settled thickness **12.75** (inches). Number of days since loose-fill insulation was installed **10** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☐ Yes	☐ No	☑ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☐ Yes	☐ No	☑ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Goldstar Insulation L.P.**		
Responsible Person's Name: **Sean Archuleta**	CSLB License: **886354**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System	**(Page 1 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted] (HOUSE)	City of Lathrop	10-00412

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☐ Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ☑ Heating system method: 21.7 x 74 Output Capacity in Thousands of Btu/hr x *leakage factor* = 96.35 CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**84**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** [redacted] 10-00412

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **whole house**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☐ Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ☑ Heating system method: 21.7 x 74 Output Capacity in Thousands of Btu/hr x *leakage factor* = 96.35 CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**94.40**
Pass if Actual Leakage is less than Allowed Leakage	☑ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Cooling System Method: Nominal capacity of condenser in Tons **2.5** x 400 x 6% = **6000** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1220** x **6%** = **7320** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall.
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	(Page 1 of 1)

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Lathrop	10-00412

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**System 1**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the installed Outdoor Unit	**Carrier 24ABB430**			
5	Make and Model Number of the installed Inside Coil	**All-Style C36H175D256**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Carrier 58MCB080-16**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.
☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

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- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	**(Page 1 of 1)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Lathrop	10-00412

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**whole house**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the Installed Outdoor Unit	**CARRIER 24ABC630A0030010**			
5	Make and Model Number of the installed Inside Coil	**ADP C36H1750156**			
6	Make and Model Number of the Installed Furnace or Air Handler.	**CARRIER 58MCB080-16**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			
7a	**QA Additional Question:** Website URL confirming LHRI: **HOUSE:** CERT # 3730391				
☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure. ☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.					
8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

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Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591699**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

QA Tested New

Erik Hoover (9/12)

Tim O'Neil Logged In [Logout]

QA Data Collection Form: 15987 Crescent Park Circle , Lathrop, CA 95330

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 11/15/2011 / 15:00

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No S/N 1511E06883 30010

Condenser Make:* CARRIER Model:* 24ABC630A00 # of Vents:* 15 # of Returns:* 1

SEER: 14.5

F.A.U. Make:* CARRIER Model:* 58MCB080-16 AFUE: .925 HSPF:

Output BTU:* 74,000 Location: Attic

Coil Make:* ADP Model:* C36H175D 156 EER: 12 TXV

80,000

Coil Number:* 7111F31829 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

1. ENV - 927 CFM rater - 1289
2. HIGH EER
3. QII (I)
4. DL - 94.4 rater: heating (96) actual 84
Airflow (Hood) 1220 CFM

Attic Investigation:* [Select from list]

	Bd1	Ba1	Bd2	H	MBd	Mba	L/D	K	L	Ba3
Ducts	2	2	2	1	2	1	2	1	1	1

NEXT

* *Required Fields*

Reg - 1 1 - ~~Fr. Air~~ ? Jumper

Lot 103

15931

15932

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Revised: January 11, 2010
[Terms and Conditions]
[Privacy Statement]
[Class Cancellation Policy]

CalCERTS, Inc.

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Sm Jumper MBd — Hall

2x2 H → Small Bd 1

→ Small Bd 2

11 Supply

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251117	Phase 1	[redacted]	10-00412	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		Clear Results
Site Address: Liberty	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

HOUSE

2. Building Envelope Leakage Test

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft^2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✔	✔
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	927	
4.	The leakage test passes if the measured envelope leakage $CFM50_H$ value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail		
5.	If measured $CFM50_H$ from row 3 is less than the minimum $CFM50_H$ value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter >=1.5 SLA		

FINAL TESTED RESULT: ◉ Pass ○ Fail

DECLARATION STATEMENT

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QA Rater: ---SELECT RATER---

SAVE INFO | CERTIFY RESULTS

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251117	Phase 1	[redacted]	10-00412	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

HOUSE

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	HOUSE	
2	System Location or Area Served		
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	17	
4	Installed Outdoor Unit	Make: Carrier	Model:
5	Installed Inside Coil	Make: ADP	Model:
6	Installed Furnace or Air Handler	Make: Carrier	Model:
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0 EER**	
7a	Please provide the website URL confirming LHRI:	HTTP:// #3930391	

○ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.

○ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater.than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	

FINAL TESTED RESULT for HOUSE: ○ Pass ○ Fail

DECLARATION STATEMENT

☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.

☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251117	Phase 1	[redacted]	-10-00412	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412
Assigned Rater: SEE BELOW	**Tested Date:** 11/15/2011 (M/D/YYYY)	

Yes	No	N/A	FLOOR INSULATION
○	○	○	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
○	○	○	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
○	○	○	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
○	○	○	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
○	○	○	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
○	○	○	Insulation R-value same or greater that listed on CF-1R.
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	**SPF** list the required floor cavity R-value from CF-1R, R-[ ]. List tested average depth of insulation [ ] in X 5.8R = ___ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	○	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
Yes	**No**	**N/A**	**WALL INSULATION**
○	○	○	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
○	○	○	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
○	○		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight
○	○	○	**BATTS**, not a single void/depression deeper than ¾" in ANY stud bay. (NA if loose fill or SPF)
○	○	○	**BATTS,** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
○	○	○	**Loose Fill** no gaps or voids of any depth allowed. (NA if batts or SPF).
○	○		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
○	○		All Rim-joists to the outside insulated.

○	○		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
○	○	○	All skylight shafts and attic kneewalls insulated with minimum R-19.
○	○	○	Insulation in full contact with drywall or wall finish of skylight shafts and attic kneewalls.
○	○		Wall insulation same or better than what is listed on the CF-1R.
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	SPF list the required floor cavity R-value from CF-1R, R-[13]. List tested average depth of insulation [ ] in X 5.8R = __ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	○	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth
Yes	No	N/A	**CEILING INSULATION**
○	○	○	**BATTS** there must not be a single gap/void/depression deeper than ¾". (NA if loose fill or SPF).
○	○	○	**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
○	○	○	**NO** gaps or voids allowed for loose fill and SPF. (NA if batts).
○	○		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
○	○		Insulation in full contact with the ceiling, NO gaps.
○	○		Insulation in contact with air barrier on all five sides.
○	○	○	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
○	○	○	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF).
○	○	○	**SPF** the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA if loose fill or batts).
○	○	○	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks) CAN'T VERIFY – Blocked
○	○		Attic access gasketed
○	○		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
○	○		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from ½-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
○	○		Wall insulation same or better than what is listed on the CF-1R
○	○	○	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
○	○	○	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
○	○	○	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value [38] Manufacturer's minimum required weight for the target R-value [.535] (pounds-per-square foot). Sample weight [.490] (pounds per square foot). 3.75 oz/16 / .545
			Manufacturer's minimum required thickness at time of installation [12.75] (inches) Manufacturer's minimum required settled thickness [12.75] (inches). Number of days

○	☒	○	since loose-fill insulation was installed [0] (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches). 0
[Yes]	[No]	[N/A]	**GARAGE ROOF/CEILING INSULATION FOR TWO STORIES (no conditioned space over garage)**
○	○	☒	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
[Yes]	[No]	[N/A]	**GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**
○	○	○	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
○	○	○	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	**SPF** list the required floor cavity R-value from CF-1R, R- [ ]. List tested average depth of insulation [ ] in X 5.8R = ___ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	☒	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth

FINAL TESTED RESULT: ○ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: ---SELECT RATER---

SAVE INFO CERTIFY RESULTS

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CalCERTS, Inc.

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(877-437-7787)
Fax: 916-985-3402

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251117	Phase 1	[redacted]	10-00412	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-21
Quality Insulation Installation (QII) - Framing Stage Checklist		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00412
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

Yes	No	N/A	
			FLOOR AIR BARRIER
○	○	○	All gaps in the raised floor to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
○	○	○	All openings on a second floor including under a tub where the drain penetrates the floor is sealed
Yes	No	N/A	**WALLS AIR BARRIER**
○	○	○	All gaps in wall exterior sheathing to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)
○	○	○	No gaps in sheathing against the garage, attic, or covered patio. All gaps larger than 1/8" filled with foam or caulk. (NA if SPF)
○	○	○	All gaps in Rim-joists in interior and exterior walls to the outside including holes drilled for electrical and plumbing larger than 1/8" filled with foam or caulk. (NA if SPF)
○	○	○	Rope caulk, foam gasket, or caulking bead around the entire sole plate of the home
○	○	○	All gaps around the windows are caulked or foamed (stuffing with fiberglass not acceptable)
Yes	No	N/A	**ATTIC INSPECTION**
○	○	○	Attic rulers appropriate to the material installed evenly throughout the attic to verify depth. (NA if SPF or batt)
○	○	○	Square foot of attic [ ] / 250 = __ minimum number of rulers installed. Must round up. Number of rulers actually installed [ ] (NA if SPF or batt)
○	○	○	ALL rulers visible from attic access.(NA if SPF or batt)
○	○	○	Eave vents baffles installed at all eave vents to prevent air movement under or into insulation. (NA if SPF)
○	○	○	Area of eave vent baffle is the same or larger than the net free-ventilation area of the eave vent. (NA if SPF)
Yes	No	N/A	**ROOF/CEILING AIR BARRIER**
○	○	○	All draft stops in place to form a continuous ceiling air barrier no gaps larger than 1/8". (NA if SPF)
○	○	○	**All** drops covered with hard covers. Gaps around or in the hard cover larger than 1/8" filled with foam or caulk. (NA if SPF).
○	○		All recessed light fixtures in non conditioned space IC and air tight (AT)
○	○		All recessed light fixtures are sealed with a gasket or caulk between the housing and the ceiling
○	○		Openings around flue shafts fully sealed with solid ing or flashing and any remaining gaps sealed with fire-rated caulk or sealant.

○	○		Piping shafts openings fully sealed and caulked
○	○		Penetrations from wiring in interior walls, electrical boxes, fire alarms etc. sealed with caulk or sealant
○	○		All duct chases, fireplace chases, and double walls sealed air tight at the ceiling level. All gaps into shafts larger than 1/8" filled with foam or caulk. Special attention paid to ducts entering shafts from ceiling.
Yes	No	N/A	**GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (no conditioned space over garage)**
○	○	○	Air barrier installed at joists in garage to house transition (between floors). No gaps larger than 1/8". If SPF used then air barrier installed gaps not required to be filled. (NA if SPF or conditioned space over garage)
Yes	No	N/A	**GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**
○	○	○	If insulation is to be installed at subfloor then subfloor has no gaps over 1/8". Air barrier installed at joists in garage to house transition (between floors). (NA if SPF or no conditioned space over garage)
○	○	○	If insulation is to be installed at ceiling of garage then ceiling and joists to the outside have no gaps over 1/8". (NA if SPF or no conditioned space over garage.)

FINAL TESTED RESULT: ○ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: ---SELECT RATER---

SAVE INFO CERTIFY RESULTS

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OWENS CORNING®
INNOVATIONS FOR LIVING®

PROPINK® L77 PINK® Fiberglas™ Unbonded Loosefill Insulation

PROPINK® L77 PINK® Fiberglas™ Unbonded Loosefill Insulation is designed to be mechanically blown into attics but may also be applied in the exterior walls or enclosed cavities of new or existing construction. The product consists of unbonded fiberglass insulation material packaged in bags.

SEAN ARCHULETA

Technical Data – Attics

Nominal bag weight: 33 lbs.

R-value*	Bags Per 1,000 ft.²	Maximum Net Coverage	Minimum Weight/Ft.²	Minimum Thickness (in)	Minimum Settled Thickness[1]
R-13	5.5	182.9	0.180	4.75	4.75
R-19	8.1	124.2	0.266	6.75	6.75
R-22	9.4	106.3	0.311	7.75	7.75
R-26	11.2	89.6	0.368	9.00	9.00
R-30	13.0	77.0	0.428	10.25	10.25
R-38	16.8	59.5	0.555	12.75	12.75
R-44	20.1	49.8	0.662	14.75	14.75
R-49	22.6	44.2	0.747	16.25	16.25
R-60	28.5	35.1	0.940	19.50	19.50

Technical Data – Walls

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 Ft.²	Min. Weight Lbs./Ft.²
13	3.5 (2x4)	1.3	87.0	11.5	0.379
15	3.5 (2x4)	1.5	75.4	13.3	0.438
21	5.5 (2x6)	1.3	55.4	18.1	0.596
24	5.5 (2x6)	1.8	40.0	25.0	0.825

Technical Data – Floors

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 ft.²	Min. Weight Lbs./Ft.²
31	2x8	1.4	39.0	25.6	0.846
39	2x10	1.4	30.6	32.7	1.079
48	2x12	1.5	23.5	42.6	1.406

Technical Data – Cathedral Ceiling

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 ft.²	Min. Weight Lbs./Ft.²
28	2x8	1.3	42.0	23.8	0.785
36	2x10	1.3	32.9	30.4	1.002
44	2x12	1.3	27.1	36.9	1.219

1. This product shows negligible settling.
Unisol Volu-Matic III machine was used to determine the coverage information above. The machine was set up in 3rd gear, with a 75% open gate and a 3" hose, blowing the wool out in a 10 ft. arc.

*R-values differ. Find out why in the seller's fact sheet on R-values. Higher R-value means greater insulating power.

Surface Burning Characteristics/Building Code Construction Classification

Flame Spread	Smoke Developed	ICC
0	0	All Types

This product conforms to the product requirements of ASTM C 764 Type I.
R-values are determined in accordance with ASTM C 687.
Conforms to Department of Energy material standards.
Passes the requirements of ASTM E 136 and is considered noncombustible by the model building codes.
This product is non-corrosive, does not absorb moisture and does not support mold growth.
Conforms to the quality standards of the state of California.

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55
Project Address..... Liberty ******
Lathrop, CA *v8.0*
Documentation Author... Marcos Hernandez ******
Beutler Corporation
4700 Lang Ave.
McClellan, CA 95652
916-646-2222
Climate Zone..... 12
Compliance Method..... MICROPAS8 v8.0 for 2008 CEC Standards (r11)

Building Permit #

Plan Check / Date

Field Check/ Date

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

MICROPAS8 ENERGY USE SUMMARY

Energy Use (kTDV/sf-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating.....	24.93	20.93	4.00	16.0%
Space Cooling.....	13.30	7.44	5.86	44.1%
Ventilation Fans.....	0.77	0.77	0.00	0.0%
Water Heating.....	18.83	17.43	1.40	7.4%
North Total	57.83	46.57	11.26	19.5%
Space Heating.....	24.93	21.60	3.33	13.4%
Space Cooling.....	13.30	8.98	4.32	32.5%
Ventilation Fans.....	0.77	0.77	0.00	0.0%
Water Heating.....	18.83	17.43	1.40	7.4%
East Total	57.83	48.78	9.05	15.6%
Space Heating.....	24.93	22.76	2.17	8.7%
Space Cooling.....	13.30	7.38	5.92	44.5%
Ventilation Fans.....	0.77	0.77	0.00	0.0%
Water Heating.....	18.83	17.43	1.40	7.4%
South Total	57.83	48.34	9.49	16.4%
Space Heating.....	24.93	21.94	2.99	12.0%
Space Cooling.....	13.30	7.77	5.53	41.6%
Ventilation Fans.....	0.77	0.77	0.00	0.0%
Water Heating.....	18.83	17.43	1.40	7.4%
West Total	57.83	47.91	9.92	17.1%

*** Building complies with Computer Performance ***
*** HERS Verification Required for Compliance ***

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

GENERAL INFORMATION

HERS Verification.....	Required
Conditioned Floor Area.....	1974 sf
Building Type.....	Single Family Detached
Construction Type	New
Natural Gas at Site	Yes
Building Front Orientation.	Cardinal - N,E,S,W
Number of Dwelling Units...	1
Number of Building Stories.	1
Weather Data Type.....	FullYear
Floor Construction Type....	Slab On Grade
Number of Building Zones...	1
Conditioned Volume.....	17766 cf
Slab-On-Grade Area.....	1974 sf
Glazing Percentage.....	12.3 % of floor area
Average Glazing U-factor...	0.31 Btu/hr-sf-F
Average Glazing SHGC.....	0.24
Average Ceiling Height.....	9 ft

BUILDING ZONE INFORMATION

Zone Type	Floor Area (sf)	Volume (cf)	# of Dwell Units	# of Peop-le	Cond-it-ioned	Thermo-stat Type	Vent Height (ft)	Vent Area (sf)	Verified Leakage or Housewrap
Residence	1974	17766	1.00	4.0	Yes	Setback	2.0	Standard	3 SLA

ATTIC AND ROOF DETAILS

Roof Type	Roof Mass (lb/sqft)	Roof Rise	Re-flect-ance	Emiss-ivity	Frame Depth (in.)	Frame Spac-ing (in.)	R-Value Above Deck	R-Value Below Deck	Vent Area Ratio	Vent High
Tile	10	5:12	0.13	0.91	3.5	24 oc	0.00	0.00	1/150	0.50

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-factor	Sheathing Cavity R-val	Sheathing R-val	Act Azm	Tilt	Solar Gains	Appendix JA4 Reference	Location/ Comments
1 Wall	Wood	228	0.072	13	4	0	90	Yes	4.3.1 C3	Front Wall
2 Wall	Wood	495	0.072	13	4	90	90	Yes	4.3.1 C3	Left Wall
3 Wall	Wood	325	0.072	13	4	180	90	Yes	4.3.1 C3	Back Wall
4 Wall	Wood	476	0.072	13	4	270	90	Yes	4.3.1 C3	Right Wall
5 Wall	Wood	188	0.102	13	0	0	90	No	4.3.1 A3	Garage Wall
6 Attic	Wood	1846	0.025	38	0	n/a	0	Yes	4.2.1 A21	Attic Ceiling
7 Attic	Wood	100	0.048	19	0	n/a	0	Yes	4.2.1 A16	At Furnace
8 Door	Other	24	0.500	0	0	0	90	Yes	4.5.1 A4	Entry Door
9 Door	Other	18	0.500	0	0	0	90	No	4.5.1 A4	Garage Door

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix JA4 Reference	Location/ Comments
10 SlabEdge	43	0.730	R-0/0in	No	4.4.7 A1	Exposed edge
11 SlabEdge	172	0.730	R-0/0in	No	4.4.7 A1	Covered edge

FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	10.0	0.280	0.250	0	90	Standard	F1/LowE2 or Equiv/Fixed
2 Wind Front (N)	25.0	0.310	0.230	0	90	Standard	F2/LowE2 or Equiv/Operab
3 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L1/LowE2 or Equiv/Operab
4 Wind Left (E)	18.0	0.310	0.230	90	90	Standard	L2/LowE2 or Equiv/Operab
5 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L3/LowE2 or Equiv/Operab
6 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L4/LowE2 or Equiv/Operab
7 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L5/LowE2 or Equiv/Operab
8 Door Back (S)	48.0	0.320	0.250	180	90	Standard	B1/LowE2 or Equiv/Pation
9 Wind Back (S)	30.0	0.310	0.230	180	90	Standard	B3/LowE2 or Equiv/Operab
10 Door Back (S)	48.0	0.320	0.250	180	90	Standard	B5/LowE2 or Equiv/Pation
11 Wind Right (W)	20.0	0.310	0.230	270	90	Standard	R1/LowE2 or Equiv/Operab
12 Wind Right (W)	6.0	0.280	0.250	270	90	Standard	R2/LowE2 or Equiv/Fixed
13 Wind Right (W)	6.0	0.280	0.250	270	90	Standard	R3/LowE2 or Equiv/Fixed

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

OVERHANGS

Surface	Area (sf)	Window Width	Window Height	Overhang Depth	Overhang Height	Overhang Left Extension	Overhang Right Extension
1 Window	10.0	n/a	5	8.5	0.5	n/a	n/a
3 Window	8.0	n/a	4	1.5	0.5	n/a	n/a
8 Door	48.0	n/a	8	1.5	0.5	n/a	n/a
9 Window	30.0	n/a	5	1.5	0.5	n/a	n/a
10 Door	48.0	n/a	8	1.5	0.5	n/a	n/a
12 Window	6.0	n/a	3	11	0.5	n/a	n/a
13 Window	6.0	n/a	3	1.5	0.5	n/a	n/a

SLAB SURFACES

Slab Type	Area (sf)
Standard Slab	1974

HVAC SYSTEMS

System Type	Minimum Efficiency	Verified EER	Verified Refrig Charge or CID	Verified Adequate Airflow	Verified Fan Watt Draw	Verified Maximum Cooling Capacity
Furnace	0.920 AFUE	n/a	n/a	n/a	n/a	n/a
ACSplit	14.00 SEER	12.0	No	No	No	No

HVAC SIZING

System Type	Total Heating Load (Btu/hr)	Sensible Cooling Load (Btu/hr)	Design Cooling Capacity (Btu/hr)	Verified Maximum Cooling Capacity (Btu/hr)
Furnace	30698	n/a	n/a	n/a
ACSplit	n/a	15441	18341	n/a

Orientation of Maximum..... Front Facing 90 deg (E)
Sizing Location..... LATHROP
Winter Outside Design..... 24 F
Winter Inside Design..... 70 F

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

Summer Outside Design..... 97 F
Summer Inside Design..... 75 F
Summer Range..... 35 F

DUCT SYSTEMS

System Type	Duct Location	Duct R-value	Verified Duct Leakage	Verified Surface Area	Verified Buried Ducts
Furnace	Attic	R-6	Yes	No	No
ACSplit	Attic	R-6	Yes	No	No

INFILTRATION TESTING DETAILS

Blower Door Leakage Target (CFM50h/SLA)	Blower Door Leakage Minimum (CFM50h/SLA)
1551 / 3.0	775 / 1.5

FAN SYSTEMS

System Type	Flow (cfm)	Power (W/cfm)
Standard	49.74	.25

WATER HEATING SYSTEMS

Tank Type	Heater Type	Distribution Type	Number in System	Energy Factor	Tank Size (gal)	External Insulation R-value
1 Storage	Gas	Standard	1	0.62	50	R-n/a

SPECIAL FEATURES AND MODELING ASSUMPTIONS

*** Items in this section should be documented on the plans, ***
*** installed to manufacturer and CEC specifications, and ***
*** verified during plan check and field inspection. ***

This is a multiple orientation building. This printout is for the front facing North.

This building incorporates a Radiant Barrier.

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

HERS REQUIRED VERIFICATION

*** Items in this section require field testing and/or ***
*** verification by a certified home energy rater under ***
*** the supervision of a CEC-approved HERS provider using ***
*** CEC approved testing and/or verification methods and ***
*** must be reported on the CF-4R installation certificate. ***

This building incorporates HERS verified High Quality Insulation Installation.

This building incorporates HERS verified Building Envelope Sealing. Target and Minimum CFM values measured at 50 pascals are shown in INFILTRATION TESTING DETAILS above. If the measured CFM50h is above the target, then corrective action must be taken to reduce the infiltration and then retest. Alternatively, the compliance calculations could be redone without infiltration testing.

This building incorporates HERS verified High Energy Efficiency Ratio (EER).

This building incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R. If the measured CFM is above the target, then corrective action must be taken to reduce the duct leakage and then must be retested. Alternatively, the compliance calculations could be redone without duct testing. If ducts are not installed, then HERS verification is not necessary.

REMARKS

Plan Check #1 2-18-10

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and performance specifications needed to comply with Title-24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility.

DESIGNER or OWNER	DOCUMENTATION AUTHOR
Name.... _____	Name.... Marcos Hernandez
Company. D R Horton, Inc.	Company. Beutler Corporation
Address. 6630 Owens Dr.	Address. 4700 Lang Ave.
Pleasanton, CA -94588	McClellan, CA 95652
Phone... (925) 225-7400	Phone... 916-646-2222
License. _____	
Signed.. _____ (date)	Signed.. _____ (date)

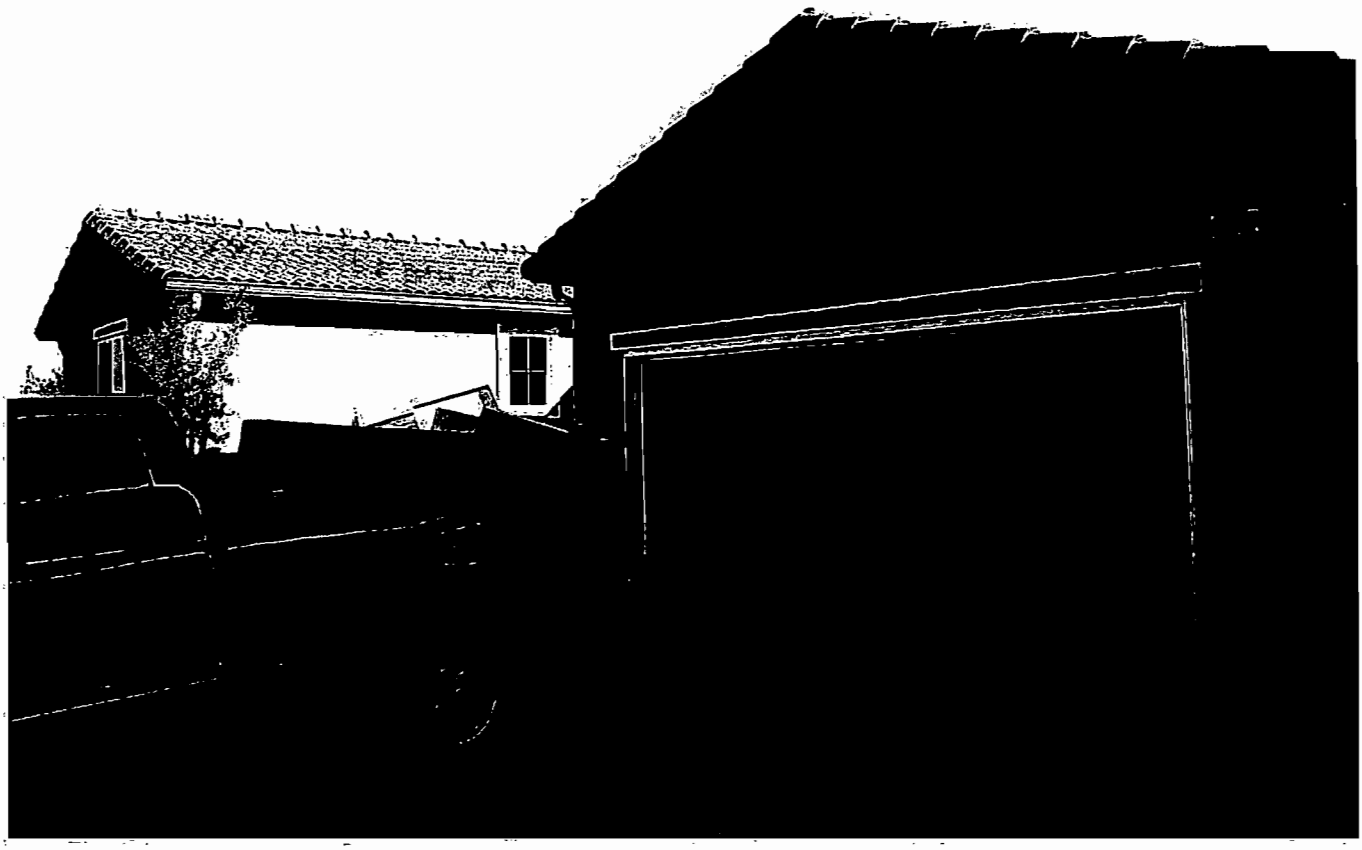
ENFORCEMENT AGENCY

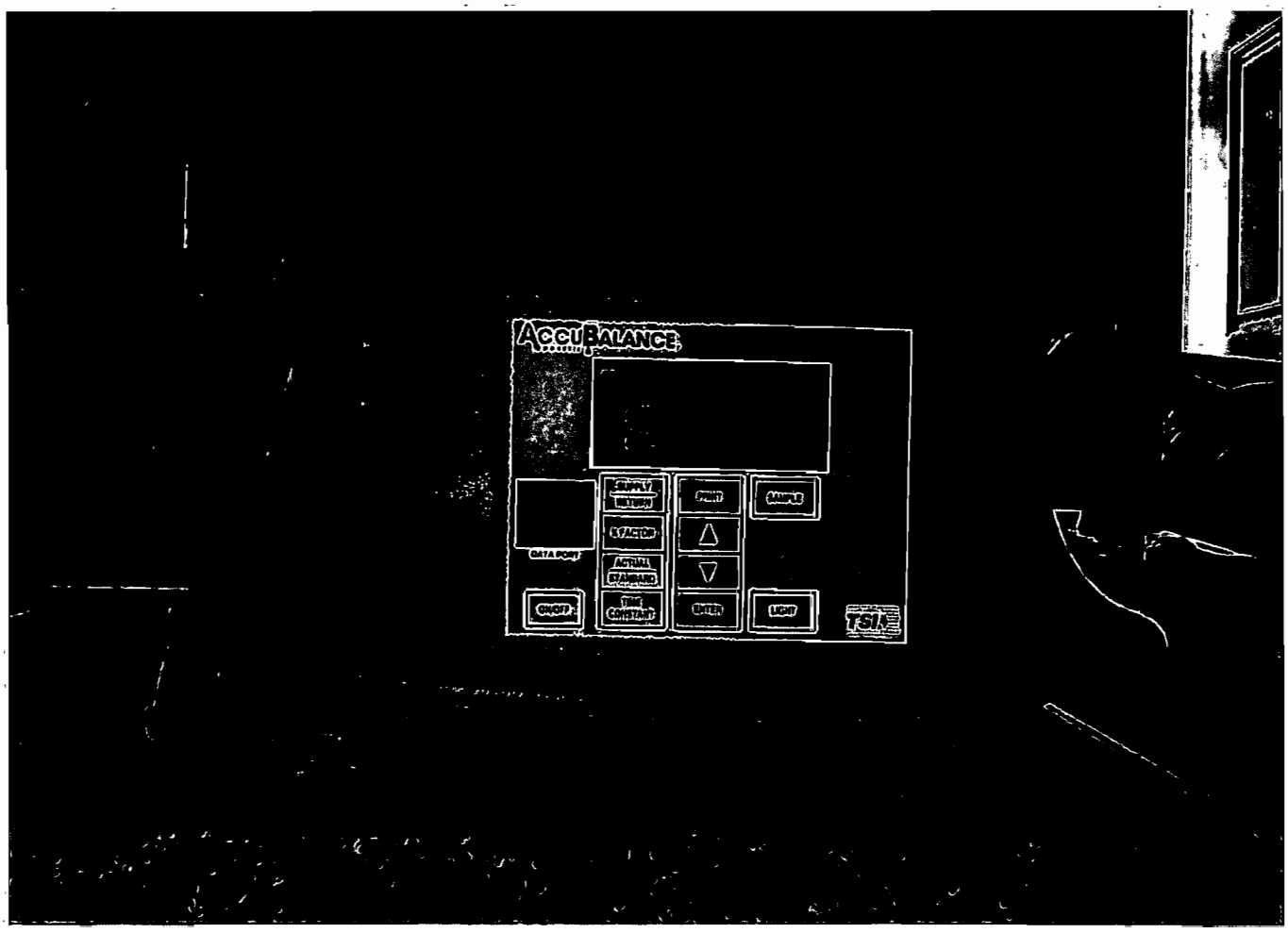
Name.... _____
Title.... _____
Agency... _____
Phone... _____
Signed.. _____ (date)

Digitally Signed by John P Arcidiacono (D.R.Horton -Northern CA) at CalCERTS.com -3/22/2010

Digitally Signed by Energy Consultant at CalCERTS.com - 3/22/2010

Reg: 210-N0001943B-000000000-0000 Registration Date/Time: 2010/02/18 18:54:46 HERSProvider: CalCERTS

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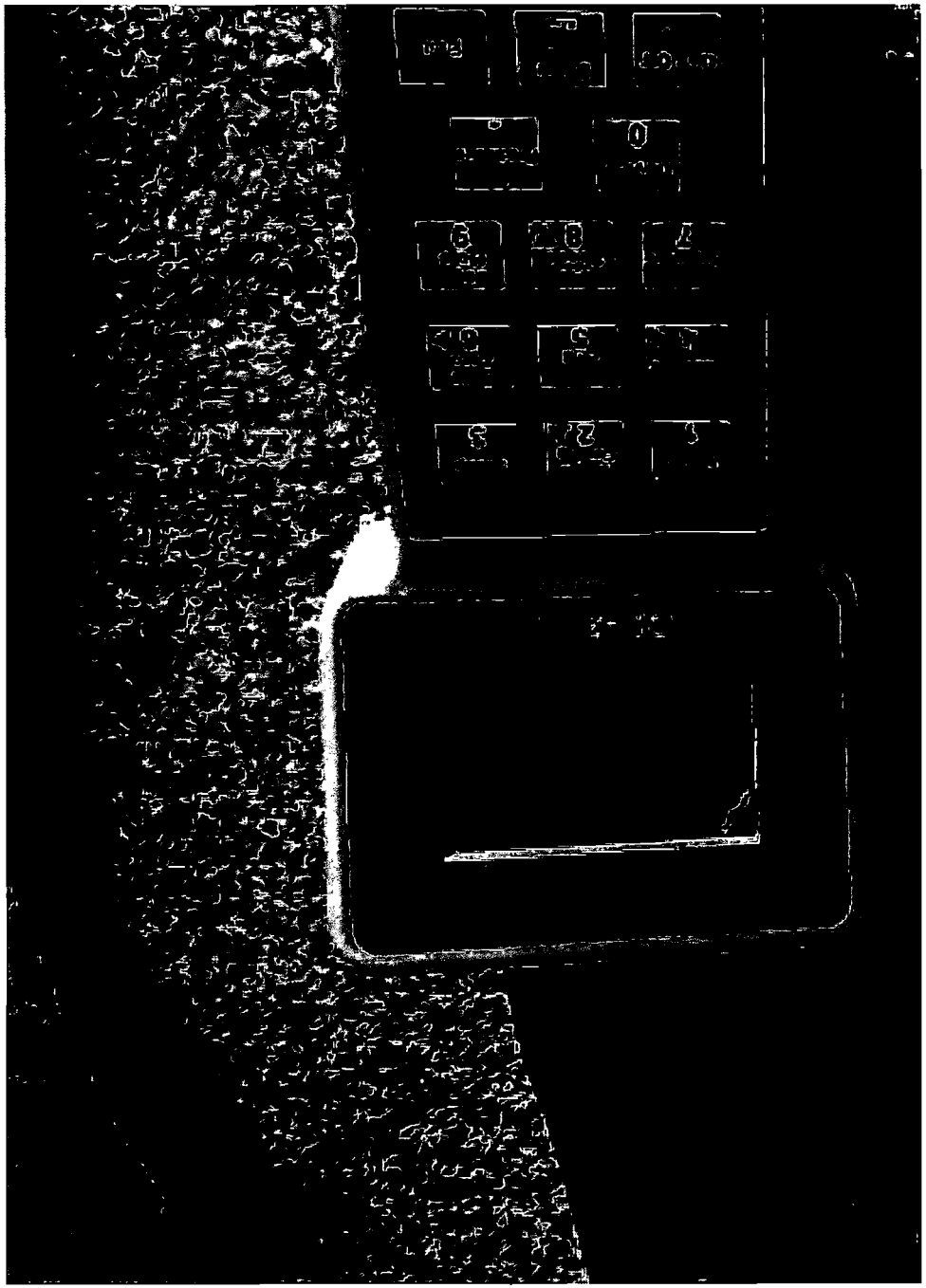
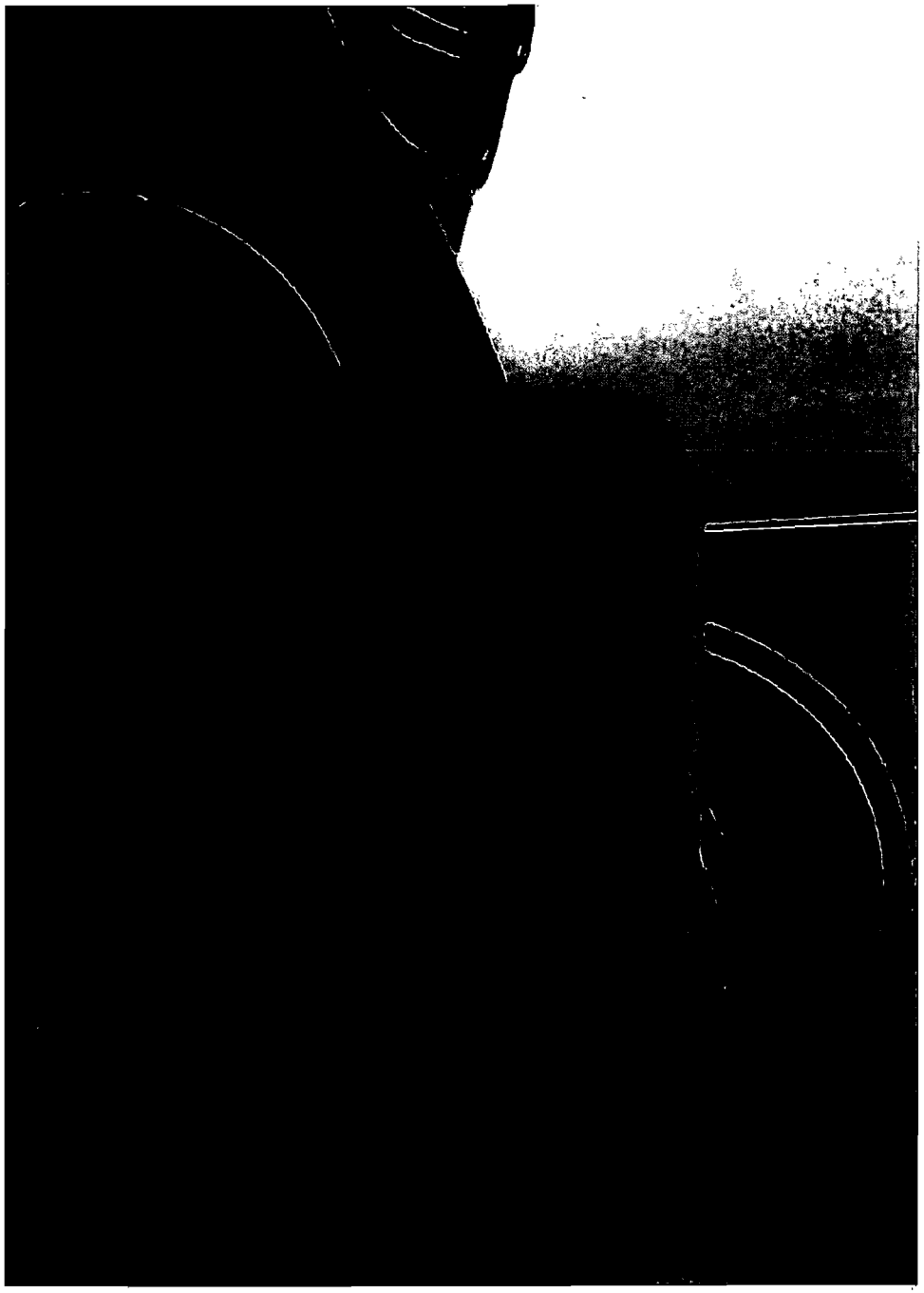
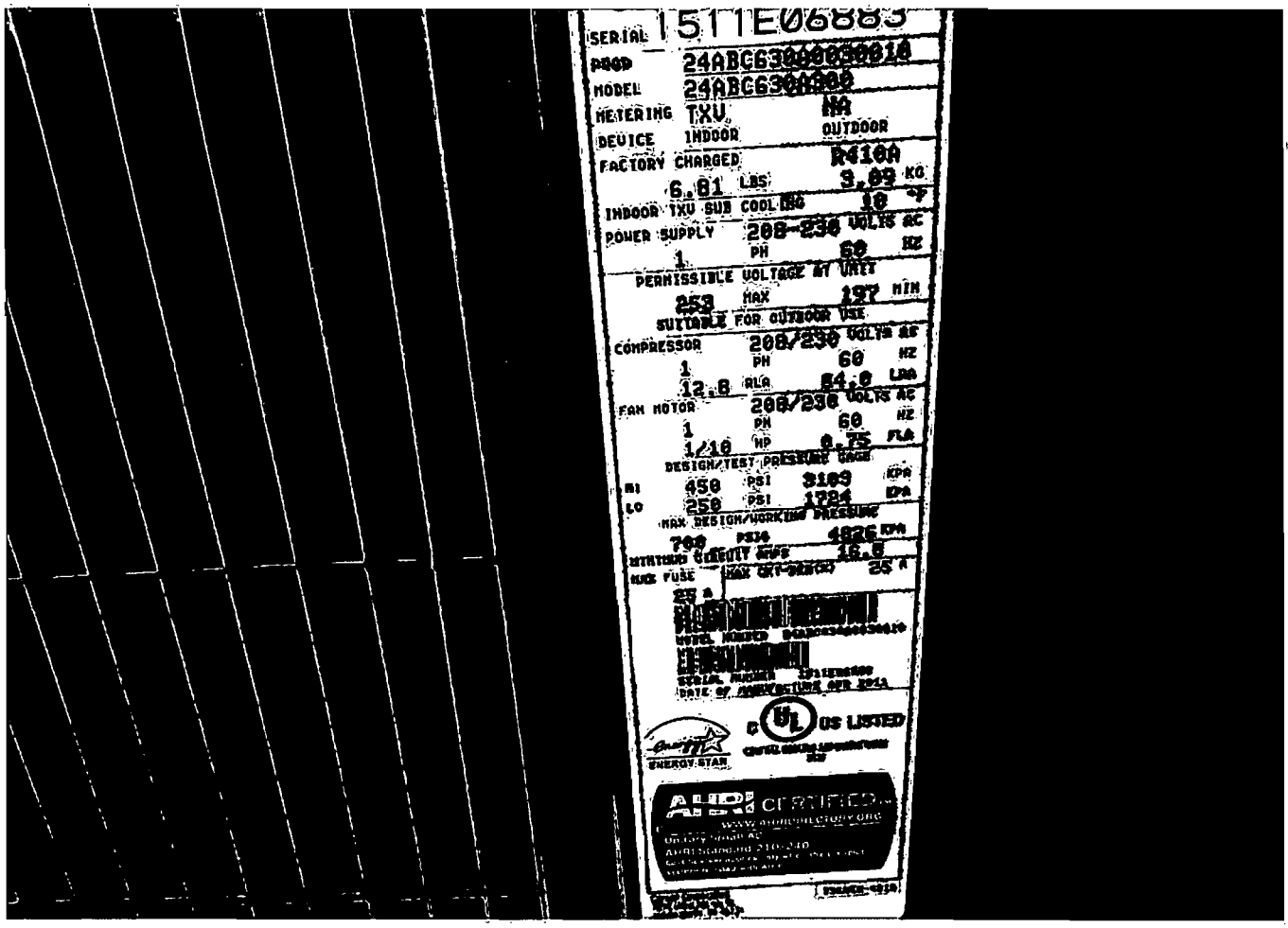
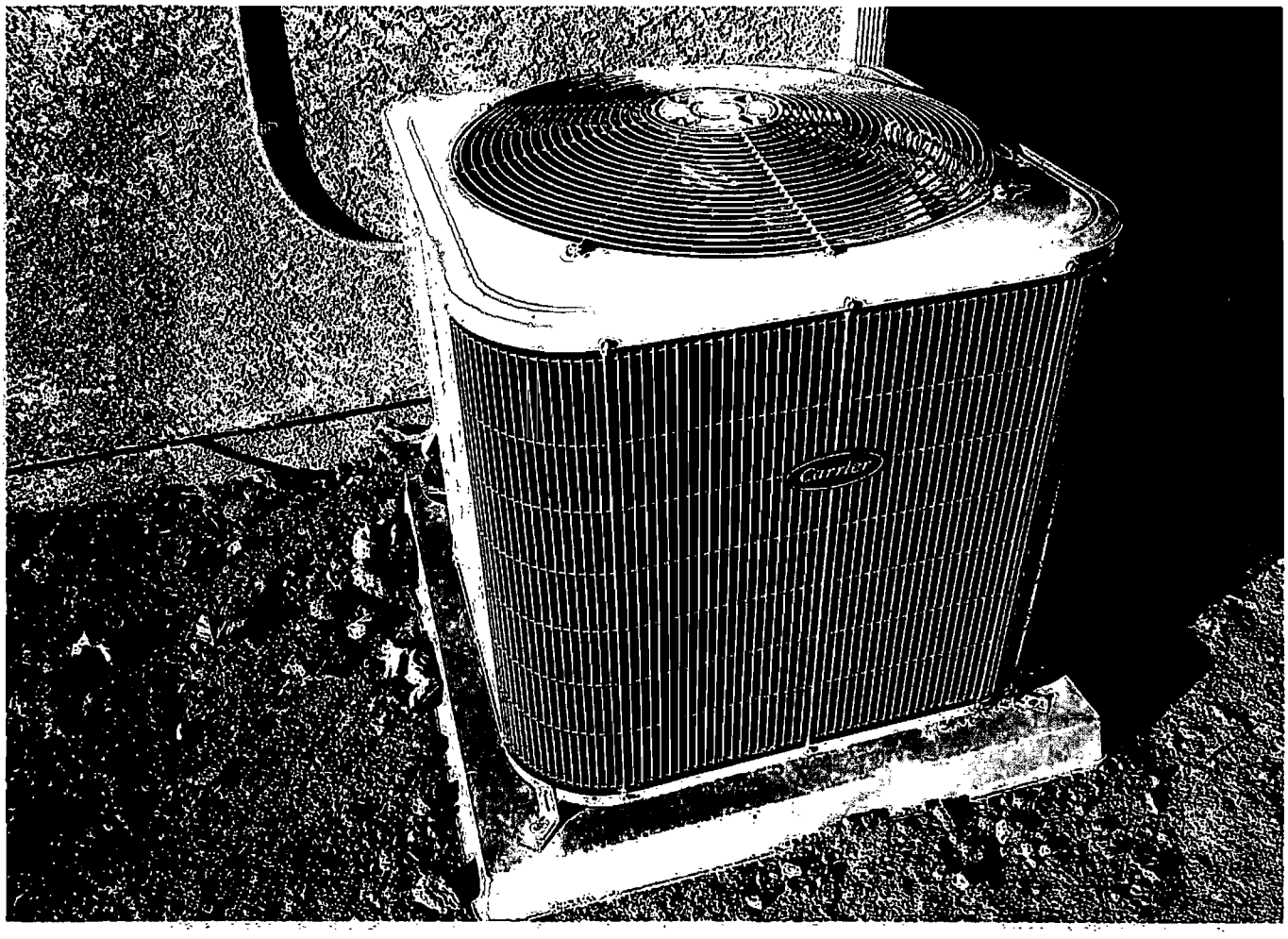
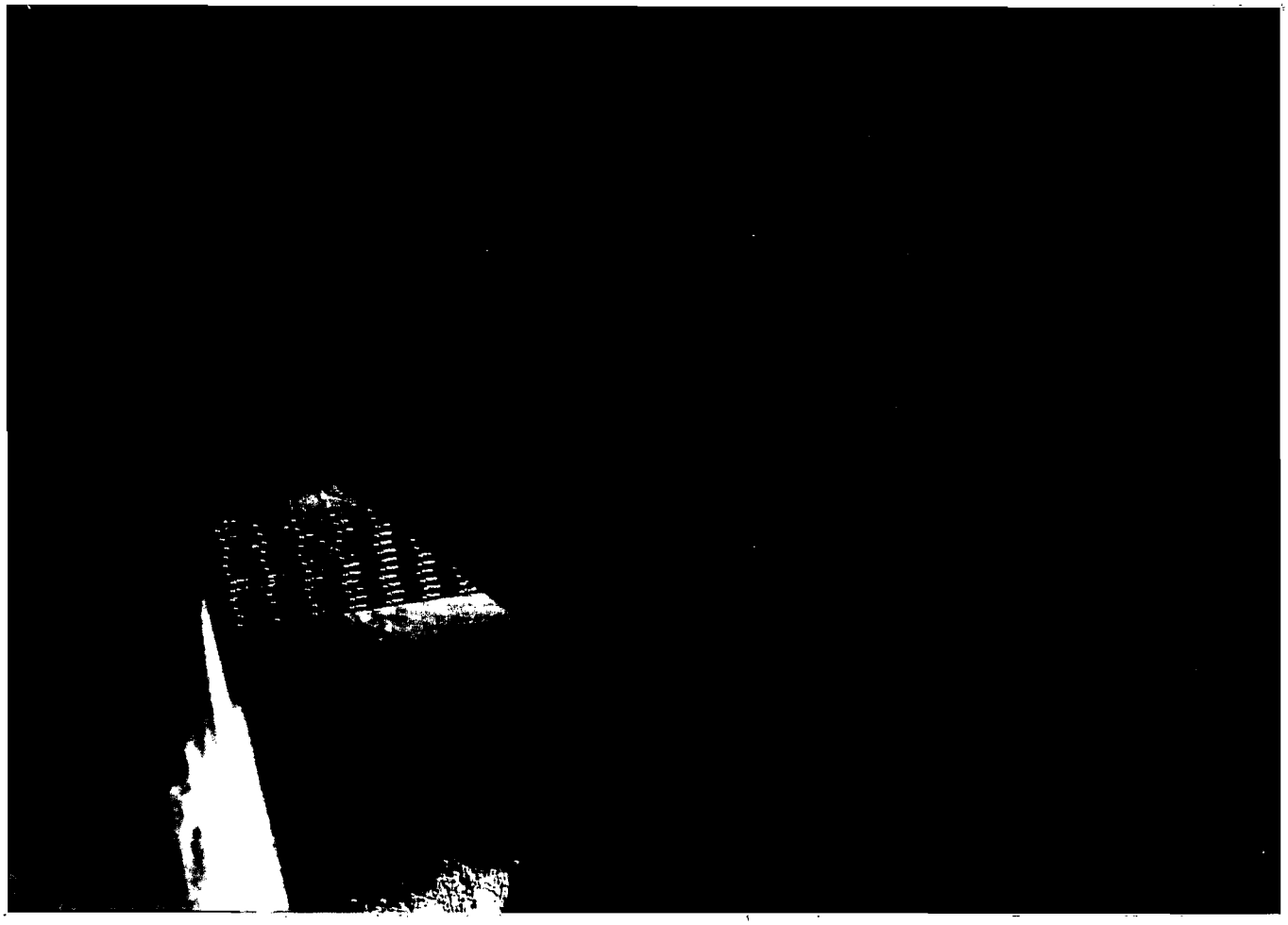
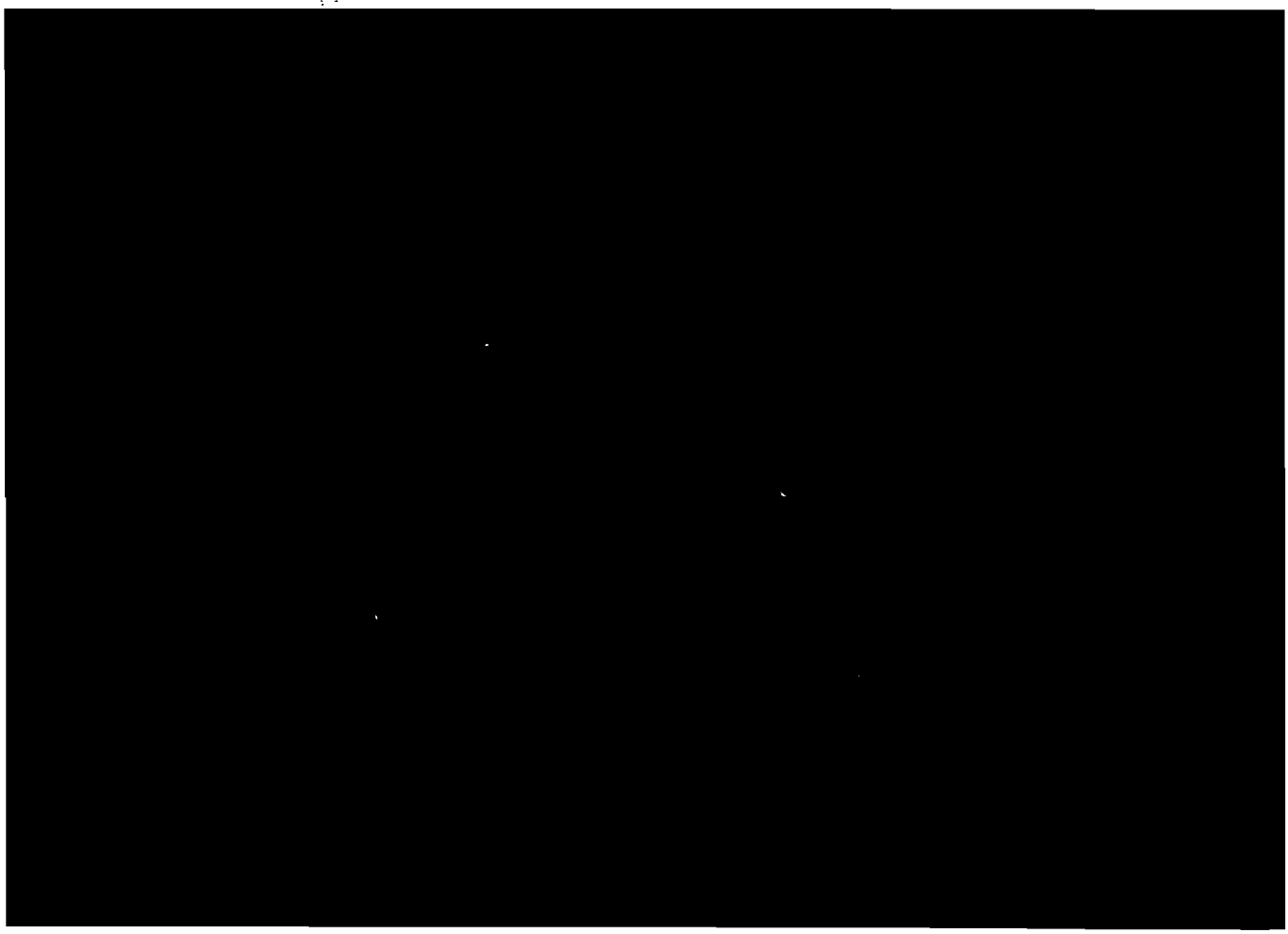


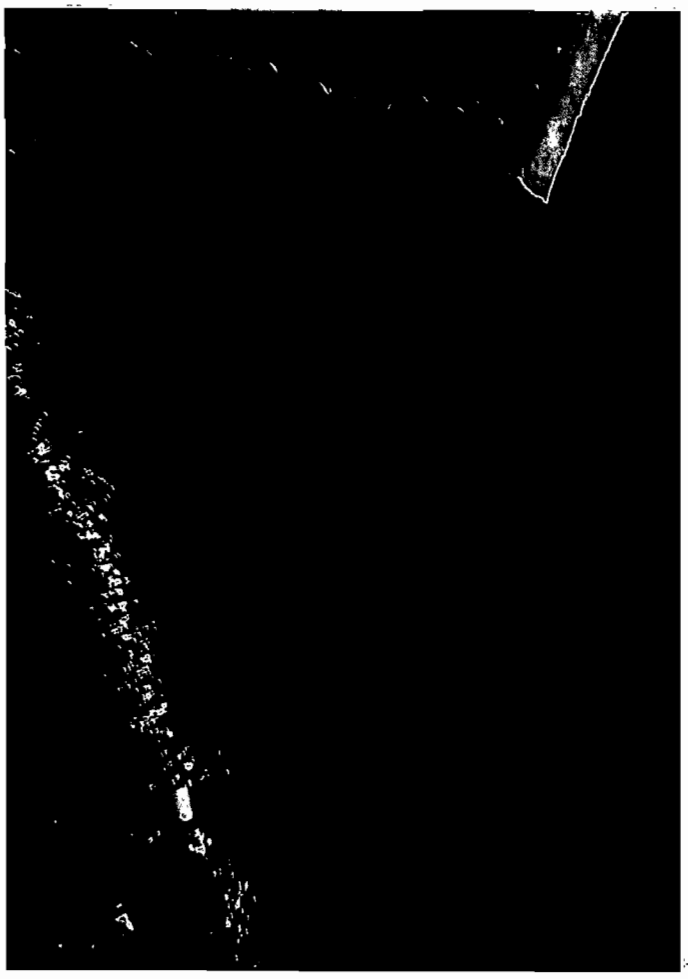


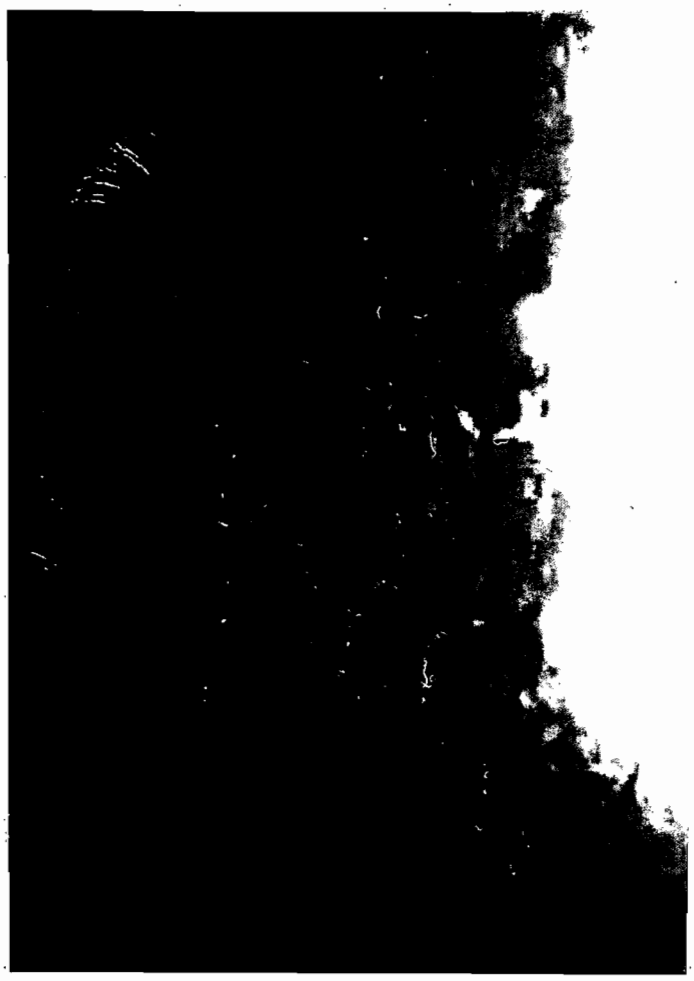

SERIAL 1511E06883
MODEL
METERING TXV NA
DEVICE INDOOR OUTDOOR
FACTORY CHARGED R410A
6.81 LBS 3.09 KG
INDOOR TXV SUB COOLING 10 °F
POWER SUPPLY 208-230 VOLTS AC
1 PH 60 HZ
PERMISSIBLE VOLTAGE BY UNIT
253 MAX 197 MIN
SUITABLE FOR OUTDOOR USE
COMPRESSOR 208/230 VOLTS AC
1 PH 60 HZ
12.8 RLA 84.0 LRA
FAN MOTOR 208/230 VOLTS AC
1 PH 60 HZ
1/10 HP 0.75 FLA
DESIGN/TEST PRESSURE GAGE
HI 450 PSI 3103 KPA
LO 250 PSI 1724 KPA
MAX DESIGN/WORKING PRESSURE
700 PSIG 4826 KPA
MINIMUM CIRCUIT AMPS 18.8
MAX FUSE MAX CKT-BRKR 25 A
25 A
ENERGY STAR
c UL us LISTED
AHRI CERTIFIED


Carrier









DYMO
kg lb
HOLD

kg lb
HOLD

FOLLOW-UP

- SEE HOW OFTEN USE HOSTING
- HIGH EER
- WHERE DID TIM GET HIS INSULATION #

ERIC HOOVER 1/6/12

ALTERATION - ENTERS OWN DATA

NEW CONST. OFFICE ENTERS INS

DOESN'T CHECK ACCURACY

EQUIPMENT CALIBRATION

6 MONTHS - COMES ON + OFF

NEW A MONTH AGO - OLD ONES

AWARE OF TMAX REQUIREMENTS

[redacted]

DIDN'T REMEMBER IF HE DID FRESNO STAGE OR NOT - HIS NAME ON ENV 21 + 22

HIGH EER -

DESCRIPTION OF TDV 60 SECOND

DOESN'T KNOW HOW TO VERIFY HIGH EER

FAILED FIRST TIME MISERABLY

RCA

8/8 - SAY IT WAS A COLD DAY

ERIC TO SUPPLY HOW EER VERIFICATION

EXHIBIT 19

Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Project	Rating Company	Type	QA
008	[redacted] (Liberty at Moss Landing)	[redacted]	CA	[redacted]	CC-1798591697	See Below	Liberty at Moss Landing	Valley Duct Testing	New Construction SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-ENV-20-HERS	CSLB: N/A	D.R. Horton - Northern CA	John P Arcidiacono
CF-6R-ENV-21-HERS	CSLB: 886354	Goldstar Insulation L.P.	Sean Archuleta
CF-6R-ENV-22-HERS	CSLB: 886354	Goldstar Insulation L.P.	Sean Archuleta
CF-6R-MECH-20-HERS	CSLB: 638992	Signal Heating & Air Cond.	Robert L McMurtrie
CF-6R-MECH-23-HERS	CSLB: 638992	Signal Heating & Air Cond.	Robert L McMurtrie

Address	Certificate Type	CF-4R-ENV-20 Envelope	CF-4R-ENV-21 QII - Framing	CF-4R-ENV-22 QII - Insulation	CF-4R-MECH-20 Duct Leakage New	CF-4R-MECH-23 High EER
800 Ferry Launch Avenue	Compliance	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE

No QA

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Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Rater DL = 77 cfm, QA = 91cfm, Target = 96. No insulation install information in the attic. No gasket around the attic access. Voids/ depressions present. Not able to verify batt insulation under catwalk. Rater lists minimum weight at .615 ft2, and depth at 14.75 ". The data sheet says .555 ft2 and 12.75". This house had 5 jumper vents to equalize temperature in the rooms, and fresh air ventilation within the HVAC system.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Envelope	CF-4R-ENV-20	Complete	HOUSE	[Comments]
QII - Framing	CF-4R-ENV-21	Not Started	QA CF-4R	[Comments]
QII - Insulation	CF-4R-ENV-22	**QA FAILED**	System 1	[Comments]
Duct Leakage New	CF-4R-MECH-20	Complete	HOUSE	[Comments]
High EER	CF-4R-MECH-23	Complete	HOUSE	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 11/15/2011 / 10:30
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Carrier **Model:** 24ABC630A0030010 **# of Vents:** 11 **# of Returns:** 1 **SEER:** 14.5
F.A.U. Make:	Carrier **Model:** 58MCB080-16 **AFUE:** .925 **HSPF:** **Output BTU:** 74,000 **Location:** Attic
Coil Make:	ADP **Model:** C36H175D156 **EER:** 12

Coil Number: 7111F31827 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: No Notes
Attic Investigation: Investigated and saw something which may decrease system efficiency
NO Photos

Registered CF-4R Data

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

Building Envelope Sealing

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft^2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✔	✔
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	**1302**	
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail	☑ Pass	☐ Fail
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter ≥1.5 SLA	☐ < 1.5 SLA*	☑ ≥ 1.5 SLA

*Advisory note to builder and enforcement agency: If row 5 indicates "< 1.5 SLA", it is critical to ensure that combustion and solid-fuel burning appliances in the dwelling are provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions and all applicable codes as specified by ASHRAE Standard 62.2 Section 6.4. Additional information about compliance with this requirement is given in Section 4.6.5 of the Residential Compliance Manual under the topic of Combustion and Solid-Fuel Burning Appliances.

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **D.R. Horton - Northern CA**		
Responsible Person's Name: **John P Arcidiacono**	CSLB License: **N/A**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

Building Envelope Sealing

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft^2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✓	✓
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	**833.50**	
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail	☑ Pass	☐ Fail
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter ≥1.5 SLA	☐ < 1.5 SLA*	☑ ≥ 1.5 SLA
*Advisory note to builder and enforcement agency: If row 5 indicates "< 1.5 SLA", it is critical to ensure that combustion and solid-fuel burning appliances in the dwelling are provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions and all applicable codes as specified by ASHRAE Standard 62.2 Section 6.4. Additional information about compliance with this requirement is given in Section 4.6.5 of the Residential Compliance Manual under the topic of Combustion and Solid-Fuel Burning Appliances.			

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Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **D.R. Horton - Northern CA**		
Responsible Person's Name: **John P Arcidiacono**	CSLB License: **N/A**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- _____. List tested average depth of insulation _____ In X 5.8R = _____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☑ Yes	☐ No	☐ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No	☐ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☑ Yes	☐ No	☐ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☑ Yes	☐ No	☐ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☑ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☑ Yes	☐ No	☐ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 2 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- **13**. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☑ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☑ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☑ Yes	☐ No	☐ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☑ Yes	☐ No	☐ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches (NA if no platforms or cat-walks)
☑ Yes	☐ No		Attic access gasketed
☑ Yes	☐ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **38** Manufacturer's minimum required weight for the target R-value **.615** (pounds-per-square foot). Sample weight **.645** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation **16** (inches) Manufacturer's minimum required settled thickness **14.75** (inches). Number of days since loose-fill insulation was installed **1** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	(Page 3 of 3)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Lathrop	10-00410

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☑ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☑ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☑ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Goldstar Insulation L.P.**		
Responsible Person's Name: **Sean Archuleta**	CSLB License: **886354**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- _____. List tested average depth of insulation _____ in X 5.8R = _____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☐ Yes	☐ No	☑ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☐ Yes	☐ No	☑ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☐ Yes	☐ No	☑ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☐ Yes	☐ No	☑ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☐ No	☑ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☐ Yes	☐ No	☑ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☐ Yes	☐ No	☑ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Lathrop	10-00410

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- **13**. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☐ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☐ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☐ Yes	☐ No	☑ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3.5 inches (NA if no platforms or cat-walks)
☐ Yes	☑ No	☐ NA	Attic access gasketed
☑ Yes	☐ No	☐ NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☐ Yes	☑ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **38** Manufacturer's minimum required weight for the target R-value **.555** (pounds-per-square foot). Sample weight **.607** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation **12.75** (inches) Manufacturer's minimum required settled thickness **12.75** (inches). Number of days since loose-fill insulation was installed **60** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☐ Yes	☐ No	☑ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☐ Yes	☐ No	☑ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Goldstar Insulation L.P.**		
Responsible Person's Name: **Sean Archuleta**	CSLB License: **886354**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☐ Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ☑ Heating system method: 21.7 x 74 Output Capacity in Thousands of Btu/hr x *leakage factor* = 96.35 CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**77**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **whole house**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) If those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☐ Cooling system method: Nominal capacity of condenser in Tons ____ x 400 x *leakage factor* = ____ CFM ☑ Heating system method: 21.7 x 74 Output Capacity in Thousands of Btu/hr x *leakage factor* = 96.35 CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**91.45**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Cooling System Method: Nominal capacity of condenser in Tons **2.5** x 400 x **6%** = **6000** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1210** x **6%** = **7260** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall.
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (If applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/17/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	**(Page 1 of 1)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Lathrop	10-00410

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**System 1**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the installed Outdoor Unit	**Carrier 24ABB442**			
5	Make and Model Number of the installed Inside Coil	**All-Style C36H175D256**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Carrier 58MCB080-16**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.
☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Erik K Hoover**	Responsible Rater's Signature: **Erik K Hoover**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005171**	Date Signed: **9/12/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-23
Verification of High EER Equipment	**(Page 1 of 1)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Lathrop	10-00410

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**whole house**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the installed Outdoor Unit	**CARRIER 24ABC630A0030010**			
5	Make and Model Number of the installed Inside Coil	**ADP C36H175D156**			
6	Make and Model Number of the installed Furnace or Air Handler.	**CARRIER 58MCB080-16**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12.0**			
7a	**QA Additional Question:** Website URL confirming LHRI: **HOUSE:** CERT #3730391				

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.
☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies, enter Pass**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Signal Heating & Air Cond.**		
Responsible Person's Name: **Robert L McMurtrie**	CSLB License: **638992**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798591697**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/15/2011**	

CalCERTS - QA Report Results Page 1 of 1

QA Tested - New ERIK HOOVER (9/12)

Mark Wiese Logged In [Logout]

QA Data Collection Form:

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 11/15/20 / 10:30 → JC [redacted]

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

11 Actual Vents
5 Jumpers

Condenser Make:* CARRIER Model:* 24ABC630A0030010 # of Vents:* 16 # of Returns:* ~~2~~ 1

SEER:

F.A.U. Make:* 58MCB080-16 Model:* CARRIER AFUE: .925 HSPF: Output ~~Fresh Air~~?

80,000 BTU:* 74,000 Location: Attic

Coil Make:* ADP Model:* C36H175D156 EER:

TXV installed

Coil Number:* 7111F31827 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL (91.45) Rater: used heating (96) 77 actual → Target
ENV (833.50) Rater: 1302
HIGH EER (# 3730391)
QII (I) No insul cert, No gasket @ access, Voids, Dep

Attic Investigation:* [Select from list]

1Bd	Ba	2Bd	H	MB	Mba	Liv/Di	K	3B	1
2	2	2	1	2	1	2	1	1	

Ducts - Vents 16

Registers - ~~2~~ 1

NEXT

* Required Fields

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
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Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

16127, 16145, 16169 Covered Bridge,

Airflow (Hood) 1210

9/12

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251115	Phase 1	[redacted]	10-00410	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		Clear Results
Site Address: Liberty	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

HOUSE

2. Building Envelope Leakage Test

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft^2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✔	✔
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1551**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**775**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)		
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail		
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter >=1.5 SLA		

FINAL TESTED RESULT: ◉ Pass ○ Fail

DECLARATION STATEMENT

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QA Rater: ---SELECT RATER---

SAVE INFO | CERTIFY RESULTS

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
251115	Phase 1	[redacted]	10-00410	Plan 2 (New)

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Lathrop	**Permit Number:** 10-00410
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

Yes	No	N/A	FLOOR INSULATION
○	○	○	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
○	○	○	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
○	○	○	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
○	○	○	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
○	○	○	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
○	○	○	Insulation R-value same or greater that listed on CF-1R.
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	**SPF** list the required floor cavity R-value from CF-1R, R-[ ]. List tested average depth of insulation [ ] in X 5.8R = ___ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	○	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
Yes	No	N/A	**WALL INSULATION**
○	○	○	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
○	○	○	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
○	○		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight
○	○	○	**BATTS**, not a single void/depression deeper than ¾" in ANY stud bay. (NA if loose fill or SPF)
○	○	○	**BATTS,** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
○	○	○	**Loose Fill** no gaps or voids of any depth allowed. (NA if batts or SPF).
○	○		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
○	○		All Rim-joists to the outside insulated.

○	○	N/A	Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
○	○	○	All skylight shafts and attic kneewalls insulated with minimum R-19.
○	○	○	Insulation in full contact with drywall or wall finish of skylight shafts and attic kneewalls.
○	○		Wall insulation same or better than what is listed on the CF-1R.
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	SPF list the required floor cavity R-value from CF-1R, R-[13]. List tested average depth of insulation [ ] in X 5.8R = ___ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	○	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth
Yes	No	N/A	**CEILING INSULATION**
○	○	✓	**BATTS** there must not be a single gap/void/depression deeper than ¾". (NA if loose fill or SPF).
○	○	✓	**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
○	✓	○	**NO** gaps or voids allowed for loose fill and SPF. (NA if batts).
✓	○		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
✓	○		Insulation in full contact with the ceiling, NO gaps.
✓	○		Insulation in contact with air barrier on all five sides.
○	○	✓	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
○	○	✓	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF).
○	○	✓	**SPF** the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA if loose fill or batts).
Assume YES → ✓	○	○	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then, minimum 3 inches. (NA if no platforms or cat-walks) Can't Verify - has rim around entire catwalk
○	✓		Attic access gasketed
✓	○		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
✓	○		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from ½-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
○	○	✓	Wall insulation same or better than what is listed on the CF-1R
✓	○	○	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
✓	○	○	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
○	○	○	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value [38] Manufacturer's minimum required weight for the target R-value [.555] (pounds-per-square foot). Sample weight [.607] (pounds per square foot). PASS
			Manufacturer's minimum required thickness at time of installation [12.15] (inches) Manufacturer's minimum required settled thickness [12.15] (inches). Number of days

5.30 ÷16 ÷

○	○	○	since loose-fill insulation was installed [ ] (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches). 12 in
[Yes]	[No]	[N/A]	**GARAGE ROOF/CEILING INSULATION FOR TWO STORIES (no conditioned space over garage)**
○	○	✓	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
[Yes]	[No]	[N/A]	**GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**
○	○	○	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
○	○	○	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	**SPF** list the required floor cavity R-value from CF-1R, R- [ ]. List tested average depth of insulation [ ] in X 5.8R = __ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	○	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth

FINAL TESTED RESULT: ○ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
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QA Rater: ---SELECT RATER---

SAVE INFO CERTIFY RESULTS

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CalCERTS, Inc.

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Fax: 916-985-3402

OWENS CORNING
INNOVATIONS FOR LIVING®

PROPINK® L77 PINK® Fiberglas™ Unbonded Loosefill Insulation

PROPINK® L77 PINK® Fiberglas™ Unbonded Loosefill Insulation is designed to be mechanically blown into attics but may also be applied in the exterior walls or enclosed cavities of new or existing construction. The product consists of unbonded fiberglass insulation material packaged in bags.

SEAN ARCHULETA

Technical Data – Attics

Nominal bag weight: 33 lbs.

R-value*	Bags Per 1,000 ft.²	Maximum Net Coverage	Minimum Weight/Ft.²	Minimum Thickness (in)	Minimum Settled Thickness[1]
R-13	5.5	182.9	0.180	4.75	4.75
R-19	8.1	124.2	0.266	6.75	6.75
R-22	9.4	106.3	0.311	7.75	7.75
R-26	11.2	89.6	0.368	9.00	9.00
R-30	13.0	77.0	0.428	10.25	10.25
R-38	16.8	59.5	0.555	12.75	12.75
R-44	20.1	49.8	0.662	14.75	14.75
R-49	22.6	44.2	0.747	16.25	16.25
R-60	28.5	35.1	0.940	19.50	19.50

Technical Data – Walls

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 Ft.²	Min. Weight Lbs./Ft.²
13	3.5 (2x4)	1.3	87.0	11.5	0.379
15	3.5 (2x4)	1.5	75.4	13.3	0.438
21	5.5 (2x6)	1.3	55.4	18.1	0.596
24	5.5 (2x6)	1.8	40.0	25.0	0.825

Technical Data – Floors

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 ft.²	Min. Weight Lbs./Ft.²
31	2x8	1.4	39.0	25.6	0.846
39	2x10	1.4	30.6	32.7	1.079
48	2x12	1.5	23.5	42.6	1.406

Technical Data – Cathedral Ceiling

R-value*	Minimum Thickness	Installed Density Lbs./Ft.³	Max. Coverage Per Bag	Bags Per 1,000 ft.²	Min. Weight Lbs./Ft.²
28	2x8	1.3	42.0	23.8	0.785
36	2x10	1.3	32.9	30.4	1.002
44	2x12	1.3	27.1	36.9	1.219

1. This product shows negligible settling.
Unisol Volu-Matic III machine was used to determine the coverage information above. The machine was set up in 3rd gear, with a 75% open gate and a 3" hose, blowing the wool out in a 10 ft. arc.

*R-values differ. Find out why in the seller's fact sheet on R-values. Higher R-value means greater insulating power.

Surface Burning Characteristics/Building Code Construction Classification

Flame Spread	Smoke Developed	ICC
0	0	All Types

This product conforms to the product requirements of ASTM C 764 Type I.
R-values are determined in accordance with ASTM C 687.
Conforms to Department of Energy material standards.
Passes the requirements of ASTM E 136 and is considered noncombustible by the model building codes.
This product is non-corrosive, does not absorb moisture and does not support mold growth.
Conforms to the quality standards of the state of California.

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-factor	Cavity R-val	Sheathing R-val	Act Azm	Tilt	Solar Gains	Appendix JA4 Reference	Location/ Comments
1 Wall	Wood	228	0.072	13	4	0	90	Yes	4.3.1 C3	Front Wall
2 Wall	Wood	495	0.072	13	4	90	90	Yes	4.3.1 C3	Left Wall
3 Wall	Wood	325	0.072	13	4	180	90	Yes	4.3.1 C3	Back Wall
4 Wall	Wood	476	0.072	13	4	270	90	Yes	4.3.1 C3	Right Wall
5 Wall	Wood	188	0.102	13	0	0	90	No	4.3.1 A3	Garage Wall
6 Attic	Wood	1846	0.025	38	0	n/a	0	Yes	4.2.1 A21	Attic Ceiling
7 Attic	Wood	100	0.048	19	0	n/a	0	Yes	4.2.1 A16	At Furnace
8 Door	Other	24	0.500	0	0	0	90	Yes	4.5.1 A4	Entry Door
9 Door	Other	18	0.500	0	0	0	90	No	4.5.1 A4	Garage Door

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix JA4 Reference	Location/ Comments
10 SlabEdge	43	0.730	R-0/0in	No	4.4.7 A1	Exposed edge
11 SlabEdge	172	0.730	R-0/0in	No	4.4.7 A1	Covered edge

FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	10.0	0.280	0.250	0	90	Standard	F1/LowE2 or Equiv/Fixed
2 Wind Front (N)	25.0	0.310	0.230	0	90	Standard	F2/LowE2 or Equiv/Operab
3 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L1/LowE2 or Equiv/Operab
4 Wind Left (E)	18.0	0.310	0.230	90	90	Standard	L2/LowE2 or Equiv/Operab
5 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L3/LowE2 or Equiv/Operab
6 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L4/LowE2 or Equiv/Operab
7 Wind Left (E)	8.0	0.310	0.230	90	90	Standard	L5/LowE2 or Equiv/Operab
8 Door Back (S)	48.0	0.320	0.250	180	90	Standard	B1/LowE2 or Equiv/Pation
9 Wind Back (S)	30.0	0.310	0.230	180	90	Standard	B3/LowE2 or Equiv/Operab
10 Door Back (S)	48.0	0.320	0.250	180	90	Standard	B5/LowE2 or Equiv/Pation
11 Wind Right (W)	20.0	0.310	0.230	270	90	Standard	R1/LowE2 or Equiv/Operab
12 Wind Right (W)	6.0	0.280	0.250	270	90	Standard	R2/LowE2 or Equiv/Fixed
13 Wind Right (W)	6.0	0.280	0.250	270	90	Standard	R3/LowE2 or Equiv/Fixed

Project Title..... Plan 2 (1974) Date..03/20/10 10:15:55

MICROPAS8 v8.0 File-LY1974 Wth-CTZ12S08 Program-FORM CF-1R
User#-MP0565 User-Beutler Corporation Run-Plan 2 (1974)

OVERHANGS

Surface	Area (sf)	Window Width	Window Height	Overhang Depth	Overhang Height	Overhang Left Extension	Overhang Right Extension
1 Window	10.0	n/a	5	8.5	0.5	n/a	n/a
3 Window	8.0	n/a	4	1.5	0.5	n/a	n/a
8 Door	48.0	n/a	8	1.5	0.5	n/a	n/a
9 Window	30.0	n/a	5	1.5	0.5	n/a	n/a
10 Door	48.0	n/a	8	1.5	0.5	n/a	n/a
12 Window	6.0	n/a	3	11	0.5	n/a	n/a
13 Window	6.0	n/a	3	1.5	0.5	n/a	n/a

SLAB SURFACES

Slab Type	Area (sf)
Standard Slab	1974

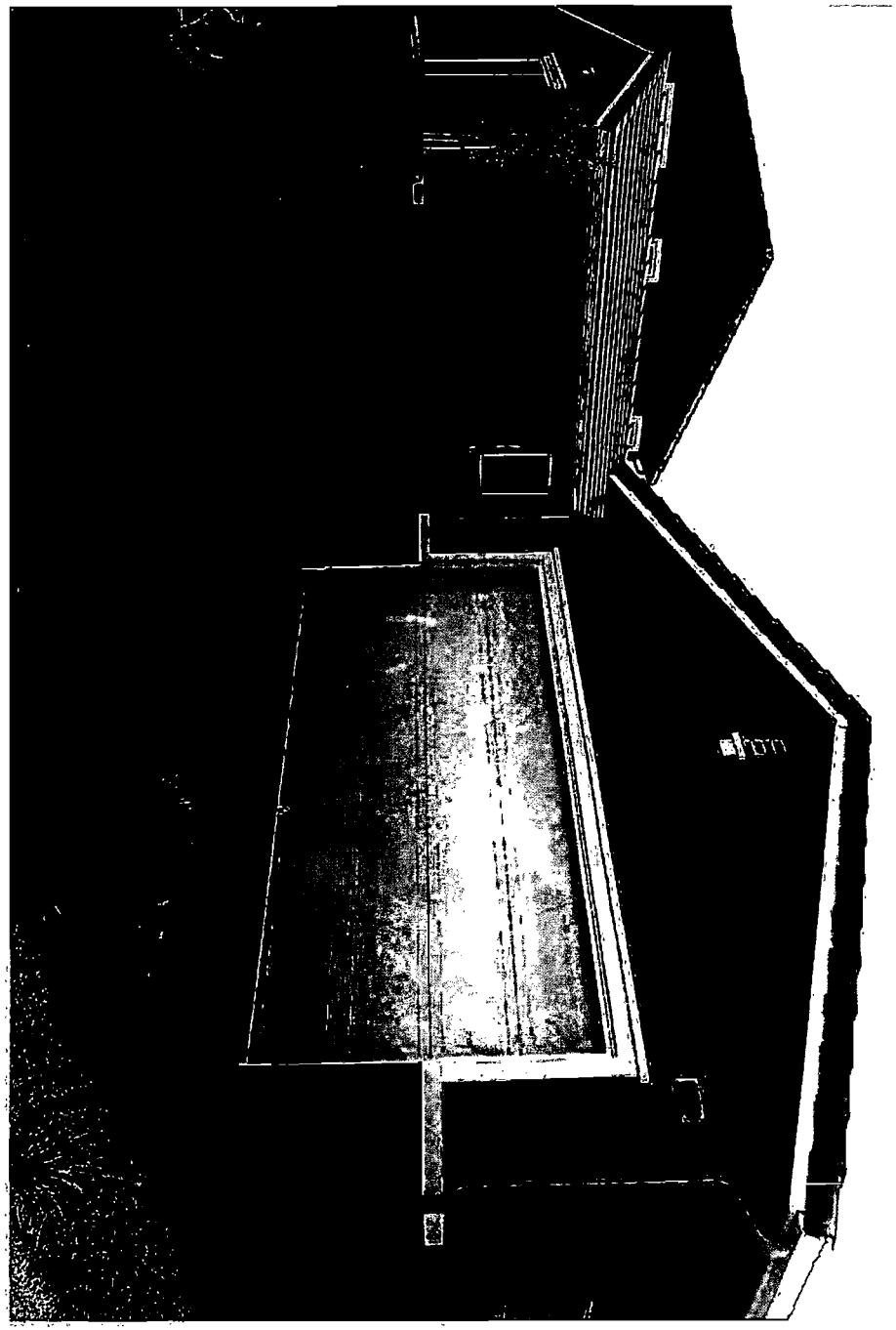
HVAC SYSTEMS

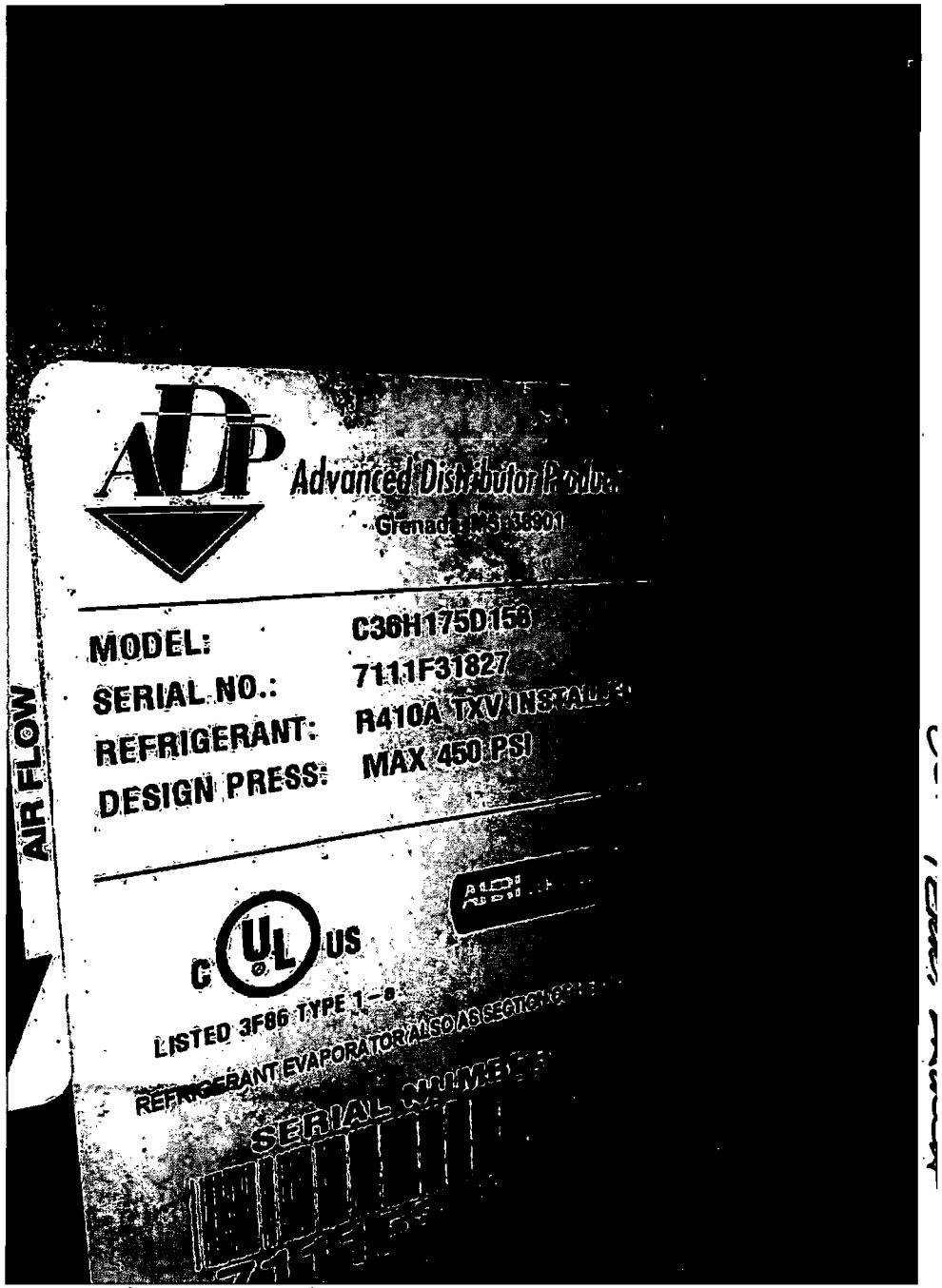
System Type	Minimum Efficiency	Verified EER	Verified Refrig Charge or CID	Verified Adequate Airflow	Verified Fan Watt Draw	Verified Maximum Cooling Capacity
Furnace	0.920 AFUE	n/a	n/a	n/a	n/a	n/a
ACSplit	14.00 SEER	12.0	No	No	No	No

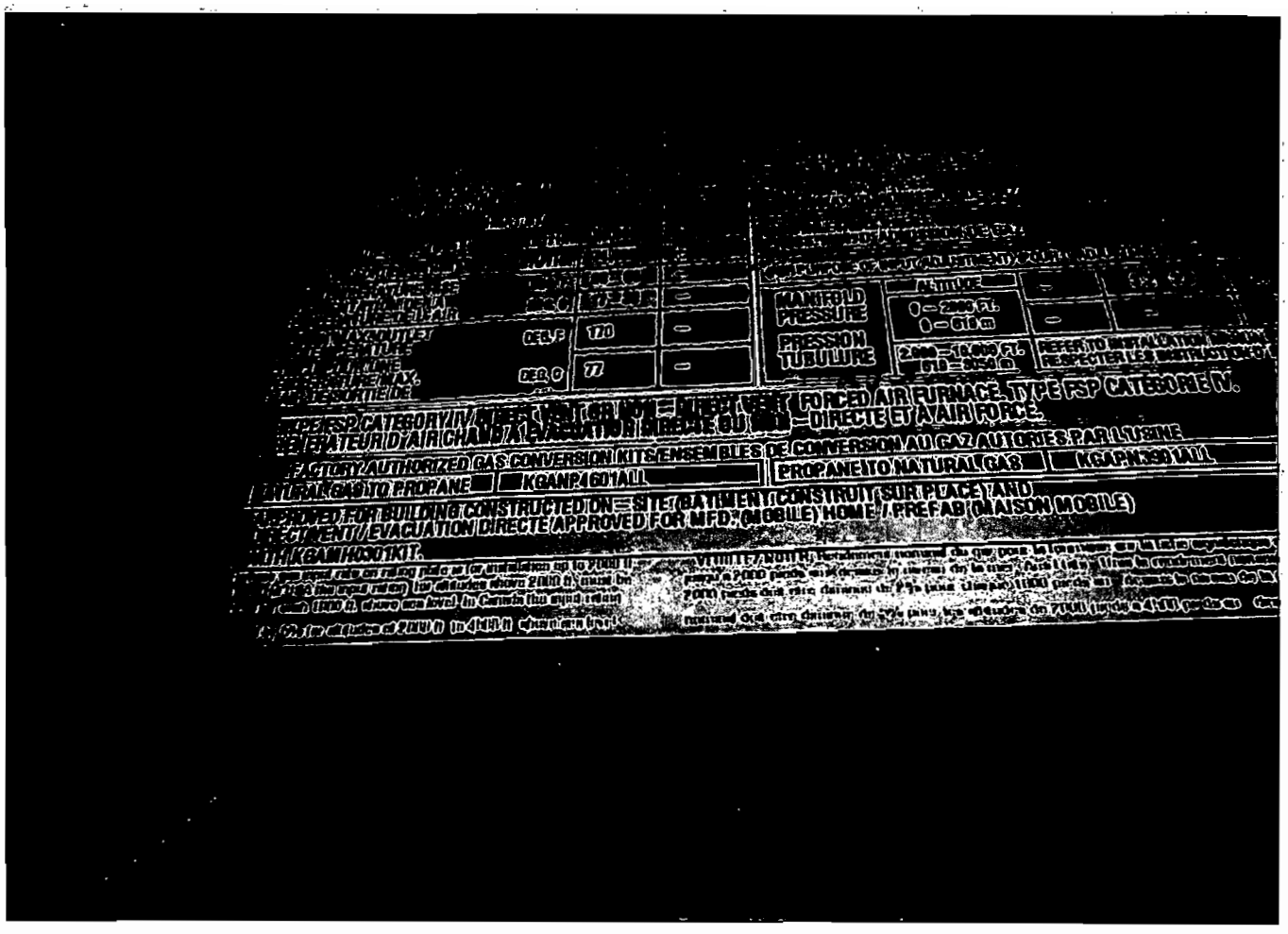
HVAC SIZING

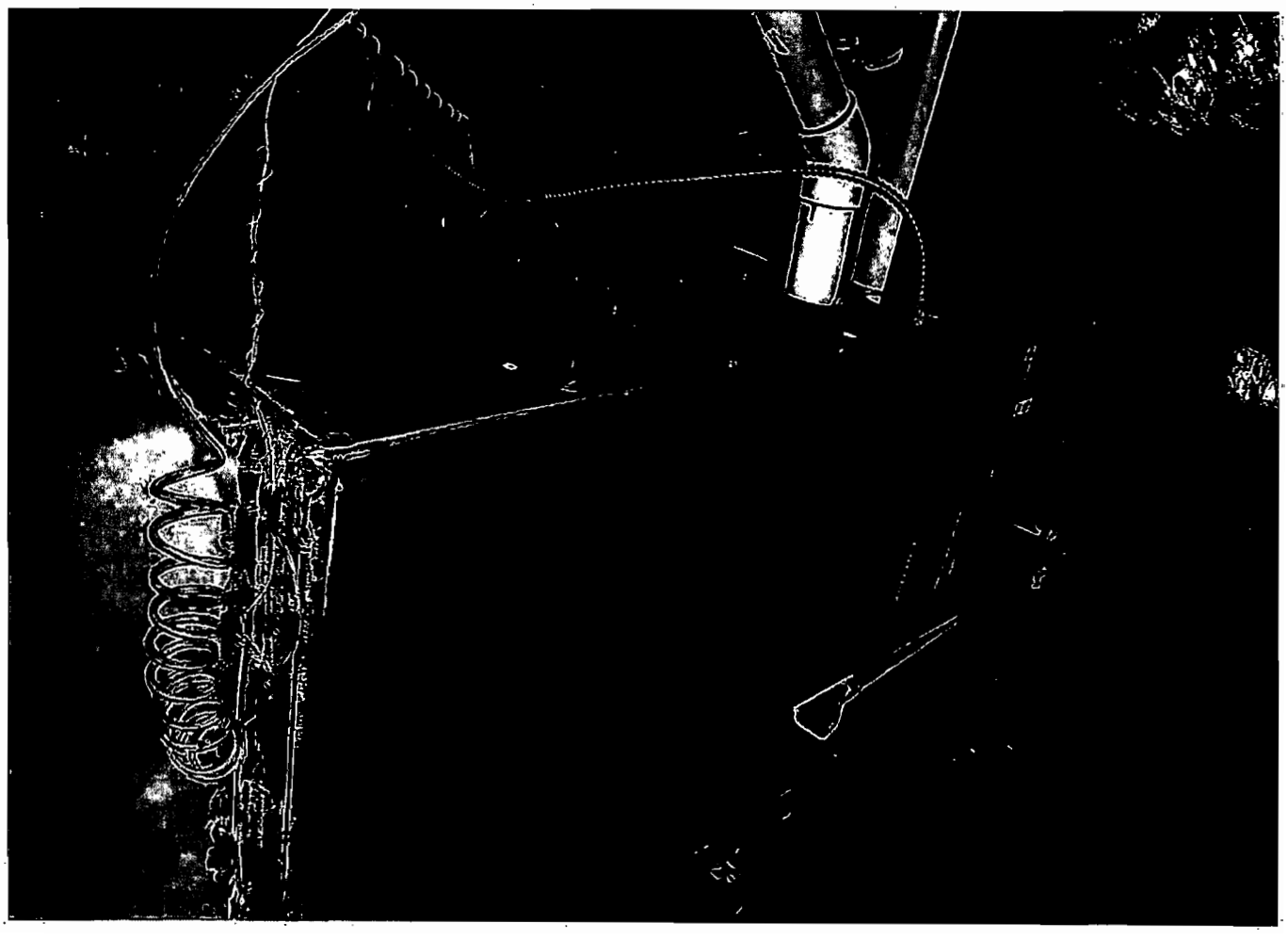
System Type	Total Heating Load (Btu/hr)	Sensible Cooling Load (Btu/hr)	Design Cooling Capacity (Btu/hr)	Verified Maximum Cooling Capacity (Btu/hr)
Furnace	30698	n/a	n/a	n/a
ACSplit	n/a	15441	18341	n/a

Orientation of Maximum..... Front Facing 90 deg (E)
Sizing Location..... LATHROP
Winter Outside Design..... 24 F
Winter Inside Design..... 70 F

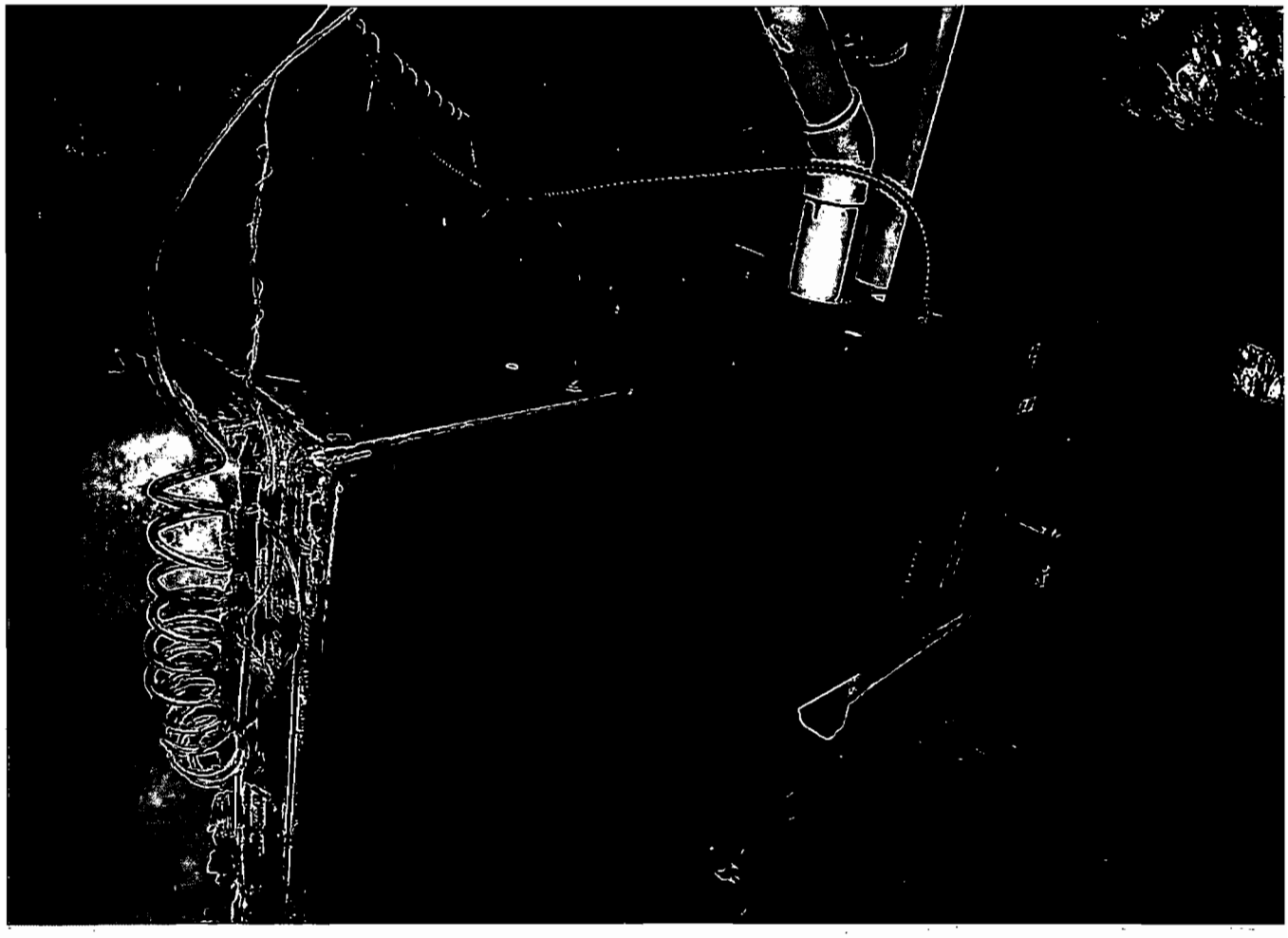


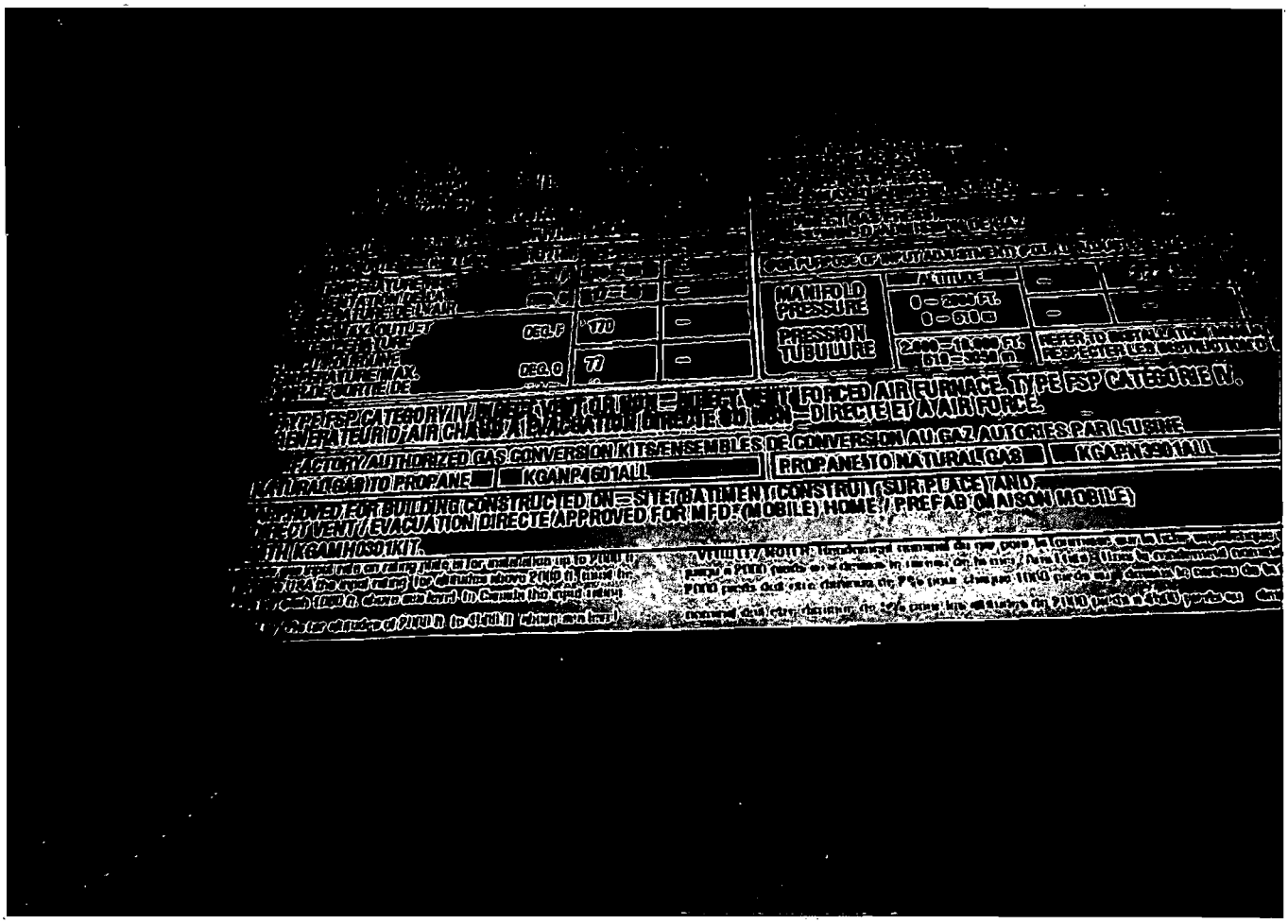

ADP
Advanced Distributor Produ
Grenada MS 38901
MODEL: C36H175D158
SERIAL NO.: 7111F31827
REFRIGERANT: R410A TXV INSTALL
DESIGN PRESS: MAX 450 PSI
AIR FLOW
C UL US
LISTED 3F86 TYPE 1-a
REFRIGERANT EVAPORATOR ALSO AS SECTION
SERIAL NUMBER

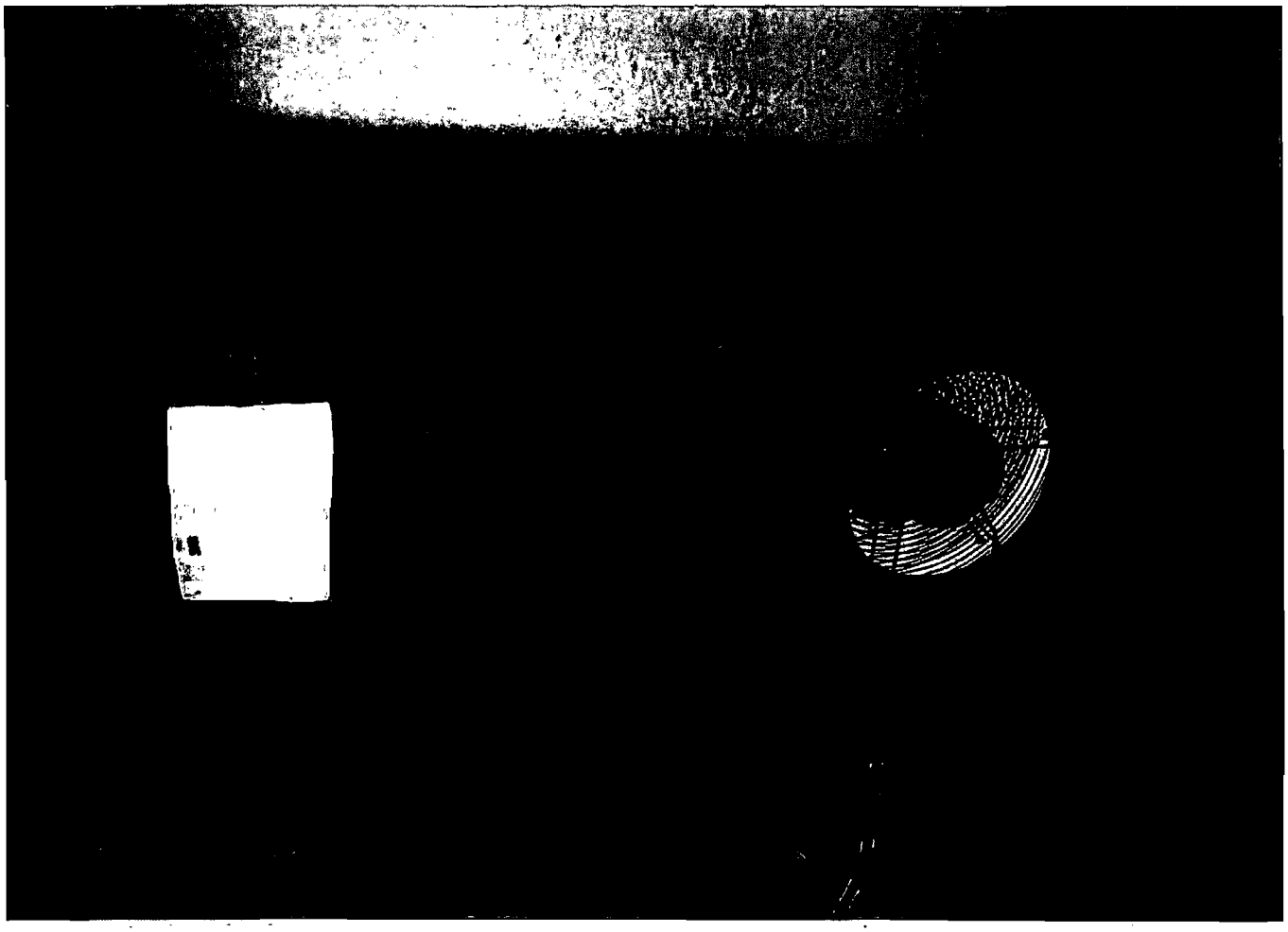

MANIFOLD PRESSURE
PRESSION TUBULURE
ALTITUDE
DEG. F
170
DEG. C
77
FORCED AIR FURNACE. TYPE FSP CATEGORIE IV.
DIRECTE ET A AIR FORCE.
FACTORY AUTHORIZED GAS CONVERSION KITS/ENSEMBLES DE CONVERSION AU GAZ AUTORIES PAR L'USINE
PROPANE TO NATURAL GAS
KGAPN3901ALL
KGANP4601ALL
APPROVED FOR BUILDING CONSTRUCTED ON-SITE (BATIMENT CONSTRUIT SUR PLACE) AND
DIRECT VENT / EVACUATION DIRECTE APPROVED FOR MFD. (MOBILE) HOME / PREFAB (MAISON MOBILE)
KGAMH0301KIT.

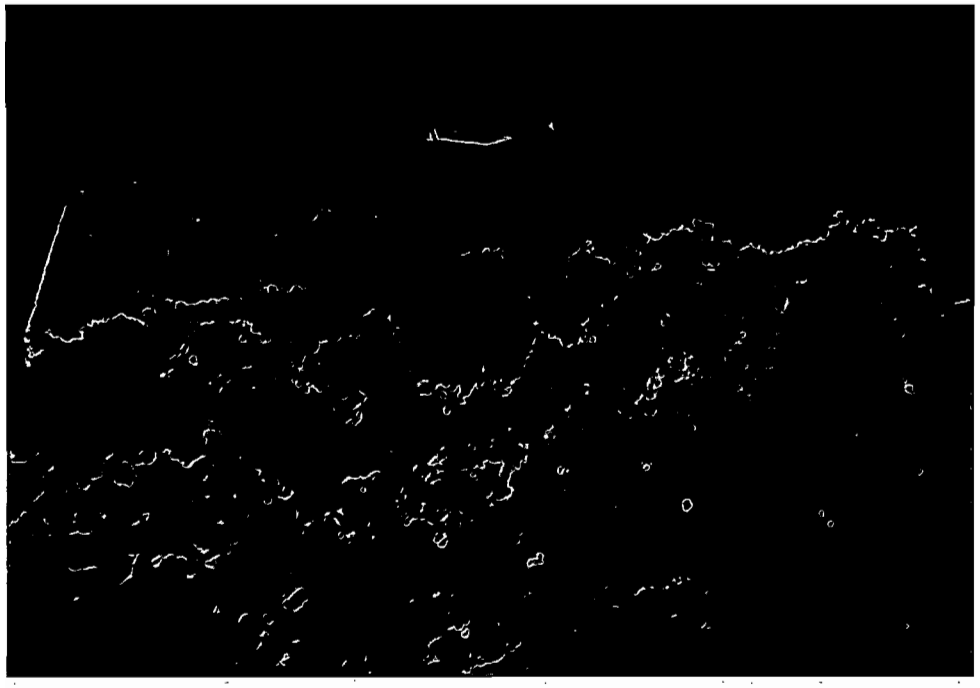


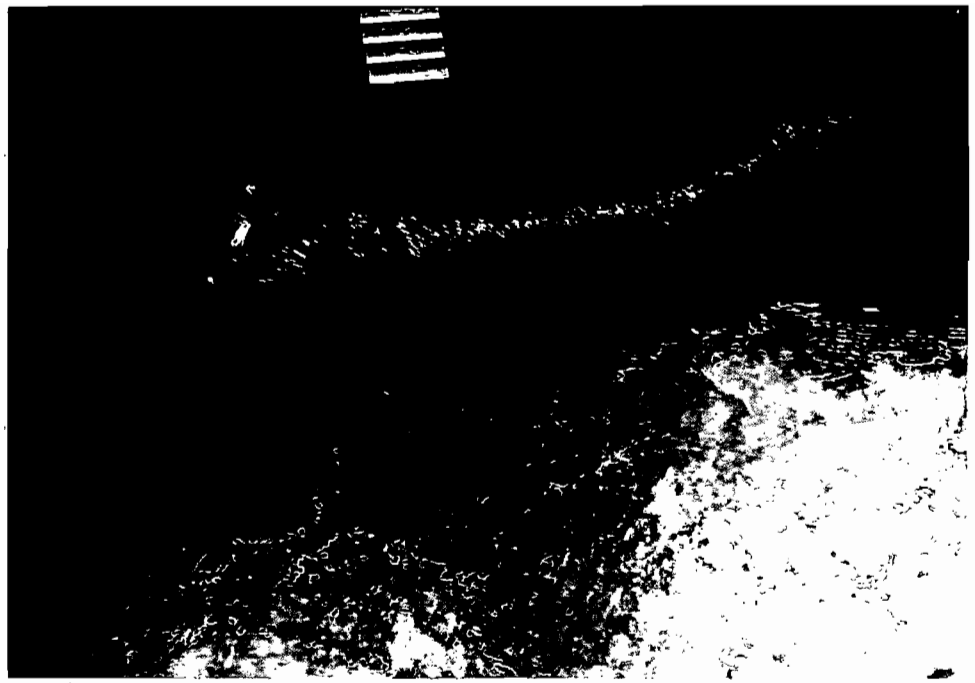
Dual-Channel Digital Micromanometer and Control
DM-2 mark II
Mode 1
Range Config 2
Setup 3
Baseline 4
Time Avg 5
Auto Zero 6
Set Pressure 7
Set Speed 8
Jog / Hold 9
Device 0
@ Pressure
On / Off
Enter

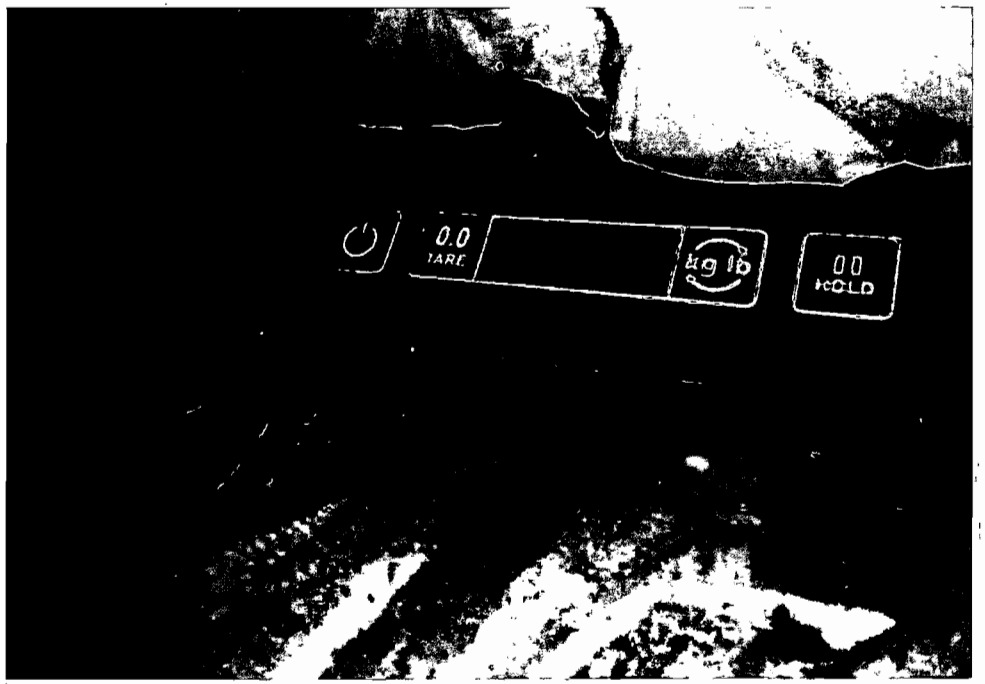



MANIFOLD PRESSURE
PRESSION TUBULURE
ALTITUDE
DEG. F
DEG. C
FORCED AIR FURNACE. TYPE FSP CATEGORIE IV.
DIRECTE ET A AIR FORCE.
FACTORY AUTHORIZED GAS CONVERSION KITS/ENSEMBLES DE CONVERSION AU GAZ AUTORIES PAR L'USINE
PROPANE TO NATURAL GAS
KGAPN3901ALL
NATURAL GAS TO PROPANE
KGANP4601ALL
APPROVED FOR BUILDING CONSTRUCTED ON-SITE (BATIMENT CONSTRUIT SUR PLACE) AND
DIRECT VENT / EVACUATION DIRECTE APPROVED FOR MFD (MOBILE) HOME / PREFAB (MAISON MOBILE)
KGAMH0301KIT.





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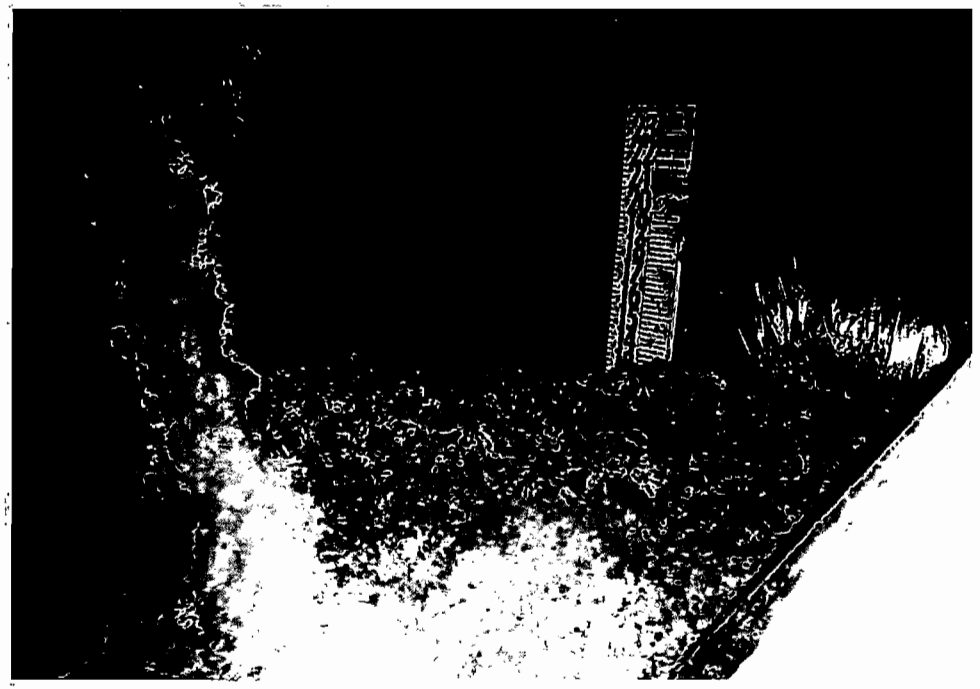

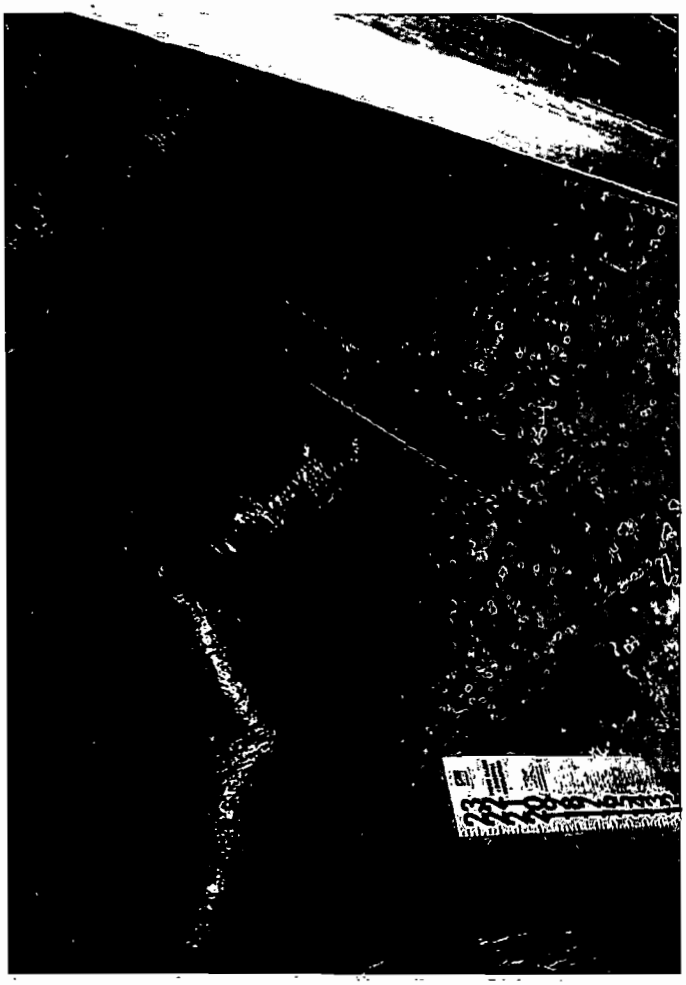

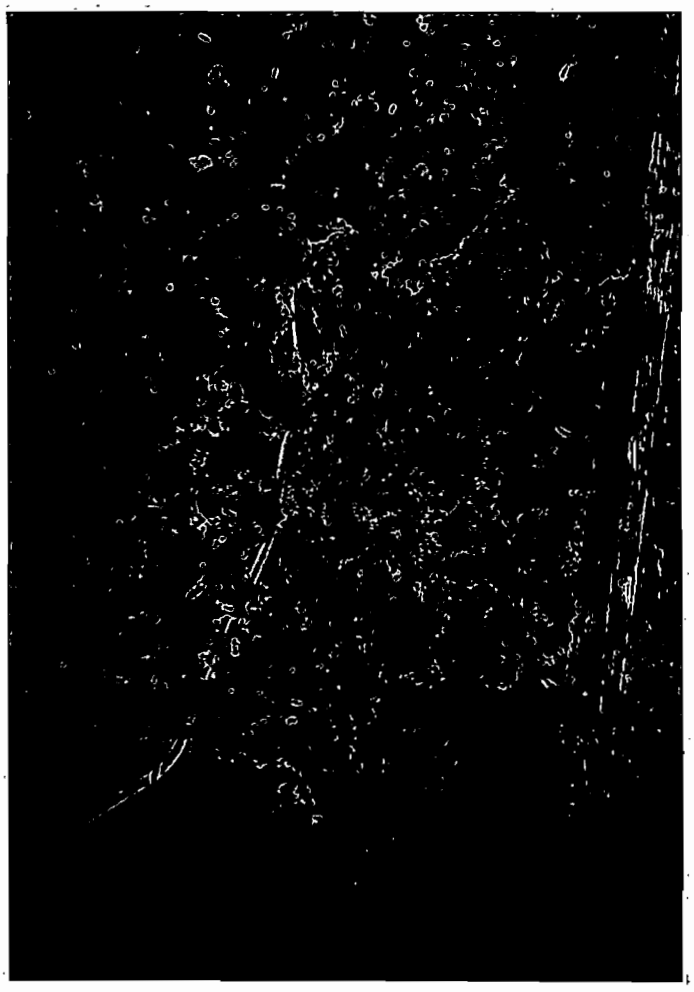

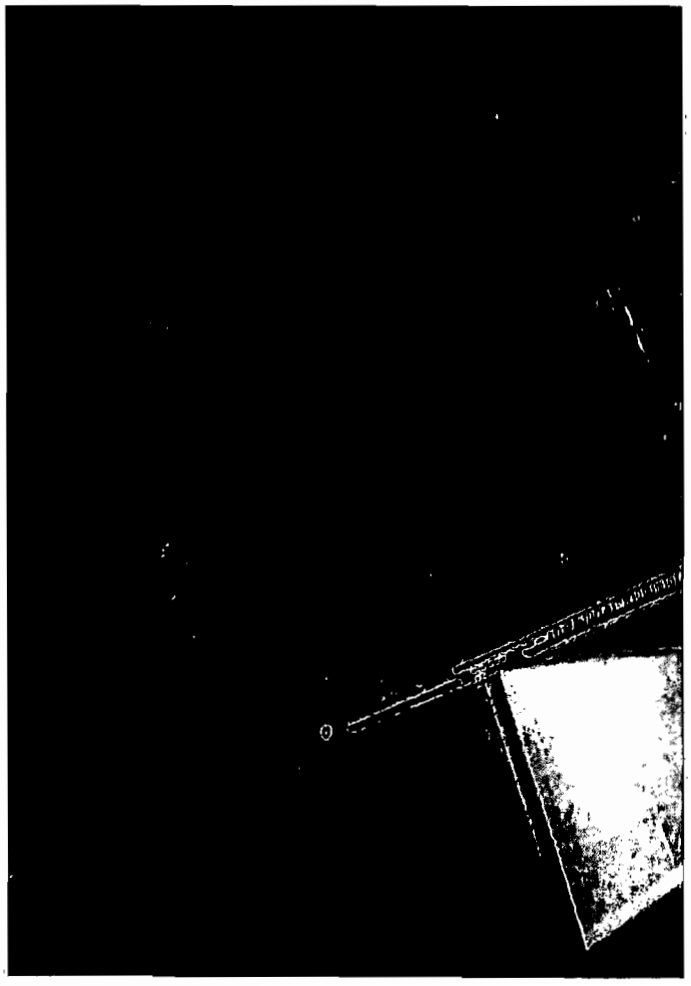

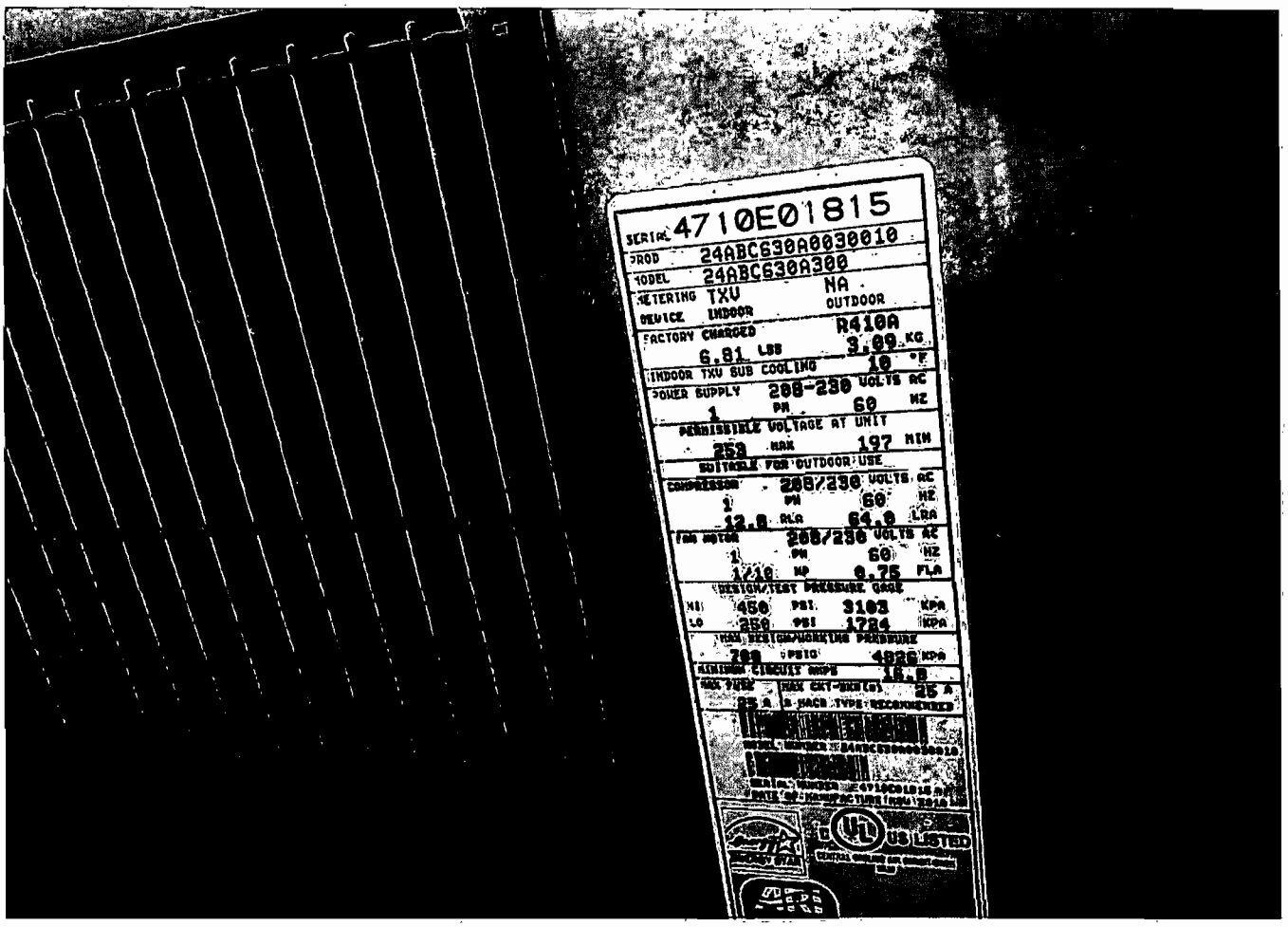
SERIAL 4710E01815
PROD 24ABC630A0030010
MODEL 24ABC630A300
METERING TXV NA
DEVICE INDOOR OUTDOOR
FACTORY CHARGED R410A
6.81 LBS 3.09 KG
INDOOR TXV SUB COOLING 10 °F
POWER SUPPLY 208-230 VOLTS AC
1 PH 60 HZ
PERMISSIBLE VOLTAGE AT UNIT
253 MAX 197 MIN
SUITABLE FOR OUTDOOR USE
COMPRESSOR 208/230 VOLTS AC
1 PH 60 HZ
12.0 RLA 64.0 LRA
FAN MOTOR 208/230 VOLTS AC
1 PH 60 HZ
1/10 HP 0.75 FLA
DESIGN/TEST PRESSURE GAGE
HI 450 PSI 3103 KPA
LO 250 PSI 1724 KPA
MAX DESIGN/WORKING PRESSURE
700 PSIG 4826 KPA
MINIMUM CIRCUIT AMPS 16.0
MAX FUSE 25 A
MAX CKT-BKR(S) 25 A
S MACH TYPE RECOMMENDED
US LISTED

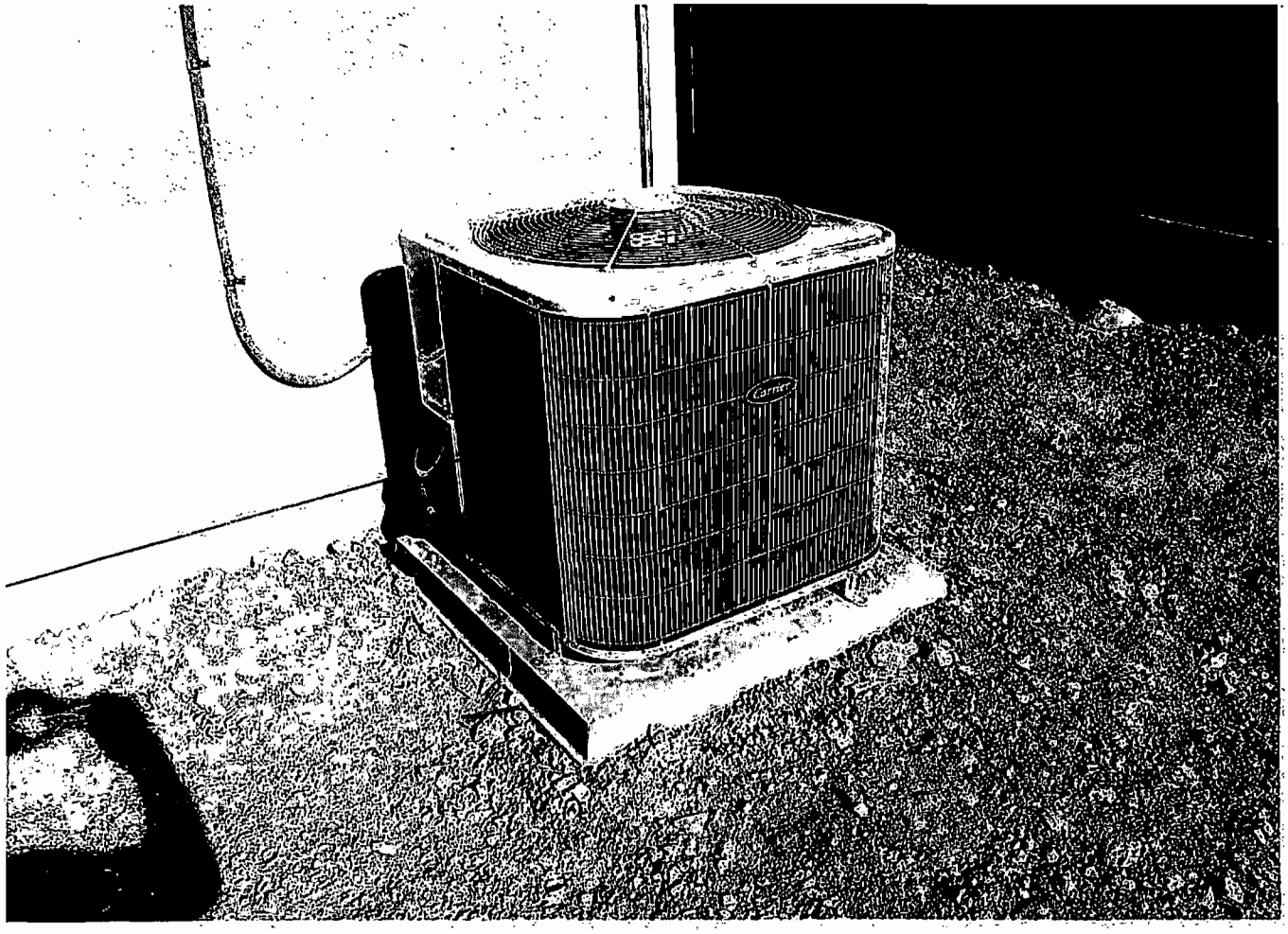

EXHIBIT 20

Mark Wiese

From: Charlie Bachand
Sent: Friday, December 16, 2011 3:33 PM
To: ehoover79@yahoo.com; Mark Wiese
Subject: QA Review

Erik Hoover,

This letter is to inform you that you failed a QA review. As a result you have been placed on a 15 day suspension. Please contact CalCERTS within this 15 day period to schedule a meeting to discuss this matter. Failure to contact CalCERTS within this timeframe will result in decertification.

You failed QA inspections at the following addresses:

334 Malbec Ct, Stockton, CA

15987 Crescent Pk, Lathrop, CA

800 Ferry Launch, Lathrop, CA

9531 Richdale, Orangevale, CA

You will be given the opportunity to present your records and documentation when meeting with CalCERTS.

Sincerely,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

EXHIBIT 21

QA ACTION REPORT

To be used in conjunction with QA Summary Report

RATER INFORMATION

Rater: Erik Hoover
Company: Valley Duct Testing
Street Address: 7245 Mountainside Drive, Citrus Heights, CA 95621
Phone: 916-624-2092 **Mobile:** 916-769-0598 **Fax:**
Email: ehoover79@yahoo.com

Complaint # (If applicable):
Certification #: CC2005171 **Date:** 01-17-12

FAILURE SUMMARY Note: See QA Summary report for more Data and Details.

This rater has had four QAs completed and has fails on all four. Fails include visual inspections, such as verifying TMAHs although none were present. Failure to determine minimum insulation requirements for QII, or properly verify High EER. Fails were recorded in measuring device tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV).

RATER INTERVIEW

Date of Interview: 01-06-12 **Location:** CalCERTS, Folsom **Recorded?** No
Persons Present: Erik Hoover, Charlie Bachand, Mark Wiese
Summary or Interview:

Erik agreed not to record and indicated that he didn't care if we did, so we didn't.

Erik indicated that he might do 5 ratings per day in the summer, over 12 working hours.

Erik corroborated that he entered Alteration data into the registry himself, but that office personnel entered New Construction data. When asked, Erik said he never checks the accuracy of the office personal entries.

Erik says that he started using a new meter in December after his old one started having problems with the display. Previously his old meter had been calibrated approximately 6 months ago.

Erik indicated that he wasn't aware that failures should be entered into the registry for 100% testing.

Erik verified receiving the CalCERTS bulletin regarding the need for TMAHs.

[redacted]

Recalled being there.
No explanation for DL results.
Regarding the missing TMAH holes, he said he 'Must have missed that'. He acknowledged that he must have checked the wrong box.
FOLLOW UP: Confirm with Tim that no confusion regarding DL results is possible.

[redacted] (and [redacted])

Asked about the QII inspection, Erik primarily spoke about looking for level blown-in insulation. Initially he didn't mention looking for installer certificates, and didn't seem to know what a CF-6R-ENV-01 was, but later said he looks for documentation. He was unable to explain discrepancies on cookie cutter test results.

Initially he claimed that he was not the rater responsible for Framing stage, but the registry indicates that he performed Framing and Insulation inspections on the same day. He also admits missing the attic access door weather stripping. FOLLOW UP: Inspect the cookie cutter data. Check where Tim got his depth and density targets.

Asked about the High EER inspection, Erik mentioned verifying the TDR, and verifying that listed equipment is present. He didn't mention how the actual High EER verification is performed. He then claimed that office personnel perform that stage of the verification and made reference to the "ARI" number. We notified him that this was inappropriate as his name was on the report. FOLLOW UP: Determine how office personnel verify High EER.

[redacted]

Asked about whether he verified New Construction or Alterations, he said they 'Looked like remodels', and that he is told by the office or the installer what the building qualifies for. He also said that in the past he has caught installers asking for alterations style testing when new construction is appropriate.
He said the first visit to the address" failed miserably" DL, at perhaps double the target (ie, 250-300, approximately).

With no TMAH holes, he admitted that was a mistake. Then when asked about how he verified T split he said he measured at the supply and return grills. But then he said he told the contractor to return and drill the holes. When asked why he would measure T split at the grills if the contractor was returning to drill the proper holes he had no answer. He also initially disputed that there was a place to put the TMAH holes, but didn't dispute the point when we showed pictures.
When told failed superheat (TXV verification), he said sometimes if they take a reading in the morning and Refrigerant charge fails, they may get a pass later in the day. He said he remembers that it was a cold morning. AccuWeather.com show temperatures that day as High of 91°, low of 54°
FOLLOW UP: Verify we have the correct pictures and that we are confident such holes could have been placed. Examine pics for other addresses in area to look for a pattern regarding whether or not holes could have been placed. Who entered the CF-1Rs in the registry? When were they transferred? Possible examination of the plans from the Building Department? Possible query to CLE regarding the CF-1Rs?

General Questons
Erik indicated that he neither drills holes nor tapes anything for the installer, and anecdotally discussed how he tells the installers where they have to tape.

Erik indicated that Smart Vents themselves aren't taped, but the housing where they leak 'to the side' is.

Erik asserted that he was comfortable with the Sealing of All Accessible Leaks, Smoke, and Visual Verification protocols.

Erik said that he had been a superintendent prior to being a rater.

When asked, Erik said he is confident in his abilities as a Rater.

QA ACTION REPORT

To be used in conjunction with QA Summary Report

ACTION PLAN

1. Inspect the cookie cutter data. Check where Tim got his depth and density targets.
    a. 1/18/12 Answer - Tim contacted the installer and got the specs - updated information in QA report

2. Determine how office personnel verify High EER.

3. Verify we have the correct pictures and that we are confident such holes could have been placed. Examine pics for other addresses in area to look for a pattern regarding whether or not holes could have been placed.
    a. Who entered the CF-1Rs in the registry?
    b. When were they transferred? Possible examination of the plans from the Building Department?
    c. Possible query to CLE regarding the CF-1Rs?

4. [redacted] TXV failures.
    a. (1-18-12) Mark spoke with Russ who said the failure of all units on superheat could be due to incorrect installation.
    b. Check with Russ on how I can verify whether or not TXVs were installed properly
5. Determine how many flow hoods VDT has

DISPOSITION

EXHIBIT 22

-----Original Message-----
From: Charlie Bachand
Sent: Wednesday, January 18, 2012 6:23 PM
To: 'Erik Hoover'; Mark Wiese
Subject: RE: Update

Hi Erik,
We will have a decision for very soon, within the next 7 days. In the meanwhile:
1. Do you have any questions regarding the QA findings discussed in the interview, or comments?
2. We would appreciate information from you and/or your scheduler regarding which addresses you were responsible for verifying on 7/27/2011 and on 8/12/2011. We have received similar information from Kassie in the past and if she can send the pertinent information in the usual format that would be fine. Let me know if you have any questions.
Regards,

Charlie Bachand
Senior Analyst
CalCERTS, Inc.
Email: charlie@calcerts.com
Office: 916-985-3400
Fax: 916-985-3402

-----Original Message-----
From: Erik Hoover [mailto:ehoover79@yahoo.com]
Sent: Tuesday, January 17, 2012 9:53 PM
To: Charlie Bachand
Cc: Flores;John
Subject: Update

Charlie,

I am inquiring to see if there have been any developments with my suspension and when it will be lifted? I have been suspended for over 30 days now and I'm eager to get back to work.

Respectfully,
Erik Hoover

Sent from my iPhone

EXHIBIT 23

January 30, 2012

Erik Hoover
7245 Mountainside Drive
Citrus Heights, CA 95621

Dear Mr. Hoover,

A Quality Assurance investigation by CalCERTS, Inc. has determined that your actions as a California HERS Rater are in violation of Title 24 and/or Title 20. Therefore CalCERTS, Inc. is decertifying you as a rater, effective immediately. This will not prevent you from accessing the registry as an installer if you are also an installer.

Our QA process found multiple failures at multiple addresses concerning verification of Duct Leakage and Refrigerant Charge. Failures include:

1. Duct Leakage Verification - multiple failures
    a. Failure to correctly measure Duct Leakage.
    b. Failure to correctly determine Duct Leakage target.
2. Refrigerant Charge verification - multiple failures.
    a. You incorrectly certified homes as compliant with Title 24 by verifying the presence of TMAHs. Our QA Rater was able to determine that, in some cases, the TMAHs you certified as present were, in fact, not there.
    b. You verified airflow using Temperature Split when no TMAHs were present to do so.
    c. Failure to correctly verify functioning TXV.
3. QII
    a. Failure to correctly determine insulation depth and density target.
    b. Failure to correctly measure insulation depth and density.
4. Cooling Coil Airflow
    a. Recorded HSPPs as present when none were.

We have determined that these failures are egregious, establish a pattern, and are not rectifiable. As required by Title 20, CalCERTS, Inc will also notify the California Energy Commission that you have been decertified, along with the details of our investigation.

Regards,

Charlie Bachand
Senior Analyst
CalCERTS, Inc

EXHIBIT 24

QA DISPOSITION

Erik Hoover - Rater since 08/20/08 - RCA 1/11/10

This rater has had four addresses fail QA, with multiple failures at some addresses. Fails include: visual inspections, such as verifying TMAHs although none were present, failure to determine minimum insulation requirements for QII, and to properly verify High EER. Based on evidence and statements provided by the rater, the failure to properly verify QII and High EER may be due to systematic errors at Valley Duct Testing. Fails were also recorded in diagnostic tests that included Duct leakage (DL), Refrigerant charge airflow (using temperature split which is not possible without TMAHs), (RCA), Refrigerant charge verification (RCV), and metering device functionality (TXV). Based on statements provided by the rater, the data entry procedures at Valley Duct Testing are, at least, contributing to failures to correctly verify Title 24.

[redacted]

Mr. Hoover was asked whether he verified New Construction or Alterations, he said they 'Looked like remodels', and that he is told by the office or the installer what the building qualifies for. He also said that in the past he has caught installers asking for alterations style testing when new construction is appropriate. He said the first visit to the address" failed miserably" DL, at perhaps double the target (ie, 250-300, approximately).

With regard to the missing TMAH holes, he admitted that was a mistake. Then when asked about how he verified T split he said he measured at the supply and return grills. But then he said he told the contractor to return and drill the holes. When asked why he would measure T split at the grills if the contractor was returning to drill the proper holes he had no answer.
When informed that he failed superheat (TXV verification), he said sometimes if they take a reading in the morning and Refrigerant charge fails, they may get a pass later in the day. He said he remembers that it was a cold morning. AccuWeather.com show temperatures that day as High of 91°, low of 54°

Duct Leakage: Fail
Rater recorded a duct leakage value that would pass at 15% (Alteration) but would not have passed 6% (New Construction). QA recorded duct leakage well above rater's.
Note:
Ratings were done as Alterations. Buildings and ductwork all appeared to be new. When asked, the homeowner stated the homes were new. We contacted the City of Stockton lead building official, who confirmed that the project was new construction, from the ground up, and plans with the CF-1R are on file.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs are present in accessible plenums
RCA: Fail
Rater passed Airflow using temperature split. QA could not verify RCA using the Temperature/Split Method because no TMAHs were present.
RCV: Pass
TXV: Fail

The Rater passed with a recorded 15°.
QA failed TXV with superheat outside target range

[redacted]

Note: [redacted] and [redacted] had similar results.
Mr. Hoover was unable to explain discrepancies on cookie cutter test results. Initially he claimed that he was not the rater responsible for Framing stage, but the registry indicates that he performed Framing and insulation inspections on the same day. He also admits missing the attic access door weather stripping.

When asked about the High EER inspection, Mr. Hoover mentioned verifying the TDR, and verifying that listed equipment is present. He didn't mention how the actual High EER verification is performed. He then claimed that office personnel perform that stage of the verification and made reference to the "ARI" number. We notified him that this was inappropriate as his name was on the report.

Bullding Envelope: Pass
Rater recorded leakage of 1289 cfm, with a target range of 775-1551 cfm.
Pass, QA passed, but recorded substantially lower leakage than rater.

QII (I): Fail

- No insulation certificate posted in the attic.
    - Since no certificate was posted, QA contacted the installing company and spoke with Sean Archuleta. Sean said the installed insulation was Owens Corning PROPINK L77 (see spec sheet)
    - Rater recorded incorrect target insulation depth of 14.75" and a pass
    - QA recorded target insulation depth of **12.75**." Various measurements were taken, a couple above the 12.75", but others below. There were no measurements at 14.75"
    - Rater recorded insul. weight at .615 lb./sq. ft. with an incorrect target of .635
    - QA recorded insul. Weight at well below the target of **.555** lb./sq. ft.
- No gasket around access

Duct Leakage: Pass

High EER: Fail
No documentation available on High EER for installed equipment.

[redacted]

Building Envelope: Pass
Rater recorded leakage of 1302 cfm, with a target range of 775-1551 cfm.
QA recorded leakage of 833.5cfm
Pass, QA passed, but recorded substantially lower leakage than rater.

QII (I): Fail

- No insulation certificate posted in the attic.
  - Since no certificate was posted, QA contacted the installing company and spoke with Sean Archuleta. Sean said the installed insulation was Owens Corning PROPINK L77 (see spec sheet)
  - Rater recorded incorrect target insulation depth of 14.75" and a pass
  - QA recorded target insulation depth of 12.75." Various measurements were taken, a couple above the 12.75", but others below. There were no measurements at 14.75"
  - Rater recorded insul. weight at .615 lb./sq. ft. with an incorrect target of .635
  - QA recorded insul. Weight at well below the target of **.555** lb./sq. ft.

Duct Leakage: Pass

High EER: Pass

[redacted]

Mr. Hoover recalled being at this address. He had no explanation for DL failures.
Regarding the missing TMAH holes, he said he 'Must have missed that'. He acknowledged that he must have checked the wrong box.

System 1:
Duct Leakage: Fail
Rater recorded 71 cfm, and a target of **72**.
QA recorded leakage well above the target of 72 cfm.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs are present in accessible plenums
RCA: Pass
RCV: Fail
The Rater passed RCV with a difference of -3.0°
QA Failed RVC with a difference of outside target range.
TXV: Pass
The Rater recorded superheat of 19°.
QA recorded superheat of 15.3°.

CCAF: Fail
No HSPP or PSPP are present in accessible plenums
Rater recorded airflow of 1080 cfm, with a target of 1050
QA recorded airflow above the target of 1050 cfm
FWD: Pass
Rater recorded 315 watts, with a target of **626.4**

QA recorded wattage below target

System 2:
Duct Leakage: Fail
Rater recorded 47 cfm, and a target of **48.**
QA recorded leakage well above the target of 48 cfm.

Refrigerant Charge: Fail
TMAHs: Fail
No TMAHs are present in accessible plenums
RCA: Pass
Rater recorded airflow of 868 cfm, with a target of 600
QA recorded airflow above the target of 600 cfm
RCV: Pass
The Rater passed RCV with a difference of -3.0°
QA Passed RVC with a difference within the target range.
TXV: Fail
The Rater recorded superheat of 21°.
QA recorded superheat of outside the target range

CCAF: Fail
No HSPP or PSPP
Rater recorded airflow of 868 cfm, with a target of 700
QA recorded airflow above the target of 700 cfm
FWD: Pass
Rater recorded 228 watts, with a target of **503.44**
QA recorded wattage below target

Additional notes from the January 6th, 2012
Meeting between Erik Hoover, Charlie Bachand, and Mark Wiese
Mr. Hoover agreed not to record and indicated that he didn't care if we did, so we didn't.

Mr. Hoover indicated that he might do 5 ratings per day in the summer, over 12 working hours.

Mr. Hoover corroborated that he entered Alteration data into the registry himself, but that office personnel entered New Construction data. When asked, Mr. Hoover said he never checks the accuracy of the office personnel entries.

Mr. Hoover says that he started using a new meter in December after his old one started having problems with the display. Previously his old meter had been calibrated approximately 6 months ago.

Mr. Hoover indicated that he wasn't aware that failures should be entered into the registry for 100% testing.

Mr. Hoover verified receiving the CalCERTS bulletin regarding the need for TMAHs.

EXHIBIT 25

Daniel Sidhu-

[redacted] (06/21/2011 QA- 10/28/2011)

QII (I): Fail

1. Measured insulation depth of 9" behind air handler.
2. No insulation certificate posted in the attic.
3. Batt insulation not attached to attic access panel.

Building Envelope: Fail.
Rater recorded **838** cfm with and range between **647** and **1164**.
QA recorded 1245 cfm.

Duct Leakage: Pass
Rater recorded duct leakage of **47** cfm, and a target of **72**.
QA recorded DL of **45** cfm.

CCAF: Pass.
HSPP was present in supply plenum.
Rater recorded **1070** cfm (Flow Hood) and a target of **1050**.
QA recorded **1114** cfm.

FWD: Pass.
Rater recorded **396** watts and a target of **609**.
QA recorded **464** watts and a target of **646**.

High EER: Fail
QA matched units at 10.8 EER on the AHRI website, Target= **11**, also, on the CF-1R, lists the installed units having an **AFUE= .92**, but the installed units are **.81**.

[redacted] (10/11/2011 QA- 10/28/2011)

QII (I): Fail

1. 5" void under catwalk.
2. No insulation certificate posted in the attic.
3. Batt insulation not attached to attic access panel.

Duct Leakage: Pass
Rater recorded duct leakage of **65** cfm, and a target of **72**.
QA recorded DL of **37** cfm.

High EER: Fail
QA matched units at 10.8 EER on the AHRI website, Target= **11**, also, on the CF-1R, lists the installed units having an **AFUE= .92**, but the installed units are **.81**.

This Sheet Intentionally Left Blank

Jennifer McFall – Rater since 05-19-09

[redacted] (07/15/2011 QA- 10/03/2011) Alteration/ Tested

TMAHs: Fail
She did a Temp/Split Method for RCA and no TMAHs were seen, yet plenums were present.
Note: Flow Hood, **1240** cfm.

[redacted] (07/27/2011 QA- 09/29/2011) Alteration/ Tested

Duct Leakage: Pass
Rater recorded **160** cfm, and a target of **240**.
QA recorded **126** cfm.

Refrigerant Charge: Fail
TMAHs: Fail
There was no Supply Plenum, only a collar, so she put the TMAH on the air handler door.
RCA: Pass
Rater recorded T/S differential of **2°** .
QA recorded **-2.5°.**
RCV: Pass
Rater recorded Subcooling differential of **0°.**
QA recorded **0°.**
TXV: Pass
Rater recorded Superheat differential of **24°.**
QA recorded **21°.**
Note: Flow Hood, **1540** cfm.

[redacted] (11/18/2011, QA 01/26/2012) Alteration/ Tested (+2)

Duct Leakage(N): Pass
Rater recorded **35** cfm and a target of **60** cfm.
QA recorded **36.65** cfm.

CCAF: Pass
Rater recorded **954** cfm and a target **875** cfm.
QA recorded **875** cfm, a difference of 79 cfm.

FWD: Fail
Rater recorded **495** watts with a target of **553.32**.
QA recorded 525 watts with a target of **507.5.**

Refrigerant Charge: Fail
TMAHs: Fail
TMAHs, almost a 1/2" in size, were located in the Air Handler and Coil Cabinets, not the plenums which were present.
RCA: Fail
Rater recorded T/S differential of **1.3°**.

QA recorded 10.2°.

RCV: Fail

Rater recorded subcooling differential of **-1°**.

QA recorded -7.3°.

TXV: Pass

Rater recorded Superheat differential of **11°**.

QA recorded **15.6°.**

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Donald Scott White-

[redacted] (08/13/2011 QA- 10/05/2011)

Duct Leakage: Pass
Rater recorded 221 cfm, and a target of **300**.
QA recorded 144 cfm.
Even though it passed the duct leakage, the Rater's leakage was 76 cfm more than the QA.

Refrigerant Charge: Fail
TMAHs: Pass
RCA: Pass
Rater recorded temp split of -0.9°
QA recorded temp split of 2.3°
QA tested airflow with the Flow Hood, 1430 cfm, under the target of **1500**
RCV: Pass
The Rater passed RCV with a difference of 1°
QA Passed RVC with a difference of -3°
TXV: Pass
The Rater passed with a recorded superheat 21°.
QA failed with a recorded superheat of 26°.

[redacted] 08/11/2011 QA- 10/05/2011)

Duct Leakage: Fail
Rater recorded 71 cfm, and a target of **72**.
QA recorded 76.5 cfm.
The Rater used the Cooling Method to determine Target Leakage of 72 cfm. The Heating Method would have allowed a target or 75 cfm.

Refrigerant Charge: Fail
TMAHs: Pass
RCA: Fail
Rater recorded temp split of 2.6°
QA recorded temp split of 5.5°
Note: Rater used a flow hood to measure CCAF (see below).
RCV: Fail
The Rater passed RCV with a difference of 0.0°
QA Passed RVC with a difference of -6.0°
TXV: Pass
The Rater passed with a recorded superheat of 7°.
QA failed with a recorded superheat of 4°.

CCAF: Fail
Rater recorded airflow of 1075 cfm, with a target of 1050
QA recorded airflow of 1007 cfm.
Note: There was no air filter installed anywhere in the system, so the airflow measurement was taken without an air filter, and still failed.

FWD: Pass
Rater recorded 610 watts, with a target of **623.5**
QA recorded 459 watts, with a target of **584.6**.

[redacted] (08/18/2011 QA- 10/12/2011)(Alteration/ Tested)

Duct Leakage: Pass
Rater recorded leakage of **140** cfm, with a target of **300**
QA recorded leakage of **170**
Note: 30 cfm difference

Refrigerant Charge: Fail
TMAHs: Fail
The TMAH holes were 1/8 inch in diameter
Rater recorded temp split of **-1.4°**
QA recorded temp split of 7.4°
RCV: Fail
The Rater recorded a difference of **1.0°**
QA recorded a difference of 9.5°
Note: Pcond. was recorded at 287 PSIG, higher than we usually see.
TXV: Pass
The Rater recorded superheat of **22°**.
QA recorded superheat of **22°**.

[redacted] (10/28/2011, QA 01/26/2012)(Alteration/ Tested)(+2)

Duct Leakage: Fail.
Rater recorded **57** cfm and a target of **60**.
QA recorded 77.20 cfm @ 25.0 Pa.

CCAF: Pass.
Rater recorded **880** and a target of **875**.
QA recorded **940** cfm.

FWD: No Test.
QA could not verify FWD under the target of **545** as the unit was hardwired and condenser was not turned off before recording wattage at the meter.

Refrigerant Charge: Pass.
TMAH: Pass.
RCA Pass.
Rater recorded **1.3°** T/ S differential.
QA recorded **2.5°**.
RCV: Pass.
Rater recorded **3°** Subcooling differential.
QA recorded **-1.4°**.
TXV: Pass.
Rater recorded **19.0°** Superheat differential.

QA recorded **14.4°**.

[redacted] (09/19/2011, QA 01/27/2012)(Alteration/ Tested) (+2)

Homeowner stated that 5 inspectors were there for a couple hours the first day, and a couple were there for a few hours the second day. He said they blocked the supply and return vent; crawled under the house and in the attic; and performed what he described as a building envelope test and Solar PV. I photographed a sticker placed on the electrical panel of one of the condensers stating a Whole House Rating (Energy Upgrade CA) was performed by Daniel Sidhu with a score of 184..

System 1 (Upstairs)

Duct Leakage: Pass.

Rater recorded **46** cfm and a target of **48.**

QA recorded **45.**

CCAF: Pass.

Rater recorded **800** cfm and a target of **700.**

QA recorded **820** (Flow Hood).

FWD: No Test.

Homeowner needed power on during QA, unit was hardwired, and QA did not have a clamp-on watt meter that meets required specs.

Refrigerant Charge: Pass.

TMAHs: Pass.

RCA: Pass.

Rater recorded T/S of **0.1°.**

QA recorded **1.2°.**

RCV: Pass. Rater recorded subcooling differential of **1°.**

QA recorded **-0.1°.**

TXV: Pass.

Rater recorded a superheat differential of **15°.**

QA recorded **9.8°.**

System 2 (Downstairs)

Duct Leakage: Pass.

Rater recorded **95** cfm and a target of **180.**

QA recorded **141** cfm @ 25.0 Pa.

Refrigerant Charge: Pass.

TMAHs: Pass.

RCA: Pass.

Rater recorded T/S of **-0.4°.**

QA recorded **3.0°.**

RCV: Pass.

Rater recorded subcooling differential of **3°.**

QA recorded **3.8°.**

TXV: Pass.

Rater recorded a superheat differential of **13°**.
QA recorded **10.7.**
Note: Flow Hood: **1320** cfm.

EXHIBIT 26

QA DISPOSITION

CalCERTS, Inc.

Daniel Sidhu – Rater since 09-01-10

This rater has two QA failures concerning QII verification and verification of High EER. Based on evidence and statements provided by the rater, the failure to properly verify QII and High EER may be due to systematic errors at Valley Duct Testing. Based on statements provided by the rater, the data entry procedures at Valley Duct Testing are, at least, contributing to failures to correctly verify Title 24.

[redacted]

QII (I): Fail

Measured insulation depth of 9" behind air handler. No insulation certificate posted in the attic, and Batt insulation not attached to attic access panel.

Duct Leakage: Pass

Rater recorder duct leakage of 47 cfm, and a target of **72.**

QA recorder DL below the target of 72

High EER: Fail

QA matched units at 10.8 EER on the AHRI website, Target= 11.

Note: on the CF-1R, lists the installed units having an AFUE= .92, but the installed units are .81.

[redacted]

QII (I): Fail

No insulation certificate posted in the attic, and Batt insulation not attached to attic access panel.

Duct Leakage: Pass

Rater recorder duct leakage of 65 cfm, and a target of **72.**

QA recorder DL below the target of 72

High EER: Fail

QA matched units at 10.8 EER on the AHRI website, Target= 11, also, on the CF-1R, lists the installed units having an AFUE= .92, but the installed units are .81.

Additional notes from the January 25th, 2012

Meeting between Daniel Sidhu, Charlie Bachand, and Mark Wiese

1. Mr. Sidhu was asked if he would like the meeting recorded and said no
2. Are you confident in your skills and knowledge as a rater? Yes
3. How many ratings do you do in a day or week? 1-5 a day
4. You've done a lot of QII – have you had any problems with it? Started talking about cookie cutter, but spoke QII more generally.
5. You've done a lot of High EER verifications – what is your process for High EER verification. Understood the whole process, - appeared to have talked with Scott White about this and confirmed that he had when asked directly. Hasn't verified them in the past but will going forward.

QA DISPOSITION

6. Do you feel you have enough time on each job to do a completely thorough and accurate job? Yes, has a job before moving to the next.
7. Have you ever been asked to alter your results in any way or for any reason? No
8. Has your equipment been calibrated properly? Yes, had a monometer fail, but equipment is calibrated regularly.
9. Have you been recording all failures into the registry, including 100% testing? No but will going forward. Wanted to know how to do it – was directed to Technical support.
10. You've done a lot of Whole House ratings – have you had any problems with those? No problems – is comfortable with the process, and asked about upgrades to EnergyPro.
11. How about EEMs? Any problems? No problems .
12. What lenders do you work with? There are a number of them.
13. Have you been recording all failures into the registry, including 100% testing? Notified him that he is required to enter fails
14. Do you ever or seal ductwork or drill TMAHs? No

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QA DISPOSITION

Jennifer McFall – Rater since 05-19-09

This rater had two QA failures, both regarding the placement of TMAH holes. In both cases the method used to verify RCA was inappropriate due to the missing TMAH holes. In one case a sticker was placed indicating a hole where none was present.

[redacted]

TMAHs: Fail

She did a Temp/Split Method for RCA, yet no TMAHs were present.

RCA: Pass with Flow Hood

-Ms. McFall stated she took temperature measurements at the grills because the installer was in the way doing cleanup. She indicated that this was the only time she ever did this. She also didn't dispute that she falsely checked the TMAH box in the registry.

[redacted]

DL Pass

RCA: Fail

There was no Supply Plenum, only a collar, so she put the TMAH on the air handler door.

Meeting notes from the January 25th, 2012

Jennifer McFall, Charlie Bachand, and Mark Wiese

1. Do you have any questions or have anything you want to say before we get started?
2. Do receive the CalCERTS Newsletter emails? Yes
3. Been a rater since 05-19-09
    a. Residential, Alterations and New
    b. RCA
4. Are you confident in your skills and knowledge as a rater? Yes
5. How many ratings do you do in a day or week? Up to 7 a day. Asked if this is an 8 hour day, she said no – could start at 5:00 am and be out until 8:00
6. Describe your process for QII verification. Have you had any problems with it? Use there own ruler in addition to attic rulers. Use VDT chart to identify insulation. Says she has failed QIIs.
7. What is your process for High EER verification? Have you had any problems with it? Jennifer said she used the AHRI site in the past, when she worked in the office.
8. Do you feel you have enough time on each job to do a completely thorough and accurate job? Yes
9. Do you enter our own data into the registry? Yes on alterations, the office does new construction.
10. Have you ever been asked to alter your results in any way or for any reason? No
11. Has your equipment been calibrated properly? Gauges once a month, equipment once a year.
12. Have you been recording all failures into the registry, including 100% testing? We informed her that failures need to be entered.
13. Do you ever tape or seal ductwork or drill TMAHs? No
14. Has your equipment been calibrated properly? Gauges once a month, equipment once a year.

QA DISPOSITION

15. Have you been recording all failures into the registry, including 100% testing? We informed her that failures need to be entered.
16. Do you ever tape or seal ductwork or drill TMAHs? No

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QA DISPOSITION

CalCERTS inc.

Donald Scott White

This rater has 2 QA failures, one of which may have been attributed to him by a data entry error at Valley Duct Testing. Failures include Duct Leakage verification, Refrigerant Charge, and Cooling Coil Airflow.

[redacted]

Duct Leakage: Fail
Rater recorded 71 cfm, and a target of **72**.
QA recorded DL above the target of 72 cfm
The Rater used the Cooling Method to determine Target Leakage of 72 cfm. The Heating Method would have allowed a target or 75 cfm.

-No reason given for failure

Refrigerant Charge: Fail
TMAHs: Pass
RCA: Fail
Rater recorded temp split difference of 2.6°
QA recorded temp split difference outside the target range.
Note: Rater used a flow hood to measure CCAF (see below).
RCV: Fail
The Rater passed RCV with a difference of 0.0°
QA Passed RVC with a difference outside the target range.
TXV: Pass
The Rater passed with a recorded superheat of 7°.
QA failed with a recorded within target range

– no reason given for failure on RCA temperature split. Rater explained that he used temp. Split instead CCAF # because he was training another Rater

CCAF: Fail
Rater recorded airflow of 1075 cfm, with a target of 1050
QA recorded airflow of below the target of 1050 cfm.
Note: There was no air filter installed anywhere in the system, so the airflow measurement was taken without an air filter, and still failed.

– Mr. White had no explanation for CCAF failure. Asked about absence of filter, he had no explanation. Was unclear on whether or not filter was supposed to be in place during test.

FWD: Pass
Rater recorded 610 watts, with a target of **623.5**
QA recorded wattage below the target.

[redacted]

Mr. White stated William Barrett did this address. He also said he believed Mr. Barrett didn't yet have access to the registry, which is probably why it was entered in his name. We informed him that it was registered in his name, therefore the responsible for it.

Duct Leakage: Pass
Rater recorded leakage of 140 cfm, with a target of 300
QA recorded leakage below the target of 300 cfm

Refrigerant Charge: Fail
TMAHs: Fail
The TMAH holes were 1/8 inch in diameter
Rater recorded temp split difference of -1.4°
QA recorded temp split difference outside the target range
RCV: Fail
The Rater passed RCV with a difference of 1.0°
QA Failed RVC with a difference outside the target range
TXV: Pass
The Rater passed with a recorded superheat of 22°.
QA passed with a recorded superheat within the target range.

Additional notes from the January 20th, 2012
Meeting between Scott White, Charlie Bachand, and Mark Wiese

1. Do you have any questions or have anything you want to say before we get started?
    a. Expressed desire for more thorough training or refresher training. Initial training is like "trying to drink from a fire hose" – a lot of information to take in all at once.
2. Been a rater since June 1, 2010
    a. Residential Alterations and New
    b. Non-Res Alterations & New
    c. RCA
    d. Solar
    e. EEM
    f. Whole House Rater
3. Are you confident in your skills and knowledge as a rater?
    a. Scott stated he is confident in his abilities.
4. How many ratings do you do in a day or week?
    a. Up to 30 in a two week period – couldn't say what the most per day he has done.
5. Do you do a lot of Solar rating?
    a. Not much – more recently. Seemed unclear on shading analysis of planned landscaping.
6. You've done a lot of QII – have you had any problems with it?
    a. Seemed confident, but didn't know what a CF-6R ENV-01 was.
7. You've done a lot of High EER verifications – what is your process for High EER verification.

a. Did not know he had to confirm High EER either by gathering appropriate documents, or by using the AHRI website. He also indicated data entry personal enter EER information into registry.

8. Do you feel you have enough time on each job to do a completely thorough and accurate job?
    a. Yes
9. Have you ever been asked to alter your results in any way or for any reason?
    a. No. When specifically asked about changing results at Mormon street, still said no.
10. Has equipment been calibrated properly
    a. Yes
11. Have you been recording all failures into the registry, including 100% testing?
    a. No – didn't know it was required. He later said he remembered it from training but hadn't been doing it.
12. Do you Tape seal or drill
    a. No.

EXHIBIT 27

EXHIBIT 27

Part 1

Daniel Sidhu

Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Project	Rating Company	Type	QA
199	[redacted] (Preston Meadows)	[redacted]	CA	[redacted]	CC-1798569381	See Below	Preston Meadows	Valley Duct Testing	New Construction SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-ENV-20-HERS	CSLB: N/A	Woodside Homes - Northern CA	Mike Kitchell
CF-6R-ENV-21-HERS	CSLB: N/A	Woodside Homes - Northern CA	Mike Kitchell
CF-6R-ENV-22-HERS	CSLB: 794484	Western Insulation	Leslye Y Soble
CF-6R-MECH-20-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-22-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-22-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-23-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-29-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane

Address	Certificate Type	CF-4R-ENV-20 Envelope	CF-4R-ENV-21 QII - Framing	CF-4R-ENV-22 QII - Insulation	CF-4R-MECH-20 Duct Leakage New	CF-4R-MECH-22 Cooling Coil Airflow Fan Watt	CF-4R-MECH-23 High EER	CF-4R-MECH-29 Location; Area; R-Value	AdditionalEnergyFeatures Additional Features
[redacted]	Compliance		TESTED	TESTED	TESTED HOUSE		TESTED HOUSE		
[redacted]	Above Code	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE	TESTED HOUSE		TESTED
[redacted]	Photovoltaic (NSHP)	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE	TESTED HOUSE		TESTED

NOT PERFORMED

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Tim O'Neil Logged In [Logout]

QA Report Results: [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

QII(I) Fail, Measured insulation depth of 9" behind air handler. No insulation information posted in the attic. Batt insulation not attached to attic access panel.

High EER Fail, I verified EER at 10.80, matching 2 of 3 components on the AHRI website, cert #4680783. I was unable find match with all components. Target is 11.0

While looking at the CF-1R, I noticed a required AFUE of .92, the installed unit has an AFUE of .81

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
QII - Framing	CF-4R-ENV-21	Not Started	QA CF-4R	[Comments]
QII - Insulation	CF-4R-ENV-22	**QA FAILED**	System 1	[Comments]
Duct Leakage New	CF-4R-MECH-20	Complete	HOUSE	[Comments]
High EER	CF-4R-MECH-23	**QA FAILED**	HOUSE	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/28/2011 / 11:15
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Lennox **Model:** 13ACX-036-230-15 **# of Vents:** 15 **# of Returns:** 2 **SEER:** 13
F.A.U. Make:	Lennox **Model:** ML180UH070XXP36A **AFUE:** .81 **HSPF:** **Output BTU:** 54000 **Location:** Attic
Coil Make:	Aspen **Model:** CB36A34000T042 **EER:**

Coil Number: C11-00012931 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: I verified EER at 10.80, matching 2 of 3 components on the AHRI website, cert #4680783. I was unable find match with all components.

Attic Investigation: Investigated and saw something which may decrease system efficiency

NO Photos

Registered CF-4R Data

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-20
Building Envelope Sealing		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Building Envelope Sealing

Diagnostic Testing Results			
$CFM50_H$ = the measured airflow in cubic feet per minute (cfm) at 50 pascals for the dwelling with air distribution registers unsealed. SLA = 3.819 x ($CFM50_H$ / Conditioned Floor Area in ft^2) per Residential ACM Manual Equation R3-16			
	Building Envelope Leakage $CFM50_H$ as measured using a blower door diagnostic device	✓	✓
1.	Enter the blower door leakage **target $CFM50_H$ value for compliance** from the CF-1R (cfm).	**1164**	
2.	Enter the blower door leakage **minimum $CFM50_H$ value corresponding to 1.5 SLA** from the CF-1R (cfm).	**647**	
3.	Enter the **measured $CFM50_H$** value from the blower door test (cfm)	**838**	
4.	The leakage test passes if the measured envelope leakage *$CFM50_H$* value from row is 3 less than or equal to the value required for compliance from row 1, otherwise the test fails. check/enter Pass or Fail	☑ Pass	☐ Fail
5.	If measured *$CFM50_H$* from row 3 is less than the minimum *$CFM50_H$* value corresponding to 1.5 SLA from row 2: check/enter < 1.5 SLA, otherwise check/enter ≥1.5 SLA	☐ < 1.5 SLA*	☑ ≥ 1.5 SLA

*Advisory note to builder and enforcement agency: If row 5 indicates "< 1.5 SLA", it is critical to ensure that combustion and solid-fuel burning appliances in the dwelling are provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions and all applicable codes as specified by ASHRAE Standard 62.2 Section 6.4. Additional information about compliance with this requirement is given in Section 4.6.5 of the Residential Compliance Manual under the topic of Combustion and Solid-Fuel Burning Appliances.

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Woodside Homes - Northern CA**		
Responsible Person's Name: **Mike Kitchell**	CSLB License: **N/A**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC13-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **6/21/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☑ Yes	☐ No	☐ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No	☐ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☑ Yes	☐ No	☐ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☑ Yes	☐ No	☐ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☑ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☑ Yes	☐ No	☐ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING			CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist			**(Page 2 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961	

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☑ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☑ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☑ Yes	☐ No	☐ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☑ Yes	☐ No	☐ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks).
☑ Yes	☐ No		Attic access gasketed
☑ Yes	☐ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **30** Manufacturer's minimum required weight for the target R-value **.485** (pounds-per-square foot). Sample weight **.537** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation **12** (inches) Manufacturer's minimum required settled thickness **12** (inches). Number of days since loose-fill insulation was installed **1** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	(Page 3 of 3)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Stockton	10-3961

			GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)
☑ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
			GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)
☑ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☑ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Western Insulation**		
Responsible Person's Name: **Leslye Y Soble**	CSLB License: **794484**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **6/21/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☐ Yes	☐ No	☑ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☐ Yes	☐ No	☑ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☐ Yes	☐ No	☑ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☐ Yes	☐ No	☑ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☐ No	☑ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☐ Yes	☐ No	☑ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☐ Yes	☐ No	☑ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist	**(Page 2 of 3)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Stockton	10-3961

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- _____. List tested average depth of insulation _____ in X 5.8R = _____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☐ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☐ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☐ Yes	☐ No	☑ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts).
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches (NA if no platforms or cat-walks)
☑ Yes	☐ No		Attic access gasketed
☐ Yes	☑ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☐ Yes	☑ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☐ Yes	☑ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **30** Manufacturer's minimum required weight for the target R-value **.485** (pounds-per-square foot). Sample weight **.705** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation **12** (inches) Manufacturer's minimum required settled thickness **12** (inches). Number of days since loose-fill insulation was installed **5** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☐ Yes	☐ No	☑ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☐ Yes	☐ No	☑ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Western Insulation**		
Responsible Person's Name: **Leslye Y Soble**	CSLB License: **794484**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr x *leakage factor* = ___ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ___ x *leakage factor* = ___ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**47**
Pass if Actual Leakage is less than Allowed Leakage	☑ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **6/21/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Enter the Duct System Name or Identification/Tag: **HOUSE**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr x *leakage factor* = ___ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ___ x *leakage factor* = ___ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	45
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **54,000** Output Capacity in Thousands of Btu/hr x **6%** = **70.31** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1114** x **6%** = **6684** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped-off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)Indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**HOUSE**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.1.1					
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.1.2					
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.1.3					
System Name or Identification/Tag	**HOUSE**				
System Location or Area Served	**HOUSE**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**3**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**1050**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1070**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Stockton	10-3961

Fan Watt Draw Verification

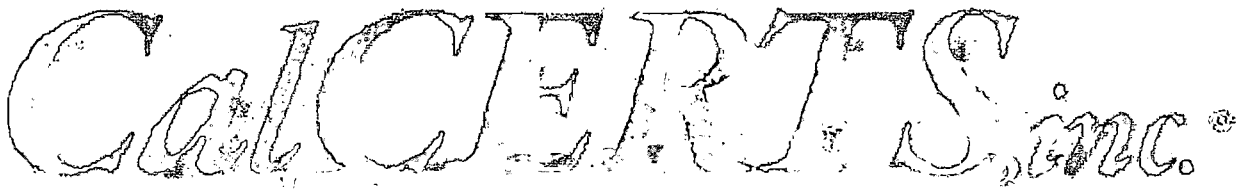
When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**HOUSE**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**1050**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**609**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**396**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			



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Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC13-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **6/21/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**12**			
4	Make and Model Number of the installed Outdoor Unit	**Lennox 13ACX-036**			
5	Make and Model Number of the installed Inside Coil	**Aspen CB36A34**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Lennox ML180UH070**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**12**			

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.

☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

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DECLARATION STATEMENT

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Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **6/21/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-3961

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**10.80**			
4	Make and Model Number of the installed Outdoor Unit	**LENNOX 13ACX-036-230-15**			
5	Make and Model Number of the installed Inside Coil	**ASPEN CB36A34000T042**			
6	Make and Model Number of the installed Furnace or Air Handler.	**LENNOX ML180UH070XP36A**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**11**			
7a	**QA Additional Question:** Website URL confirming LHRI: **HOUSE:** cert #4680783				

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.
☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**FAIL**			

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Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798569381**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

QA, New Tested

Rater ENV-20 ENV-21 ENV-22 Mech-20 -22 Sidhu 1

Mark Wiese Logged In [Logout]

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My Raters
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Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Data Collection Form:

STEP 1: Collect information

Date / Time:* 10/28 / 11:15 AM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

S/N 1911E11470

Condenser Make:* LENNOX Model:* 13ACX-036 230-15 # of Vents:* 15 # of Returns:* 2

SEER: 13

S/N 5911C30092 P36A

F.A.U. Make:* LENNOX Model:* ML180V1H070X AFUE: .81 HSPF: Output

66,000 - 54000 BTU:* 54,000 Location: Attic

Coil Make:* ASPEN Model:* CB36A34000 T042 EER:

TXV INSTALLED

Coil Number:* C11-00012931 Ducts R4 or R6: ~~R4~~ R6

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL = 45 CFM @ 25 PA

CCAF = 286 CFM, 828 = 1114 CFM

ENV 20 = 1245 CFM @ 50 PA

Attic Investigation:* [Select from list]

FWD = 464

NEXT

* *Required Fields*

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CalCERTS, Inc.

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Insulation WT = 6.15 ÷ 16 ÷ 545 = 0.705 lb/sqft

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Model Status of 'Active' means models are currently in production. 'Discontinued' means that the manufacturer has elected to stop producing, yet stock is still available. 'Obsolete' means that the manufacturer is required to stop manufacturing due to a test failure in the AHRI Certification Programs.

				Outdoor Unit		Indoor Unit			Cooling								
AHRI Certified Ref #	Model Status	Manufacturer Type	Trade/Brand Name	Manufacturer	Model	Manufacturer(Mix-Match)	Model	Furnace Model	Capacity (Btu/h)	EER	SEER	Phase	AHRI Type	HSVTC	Exclusively for Export	Est. National Avg. Annual Operating Cooling Cost ($)	Eligible for Federal Tax Credit
4680653	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH045E36A*	34200	11.40	14.00	1	RCU -A-CB			285	
4680598	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-36B-045*	32800	11.00	14.00	1	RCU -A-CB			273	
4680683	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH090XE48B*	34200	11.40	14.50	1	RCU -A-CB			275	
4680706	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH070V36A*	34200	11.30	14.00	1	RCU -A-CB			285	
4680828	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-60C-110*	34200	11.00	14.00	1	RCU -A-CB			285	
4680693	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH110XE60C*	34000	11.00	14.00	1	RCU -A-CB			283	
4680738	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH090XV60C*	34200	11.00	14.50	1	RCU -A-CB			275	
4680773	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98UH090V48C*	33600	11.00	14.50	1	RCU -A-CB			270	
[redacted]	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR		33600	[redacted]		1	RCU -A-C			301	
4680643	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180DF090E48B*	32800	10.80	13.50	1	RCU -A-CB			283	
4680668	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH070XE36B*	34000	11.00	14.50	1	RCU -A-CB			273	
4680623	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-60C-091*	34400	11.00	14.00	1	RCU -A-CB			286	
4680678	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH090E60C*	34200	11.00	14.50	1	RCU -A-CB			275	
4680703	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280DF110V60C*	33200	11.30	14.00	1	RCU -A-CB			276	
4680603	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-36B-070*	33200	11.00	14.00	1	RCU -A-CB			278	
4680728	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH090V60C*	34400	11.00	14.50	1	RCU -A-CB			278	
4680753	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98DF070V36B*	32800	10.80	13.50	1	RCU -A-CB			283	
4680778	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98UH110V60C*	34200	11.00	14.50	1	RCU -A-CB			275	

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Model Status of 'Active' means models are currently in production. 'Discontinued' means that the manufacturer has elected to stop producing, yet stock is still available. 'Obsolete' means that the manufacturer is required to stop manufacturing due to a test failure in the AHRI Certification Programs.

				Outdoor Unit		Indoor Unit			Cooling								
AHRI Certified Ref #	Model Status	Manufacturer Type	Trade/Brand Name	Manufacturer	Model	Manufacturer(Mix-Match)	Model	Furnace Model	Capacity (Btuh)	EER	SEER	Phase	AHRI Type	HSVTC	Exclusively for Export	Est. National Avg. Annual Operating Cooling Cost ($)	Eligible for Federal Tax Credit
4680603	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TOR	G61MPV-36B-070*	33200	11.00	14.00	1	RCU -A-CB			278	
4680728	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TOR	SL280UH090V60C*	34400	11.00	14.50	1	RCU -A-CB			276	
4680753	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP96DF070V36B*	32800	10.80	13.50	1	RCU -A-CB			283	
4680778	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98UH110V60C*	34200	11.00	14.50	1	RCU -A-CB			275	
4680743	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH110V60C*	34000	11.00	14.00	1	RCU -A-CB			283	
4680758	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98DF090V36C*	33200	11.10	14.00	1	RCU -A-CB			278	
4680673	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH090E48B*	34200	11.40	14.50	1	RCU -A-CB			275	
4680953	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH045E36A*	34200	11.40	14.00	1	RCU -A-CB			285	
4680598	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-36B-045*	32800	11.00	14.00	1	RCU -A-CB			273	
4680883	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TOR	ML180UH090XE48B*	34200	11.40	14.50	1	RCU -A-CB			275	
4680708	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH070V36A*	34200	11.30	14.00	1	RCU -A-CB			285	
4680763	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98UH070V36B*	33600	11.00	14.00	1	RCU -A-CB			280	
4680618	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-60C-090*	34000	11.20	14.00	1	RCU -A-CB			283	
4680716	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH090V36B*	33800	11.00	14.50	1	RCU -A-CB			270	
4680633	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	G61MPV-60C-111*	34200	11.00	14.00	1	RCU -A-CB			285	
4680668	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH110E60C*	34000	11.00	14.00	1	RCU -A-CB			283	
4680713	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH070XV36A*	34200	11.30	14.00	1	RCU -A-CB			285	
4680658	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	ML180UH045XE36A*	34200	11.40	14.00	1	RCU -A-CB			285	
4680738	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SL280UH090XV60C*	34200	11.00	14.50	1	RCU -A-CB			275	
4680773	Active	Coil (Mix-Match)	ASPEN	LENNOX INDUSTRIES, INC.	13ACX -036-230-15	ASPEN MANUFACTURING	C(B,P) 36A34+TDR	SLP98UH090V48C*	33800	11.00	14.50	1	RCU -A-CB			270	

Next 18 Records >>

Now displaying records 1 - 20 of 38 total

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Project Title..... Plan 4015 (1832) Date..03/10/11 09:11:50

MICROPAS8 v8.1 File-PM4015 Wth-CTZ12S08
User#-MP0101 User-Enercomp, Inc. Run-Plan 4015 (1832)

SLAB SURFACES

Slab Type	Area (sf)
Standard Slab	1832

HVAC SYSTEMS

System Type	Number of Systems	Minimum Efficiency	Verified HighEff EER	Verified Refrig Charge or CID	Verified Cooling Coil Airflow	Verified Fan Watt Draw	Verified Maximum Total Rated Cooling Capacity
Furnace	1	0.920 AFUE	n/a	n/a	n/a	n/a	n/a
ACSplit	1	13.00 SEER	11	No	Yes	No	No

HVAC SIZING

System Type	Total Heating Load (Btu/hr)	Sensible Cooling Load (Btu/hr)	Design Cooling Capacity (Btu/hr)	Verified Maximum Cooling Capacity (Btu/hr)
Furnace	29552	n/a	n/a	n/a
ACSplit	n/a	15418	18313	n/a

Orientation of Maximum..... Front Facing 270 deg (W)
Sizing Location..... STOCKTON AP
Winter Outside Design..... 24 F
Winter Inside Design..... 70 F
Summer Outside Design..... 97 F
Summer Inside Design..... 75 F
Summer Range..... 35 F

Project Title..... Plan 4015 (1832) Date..03/10/11 09:11:50

MICROPAS8 v8.1 File-PM4015 Wth-CTZ12S08
User#-MP0101 User-Enercomp, Inc. Run-Plan 4015 (1832)

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-factor	Cavity R-val	Sheathing R-val	Act Azm	Tilt	Solar Gains	Appendix JA4 Reference	Location/ Comments
1 Wall	Wood	165	0.072	13	4	0	90	Yes	4.3.1 C3	Front Wall
2 Wall	Wood	268	0.072	13	4	90	90	Yes	4.3.1 C3	Left Wall
3 Wall	Wood	397	0.072	13	4	180	90	Yes	4.3.1 C3	Back Wall
4 Wall	Wood	506	0.072	13	4	270	90	Yes	4.3.1 C3	Right Wall
5 Wall	Wood	239	0.102	13	0	0	90	No	4.3.1 A3	Garage Wall
6 AtticRad	Wood	1732	0.031	30	0	n/a	0	Yes	4.2.1 A20	Attic
7 AtticRad	Wood	100	0.048	19	0	n/a	0	Yes	4.2.1 A16	At Furnace
8 Door	Wood	24	0.500	0	0	0	90	Yes	4.5.1 A4	Entry Door
9 Door	Wood	18	0.500	0	0	0	90	No	4.5.1 A4	Garage Door

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix JA4 Reference	Location/ Comments
10 SlabEdge	204	0.730	R-0/0in	No	4.4.7 A1	Standard Slab Edge

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FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	16.0	0.340	0.230	0	90	Standard	F1/Atrium or Equivalent.
2 Wind Front (N)	8.0	0.310	0.250	0	90	Standard	F2/Atrium or Equivalent.
3 Wind Left (E)	18.0	0.340	0.230	90	90	Standard	L1/Atrium or Equivalent.
4 Wind Left (E)	25.0	0.340	0.230	90	90	Standard	L2/Atrium or Equivalent.
5 Door Back (S)	48.0	0.360	0.200	180	90	Standard	B1/Atrium or Equivalent.
6 Wind Back (S)	30.0	0.340	0.230	180	90	Standard	B2/Atrium or Equivalent.
7 Wind Back (S)	16.0	0.340	0.230	180	90	Standard	B3/Atrium or Equivalent.
8 Wind Back (S)	40.0	0.340	0.230	180	90	Standard	B4/Atrium or Equivalent.
9 Wind Right (W)	20.0	0.340	0.230	270	90	Standard	R1/Atrium or Equivalent.
10 Wind Right (W)	3.0	0.340	0.230	270	90	Standard	R2/Atrium or Equivalent.
11 Wind Right (W)	20.0	0.340	0.230	270	90	Standard	R3/Atrium or Equivalent.

AHRI CERTIFIED™
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Certificate of Product Ratings

AHRI Certified Reference Number: 4208214 Date: 12/2/2011

Product: Residential Furnace Heating Equipment
Model Number: ML180UH070XP36A-*
Manufacturer: LENNOX INDUSTRIES, INC.
Trade/Brand name: MERIT 80

Rated as follows in accordance with Department of Energy (DOE) furnace test procedures as published in the latest edition of the Code of Federal Regulations, 10 CFR Part 430 and subject to verification of rating accuracy by AHRI-sponsored, independent, third party testing:

AFUE:	80.0%
Output Heating Capacity:	54 MBTUH

The following data is for reference only and is not certified by AHRI:

Input:	66 MBTUH
Ef:	57.4 MMBTU/yr
Eae:	753 kWh/yr
PE:	77 Watts
Furnace Type:	Non-Weatherized
Config:	Upflow,Horizontal
Fuel Type:	Natural Gas,Propane Gas

FootNote 19 - Suffix (*) may be a letter and/or number.

† Models with an 'Active' status are those that are currently in production. Models with a 'Discontinued' status are those that the manufacturer has elected to stop producing, yet stock is still available. Models with an 'Obsolete' status are those that the manufacturer is required to stop manufacturing due to an AHRI certification program test failure.

* Ratings followed by an asterisk (*) indicate a voluntary rerate of previously published data, unless accompanied with a WAS, which indicates an involuntary rerate.

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CERTIFICATE VERIFICATION
The information for the model cited on this certificate can be verified at www.ahridirectory.org, click on "Verify Certificate" link and enter the AHRI Certified Reference Number and the date on which the certificate was issued, which is listed above, and the Certificate No., which is listed below.

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CERTIFICATE NO.: 129673255954581055

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Tim O'Neil Logged In [Logout]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Test Results for [redacted]

Lot	Address	City	State	Zip	Certificate	Result	Project	Rating Company	Type	QA
188	[redacted] (Preston Meadows)	[redacted]	CA	[redacted]	CC-1798594069	See Below	Preston Meadows	Valley Duct Testing	New Construction SFR	Report QA

2008 Standards

NSHP Info:
PV ID: 0293-A-002
CF-6R-PV: Completed by Sunpower
CF-4R-PV: Not Complete

Installers for this Address:

CF-6R-ENV-20-HERS	CSLB: N/A	Woodside Homes - Northern CA	Mike Kitchell
CF-6R-ENV-21-HERS	CSLB: 794484	Western Insulation	Leslye Y Soble
CF-6R-ENV-22-HERS	CSLB: 794484	Western Insulation	Leslye Y Soble
CF-6R-MECH-20-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-22-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-23-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane
CF-6R-MECH-29-HERS	CSLB: 162634	Beutler Corporation	Christina Cochrane

Address	Certificate Type	CF-4R-ENV-20 Envelope	CF-4R-ENV-21 QII - Framing	CF-4R-ENV-22 QII - Insulation	CF-4R-MECH-20 Duct Leakage New	CF-4R-MECH-22 Cooling Coil Airflow	CF-4R-MECH-23 High EER	CF-4R-MECH-29 Location; Area; R-Value	AdditionalEnergyFeatures Additional Features
[redacted]	Compliance		TESTED	TESTED	TESTED HOUSE		TESTED HOUSE		
[redacted]	Above Code	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE	TESTED HOUSE		TESTED
[redacted]	Photovoltaic (NSHP)	TESTED HOUSE	TESTED	TESTED	TESTED HOUSE	TESTED HOUSE	TESTED HOUSE		TESTED

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NOT PERFORMED

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
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Toll Free: 877-HERS-R8R (877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice

User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms

Website Updates

Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

QA QII(I) Fail, 5" void under catwalk.
Attic access not gasketed and insulation present, but not attached to cover.
No insulation information in attic.
Duct Leakage: Pass. Rater recorded 65 cfm and a target of 72. QA recorded 37.
High EER Fail, Could verify 2 of 3 matched conponents at 10.8. Target is 11.0.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
QII - Framing	CF-4R-ENV-21	Not Started	QA CF-4R	[Comments]
QII - Insulation	CF-4R-ENV-22	**QA FAILED**	System 1	[Comments]
Duct Leakage New	CF-4R-MECH-20	Complete	HOUSE	[Comments]
High EER	CF-4R-MECH-23	**QA FAILED**	HOUSE	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/28/2011 / 10:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Lennox **Model:** 13ACX-036-230-15 **# of Vents:** 15 **# of Returns:** 2 **SEER:** 13
F.A.U. Make:	Lennox **Model:** ML180UH070XP36A-01 **AFUE:** .81 **HSPF:** **Output BTU:** 54000 **Location:** Attic
Coil Make:	Aspen **Model:** CB36A34000T942 **EER:**

Coil Number: E11-00002136 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: No Notes
Attic Investigation: Investigated and saw something which may decrease system efficiency
NO Photos

Registered CF-4R Data

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☑ Yes	☐ No	☐ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No	☐ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☑ Yes	☐ No	☐ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☑ Yes	☐ No	☐ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☑ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☑ Yes	☐ No	☐ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Stockton	10-2711

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☑ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☑ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☑ Yes	☐ No	☐ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☑ Yes	☐ No	☐ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts)
☑ Yes	☐ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches (NA if no platforms or cat-walks)
☑ Yes	☐ No		Attic access gasketed
☑ Yes	☐ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **30** Manufacturer's minimum required weight for the target R-value **.485** (pounds-per-square foot). Sample weight **.529** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation **12** (inches) Manufacturer's minimum required settled thickness **12** (inches). Number of days since loose-fill insulation was installed **1** (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☑ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☑ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☑ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☑ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Western Insulation**		
Responsible Person's Name: **Leslye Y Soble**	CSLB License: **794484**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **9/26/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 1 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

*QII credit not allowed if any steel framing or structural framing in the walls of a **conditioned** space.*

Insulation Stage Checklist

FLOOR INSULATION			
☐ Yes	☐ No	☑ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
☐ Yes	☐ No	☑ NA	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
☐ Yes	☐ No	☑ NA	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
☐ Yes	☐ No	☑ NA	Insulation R-value same or greater that listed on CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
WALL INSULATION			
☐ Yes	☐ No	☑ NA	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
☐ Yes	☐ No	☑ NA	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
☑ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.
☐ Yes	☐ No	☑ NA	**BATTS**, not a single void/depression deeper than 3/4" in ANY stud bay. (NA if loose fill or SPF)
☐ Yes	☐ No	☑ NA	**BATTS**, voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☐ Yes	☐ No	☑ NA	Loose Fill no gaps or voids of any depth allowed. (NA if batts or SPF).
☑ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☑ Yes	☐ No		All Rim-joists to the outside insulated.
☑ Yes	☐ No		Special attention must be paid to corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.
☐ Yes	☐ No	☑ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.
☐ Yes	☐ No	☑ NA	Insulation in **full** contact with drywall or wall finish of skylight shafts and attic kneewalls.
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 2 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

☐ Yes	☐ No	☑ No	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- ____. List tested average depth of insulation ____ in X 5.8R = ____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth
CEILING INSULATION			
☐ Yes	☐ No		**BATTS** there must not be a single gap/void/depression deeper than 3/4". (NA if loose fill or SPF).
☐ Yes	☐ No		**BATTS** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
☑ Yes	☐ No	☐ NA	NO gaps or voids allowed for loose fill and SPF. (NA if batts).
☑ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☑ Yes	☐ No		Insulation in full contact with the ceiling, NO gaps.
☑ Yes	☐ No		Insulation in contact with air barrier on all five sides.
☐ Yes	☐ No	☑ NA	**Batts** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).
☐ Yes	☐ No	☑ NA	**Batts** taller than the trusses must expand so that they touch each other over the trusses. (NA for loose fill or SPF)
☐ Yes	☐ No	☑ NA	SPF the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA if loose fill or batts).
☐ Yes	☑ No	☐ NA	Insulation fully fills cavity below any plywood platform or cat-walk. If SPF used then minimum 3 inches. (NA if no platforms or cat-walks)
☐ Yes	☑ No		Attic access gasketed
☐ Yes	☑ No		Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☑ Yes	☐ No		Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from 1/2-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☑ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation at proper depth - insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose Fill** Insulation **uniformly** covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).
☑ Yes	☐ No	☐ NA	**Loose-fill** mineral fiber insulation meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value **30** Manufacturer's minimum required weight for the target R-value **.485** (pounds-per-square foot). Sample weight **.751** (pounds per square foot).
☑ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation 12 (inches) Manufacturer's minimum required settled thickness 12 (inches). Number of days since loose-fill insulation was installed 5 (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-ENV-22
Quality Insulation Installation (QII) - Insulation Stage Checklist		**(Page 3 of 3)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)			
☐ Yes	☐ No	☑ NA	Insulation installed at joists against the air barrier in the garage to house transition. All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)			
☐ Yes	☐ No	☑ NA	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met. (NA if no conditioned space over garage).
☐ Yes	☐ No	☑ NA	SPF insulation properly adhered to avoid gaps and provide an air seal
☐ Yes	☐ No	☑ NA	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than 1/2 inch less than the required thickness for the R-value. (NA for other forms of insulation).
☐ Yes	☐ No	☑ NA	**SPF** list the required floor cavity R-value from CF-1R, R- _____. List tested average depth of insulation _____ in X 5.8R = _____ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
☐ Yes	☐ No	☑ NA	Measure thickness of insulation in 6 random measurements. Must be within 1/2 inch of the required depth

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Western Insulation**		
Responsible Person's Name: **Leslye Y Soble**	CSLB License: **794484**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA. [redacted](HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

Enter the Duct System Name or Identification/Tag: **HOUSE**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**65**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted](HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **9/26/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** [redacted] 10-2711

Enter the Duct System Name or Identification/Tag: **HOUSE**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

	Allowed Leakage (CFM)
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**37**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (HOUSE)	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **54,000** Output Capacity in Thousands of Btu/hr x **6%** = **70.31** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1119** x **6%** = **6714** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/28/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**11**			
4	Make and Model Number of the installed Outdoor Unit	**Lennox 13ACX-036**			
5	Make and Model Number of the installed Inside Coil	**Aspen CB36A34**			
6	Make and Model Number of the installed Furnace or Air Handler.	**Lennox ML18OUH070XP36A**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**11**			
☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure. ☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.					
8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Daniel Sidhu**	Responsible Rater's Signature: **Daniel Sidhu**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005575**	Date Signed: **9/26/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		**(Page 1 of 1)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	**HOUSE**			
2	System Location or Area Served	**Whole House**			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	**10.8**			
4	Make and Model Number of the installed Outdoor Unit	**LENNOX 13ACX-036-230-15**			
5	Make and Model Number of the installed Inside Coil	**ASPEN CB36A34000T042**			
6	Make and Model Number of the installed Furnace or Air Handler.	**LENNOX ML180UH070XP36A-01**			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	**11**			
7a	**QA Additional Question:** Website URL confirming LHRI: **HOUSE:** CERT # 4680783				

☑ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.

☑ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal to or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**	**FAIL**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **Beutler Corporation**		
Responsible Person's Name: **Christina Cochrane**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798594069**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/28/2011**	

QA - TESTED
QA - New

D. Sidhu
Rater -
Patrick Davis - ENV 20

CalCERTS

QA Data Collection Form:

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/28 / 10:AM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

Condenser Make:* LENNOX Model:* 13HCX-036-230-15 S/N 1946179777 # of Vents:* 15 # of Returns:* 2

SEER: 13

F.A.U. Make:* LENNOX Model:* ML180UH070X2 S/N 5911F16281 AFUE: .81 HSPF: Output

BTU:* 54,000 Location: Attic

Coil Make:* ASPEN Model:* CB36A-34000T042 EER:

Coil Number:* E11-00002136 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL = 37 CFM @ 25PA
ENV-20 = 1235 CFM @ 50PA
CCAF = 1119 CFM
FWD = 473

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

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Fax: 916-985-3402
Contact Us

HIGH EFF - CERT # 4680785 showing 10.8 w/ 2 Compone
coil & Condenser —
Ins WT = 6.55 ÷ 16 ÷ .545 = 0.751 lb/ft² with the A/H, NO XP in
AHRI website

Project Title..... Plan 4011 (1646) Date..03/10/11 09:11:45

MICROPAS8 v8.1 File-PM4011 Wth-CTZ12S08
User#-MP0101 User-Enercomp, Inc. Run-Plan 4011 (1646)

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-factor	Sheathing R-val	Cavity R-val	Act Azm	Tilt	Solar Gains	Appendix JA4 Reference	Location/ Comments
1 Wall	Wood	148	0.072	13	4	0	90	Yes	4.3.1 C3	Front Wall
2 Wall	Wood	465	0.072	13	4	90	90	Yes	4.3.1 C3	Left Wall
3 Wall	Wood	208	0.072	13	4	180	90	Yes	4.3.1 C3	Back Wall
4 Wall	Wood	231	0.072	13	4	270	90	Yes	4.3.1 C3	Right Wall
5 Wall	Wood	320	0.102	13	0	0	90	No	4.3.1 A3	Garage Wall
6 AtticRad	Wood	1546	0.031	30	0	n/a	0	Yes	4.2.1 A20	Attic
7 AtticRad	Wood	100	0.048	19	0	n/a	0	Yes	4.2.1 A16	At Furnace
8 Door	Wood	24	0.500	0	0	0	90	Yes	4.5.1 A4	Entry Door
9 Door	Wood	18	0.500	0	0	0	90	No	4.5.1 A4	Garage Door

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix JA4 Reference	Location/ Comments
10 SlabEdge	181	0.730	R-0/0in	No	4.4.7 A1	Standard Slab Edge

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FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	9.0	0.310	0.250	0	90	Standard	F1/Atrium or Equivalent.
2 Wind Front (N)	16.0	0.340	0.230	0	90	Standard	F2/Atrium or Equivalent.
3 Wind Front (N)	16.0	0.340	0.230	0	90	Standard	F3/Atrium or Equivalent.
4 Wind Left (E)	20.0	0.340	0.230	90	90	Standard	L1/Atrium or Equivalent.
5 Wind Left (E)	10.0	0.310	0.250	90	90	Standard	L2/Atrium or Equivalent.
6 Door Back (S)	40.0	0.360	0.200	180	90	Standard	B1/Atrium or Equivalent.
7 Wind Back (S)	48.0	0.340	0.230	180	90	Standard	B2/Atrium or Equivalent.
8 Door Back (S)	64.0	0.360	0.200	180	90	Standard	B3/Atrium or Equivalent.
9 Wind Right (W)	18.0	0.340	0.230	270	90	Standard	R1/Atrium or Equivalent.

Project Title..... Plan 4011 (1646) Date..03/10/11 09:11:45

MICROPAS8 v8.1 File-PM4011 Wth-CTZ12S08
User#-MP0101 User-Enercomp, Inc. Run-Plan 4011 (1646)

SLAB SURFACES

Slab Type	Area (sf)
Standard Slab	1646

HVAC SYSTEMS

System Type	Number of Systems	Minimum Efficiency	Verified HighEff EER	Verified Refrig Charge or CID	Verified Cooling Coil Airflow	Verified Fan Watt Draw	Verified Maximum Total Rated Cooling Capacity
Furnace	1	0.920 AFUE	n/a	n/a	n/a	n/a	n/a
ACSplit	1	13.00 SEER	11	No	Yes	0.58 W/cfm	No

HVAC SIZING

System Type	Total Heating Load (Btu/hr)	Sensible Cooling Load (Btu/hr)	Design Cooling Capacity (Btu/hr)	Verified Maximum Cooling Capacity (Btu/hr)
Furnace	27030	n/a	n/a	n/a
ACSplit	n/a	14894	17691	n/a

Orientation of Maximum..... Front Facing 90 deg (E)
Sizing Location..... STOCKTON AP
Winter Outside Design..... 24 F
Winter Inside Design..... 70 F
Summer Outside Design..... 97 F
Summer Inside Design..... 75 F
Summer Range..... 35 F

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
253487	Phase 1	[redacted]	10-2711	Plan 4015 MP

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-ENV-22**
Quality Insulation Installation (QII) - Insulation Stage Checklist		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Stockton	**Permit Number:** 10-2711
Assigned Rater: SEE BELOW	**Tested Date:** 10/26 (M/D/YYYY)	

Yes	No	N/A	**FLOOR INSULATION**
○	○	○	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).
○	○	○	Insulation in full contact with the subfloor, NO gaps. (NA if floors are slab on grade).
○	○	○	Insulation in contact with air barrier on all five sides. (ends, sides, back). NA if floors are slab on grade.
○	○	○	Batts cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).
○	○	○	Batt insulation has continuous support. (NA if loose fill, SPF, or slab on grade).
○	○	○	Insulation R-value same or greater that listed on CF-1R.
○	○	○	SPF insulation properly adhered to avoid gaps and provide an air seal
○	○	○	SPF (Spray Polyurethane Foam Medium Density) insulation the average thickness is equal to or greater than that listed on the CF-1R and the minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. (NA for other forms of insulation).
○	○	○	**SPF** list the required floor cavity R-value from CF-1R, R-[ ]. List tested average depth of insulation [ ] in X 5.8R = ___ R this is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)
○	○	✓	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.
Yes	No	N/A	**WALL INSULATION**
○	○	○	Standard depth cavities insulation fills cavity and touches air barrier on all six sides. (NA if SPF used and meets the required R-value).
○	○	○	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides. (NA if SPF used and meets the required R-value).
○	○		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight
○	○	○	**BATTS**, not a single void/depression deeper than ¾" in ANY stud bay. (NA if loose fill or SPF)
○	○	○	**BATTS,** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).
○	○	○	**Loose Fill** no gaps or voids of any depth allowed. (NA if batts or SPF).
○	○		Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
○	○		All Rim-joists to the outside insulated.

EXHIBIT 27

Part 2

Jennifer McFall

QA Report Detail

Date / Time: 10/02/2011 / 10:30
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Day & Night **Model:** 591ANX048000ACAA **# of Vents:** 12 **# of Returns:** 1 **SEER:**
F.A.U. Make: Payne **Model:** PG8JAA048070 **AFUE:** .80 **HSPF:** **Output BTU:** 51000 **Location:** Attic
Coil Make: Goodman **Model:** CSCF4860N6CA **EER:**
Coil Number: 1004236769 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Great
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: Coil was replaced in a two year old air handler. Customer states that the coil rusted out as a condensation line got clogged. I did not see any TMAHs marked on the supply plenum. There was no return plenum to put a TMAH.

Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency

NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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Contact Us

Mark Wiese Logged In [Logout]

Test Results for 8950 VISTA DE LAGO CT.

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798571776	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-04 CSLB: 659886 ABBOTT HEATING AND AIR CONDITIONING Todd Abbott
CF-6R-MECH-RCA-HERS CSLB: 659886 ABBOTT HEATING AND AIR CONDITIONING Todd Abbott

Address	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (231194)	TESTED (McFall, Jennifer)

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Folsom, CA 95630
Office: 916-985-3400
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(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: WORKING Effective Year: 2011

Comments:

Customer stated that the rater was very thorough and took the time to explain the process to her. There are two systems, the upstairs unit and the downstairs unit. The downstairs unit is a packaged unit and was replaced in 2009, and is not part of this QA. The upstairs unit is a split system and the airhandler was replaced in 2009, and there was a Duct leakage test performed as well. The most recent work was a coil replacement. I will mark RCA failure as I saw no TMAHs labeled. CCAF passed using the Flow Hood, Target =1200 cfm, Actual = 1240 cfm.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Refrigerant Charge	CF-4R-MECH-RCA	In Progress	QA CF-4R	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ ☑ Pass	✔ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**0391E08908**			
Outdoor Unit Make	**Day & Night**			
Outdoor Unit Model	**591ANX048**			
Nominal Cooling Capacity Btu/hr	**48000**			
Date of Verification	**7/15/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**7/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**7/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**55**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**73**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**65**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**36**			
Condensor saturation temperature ($T_{condensor, sat}$)	**94**			
Suction line temperature ($T_{suction}$)	**55**			
Liquid Line Temperature (T_{liquid})	**84**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**18.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**16.1**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**1.9**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**10**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**0**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**19**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **ABBOTT HEATING AND AIR CONDITIONING**		
Responsible Person's Name: **Todd Abbott**	CSLB License: **659886**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798571776**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **7/15/2011**	

QA AT TESTED

JENNIFER MCFALL

Tim O'Neil Logged In [Logout]

CalCERTS

QA Data Collection Form: [redacted] CA [redacted]

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/3 / 10:30

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

RESULTS FOR SYSTEM 1

Type of System Split — UPSTAIRS

Is the unit a HEAT ONLY unit? No

Condenser Make:* DAY & NIGHT Model:* 591ANX048000ACAA # of Vents:* [ ] # of Returns:* 1
[ ] SEER: [ ] S/N 0391E08908

F.A.U. Make:* PAYNE Model:* PG8JAA048070 AFUE: .80 HSPF: [ ]

Output BTU:* 57,000 Location: Attic (INPUT 63,000)

Coil Make:* Goodman Model:* CSCF4860N6AA EER: [ ]

Coil Number:* 1004236769 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

Customer States that HERS Rater very through and explained the Process

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Replaced coil - Payne Air handler

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
231194	Phase 1	[redacted]	512864	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-RCA
Refrigerant Charge Verification		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Placer	**Permit Number:** 512864
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

System 1
Select MECH form used to verify Refrigerant Charge:

- ~~CF-4R-MECH-24~~
- (•) CF-4R-MECH-25

CF-4R-MECH-25

1) Select method used to determine minimum airflow:
Temperature Split (RA3.2.2.7)

2) What was the method used for determining saturation temperature?
Refrigerant Gauge
Note: *If Refrigerant Gauge is selected, Approving Rater must have completed RCA II course.*

3) Is a TXV installed?
YES

Airflow 1140 Downstairs (Two Units)
" 1240 upstairs

Additional QA Questions:

What was the Ambient Temperature in Farenheit: 78 °

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method. If installation of a CID is utilized as an alternative to refrigerant charge verification for compliance, TMAH and STMS are not required for compliance.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			System 1
System Location or Area Served			Whole House
1	( ) Yes	(X) No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.
2	( ) Yes	(X) No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.
Yes to 1 and 2 is a pass.			

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

New airhandler in attic Serves upstairs

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Outdoor Unit Serial #	
Outdoor Unit Make	
Outdoor Unit Model	
Nominal Cooling Capacity Btu/hr	(No commas)
Date of Verification	(M/D/YYYY)

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	(M/D/YYYY)	(must be re-calibrated monthly)
Date of Thermocouple Calibration	(M/D/YYYY)	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	System 1
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	(Fahrenheit)
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	(Fahrenheit)
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	(Fahrenheit)
Evaporator saturation temperature ($T_{evaporator, sat}$)	(Fahrenheit)
Condensor saturation temperature ($T_{condensor, sat}$)	(Fahrenheit) *Required if TXV*
Suction line temperature ($T_{suction}$)	(Fahrenheit)
Liquid Line Temperature (T_{liquid})	(Fahrenheit) *Required if TXV*
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	(Fahrenheit)

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	System 1
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	
Calculate difference: Actual Temperature Split - Target Temperature Split =	
Passes if difference is between -4°F and	

+4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	
Target Subcooling specified by manufacturer	
Calculate difference: Actual Subcooling - Target Subcooling =	
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Standard Charge Measurement Summary: System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.	
System Name or Identification/Tag	System 1
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

FINAL TESTED RESULT: ● Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: R-22 assu R-22 caps

NOTE: (#) = CORRESPONDS TO #s ON FIELD DATA COLLECTION FORM

$T_{RETURN, DB}$ = ____ °F (12) — This should be close to the indoor temp of the house. Typically 75-85 deg.

$T_{RETURN, WB}$ = ____ °F WET BULB (13) — This is a function of indoor temp and humidity. Typically 55-70 deg.

NOTE: (13) SHOULD BE LESS THAN (12)

TMAH @ RETURN

This is the temperature of the air after it has been cooled. Typically 15-20 deg less than #12 above.

TXV?
☐ YES
☐ NO

FAU (FURNACE) | COIL | SUPPLY PLENUM

TMAH @ SUPPLY

$T_{SUPPLY, DB}$ = ____ °F (11)

TMAH =TEMPERATURE MEASUREMENT ACCESS HOLES (PROVIDED BY MFR. OR INSTALLER

LARGE COPPER TUBE (SUCTION LINE, LOW PRESSURE) w/ 3/4" THICK INSULATION

SMALL COPPER TUBE (LIQUID LINE, HIGH PRESSURE)

This is simply the outdoor temperature. It must be above 55 deg to do the test.

$T_{COND, DB}$ = ____ °F (20)

Typical suction line temps are 50 to 65 deg

Typical suction line pressures are:
for R22 = 70 to 100 psi
for R410a = 90 to 120 psi

P_{EVAP} (blue) = ~~PSIG~~ 2 (14) redo

$T_{SUCTION}$ = ~~52.4~~ 53.1 °F (18)

T_{LIQUID} = 88.9 °F (19)

$P_{COND.}$ (red) = 144 PSIG (16) 80°

CONDENSER

Typical liquid line temps are a few deg warmer than the outside temp

Typical liquid line pressures are:
for R22 = 130 to 170 psi
for R410a = 200 to 260 psi

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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram			
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram			
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram			
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram			
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS			
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram			
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS			
18	Suction line temperature ($T_{suction}$)	See Diagram			
19	Liquid line temperature (T_{liquid})	See Diagram			
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram			

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db} - T_{supply,db}$	Line 12 - Line 11			
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table			
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23			
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass			
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag		591ANX048000ACAA		
(27)	Calculated Minimum Airflow Requirement (CFM) 4	Tons X 300	1200		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1240		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

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	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat}$ - T_{liquid}	Line 17 - Line 19			
(37)	Target Subcooling specified by manufacturer	From Condenser			
(38)	Calculate difference: Actual Subcooling - Target Subcooling =	Line 36 - Line 37			
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass			

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,\ sat}$	Line 18 - Line 15			
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given			
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #			

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QA Report Detail

Date / Time: 01/26/2012 / 11:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Ruud **Model:** 13AJN30A01 **# of Vents:** 6 **# of Returns:** 1 **SEER:** 13.0
F.A.U. Make: Ruud **Model:** RGPS-07NAMER **AFUE:** .80 **HSPF:** **Output BTU:** 60,000 **Location:** Attic
Coil Make: Aspen **Model:** CE36A24175 **EER:**
Coil Number: F11-000280084 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	Yes
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798608034	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-04 CSLB: 937274 RICK WHITE'S AIR COMPANY INC Rick White
CF-6R-MECH-20-HERS CSLB: 937274 RICK WHITE'S AIR COMPANY INC Rick White
CF-6R-MECH-22-HERS CSLB: 937274 RICK WHITE'S AIR COMPANY INC Rick White
CF-6R-MECH-22-HERS CSLB: 937274 RICK WHITE'S AIR COMPANY INC Rick White
CF-6R-MECH-RCA-HERS CSLB: 937274 RICK WHITE'S AIR COMPANY INC Rick White

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (267452)	TESTED (McFall, Jennifer)	TESTED (McFall, Jennifer)	TESTED (McFall, Jennifer)	TESTED (McFall, Jennifer)

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Fax: 916-985-3402
Contact Us

Mark Wiese Logged In [Logout]

QA Report Results: [redacted], [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Duct Leakage(N): Pass, Rater recorded 35 cfm and a target of 60 cfm. QA recorded 36.65 cfm.
CCAF: Pass, Rater recorded 954 cfm and a target 875 cfm.
QA recorded 875 cfm, a difference of 79 cfm.
FWD: Fail, Rater recorded 495 watts with a target of 553.32.
QA recorded 525 watts with a target of 507.5.
Refrigerant Charge: Fail, TMAHs Fail, TMAHs, almost a 1/2" in size, were located in the Air Handler and Coil Cabinets, not the plenums which were present.
RCA Fail, Rater recorded 1.3. QA recorded 10.2.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage New	CF-4R-MECH-20	Complete	System 1	[Comments]	
Cooling Coil Airflow	CF-4R-MECH-22	Complete	System 1	[Comments]	
Fan Watt Draw	CF-4R-MECH-22	**QA FAILED**	System 1	[Comments]	
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

	Allowed Leakage (CFM)
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons **2.5** x 400 x *leakage factor* = **60** CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**35**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw-bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (If applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **11/17/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.

Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below.

☑ Cooling system method:
Nominal capacity of condenser in Tons **2.5** x 400 x *leakage factor* = **60** CFM

☐ Heating system method:
21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM

☐ Measured airflow method (RA3.3):
Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM

Allowed Leakage (CFM)

Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).

List **Actual** Leakage from duct leakage test(CFM) **36.65**

Actual Leakage (CFM)

Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**

For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed).

List **Actual** Leakage from smoke test(CFM)

Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** [redacted] 11-00002878

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **60,000** Output Capacity in Thousands of Btu/hr x **6%** = **78.12** CFM

Measured Airflow Method (RA3.3): Measured fan flow **875** x **6%** = **5250** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall.
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

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- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted], CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for Installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1					
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2					
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3					
System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**954**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** [redacted] 11-00002878

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**954**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**553.32**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**495**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **11/18/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1
☑ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2
☐ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**875**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test	(Page 2 of 2)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Folsom	11-00002878 [redacted]

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**875**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**507.5**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**525**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**System 1**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**954**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 2 of 2)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**954**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**553.32**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**495**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **11/18/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for Installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☑ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☐ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**System 1**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**875**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**875**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**507.5**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**525**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted], CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Note: If Installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for Installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**8391W331100892**			
Outdoor Unit Make	**RUUD**			
Outdoor Unit Model	**13AJN30A01**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**11-17-2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**11-1-2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**11-1-2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**51**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**60**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**43**			
Condensor saturation temperature ($T_{condensor, sat}$)	**87**			
Suction line temperature ($T_{suction}$)	**54**			
Liquid Line Temperature (T_{liquid})	**78**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**67**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**19.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**17.7**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**1.3**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**9.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**11.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**4-25**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **11/17/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Additional QA Questions:

Ambiant Temperature: **55.9°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**8391W331100892**			
Outdoor Unit Make	**RUUD**			
Outdoor Unit Model	**13AJN30A01**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**01/26/2012**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**01/25/2012**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**01/25/2012**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**42.1**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**60.4**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**36**			
Condensor saturation temperature ($T_{condensor, sat}$)	**77**			
Suction line temperature ($T_{suction}$)	**51.6**			
Liquid Line Temperature (T_{liquid})	**74.3**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**59.7**			

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**27.90**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**17.7**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**10.2**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted], CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**2.7**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-7.3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**FAIL**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**15.6**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00002878

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **RICK WHITE'S AIR COMPANY INC**		
Responsible Person's Name: **Rick White**	CSLB License: **937274**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798608034**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

QA ALT TESTED

McFALL

Tim O'Neil Logged In [Logout]

1-18-2011

CalCERTS

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Data Collection Form: [redacted], [redacted], CA [redacted]

STEP 1: Collect information

Date / Time:* 1/26 / 11:00

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 1

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

S/N 8391W331100892

Condenser Make:* RUUD Model:* 13AJN30A01 # of Vents:* ~~X~~ 6 # of Returns:* 1 SEER: 13

F.A.U. Make:* RUUD Model:* RGPS-07 NAMER AFUE: .80 HSPF:

75,000 Output BTU:* 60,000 Location: Attic

Coil Make:* ASPEN Model:* CE36A24175 EER:

Coil Number:* F11-00028084 Ducts R4 or R6: R4 S/N GH5D302F441100596

Questions:

What is the general DUCT CONDITION?	Not Applicable	NEW
Has anyone done work near the ducts?	Not Applicable	NO
Have you stored or removed anything from the duct area?	Not Applicable	~~NO~~ YES
Any new work on Heater or A/C?	Not Applicable	NO
Any new construction?	Not Applicable	NO
Have you replaced the FURNACE filter?	Not Applicable	NO
Have you replaced the RETURN filter?	Not Applicable	NO

Notes:

Boots Taped? yes

249 PA
DL(N) 36.65@ (60) RATER = 35 PASS
CCAF HSPP (yes) (875) PASS 954 PASS
875 CFM (507.5)
FWD 525 watts (553.32) 495 PASS
QA 10.2 -7.3 15.6
RCA TMAH (yes) RCA 1.3, RCV -1, TXV, 11

Attic Investigation:* [Select from list] → Holes almost 1/2"

TMAH's present, but not in plenums (which w Present
They were put in the A/H Box & Coil Box

NEXT

* *Required Fields*

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CalCERTS, Inc.

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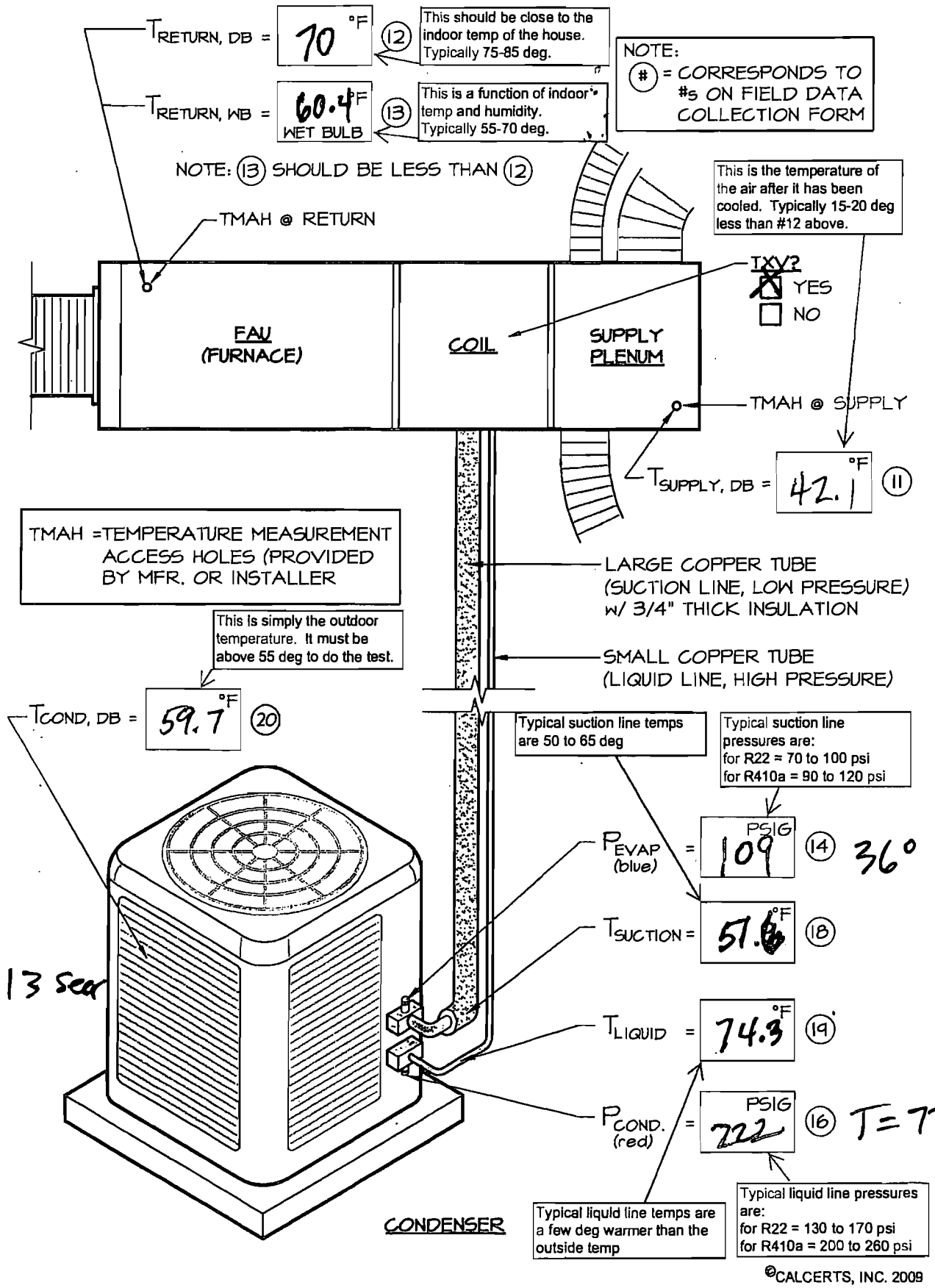
Fax: 916-985-3402
Contact Us

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram			
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram			
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram			
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram			
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS			
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram			
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS			
18	Suction line temperature ($T_{suction}$)	See Diagram			
19	Liquid line temperature (T_{liquid})	See Diagram			
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram			

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db} - T_{supply,db}$ 70 − 42.1	Line 12 - Line 11	27.9		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	17.7		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	10.2		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Fail		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement In the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300 2.5	750		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	875		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Passed		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

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	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$ 77 −74.3	Line 17 - Line 19	2.7		
(37)	Target Subcooling specified by manufacturer	From Condenser	10		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	-7.3		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	Fail		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$ 51.6 −36	Line 18 - Line 15	15.6		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	Pass		

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 09/29/2011 / 14:30
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Lennox **Model:** 14ACX-042-230-12 **# of Vents:** 14 **# of Returns:** 1 **SEER:** 14
F.A.U. Make:	Lennox **Model:** SL280UH090V-48B-03 **AFUE:** .80 **HSPF:** **Output BTU:** 70000 **Location:** Attic
Coil Make:	ADP **Model:** LH42/62E9C **EER:** 12

Coil Number: 7111C04195 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: Low leakage rate, 48 CFM. No TMAH on the return side, looking for clarification.
Attic Investigation: Investigated and saw something which may decrease system efficiency
NO Photos

Registered CF-4R Data

*** **ALERT** *** **ADMIN USE:** [UNTEST QA]

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(877-437-7787)
Fax: 916-985-3402
Contact Us

Test Results for 1065 Callander Way

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798571290	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-04 CSLB: 453302 SIERRA PACIFIC HOME & COMFORT INC Mike Baker
CF-6R-MECH-21-HERS CSLB: 453302 SIERRA PACIFIC HOME & COMFORT INC Mike Baker
CF-6R-MECH-RCA-HERS CSLB: 453302 SIERRA PACIFIC HOME & COMFORT INC Mike Baker

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (230708)	TESTED (McFall, Jennifer)	TESTED (McFall, Jennifer)

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Mark Wiese Logged In [Logout]

QA Report Results: [redacted] CA[redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments	UNTEST
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]	
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]	
Test Data Collection Form		Complete	[Results]		

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **3.5** x 400 = **1400** CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1400** x 0.15 = **210** CFM Actual Leakage = **71** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ___ x 0.10 = ___ CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798571290**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **7/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **3.5** x 400 = **1400** CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1400** x 0.15 = **210** CFM Actual Leakage = **48** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1400** x 0.10 = **140** CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = **%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Additional QA Questions:

Heating System Method: 21.7 X **70,000** Output Capacity in Thousands of Btu/hr = **1519** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1540** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798571290**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **9/29/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1911D11633**			
Outdoor Unit Make	**LENNOX**			
Outdoor Unit Model	**14ACX-042**			
Nominal Cooling Capacity Btu/hr	**42000**			
Date of Verification	**7-27-2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**7-1-2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**7-1-2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**58**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**78**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**66**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**53**			
Condensor saturation temperature ($T_{condensor, sat}$)	**112**			
Suction line temperature ($T_{suction}$)	**77**			
Liquid Line Temperature (T_{liquid})	**102**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**20.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**18**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**10.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**0**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**24.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**4-25**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798571290**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Jennifer McFall**	Responsible Rater's Signature: **Jennifer McFall**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005407**	Date Signed: **7/27/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Additional QA Questions:

Ambiant Temperature: **79°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☑ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1911D11633**			
Outdoor Unit Make	**Lennox**			
Outdoor Unit Model	**14ACX-042-230-12**			
Nominal Cooling Capacity Btu/hr	**42000**			
Date of Verification	**09/29/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**09/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**09/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**63**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**79**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**66**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**51**			
Condensor saturation temperature ($T_{condensor, sat}$)	**114**			
Suction line temperature ($T_{suction}$)	**72**			
Liquid Line Temperature (T_{liquid})	**102**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**95**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**16.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**18.5**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-2.5**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**12.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**2**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**21.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3- 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **SIERRA PACIFIC HOME & COMFORT INC**		
Responsible Person's Name: **Mike Baker**	CSLB License: **453302**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798571290**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **9/29/2011**	

QA ALT TESTED

Jennifer McFall

2:30 pm

Tim O'Neil Logged In [Logout]

CalCERTS

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

QA Data Collection Form: [redacted] CA [redacted]

STEP 1: Collect information

Date / Time:* 9/29/2011 /

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

UPSTAIRS = 8
DOWN = 6

Type of System Split

Is the unit a HEAT ONLY unit? No

Condenser Make:* LENNOX Model:* 14ACX-042-230-12 # of Vents:* 14 # of Returns:* 1

SEER: 14 S/N 1911D11633

F.A.U. Make:* LENNOX Model:* SL280UH090V-48B-03 AFUE: HSPF:

Output BTU:* 70000 Location: Attic

Coil Make:* LH42/62E9C Model:* ADP EER: 1

(88,000)

Coil Number:* 7111C04193 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

40A

Rater - T/S 2 (RCA), RCV (0), TXV (24)

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

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Revised: January 11, 2010
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[Class Cancellation Policy]

CalCERTS, Inc.

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Contact Us

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
230708	Phase 1	[redacted]	11-00001803	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-RCA
Refrigerant Charge Verification		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

System 1
Select MECH form used to verify Refrigerant Charge:

~~CF-4R-MECH-24~~

(●) CF-4R-MECH-25

CF-4R-MECH-25

1) Select method used to determine minimum airflow:
Temperature Split (RA3.2.2.7)

2) What was the method used for determining saturation temperature?
Refrigerant Gauge
Note: *If Refrigerant Gauge is selected, Approving Rater must have completed RCA II course.*

3) Is a TXV installed?
YES

Additional QA Questions:

What was the Ambient Temperature in Farenheit: 79 °

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method. If installation of a CID is utilized as an alternative to refrigerant charge verification for compliance, TMAH and STMS are not required for compliance.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			System 1
System Location or Area Served			Whole House
1	(X) Yes	( ) No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.
2	(X) Yes	( ) No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.
Yes to 1 and 2 is a pass.			

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
230708 Phase 1	[redacted]		11-00001803	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-MECH-21**
Duct Leakage Test – Existing Duct System		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001803
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Allowed leakage choose one

● Cooling system method:

Nominal capacity of condenser in Tons [3.5] x 400 = CFM 1400 CFM x .10 140 + 70 = 210 CFM

Select one compliance method from the following four choices.

● 1. Measured leakage less than 15% of fan flow

1	**Option 1** used then: Allowed leakage = Fan Airflow x 0.15 = CFM 210 CFM TARGET Actual Leakage = [48] CFM **Pass if Actual Leakage is less than Allowed leakage**
2	**Option 2** used then: Allowed leakage = Fan Airflow x 0.10 = CFM Actual Leakage to outside = [ ] CFM **Pass if Actual leakage to outside is less than Allowed leakage**
3	**Option 3** used then: Initial leakage prior to start of work = [ ] CFM Final leakage after sealing all accessible leaks using smoke test = [ ] CFM Initial leakage - Final leakage = Leakage reduction CFM ((Leakage reduction / Initial leakage) x 100) = **% Reduction.** **Pass if % Reduction > 60%**
4	**Option 4** used then: All accessible leaks repaired using smoke test. HERS rater must verify (No Sampling). **Pass if all accessible leaks have been repaired using smoke** ○ **PASS** ○ **FAIL**

○ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

○ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

○ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

○ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

Heating System Method: [70],000 Output Capacity in Thousands of Btu/hr

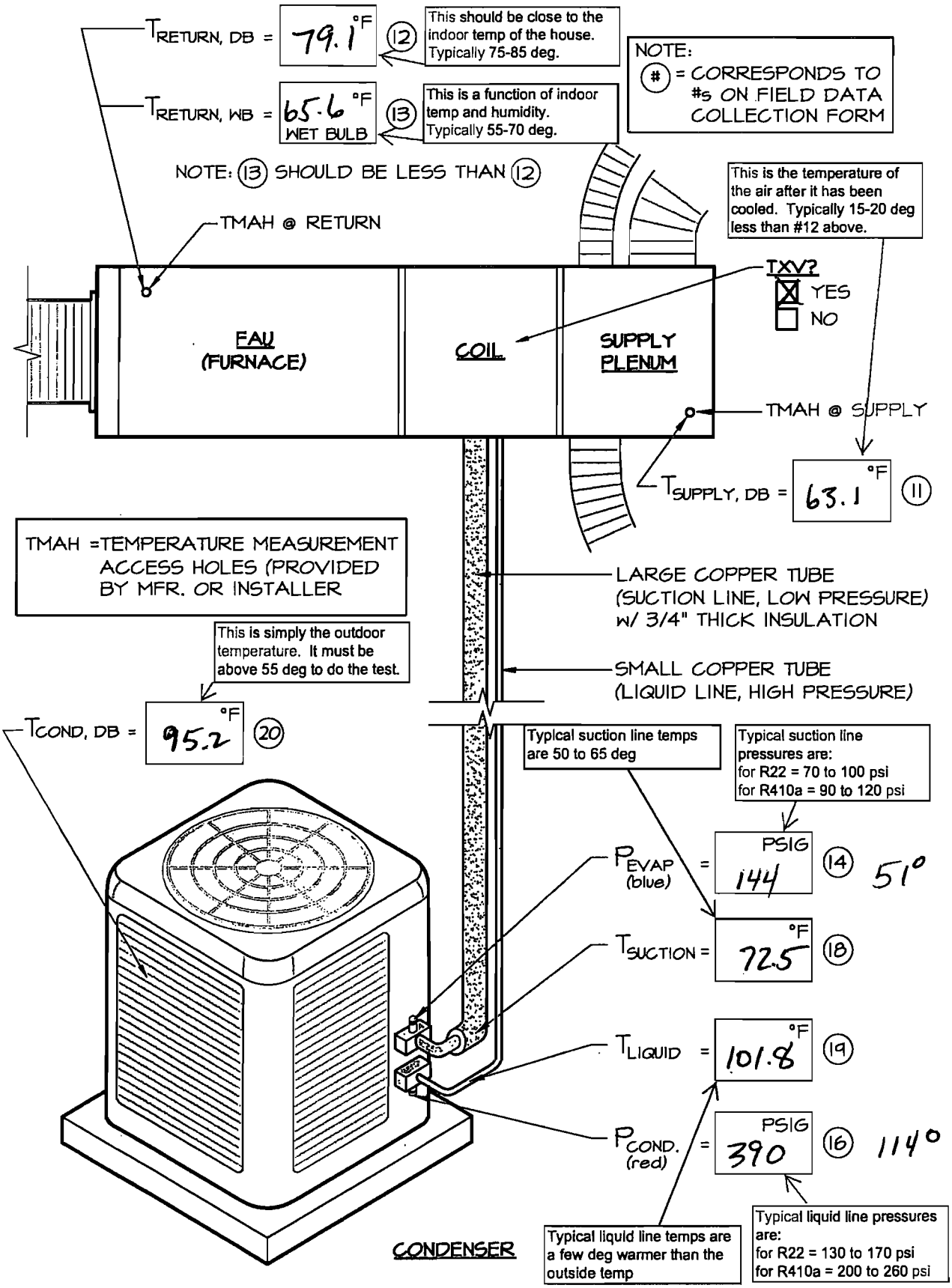
Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here [1540] CFM

[redacted]

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago	9/1/2011	(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago	9/1/2011	(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram	63		
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	79		
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram	66		
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	144		
15	Evaporator saturation temperature ($T_{Evap,sat}$)	From P/T Table and #14 or STMS	51		
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	390		
17	Condenser saturation temperature ($T_{condensor,sat}$)	From P/T Table and #16 or STMS	114		
18	Suction line temperature ($T_{suction}$)	See Diagram	72		
19	Liquid line temperature (T_{liquid})	See Diagram	102		
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,db}$)	See Diagram	95		

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	79 - 63 = 16		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	79 / 66 = 18.5		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	16 - 18.5 = -2.5		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Pass		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300 3.5	1050		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1540		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

1

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
35	System Name or Identification/Tag	Same as Line 1			
36	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	114 - 102		
37	Target Subcooling specified by manufacturer	From Condenser	9-12		
38	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	12-12=0		
39	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	Pass		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
40	System Name or Identification/Tag	Same as Line 1			
41	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	Line 18 - Line 15	72 - 51°		
42	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	21° 3 - 26		
43	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	Pass		

EXHIBIT 27

Part 3

Donald Scott White

Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798584272	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (243690)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA-[redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - PASS Effective Year: 2011

Comments:

While the RC airflow passed the Split/Temp Method, the test was invalid as the return air db dropped below 70. It failed with the Flow Hood, 1430 cfm (w/filter), but passed w/o the filter (1540), target is 1500 cfm. Upon talking to Russ King, we agreed to pass based on other factors including a restrictave filter, extrapolating below 70 degrees, and the varied reliability of the Flow Hood.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	Complete	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CalCERTS, Inc.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/05/2011 / 12:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Goodman **Model:** ASX130601CA **# of Vents:** 18 **# of Returns:** 1 **SEER:**
F.A.U. Make: Amana **Model:** AMH950905CX-AB **AFUE:** .95 **HSPF:** **Output BTU:** 89000 **Location:** Attic
Coil Make: Alpine **Model:** CE60F342-10L004 **EER:**
Coil Number: G11-00021443 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **5** x 400 = **2000** CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **2000** x 0.15 = **300** CFM Actual Leakage = **221** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ___ x 0.10 = ___ CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798584272**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) If those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **5** x 400 = **2000** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **2000** x 0.15 = **300** CFM Actual Leakage = **145** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **2000** x 0.10 = **200** CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = **____%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Additional QA Questions:

Heating System Method: 21.7 X **89,000** Output Capacity in Thousands of Btu/hr = **1931.3** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1430** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798584272**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/5/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1106210243**			
Outdoor Unit Make	**Amana**			
Outdoor Unit Model	**ASX13061CA**			
Nominal Cooling Capacity Btu/hr	**60000**			
Date of Verification	**8/13/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**64**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**83**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**67**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**47**			
Condensor saturation temperature ($T_{condensor, sat}$)	**113**			
Suction line temperature ($T_{suction}$)	**68**			
Liquid Line Temperature (T_{liquid})	**105**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**19.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**19.9**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-0.9**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE			CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure			**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409	

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**8.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**21.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 5 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of Sacramento	MISR2011-04409

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798584272**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/13/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 1 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of Sacramento	MISR2011-04409

Additional QA Questions:

Ambiant Temperature: **68°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail	✓ ☑ Pass	✓ ☐ Fail	

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☑ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1106210243**			
Outdoor Unit Make	**Goodman**			
Outdoor Unit Model	**ASX13060CA**			
Nominal Cooling Capacity Btu/hr	**89000**			
Date of Verification	**10/05/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**47**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**68**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**56**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**32**			
Condensor saturation temperature ($T_{condensor, sat}$)	**81**			
Suction line temperature ($T_{suction}$)	**52**			
Liquid Line Temperature (T_{liquid})	**77**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**68**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**21.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**18.5**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.5**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**4.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**20.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798584272**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **10/5/2011**	

QA ALT Tested

Donald Scott WHITE

Tim O'Neil Logged In [Logout]

CalCERTS Inc.

QA Data Collection Form: 11809 Oregon Bar Ct, Gold River, CA 95670

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 10/5 / 12 NOON

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 1

RESULTS FOR SYSTEM 1

Type of System Split

S/N 1106210243

Is the unit a HEAT ONLY unit? No

ASX13(60) GA

Condenser Make:* GOODMAN Model:* [redacted] # of Vents:* 18 # of Returns:* 1

SEER: [redacted]

F.A.U. Make:* AMANA Model:* AMH 950 405CX-A13 AFUE: 95.0 HSPF: [redacted]

Output BTU:* 60,000 Location: Attic 1107019765 S/N

Coil Make:* ~~Rheem~~ Aspen Model:* CE60F342 EER: [redacted]

Coil Number:* GT1-0002 1443 Ducts R4 or R6: R4 -10L004

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

Attic Investigation:* [Select from list]

46.5

NEXT

1600

* *Required Fields*

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Revised: January 11, 2010
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[Privacy Statement]
[Class Cancellation Policy]

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R (877-437-7787)
Fax: 916-985-3402
Contact Us

OFF	Hall	Liv	Din	Nook	Kit	Fam	Bath #1	#2	#3
1	1	2	1	1	1	2	1	1	2

Mast	Clos	Bed 1	Bed 2						
2	1	[redacted]							= 18

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
243690	Phase 1	[redacted]	MISR2011-04409	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of Sacramento	**Permit Number:** MISR2011-04409
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Allowed leakage choose one

◉ Cooling system method:

Nominal capacity of condenser in Tons [5] x 400 = CFM 2000

Select one compliance method from the following four choices.

◉ 1. Measured leakage less than 15% of fan flow

1 **Option 1** used then:
Allowed leakage = Fan Airflow x 0.15 = CFM 300 CFM TARGET
Actual Leakage = [145] CFM Pass
Pass if Actual Leakage is less than Allowed leakage

2 **Option 2** used then:
Allowed leakage = Fan Airflow x 0.10 = CFM
Actual Leakage to outside = [ ] CFM
Pass if Actual leakage to outside is less than Allowed leakage

3 **Option 3** used then:
Initial leakage prior to start of work = [ ] CFM
Final leakage after sealing all accessible leaks using smoke test = [ ] CFM
Initial leakage - Final leakage = Leakage reduction CFM
((Leakage reduction / Initial leakage) x 100) = **% Reduction.**
Pass if % Reduction > 60%

4 **Option 4** used then:
All accessible leaks repaired using smoke test. HERS rater must verify (No Sampling).
Pass if all accessible leaks have been repaired using smoke ○ **PASS** ○ **FAIL**

○ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

○ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

○ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

○ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

Heating System Method: [89],000 Output Capacity in Thousands of Btu/hr 1926 X.15 = 290 CFM TARGET

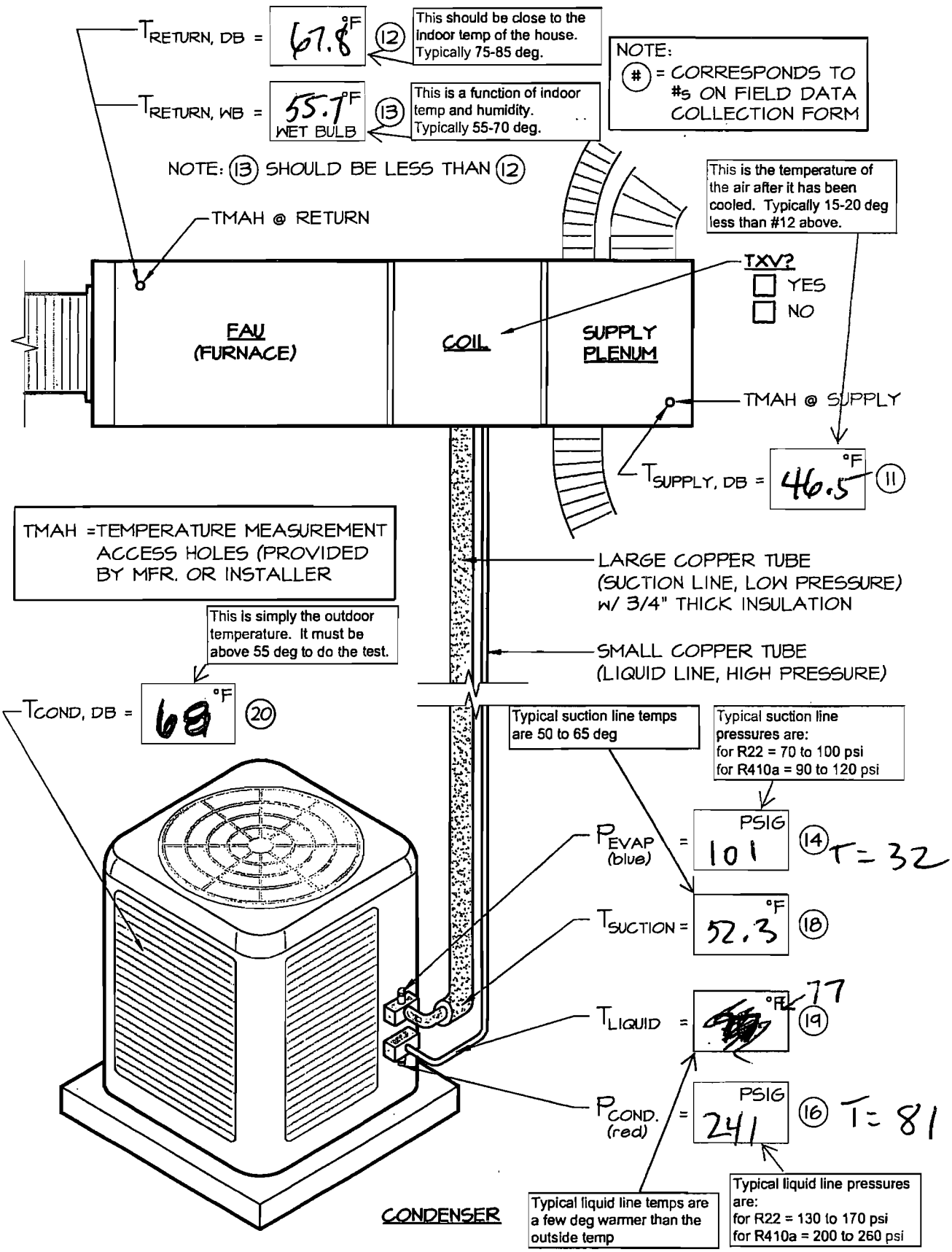
Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here [1430] CFM W/ FILTER

1430 CFM W/ FILTER

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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185

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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram	47		
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	68		
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram	56		
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	101		
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS	32		
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	241		
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS	81		
18	Suction line temperature ($T_{suction}$)	See Diagram	52		
19	Liquid line temperature (T_{liquid})	See Diagram	77		
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram	68		

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	21		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	18.5 est		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	3.5 est		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass			
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	5 Tons X 300 = 1500	1500		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1430		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	FAIL		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15	52-32 = 20		
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table	11.1		
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32	(9		
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass	PASS		

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	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	4		
(37)	Target Subcooling specified by manufacturer	From Condenser	7 - from [illegible]		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	-3		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	PASS		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	Line 18 - Line 15	20		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	PASS		

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Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798581233	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-20-HERS CSLB: 721374 INDOOR COMFORT HEATING & COOLING INC Trista Durkee
CF-6R-MECH-22-HERS CSLB: 721374 INDOOR COMFORT HEATING & COOLING INC Trista Durkee
CF-6R-MECH-22-HERS CSLB: 721374 INDOOR COMFORT HEATING & COOLING INC Trista Durkee
CF-6R-MECH-RCA-HERS CSLB: 721374 INDOOR COMFORT HEATING & COOLING INC Trista Durkee

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (240651)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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Revised: January 11, 2010
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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R (877-437-7787)
Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Customer says that the installer changed some supply vents to returns. She states that the bedrooms get super cold, but the living/ kitchen areas are slow to cool down. Installer said to give it a few days to "settle" or balance. If still having problems, the installer said he would move the thermostat to the other side of the wall.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage New	CF-4R-MECH-20	**QA FAILED**	System 1	[Comments]
Cooling Coil Airflow	CF-4R-MECH-22	**QA FAILED**	System 1	[Comments]
Fan Watt Draw	CF-4R-MECH-22	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Tim O'Neil Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/12/2011 / 14:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Rheem **Model:** 14AJM36A01 **# of Vents:** 4 **# of Returns:** 4 **SEER:** 14.5
F.A.U. Make: Rheem **Model:** RGPN-07NAMER **AFUE:** .80 **HSPF:** **Output BTU:** 60000 **Location:** Crawl
Coil Make: Rheem **Model:** RCFL-HM3617-CC **EER:**
Coil Number: W231116200 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: Ducts had no markings, no installer information for r-value insulation on ducts.
Attic Investigation: Not investigated
NO Photos

Registered CF-4R Data

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons **3** x 400 x *leakage factor* = **72** CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**71**
Pass if Actual Leakage is less than Allowed Leakage	☑ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** [redacted] 11-00001902

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/11/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 3 x 400 x *leakage factor* = 72 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**76.5**
Pass if Actual Leakage is less than Allowed Leakage	☐ **Pass** ☑ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke	☐ **Pass** ☐ **Fail**

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **57.6,000** Output Capacity in Thousands of Btu/hr x **6%** = **75** CFM

Measured Airflow Method (RA3.3): Measured fan flow **1007** x **6%** = **6042** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.
☑ All supply and return register boots must be sealed to the drywall
☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.
☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/5/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1					
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2					
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3					
System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**3**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**1050**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1075**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Folsom	11-00001902

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**1075**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**623.5**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**610**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/11/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**System 1**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**3**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**1050**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**1007**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**FAIL**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Fan Watt Draw Test	(Page 2 of 2)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Folsom	11-00001902

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	System 1			
System Location or Area Served	Whole House			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	1007			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	.58 Watt/CFM			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	584.06			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	459			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	PASS			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
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Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/12/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for Installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ ☑ Pass	✔ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ☑ N/A	✔ ☐ Pass	✔ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**7990W16110520**			
Outdoor Unit Make	**Rheem**			
Outdoor Unit Model	**14AJM36A01**			
Nominal Cooling Capacity Btu/hr	**36000**			
Date of Verification	**8/11/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**47**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**53**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**35**			
Condensor saturation temperature ($T_{condensor, sat}$)	**94**			
Suction line temperature ($T_{suction}$)	**42**			
Liquid Line Temperature (T_{liquid})	**85**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**23.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.4**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.6**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**9.0**			
Target Subcooling specified by manufacturer	**9**			
Calculate difference: Actual Subcooling - Target Subcooling =	**0**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**7.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/11/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		(Page 1 of 5)
Site Address: [redacted] CA [redacted]	Enforcement Agency: City of Folsom	Permit Number: 11-00001902

Additional QA Questions:

Ambiant Temperature: **74°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**7996W161105201**			
Outdoor Unit Make	**Rheem**			
Outdoor Unit Model	**14AJM36A01**			
Nominal Cooling Capacity Btu/hr	**37600**			
Date of Verification	**10/12/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/01/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/01/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**48**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**62**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**40**			
Condensor saturation temperature ($T_{condensor, sat}$)	**85**			
Suction line temperature ($T_{suction}$)	**44**			
Liquid Line Temperature (T_{liquid})	**82**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**79**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**22.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**16.5**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**5.5**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow Using RA3.3 Procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**3.0**			
Target Subcooling specified by manufacturer	**9**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-6**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**FAIL**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**4.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3- 26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **INDOOR COMFORT SERVICES INC**		
Responsible Person's Name: **Trista Durkee**	CSLB License: **721374**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798581233**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/12/2011**	

QA ALT Tested

Donald Scott White

Tim O'Neil Logged In [Logout]

CalCERTS, Inc.

QA Data Collection Form: [redacted] CA [redacted]

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect Information 10/12/2011

Date / Time:* 10/5 / 5PM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:*

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

3TON

Condenser Make:* RHEEM Model:* 14AJM36A01 # of Vents:* 5 # of Returns:* 4

14 SEER: S/N 7996W16110520

F.A.U. Make:* RHEEM Model:* RGPN-07NAHMER AFUE: .80 HSPF:

→ S/N FU5D302F28110512C

INPUT = 75,000 Output BTU:* 60,000 Location: Attic

Coil Make:* RHEEM Model:* RCFL-HM3617 EER:

Coil Number:* W231116200 Ducts R4 or R6: R4 NO DATA - NO MARKINGS

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

Customer says that the installer changed some sappy vents to returns. She states that the bedrooms "get super cold" but living/kitchen slow to get cold, installer to come and move Thermostat to other side of wall. - 3, 1 supervising 1 maybe training, HVAC installer has not been back since Testing.

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

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Revised: January 11, 2010
[Terms and Conditions]
[Privacy Statement]
[Ciass Cancellation Policy]

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

2:56

	Heat w/ vent	A/C w/ vent	
Hall Reg #1	222	220	
OCAF Reg #2	258. 212	254 / 204	> 460
#3	328 328	376	> 547
#4	149 149	171	

W/O FILTER

FW = 459

584.06

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
240651	Phase 1	[redacted]	11-00001902	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-MECH-22**
HSPP/PSPP Installation: Fan Watt Draw Test		Clear Results
Site Address: [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

○	Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1
○	Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	1007
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	.58
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (Watt)**	584.06
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	459
The system complies if Tested (Watt) is less than or equal to Target (Watt). **Enter Pass or Fail**	Pass

FINAL TESTED RESULT for System 1: ☒ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
240651	Phase I	[redacted]	11-00001902	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Allowed leakage choose one

◉ Cooling system method:

Nominal capacity of condenser in Tons [3] x 400 x **6%** = CFM [1200] = 72 cfm

Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).

Heating 57.6 + 21.7 x .06 = 75

List Actual Leakage from duct leakage test: [76.5] CFM

○ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

○ All supply and return register boots must be sealed to the drywall

○ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

○ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

Ring Size Used: [1] YES

Where Supply Boots Taped? [No]

Heating System Method: [57.6],000 Output Capacity in Thousands of Btu/hr

INPUT 72,000 .80 AFUE =

Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here [1001]

FINAL TESTED RESULT for System 1: ◉ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person (s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: [---SELECT RATER---]

[SAVE INFO] [CERTIFY RESULTS]

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Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
240651	Phase 1	[redacted]	11-00001902	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		Clear Results
Site Address: [redacted]	**Enforcement Agency:** City of Folsom	**Permit Number:** 11-00001902
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
X	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
○	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.	
○	Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1
○	Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2
X	Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3

Nominal Cooling Capacity (ton) of the outdoor unit.	3
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	1050 350 CFM/ton Standard
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton).	

Target (CFM)	
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	1007
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	FAIL

FINAL TESTED RESULT for System 1: ◉ Pass ○ Fail

DECLARATION STATEMENT

- ☐ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☐ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☐ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☐ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: ---SELECT RATER---

SAVE INFO | CERTIFY RESULTS

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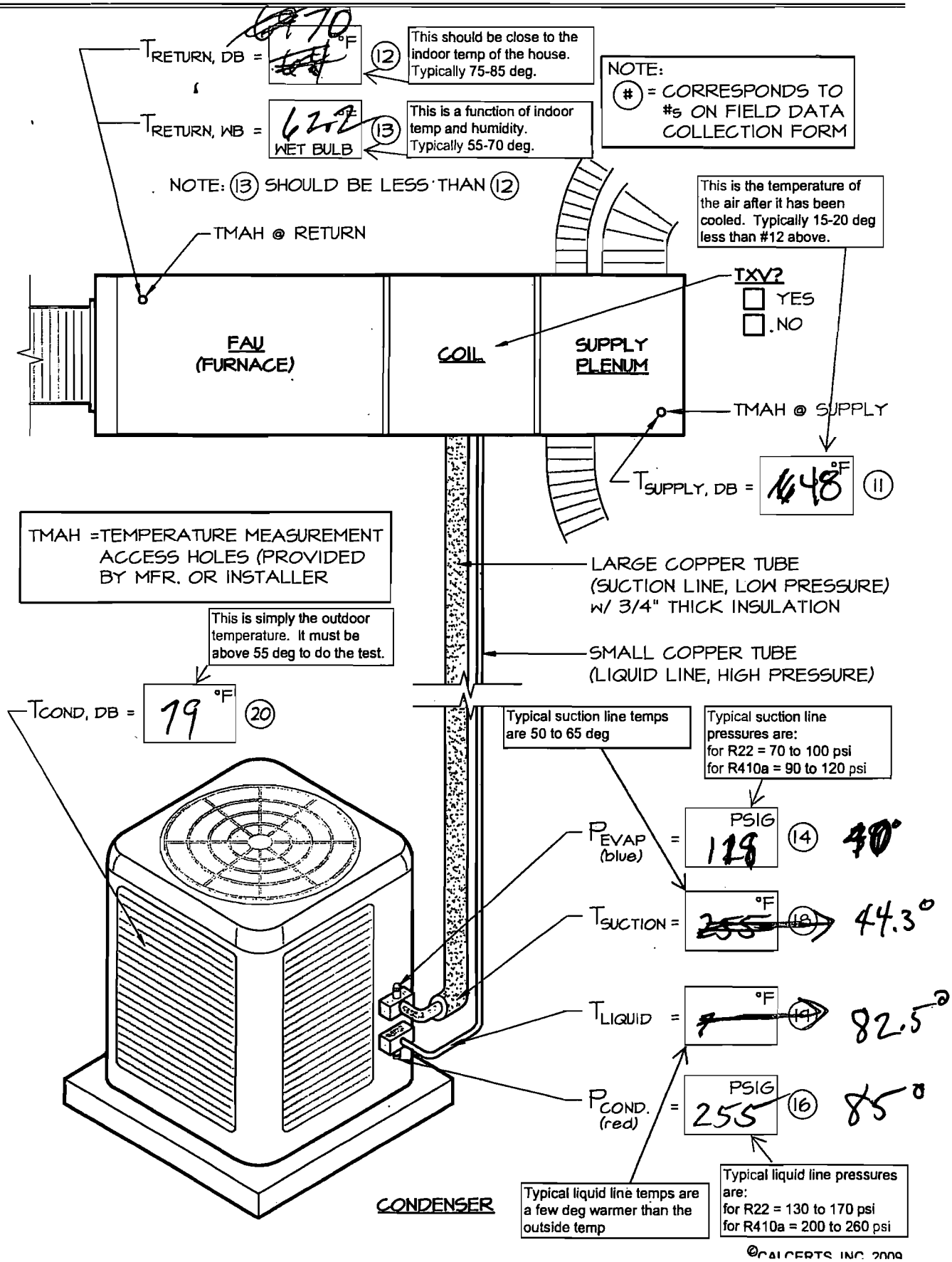
RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000	37600		
7	Date of Verification	Date of Test	10/12/2011		

	Calibration of Diagnostic Instruments	Notes		
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram	48		
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram	70		
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram	62		
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram	118		
15	Evaporator saturation temperature ($T_{Evap,sat}$)	From P/T Table and #14 or STMS	40		
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram	255		
17	Condenser saturation temperature ($T_{condensor,sat}$)	From P/T Table and #16 or STMS	85		
18	Suction line temperature ($T_{suction}$)	See Diagram	44		
19	Liquid line temperature (T_{liquid})	See Diagram	82		
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,db}$)	See Diagram	79		

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	70 − 48 = 22		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	16.5		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	5.5		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	FAIL		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag	3			
(27)	Calculated Minimum Airflow Requirement (CFM)	Tons X 300 = 900	900		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1007		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	PASS		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	85 -82 3		
(37)	Target Subcooling specified by manufacturer	From Condenser	9		
(38)	Calculate difference: Actual Subcooling - Target Subcooling =	Line 36 - Line 37	-6		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	FAIL		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	Line 18 - Line 15	44 -40 4		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	PASS		

Simplified Prescriptive Certificate of Compliance: 2008 *Residential HVAC Alterations* **CF-1R-ALT-HVAC**

Climate Zones 10 - 15

Site Address:	**Enforcement Agency:**	**Date:**	**Permit #:**
[redacted] CA [redacted]	City of Folsom	Aug 12, 2011	

Equipment Type[1]	List Minimum Efficiency[2]		Duct insulation requirement	Conditioned Floor Area	Thermostat
☐ Package Unit ☑ Furnace ☑ Indoor Coil ☑ Condensing Unit ☑ Other <= 40' Ducts	☑ AFUE 78% ☑ SEER 13.0 ☐ EER _____	☐ COP _____ ☐ HSPF _____ ☐ Resistance	☑ R 6 *(CZ 10-13)* ☐ R 8 *(CZ 14-15)*	Served by system 1260 sf	☑ Setback *If not already present, must be installed)*

*1. **Equipment Type:** Choose the equipment being installed; If more than one system, use another CF-1R-ALT-HVAC for each system.*
*2. **Minimum Equipment Efficiencies:** 13 SEER, 78% AFUE, 7.7HSPF for typical residential systems.*

HERS VERIFICATION SUMMARY Listed below are FOUR HVAC alteration Options. The installer decides what work is being done and picks one of the appropriate Options. Each Option lists the HERS measures that must be conducted. A copy of the forms shall be left on site for final inspection and a copy given to the homeowner. At final, the inspector verifies that the work listed on this form was in fact the work completed by the installer. The inspector also verifies that each appropriate CF-6R and registered CF-4R forms (no hand filled CF-4Rs allowed) are filled out and signed.**Beginning October 1, 2010, a registered copy of the CF-1R and CF-6R shall also be on site for final inspection.**

☐ **1. HVAC Changeout**	**Required Forms:**
• All HVAC Equipment replaced	CF-6R forms: MECH-04, MECH-21-HERS and (for split systems) MECH-25-HERS CF-4R forms: MECH-21 and (for split systems) MECH-25
• Condenser Coil and /or • Indoor Coil and /or • Furnace	CF-6R forms: MECH-04, MECH-21-HERS and (for split systems) MECH-25-HERS CF-4R forms: MECH-21 and (for split systems) MECH-25

For Split Systems: Duct leakage < 15 percent; RC, CCA ≤ 300 CFM/ton (Minimum Air Flow Requirement), TMAH
For Packaged Units: Duct leakage < 15 percent
Exempted from duct leakage testing if:
- ☐ 1. Duct system was documented to have been previously sealed and confirmed through HERS verification, or
- ☐ 2. Duct systems with less than 40 linear feet in unconditioned space, or
- ☐ 3. Existing duct systems are constructed, insulated or sealed with asbestos
- ☐ 4. The system will not be Ducted (ie. Ductless Mini-Split System) (Also Exempt from Refrigerant Charge)

☑ **2. New HVAC System**	**Required Forms:**
• Cut in or Changeout with new ducts: (all new ducting and all new equipment)	CF-6R forms: MECH-04, MECH-20-HERS, and (for split systems) MECH-22-HERS, and MECH-25-HERS CF-4R forms: MECH 20, and (for split systems) MECH-22, and MECH 25

For Split Systems: Duct leakage <6 percent; RC, CCA ≥ 350 CFM/ton, FWD, TMAH, STMS, and either HSPP or PSPP.
~~**For Packaged Units: Duct leakage < 6 percent**~~

☐ **3. New Ducts with/or without Replacement**	**Required Forms:**
• Includes replacing or installing all new ducting and/or outdoor condensing unit and/or indoor coil and/or furnace. No or some equipment changed.	CF-6R forms: MECH-04, MECH-20-HERS, and (for split systems) MECH-25-HERS CF-4R forms: MECH-20 and (for split systems) MECH-25

For Split Systems: Duct leakage < 6 percent; RC, CCA ≥ 300 CFM/ton, TMAH
For Packaged Units: Duct leakage < 6 percent

☐ **4. New Ducting over 40 feet**	**Required Forms:**
• Includes adding or replacing more than 40 linear feet of duct in unconditioned space.	CF-6R forms: MECH-04, MECH-21-HERS CF-4R forms: MECH-21

For split system or packaged units: Duct leakage < 15 percent
☐ EXCEPTION: Existing duct systems constructed, insulated or sealed with asbestos.

Contractor (Documentation Author's /Responsible Designer's Declaration Statement)
- I certify that this Certificate of Compliance documentation is accurate and complete.
- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the design identified on this Certificate of Compliance.
- I certify that the energy features and performance specifications for the design identified on this Certificate of Compliance conform to the requirements of Title 24, Parts 1 and 6 of the California Code of Regulations.
- The design features identified on this Certificate of Compliance are consistent with the information documented on other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with the permit application.

Name: Trista Durkee	Signature: Trista Durkee	
Company: INDOOR COMFORT SERVICES INC		Date: Aug 3, 2011
Address: 6740 LA JUNTA DRIVE		License: 721374
City/State/Zip: ORANGEVALE / CA / 95662		Phone: (916) 987-5283

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Advanced Search - Results

Export to CSV | Export to Excel

Display all fields

Display: 10 per page

Compare Checked Results <<previous Page: 7 of 44 next>> Records 61 - 70 of 440

	Manufacturer Name	Brand Name	Model Number	Coil Model Number	Central AC Type	TXV	Cooling Capacity at 82 deg. F (BTUH)
☐	Rheem	Rheem	14AJM18	RCFL-H*2417	RCU-A-C, Split System: Air -Cooled Condensing Unit, Coil Alone	Yes	20800
☐	Rheem	Rheem	14AJM24	RCFL-H*2417+RXMD-C04	RCU-A-C, Split System: Air -Cooled Condensing Unit, Coil Alone	Yes	25600
☐	Rheem	Rheem	14AJM30	RCFL-H*3617+RXMD-C04	RCU-A-C, Split System: Air -Cooled Condensing Unit, Coil Alone	Yes	30200
☑	Rheem	Rheem	14AJM36	RCFL-H*3617+RXMD-C04	RCU-A-C, Split System: Air -Cooled Condensing Unit, Coil Alone	Yes	37600
☐	Rheem	Rheem	14AJM42	RCFL-H*4821+RXMD-C04	RCU-A-C, Split System: Air -Cooled Condensing Unit, Coil Alone	Yes	43500
☐	Rheem	Rheem	14AJM48		RCU-A-C,	Yes	52000

				RCFL-H*4821+RXMD-C04	System: Air-Cooled Condensing Unit, Coil Alone			
☐	Rheem	Rheem	14AJM60	RCFL-H*6024+RXMD-C04	RCU-A-C, Split System: Air-Cooled Condensing Unit, Coil Alone	Yes	63000	14.
☐	Rheem	Rheem	DAGA-018J	TCFA-H*2417A*	RCU-A-C, Split System: Air-Cooled Condensing Unit, Coil Alone	Yes	19200	13.
☐	Rheem	Rheem	DAGA-030J	TCFA-H*3617A*	RCU-A-C, Split System: Air-Cooled Condensing Unit, Coil Alone	Yes	31000	13.
☐	Rheem	Rheem	DAGA-036J	TCFA-H*3617A*	RCU-A-C, Split System: Air-Cooled Condensing Unit, Coil Alone	Yes	37400	13.

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1.0.4248.22947

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Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798585406	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (244824)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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(877-437-7787)
Fax: 916-985-3402
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Tim O'Neil Logged In [Logout]

QA Report Results: [redacted], [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Equipped with outside air mechanical ventilation. TMAHs were present, but the holes were 1/8th inch, not 5/16 ".

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	**QA FAILED**	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 10/12/2011 / 15:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Lennox **Model:** XC17-060-230-03 **# of Vents:** 18 **# of Returns:** 1 **SEER:** 15.2
F.A.U. Make:	Lennox **Model:** G61MPV-60C **AFUE:** .95 **HSPF:** **Output BTU:** 84,000 **Location:** Attic
Coil Make:	ADP **Model:** LH49/62E9T **EER:**

Coil Number: 7111G07180 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	Not Required
Have you stored or removed anything from the duct area?	Not Required
Any new work on Heater or A/C?	Not Required
Any new construction?	Not Required
Have you replaced the FURNACE filter?	Not Required
Have you replaced the RETURN filter?	Not Required

Notes: TMAHs were present, but the size of the hole was 1/8th inch, not 5/8ths inch.
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) If those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **5** x 400 = **2000** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **2000** x 0.15 = **300** CFM Actual Leakage = **140** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ____ x 0.10 = ____ CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = **____%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798585406**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/18/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted], [redacted] CA [redacted] (System 1)	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons 5 x 400 = 2000 CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow 2000 x 0.15 = 300 CFM Actual Leakage = 170 CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow 2000 x 0.10 = 200 CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ % Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-21
Duct Leakage Test – Existing Duct System	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted] (System 1)	County of El Dorado	203140

Additional QA Questions:

Heating System Method: 21.7 X **84,000** Output Capacity in Thousands of Btu/hr = **1822.8** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1470** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798585406**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/12/2011**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (Instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**5811G02499**			
Outdoor Unit Make	**Lennox**			
Outdoor Unit Model	**XC17-060-230-03**			
Nominal Cooling Capacity Btu/hr	**60000**			
Date of Verification	**8/18/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**8/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**8/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**62**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**81**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**65**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**46**			
Condensor saturation temperature ($T_{condensor, sat}$)	**105**			
Suction line temperature ($T_{suction}$)	**68**			
Liquid Line Temperature (T_{liquid})	**94**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)				

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 3 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	County of El Dorado	203140

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**19.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.4**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-1.4**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**11.0**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**22.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798585406**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **8/18/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	(Page 1 of 5)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	County of El Dorado	203140

Additional QA Questions:

Ambiant Temperature: **74°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☐ Yes	☑ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐ Yes	☑ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☑ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☑ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**5811G02499**			
Outdoor Unit Make	**Lennox**			
Outdoor Unit Model	**XC17-060-230-03**			
Nominal Cooling Capacity Btu/hr	**60000**			
Date of Verification	**10/12/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**9/29/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**9/29/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**44**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70.7**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**58**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**35**			
Condensor saturation temperature ($T_{condensor, sat}$)	**92**			
Suction line temperature ($T_{suction}$)	**57**			
Liquid Line Temperature (T_{liquid})	**72.5**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**70**			

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 3 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], CA [redacted]	County of El Dorado	203140

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**26.70**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**19.3**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**7.4**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**FAIL**			

Note: Temperature Split Method Calculation is not necessary If actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**19.5**			
Target Subcooling specified by manufacturer	**10**			
Calculate difference: Actual Subcooling - Target Subcooling =	**9.5**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**FAIL**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**22.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**FAIL**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798585406**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **10/12/2011**	

10/12/2011 CalCERTS

QA - Alteration Tested

Rater : Donald Scott White

Tim O'Neil Logged In [Logout]

QA Data Collection Form: [redacted], [redacted], CA [redacted]

Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect Information

Date / Time:* 10/12 / 15:00

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

S/N 5811G02499 — 5 TON

Condenser Make:* LENNOX Model:* XC17-060-230-03 # of Vents:* 19 # of Returns:* 1

SEER: 15.2

F.A.U. Make:* LENNOX Model:* G61MPV-60C AFUE: .95 HSPF: -091-12

Output BTU:* 88M Location: Attic

88,000 Input
84,000 OUT PUT

Coil Make:* ADP Model:* LH4962E9T EER:

Ser. # 5911A26553

Coil Number:* 711G07189 Ducts R4 or R6: R4

TXV INSTALLED

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

8 Reg Down Stairs
10 Reg UP Stairs
Equipped with OUTSIDE AIR VENTILATION

Attic Investigation:* [Select from list]

NEXT

* *Required Fields*

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Fax: 916-985-3402
Contact Us

~~DL = 50 pa @ 24.9 Pa~~

DL = 170 CFM @ 25 PA

CCAF = 1476
Flo-Hood

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
244824	Phase 1	[redacted]	203140	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		**CF-4R-MECH-21**
Duct Leakage Test – Existing Duct System		[Clear Results]
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140
Assigned Rater: SEE BELOW	**Tested Date:** [ ] (M/D/YYYY)	

System 1

Enter the Duct System Name or Identification/Tag:	System 1
Enter the Duct System Location or Area Served:	Whole House

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Allowed leakage choose one

◉ Cooling system method:

Nominal capacity of condenser in Tons [5] x 400 = CFM 2000 CFM

Select one compliance method from the following four choices.

◉ 1. Measured leakage less than 15% of fan flow 300 CFM

1 **Option 1** used then:
Allowed leakage = Fan Airflow x 0.15 = CFM 300 CFM RATER = 140
Actual Leakage = [170] CFM
Pass if Actual Leakage is less than Allowed leakage

2 **Option 2** used then:
Allowed leakage = Fan Airflow x 0.10 = CFM
Actual Leakage to outside = [ ] CFM
Pass if Actual leakage to outside is less than Allowed leakage

3 **Option 3** used then:
Initial leakage prior to start of work = [ ] CFM
Final leakage after sealing all accessible leaks using smoke test = [ ] CFM
Initial leakage - Final leakage = Leakage reduction CFM
((Leakage reduction / Initial leakage) x 100) = **% Reduction.**
Pass if % Reduction > 60%

4 **Option 4** used then:
All accessible leaks repaired using smoke test. HERS rater must verify (No Sampling).
Pass if all accessible leaks have been repaired using smoke ○ **PASS** ○ **FAIL**

○ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

○ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

○ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

○ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

Additional QA Questions:

Heating System Method: [ ],000 Output Capacity in Thousands of Btu/hr

Measured Airflow Method (RA3.3): Enter measured fan flow in CFM here [ ] CFM

Tim O'Neil Logged In [Logout]

QA Submission Process: CF-4R Submission

ID	Phase	Address	Permit	Plan
244824	Phase 1	[redacted]	203140	CF-1R-ALT

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-RCA
Refrigerant Charge Verification		Clear Results
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** County of El Dorado	**Permit Number:** 203140
Assigned Rater: SEE BELOW	**Tested Date:** (M/D/YYYY)	

System 1

Select MECH form used to verify Refrigerant Charge:

- ~~CF-4R-MECH-24~~
- (•) CF-4R-MECH-25

CF-4R-MECH-25

1) Select method used to determine minimum airflow:
Temperature Split (RA3.2.2.7)

2) What was the method used for determining saturation temperature?
Refrigerant Gauge
Note: *If Refrigerant Gauge is selected, Approving Rater must have completed RCA II course.*

3) Is a TXV installed?
YES

Additional QA Questions:

What was the Ambient Temperature in Farenheit: 74 °

OUTDOOR?
INDOOR?

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method. If installation of a CID is utilized as an alternative to refrigerant charge verification for compliance, TMAH and STMS are not required for compliance.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

→ ONLY 1/4" in Size (diameter

System Name or Identification/Tag			System 1
System Location or Area Served			Whole House
1	(•) Yes	( ) No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.
2	(•) Yes	( ) No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.
Yes to 1 and 2 is a pass.			

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

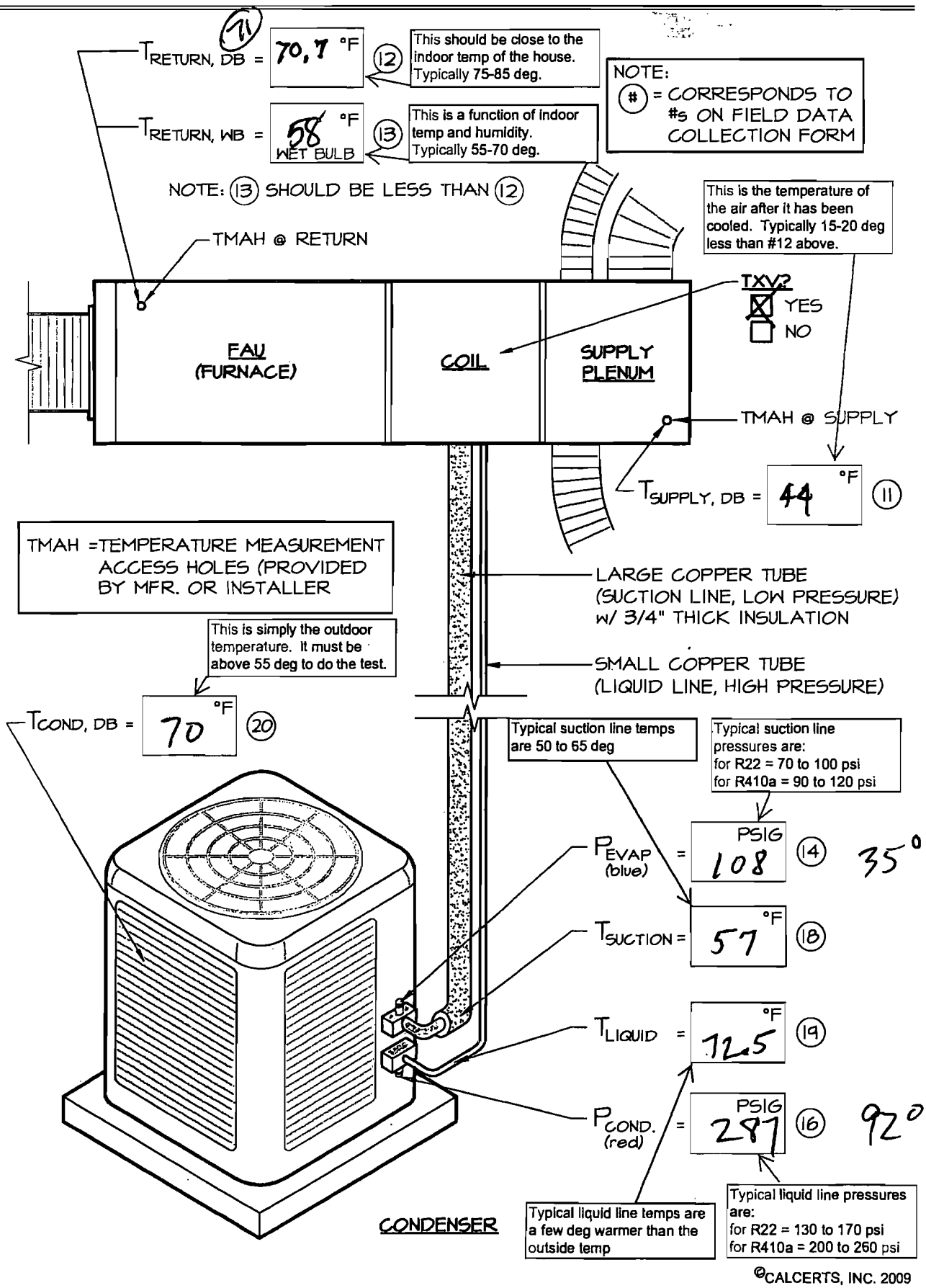
- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram			
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram			
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram			
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram			
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS			
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram			
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS			
18	Suction line temperature ($T_{suction}$)	See Diagram			
19	Liquid line temperature (T_{liquid})	See Diagram			
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram			

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	70.7 − 44 = 26.7		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	19.3		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	8.4		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	FAIL		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM)	5 Tons X 300	1500		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1470		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	FAIL		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15	57 − 35 = 22		
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table	12.7		
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32	9.3		
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass	FAIL		

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
35	System Name or Identification/Tag	Same as Line 1			
36	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$	Line 17 - Line 19	92 − 72.6 = 19.5		
37	Target Subcooling specified by manufacturer	From Condenser	8-10		
38	Calculate difference: Actual Subcooling - Target Subcooling =	Line 36 - Line 37	9.5		
39	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	FAIL		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
40	System Name or Identification/Tag	Same as Line 1			
41	Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	Line 18 - Line 15	57 − 35 = 22		
42	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
43	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	PASS		

System Name or Identification/Tag	System 1
System Location or Area Served	Whole House
Outdoor Unit Serial #	
Outdoor Unit Make	
Outdoor Unit Model	
Nominal Cooling Capacity Btu/hr	(No commas)
Date of Verification	(M/D/YYYY)

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	(M/D/YYYY)	(must be re-calibrated monthly)
Date of Thermocouple Calibration	(M/D/YYYY)	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	System 1
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	(Fahrenheit)
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	(Fahrenheit)
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	(Fahrenheit)
Evaporator saturation temperature ($T_{evaporator, sat}$)	(Fahrenheit)
Condensor saturation temperature ($T_{condensor, sat}$)	(Fahrenheit) *Required if TXV*
Suction line temperature ($T_{suction}$)	(Fahrenheit)
Liquid Line Temperature (T_{liquid})	(Fahrenheit) *Required if TXV*
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	(Fahrenheit)

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	System 1
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	
Calculate difference: Actual Temperature Split - Target Temperature Split =	
Passes if difference is between -4°F and	

+4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Subcooling = $T_{condenser,\ sat} - T_{liquid}$	
Target Subcooling specified by manufacturer	
Calculate difference: Actual Subcooling - Target Subcooling =	
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.	
System Name or Identification/Tag	System 1
Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

Standard Charge Measurement Summary: System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.	
System Name or Identification/Tag	System 1
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	○ **PASS** ○ **FAIL**

FINAL TESTED RESULT: ◉ Pass ○ Fail

DECLARATION STATEMENT

- ☑ I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- ☑ I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- ☑ The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- ☑ The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

QA Rater: ---SELECT RATER---

SAVE INFO | CERTIFY RESULTS

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Contact Us

APPROACH ⇨

TEST AND CHARGE METHOD

65°F (18.3°C) and Above

If refrigerant added or removed, retest to confirm that unit is properly charged

⇧

If value is greater than shown (high approach), add refrigerant; if less than shown (liquid temp too close to ambient temp, low approach), remove refrigerant.

⇧

APP° (Approach) Values(F:+/-1.0° [C: +/-0.6°])*

Models (XC17-XXX-230-01 and -02)						
°F (°C)*	-024	-030	-036	-042	-048	-060
Any	10 (5.6)	10 (5.6)	6 (3.3)	10 (5.6)	8 (4.4)	8 (4.4)

*Temperature of air entering outdoor coil

Models (XC17-XXX-230-03)						
°F (°C)*	-024	-030	-036	-042	-048	-060
Any	10 (5.6)	10 (5.6)	6 (3.3)	10 (5.6)	8 (4.4)	9 (5.0)

*Temperature of air entering outdoor coil

1. Confirm proper airflow across coil using figure 13.
2. Compare unit pressures with table 4, *Normal Operating Pressures.*
3. Use APPROACH to correctly charge unit or to verify the charge is correct.
4. Set thermostat to call for heat (must have a cooling load between 70-80°F (21-26°C).
5. Connect gauge set.
6. When heat demand is satisfied, set thermostat to call for cooling.
7. Allow temperatures and pressures to stabilize.
8. Record outdoor ambient temperature:

   AMB° =_____
9. Record line temperature:

   LIQ° =_____
10. Subtract to determine approach (APP°):

    LIQ°_____ - AMB° _____ = APP°_____
11. Compare results with table to the left.

* These approach values are also listed on the unit charging sticker 580005-01 located on the access panel.

Figure 16. Using Approach Test and Charge Method

SUBCOOLING ⇩

TEST AND CHARGE METHOD

65°F (18.3°C) and Above

CARDBOARD OR PLASTIC SHEET

BLOCK OUTDOOR COIL: [sometimes necessary with lower temperatures] Use cardboard or plastic sheet to restrict the airflow through the outdoor coil to achieve pressures from 325-375 psig (2240-2585 kPa). Higher pressures are needed to check charge. Block equal sections of air intake panels and move coverings sideways until the liquid pressure is in the above noted ranges.

If refrigerant added or removed, verify charge using the approach method

⇧

If value is greater than shown, remove refrigerant; if less than shown, add refrigerant

⇧

SC° (Subcooling) Values (F:+/-1.0° [C: +/-0.6°])

Models (XC17-XXX-230-01, -02 and -03)						
°F (°C)*	-024	-030	-036	-042	-048	-060
Any	4 (2.2)	4 (2.2)	7 (3.9)	5 (2.8)	6 (3.3)	6 (3.3)

*Temperature of air entering outdoor coil

* These subcooling values are also listed on the unit charging sticker 580005-01 located on the access panel.

1. Confirm proper airflow across coil using figure 13.
2. Compare unit pressures with table 4, *Normal Operating Pressures.*
3. Use SUBCOOLING to correctly charge unit or to verify the charge is correct.
4. Set thermostat to call for heat (must have a cooling load between 70-80°F (21-26°C)
5. Connect gauge set
6. Measure outdoor ambient temperature
7. When heat demand is satisfied, set thermostat to call for cooling
8. Allow temperatures and pressures to stabilize.

   NOTE - If necessary, block outdoor coil to maintain 325 - 375 psig.
9. Record liquid line temperature:

   LIQ° =_____
10. Measure liquid line pressure and use the value to determine saturation temperature (see table 5):

    SAT° =_____
11. Subtract to determine subcooling (SC°):

    SAT°_____ - LIQ° _____ = SC° _____
12. Compare results with table to the left.

Figure 17. Using Subcooling Test and Charge Method

This Sheet Intentionally Left Blank

Tim O'Neil Logged In [Logout]

Test Results for [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted]	[redacted]	CA	[redacted]	CC-1798603413	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-20-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-22-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-22-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] 262831)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] CA[redacted]

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Secure Home
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CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - FAIL Effective Year: 2011

Comments:

Duct Leakage: Fail. Rater recorded 57 cfm and a target of 60.
QA recorded 77.20 cfm @ 25.0 Pa.
CCAF: Pass. Rater recorded 880 and a target of 875.
QA recorded 940 cfm.
FWD: No Test. QA could not verify FWD under the target of 545 as the unit was hardwired and I did not turn condenser off before recording wattage at the meter.
Refrigerant Charge: Pass. TMAH: Pass. RCA Pass. Rater recorded 1.3 degree differential. QA recorded 2.5. RCV: Pass. Rater recorded 3 degree differential. QA recorded -1.4. TXV: Pass. Rater recorded 19.0 degrees. QA recorded 14.4.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage New	CF-4R-MECH-20	**QA FAILED**	System 1	[Comments]
Cooling Coil Airflow	CF-4R-MECH-22	Complete	System 1	[Comments]
Fan Watt Draw	CF-4R-MECH-22		QA CF-4R	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	Complete	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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CalCERTS, Inc.

CalCERTS, Inc.
31 Natoma St Suite 120
Folsom, CA 95630
Office: 916-985-3400
Toll Free: 877-HERS-R8R
(877-437-7787)
Fax: 916-985-3402
Contact Us

QA Report Detail

Date / Time: 01/26/2012 / 14:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted]
City/State/Zip: [redacted] CA 95670 **# of Floors:** 1

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO
Condenser Make: Goodman **Model:** GSZ130301AF **# of Vents:** 8 **# of Returns:** 1 **SEER:** 13
F.A.U. Make: Goodman **Model:** AVPTC183014 **AFUE:** 100.0 **HSPF:** 8.0 **Output BTU:** 26400 **Location:** Attic
Coil Make: Goodman **Model:** AR*F3030161 **EER:**
Coil Number: 1108674397 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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CalCERTS, Inc.
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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ✔ Cooling system method: Nominal capacity of condenser in Tons **2.5** x 400 x *leakage factor* = **60** CFM Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**57**
Pass if Actual Leakage is less than Allowed Leakage ✔ **Pass** **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke **Pass** **Fail**	

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

✔ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

✔ All supply and return register boots must be sealed to the drywall

✔ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

✔ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **10/28/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 2.5 x 400 x *leakage factor* = 60 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**77.20**
Pass if Actual Leakage is less than Allowed Leakage ☐ **Pass** ☑ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **26.4,000** Output Capacity in Thousands of Btu/hr x **6%** = **34.37** CFM

Measured Airflow Method (RA3.3): Measured fan flow **940** x **6%** = **5640** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing *** ALERT *** QA FAILURE**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
✔	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1					
Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2					
✔ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3					
System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**880**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted], [redacted] CA [redacted]	City of Rancho Cordova	539076

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.

✔ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1

Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**880**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**510.4**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**491**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

CalCERTS, inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **10/28/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**System 1**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.5**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**875**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**940**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 2 of 2)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag				
System Location or Area Served				
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.				
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).				
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**				
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**				
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**				

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	✔ Yes	No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	✔ Yes	No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✔ ✔ Pass	✔ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ✔ N/A	✔ Pass	✔ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	Yes	No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	Yes	No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	Yes	No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✔ ✔ N/A	✔ Pass	✔ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1109183629**			
Outdoor Unit Make	**Goodman**			
Outdoor Unit Model	**GSZ130301AF**			
Nominal Cooling Capacity Btu/hr	**30000**			
Date of Verification	**10/28/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**10/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**10/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**51**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**61**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**35**			
Condensor saturation temperature ($T_{condensor, sat}$)	**89**			
Suction line temperature ($T_{suction}$)	**54**			
Liquid Line Temperature (T_{liquid})	**79**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**74**			

INSTALLATION CERTIFICATE			CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure			**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076	

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**19.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**17.7**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**1.3**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**10.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**19.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CALCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] CA-[redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	✔ tested/verified dwelling	not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **10/28/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Additional QA Questions:

Ambiant Temperature: **59.6°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1109183629**			
Outdoor Unit Make	**GOODMAN**			
Outdoor Unit Model	**GSZ130301AF**			
Nominal Cooling Capacity Btu/hr	**26400**			
Date of Verification	**01/26/2012**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**01/25/2012**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**01/25/2012**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**48.5**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**70.7**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**56.8**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**34**			
Condensor saturation temperature ($T_{condensor, sat}$)	**74**			
Suction line temperature ($T_{suction}$)	**48.4**			
Liquid Line Temperature (T_{liquid})	**66.4**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**59.6**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**22.20**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**19.7**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**2.5**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 4 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] CA [redacted]	City of Rancho Cordova	539076

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**7.6**			
Target Subcooling specified by manufacturer	**9**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-1.4**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**14.4**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted], [redacted] CA [redacted]	**Enforcement Agency:** City of Rancho Cordova	**Permit Number:** 539076

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Ton Yang**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798603413**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/26/2012**	

Tim O'Neil Logged In [Logout]

QA Data Collection Form: 10461 Sierra Crest Drive, Rancho Cordova, CA 95670

White ID 3/8/2011

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 01/26/2011 2PM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted]

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 1

RESULTS FOR SYSTEM 1

Type of System Split

Is the unit a HEAT ONLY unit? No

Condenser Make:* GOODMAN Model:* GSZ130301AF S/N 1109183629 # of Vents:* 8 # of Returns:* 1 SEER: 13

F.A.U. Make:* GOODMAN Model:* AVPTC18301A S/N 1108674397 AFUE: 100. HSPF: 8.0 Output BTU:* 26,000 Location: Attic → Heat Pump

Coil Make:* ~~UNDECIPHERED~~ Model:* AxxF 30301.6 EER:

Coil Number:* Ducts R4 or R6: ~~R4~~ 6.0

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL(N) 77.20 @ 25.0Pa TARGET (60) Rater (57)
DUCT 940 (HSPF) (875) 880
FND (510.4) (491)
RC - TMAH Yes (yes) RCV -1.4 (3)
RCA 2.5 (1.3) TXV 14.4 (14.0)

Attic Investigation:* [Select from list]

FLOW Hood - 940 NO Insulation on Access

NEXT

* *Required Fields*

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Revised: January 11, 2010
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[Class Cancellation Policy]

CalCERTS, Inc.

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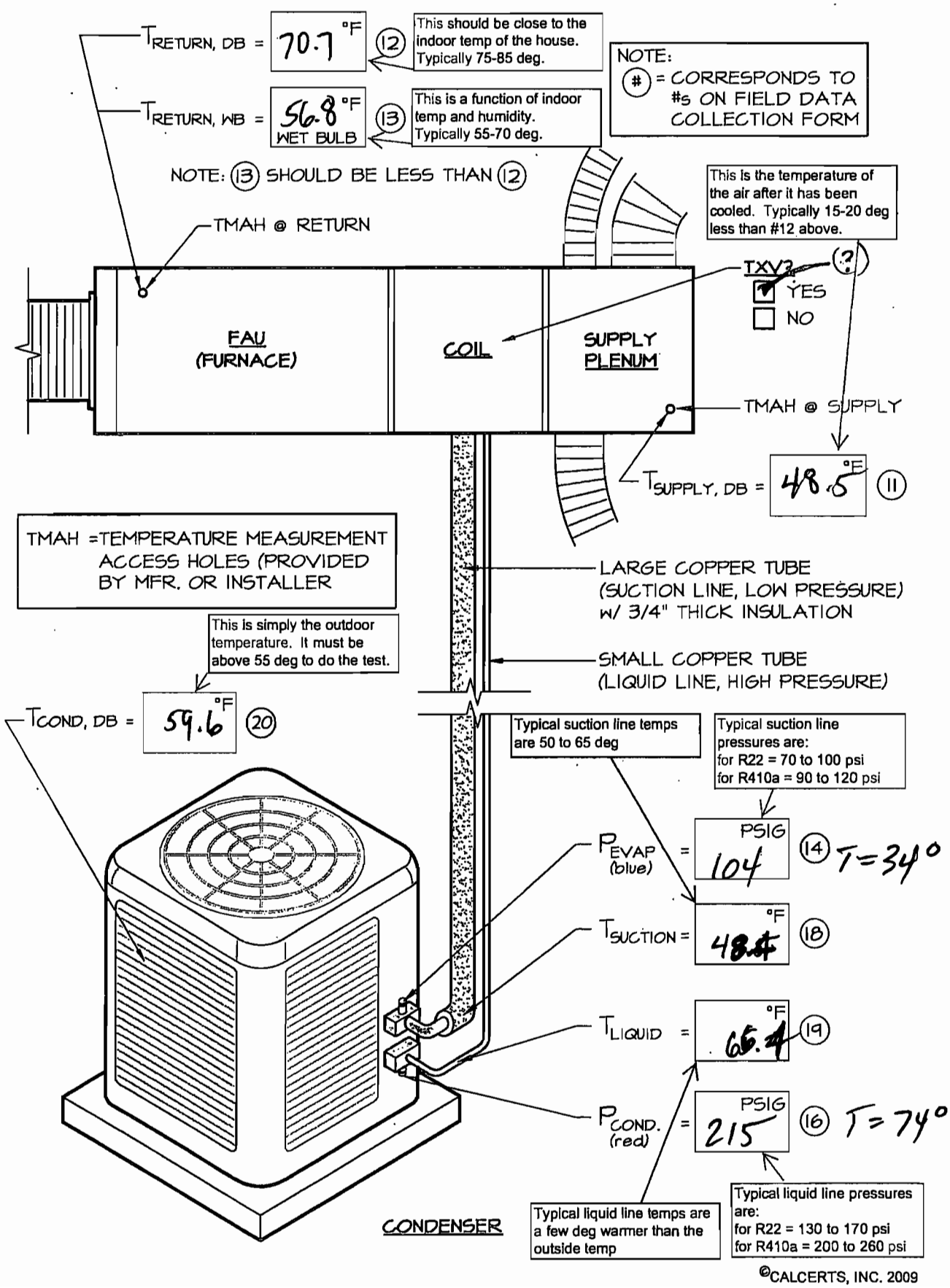
(877-437-7787)
Fax: 916-985-3402
Contact Us

Ret (1), VENTS MBed/Ba-3, Liv-1, 2Bd-1, 2Ba-1, D-1, K-1 = (8)

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram			
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram			
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram			
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram			
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS			
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram			
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS			
18	Suction line temperature ($T_{suction}$)	See Diagram			
19	Liquid line temperature (T_{liquid})	See Diagram			
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram			

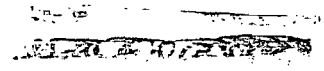
	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$ 70.7 - 48.5	Line 12 - Line 11	22.2		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$ 22.2	Line 13 & Line 12 Go to Table	19.7		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	2.5		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Pass		
	Note: Temperature Split Method Calculation Is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM) 2.5	Tons X 300	750		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	940		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,\ sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condanser,sat} - T_{liquid}$	Line 17 - Line 19 74 - 66.9	7.6		
(37)	Target Subcooling specified by manufacturer	From Condenser	9° ± 3°		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	-1.4		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	Pass		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	Line 18 - Line 15 48.4 - 34	14.4		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26 Default		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	Pass		



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Tim O'Neil Logged In [Logout]

Test Results for [redacted] (System 1)

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted] (System 1)	[redacted]	CA	[redacted]	CC-1798587457	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:

CF-6R-MECH-20-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-22-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-22-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage New CF-4R-MECH-20	Cooling Coil Airflow CF-4R-MECH-22	Fan Watt Draw CF-4R-MECH-22	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (System 1) (246875)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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CalCERTS, Inc.

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Fax: 916-985-3402
Contact Us

Tim O'Neil Logged In [Logout]

QA Report Results: [redacted] (System 1), Roseville, CA 95661

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - PASS Effective Year: 2011

Comments:

Duct Leakage: Pass. Rater recorded 46 cfm and a target of 48. QA recorded 45. CCAF: Pass. Rater recorded 800 cfm and a target of 700. QA recorded 820. FWD: No Test. Homeowner needed power on during QA, unit was hardwired, and QA did not have a clamp-on watt meter that meets required specs. Refrigerant Charge :Pass. TMAHs: Pass. RCA:Rater recorded T/S of 0.1 degrees. QA recorded 1.2. RCV: Pass. Rater recorded subcooling differential of 1 degree. QA recorded -0.1. TXV: Pass. Rater recorded a superheat differential of 15. QA recorded 9.8.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage New	CF-4R-MECH-20	Complete	System 1	[Comments]
Cooling Coil Airflow	CF-4R-MECH-22	Complete	System 1	[Comments]
Fan Watt Draw	CF-4R-MECH-22		QA CF-4R	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	Complete	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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Tim O'Neil Logged In [Logout]

QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 01/27/2012 / 11:00
Cust. Name: [redacted] **Cust. Phone:** [redacted]
Address: [redacted] (System 1)
City/State/Zip: [redacted], CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 1

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Amana **Model:** ASZ140241AJ **# of Vents:** 9 **# of Returns:** 1 **SEER:** 14
F.A.U. Make:	Amana **Model:** AVPTC313714AA **AFUE:** 100 **HSPF:** 8.2 **Output BTU:** 24,000 **Location:** Attic
Coil Make:	Amana **Model:** AVPTC313714AA **EER:**

Coil Number: 1106244858 **Ducts:** R6

Questions:

What is the general DUCT CONDITION?	New
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted](System 1), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Whole House**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.

Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons **2** x 400 x *leakage factor* = **48** CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**46**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

CalCERTS, Inc.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted](System 1), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **9/19/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 1 of 2)**
Site Address: [redacted] (System 1), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Enter the Duct System Name or Identification/Tag: **System 1**
Enter the Duct System Location or Area Served: **Upstairs**
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagonstic Test - completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the VLLDCS criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section). Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☑ Cooling system method: Nominal capacity of condenser in Tons 2 x 400 x *leakage factor* = 48 CFM ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr x *leakage factor* = ____ CFM ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here ____ x *leakage factor* = ____ CFM	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test(CFM)	**45**
Pass if Actual Leakage is less than Allowed Leakage ☑ **Pass** ☐ **Fail**	
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	
Pass if all accessible leaks (except for existing air handler) are sealed using smoke ☐ **Pass** ☐ **Fail**	

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CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test - Completely New or Replacement Duct System		**(Page 2 of 2)**
Site Address: [redacted](System 1), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Additional QA Questions:

Ring Size Used: **2**
Where Supply Boots Taped? **YES**

Heating System Method: 21.7 X **24,000** Output Capacity in Thousands of Btu/hr x **6%** = **31.25** CFM

Measured Airflow Method (RA3.3): Measured fan flow **820** x **6%** = **4920** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/27/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow		**(Page 1 of 2)**
Site Address: [redacted] (System 1), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for Installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**				
System Location or Area Served	**Whole House**				
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**				

Cooling Coil Airflow Verification

When the Certificate of Compliance Indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.					
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1					
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2					
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3					
System Name or Identification/Tag	**System 1**				
System Location or Area Served	**System 1**				
Nominal Cooling Capacity (ton) of the outdoor unit.	**2**				
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**				
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**700**				
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**800**				
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**				

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 1), [redacted] CA [redacted]	City of Roseville	BD-143307

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☑ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.	**800**			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	**.58 Watt/CFM**			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**	**464**			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	**442**			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**	**PASS**			

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DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer Information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **9/19/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 1 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 1), [redacted] CA [redacted]	City of Roseville	BD-143307

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R)Indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☑	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Upstairs**			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	**PASS**			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.				
☐ Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1				
☐ Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2				
☑ Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3				
System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Upstairs**			
Nominal Cooling Capacity (ton) of the outdoor unit.	**2.0**			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	**350 CFM/ton**			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	**700**			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	**820**			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	**PASS**			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-22
HSPP/PSPP Installation: Cooling Coil Airflow	**(Page 2 of 2)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 1), [redacted] CA	City of Roseville	BD-143307

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☐ Portable Watt Meter Measurement according to the procedures in RA3.3.2.2.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.2.2.2				
System Name or Identification/Tag				
System Location or Area Served				
Enter the air handler Tested (CFM) from the cooling coil airflow test table above.				
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).				
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Tested (CFM). **Target (CFM)**				
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**				
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter Pass or Fail**				

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/27/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] (System 1), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	(Page 2 of 5)

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 1), [redacted] CA [redacted]	City of Roseville	BD-143307

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1108610775**			
Outdoor Unit Make	**Amana**			
Outdoor Unit Model	**ASZ140241AN**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**9/19/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**9/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**9/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**57**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**77**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**62**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**49**			
Condensor saturation temperature ($T_{condensor, sat}$)	**102**			
Suction line temperature ($T_{suction}$)	**62**			
Liquid Line Temperature (T_{liquid})	**92**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**86**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] (System 1), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**20.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.4**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**-0.4**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 4 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 1), [redacted] CA [redacted]	City of Roseville	BD-143307

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**10.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**3**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**13.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

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INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] (System 1), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **9/19/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	(Page 1 of 5)

Site Address:	Enforcement Agency:	Permit Number:
[redacted](System 1),[redacted]CA	City of Roseville	BD-143307

Additional QA Questions:

Ambiant Temperature: **61.7°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			System 1			
System Location or Area Served			Upstairs			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			System 1			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			System 1			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted](System 1), [redacted]CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Upstairs**			
Outdoor Unit Serial #	**1108610775**			
Outdoor Unit Make	**Amana**			
Outdoor Unit Model	**ASZ140241AJ**			
Nominal Cooling Capacity Btu/hr	**24000**			
Date of Verification	**01/27/2012**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**01/25/2012**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**01/25/2012**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**50.0**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**74.8**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**66.3**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**42**			
Condensor saturation temperature ($T_{condensor, sat}$)	**73**			
Suction line temperature ($T_{suction}$)	**51.8**			
Liquid Line Temperature (T_{liquid})	**64.1**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**61.3**			

INSTALLATION CERTIFICATE			CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure			**(Page 3 of 5)**
Site Address: [redacted](System 1), [redacted]CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307	

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**24.80**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**23.6**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**1.2**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 4 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] System 1), [redacted] CA	City of Roseville	BD-143307

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**8.9**			
Target Subcooling specified by manufacturer	**9**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-0.1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**9.8**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted](System 1), [redacted] CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587457**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/27/2012**	

Tim O'Neil Logged In [Logout]

QA Data Collection Form: [redacted] (System 1), [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect information

Date / Time:* 8/27 / 11 am

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted] (System 2)

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

White 9/19/2011

RESULTS FOR SYSTEM 2 UPSTAIRS (Cond on Left) (2 Ton)

Type of System Split

Is the unit a HEAT ONLY unit? No

Condenser Make:* ~~GOODMAN~~ AMANA Model:* AS Z 14024 1 BJ S/N 1108610775 # of Vents:* 9 # of Returns:* 1 SEER: 14

F.A.U. Make:* AVPTC313714 AA Model:* ~~AMANA~~ S/N 1106 244858 AFUE: 100 HSPF: 8.2

Output BTU:* 24000 Location: Attic

Coil Make:* Model:* EER:

Coil Number:* Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

~~Sys 2~~ UP
D(N) 45@.250 PA ~~45~~ 48 Rater ~~45~~ 46
CAF ~~820~~ 469 (700) 800
FWD RCA (1150.1) TMAH 442 YES
RC-
RCV (1) TXV (15)

Attic Investigation:* [Select from list] FLOWS HOOD 820

NEXT

* *Required Fields*

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[Class Cancellation Policy]

CalCERTS, Inc.

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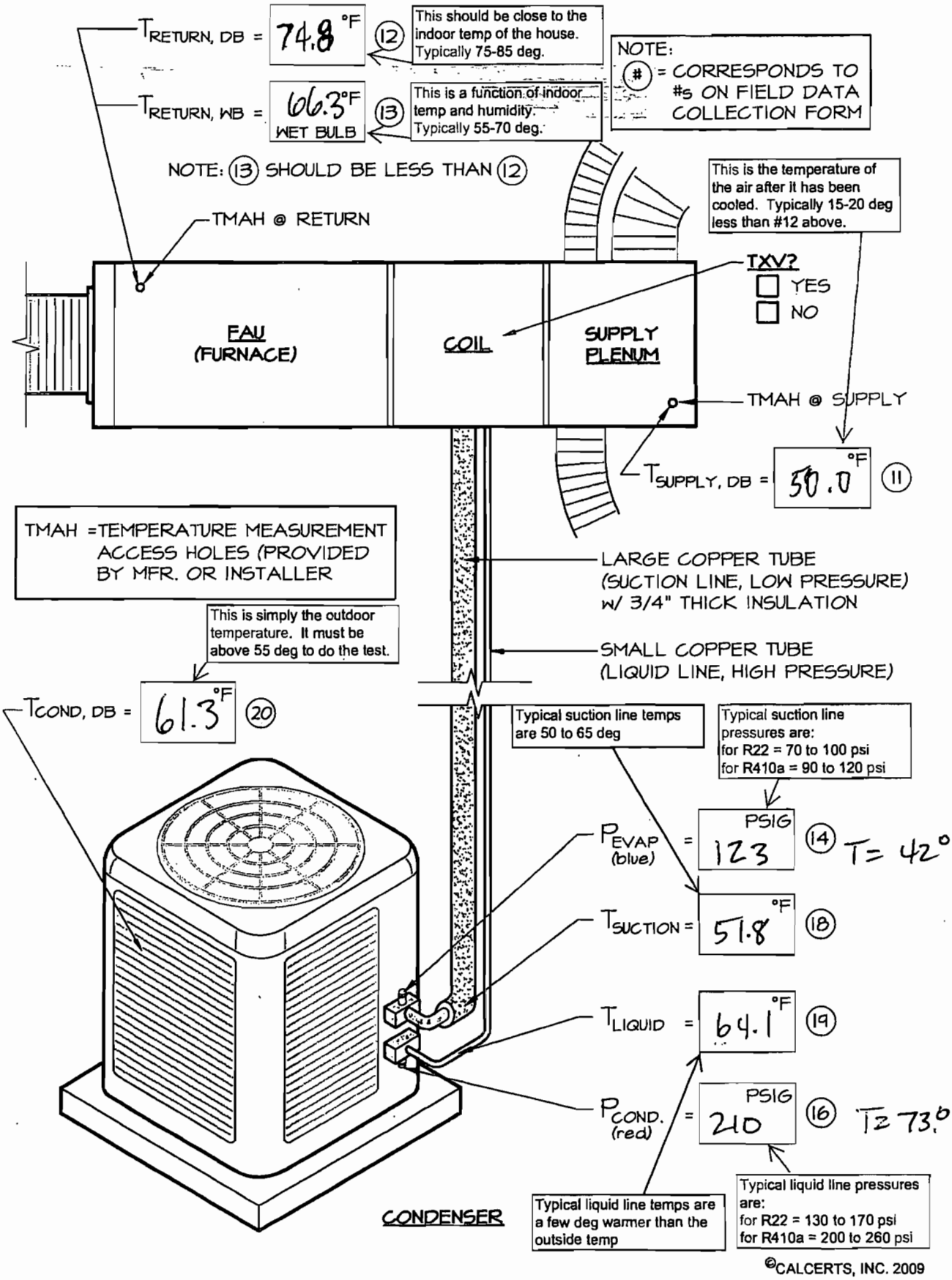
Contact Us

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM

SYSTEM NAME OR ID/TAG: Sys 1 (up)



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	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$	Line 12 - Line 11	24.8		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	23.6		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	1.2		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Pass		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 If actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM) 2	Tons X 300	600		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	820		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$ 73 − 64.1	Line 17 - Line 19	8.9		
(37)	Target Subcooling specified by manufacturer	From Condenser	9		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	−0.1		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	Pass		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$ 51.8 − 42	Line 18 - Line 15	9.8		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	Pass		

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QA Data Collection Form: [redacted] (System 2), [redacted], CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

STEP 1: Collect Information

Date / Time:* 1/27 / 11 AM

Cust. Name:* [redacted] Cust. Phone:* [redacted]

Address:* [redacted] (System 1)

City/State/Zip:* [redacted] CA [redacted] # of Floors:* 2

RESULTS FOR SYSTEM 1 Downstairs (Condenser on RT) (3.0) White 9/19/2011

Type of System Split

Is the unit a HEAT ONLY unit? No Heat Pump (Split)

Condenser Make:* AMANA Model:* ASZ140361BA # of Vents:* 10 # of Returns:* 1 SEER: 14 S/N 1108554236 S/N 1107678517

F.A.U. Make:* AMANA/Goodman Model:* AVPCTC426014 AA AFUE: 100 HSPF: 8.7

Output BTU:* 33,000 Location: Attic

Coil Make:* AMANA Model:* AVPCTT426014 SEER:

Coil Number:* 1107678517 Ducts R4 or R6: R4

Questions:

What is the general DUCT CONDITION?	Not Applicable
Has anyone done work near the ducts?	Not Applicable
Have you stored or removed anything from the duct area?	Not Applicable
Any new work on Heater or A/C?	Not Applicable
Any new construction?	Not Applicable
Have you replaced the FURNACE filter?	Not Applicable
Have you replaced the RETURN filter?	Not Applicable

Notes:

DL(N) - 141 @ 25.0 PA (~~48~~ 180) Rater ~~45~~ 95
~~CCAF~~ ~~(HSPF)~~ ~~(100)~~ ~~800~~
~~FWD~~ ~~(404)~~ ~~442~~
RC TMAH (yes) RCV (3)
RCA (-0.4) TXV (13)

Attic Investigation:* [Select from list] FLOW HOOD 1320

1st Day - 5 Guys - Couple hours - whole house Rating ENV, Solar. 2nd Couple guys, a few hours.

NEXT

* *Required Fields*

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Fax: 916-985-3402
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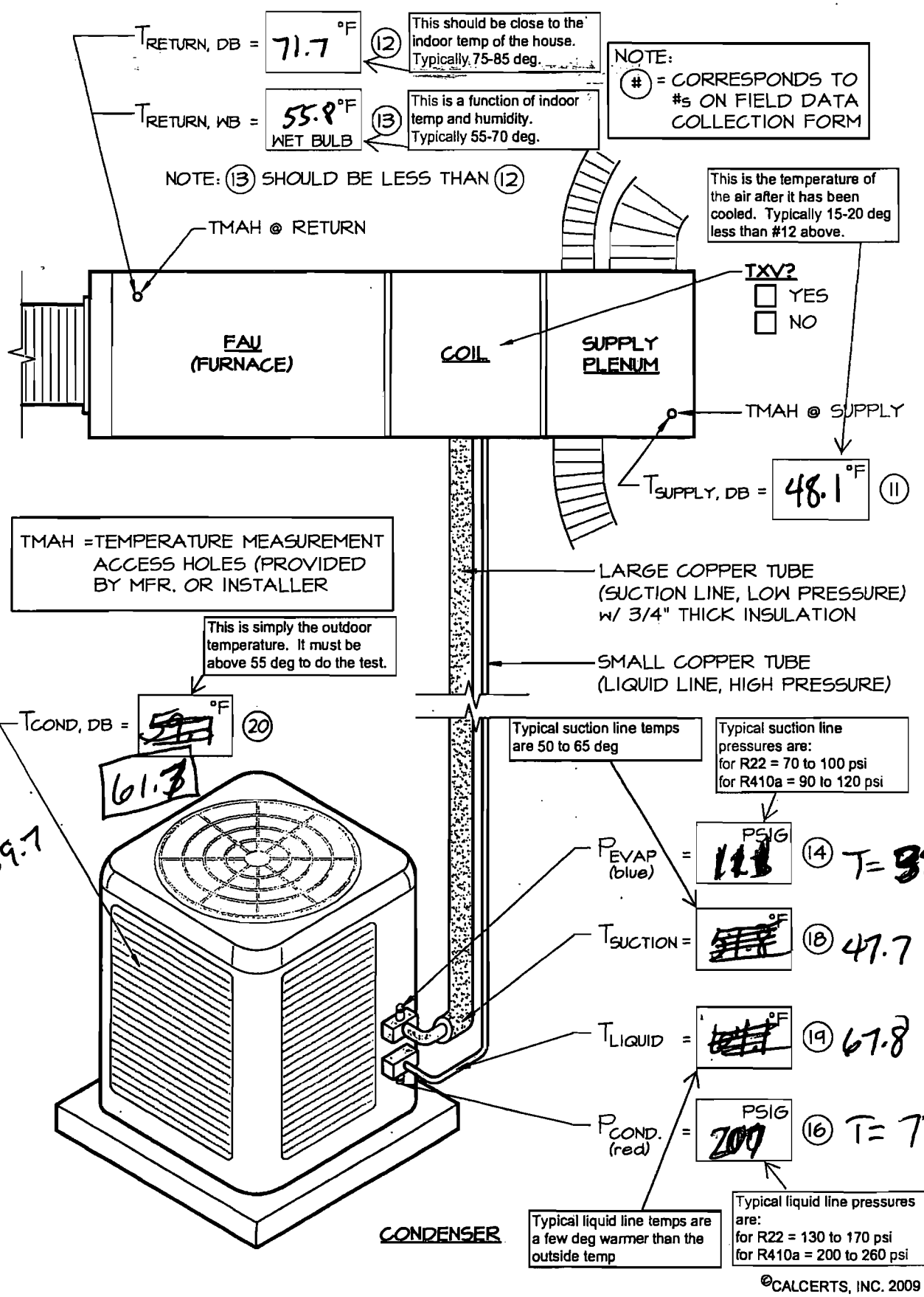
Ducts - Down - Liv-2, Din-1, K-1, N-1, F-2, Ba-2, O-1 = 10

Syst 1 ~~1st floor~~ DOWNSTAIRS

RCAF FIELD DATA COLLECTION DIAGRAM - USING GUAGES

USE ONE DIAGRAM PER SYSTEM SYSTEM NAME OR ID/TAG: _____



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RCAF FIELD DATA COLLECTION FORM

	Space Conditioning System	Notes			
1	System Name or Identification/Tag	Create name or ask (e.g. AC-1)			
2	System Location or Area Served	Describe			
3	Outdoor Unit Serial #	From Condenser			
4	Outdoor Unit Make	From Condenser			
5	Outdoor Unit Model	From Condenser			
6	Nominal Cooling Capacity Btu/hr	Tons X 12000			
7	Date of Verification	Date of Test			

	Calibration of Diagnostic Instruments	Notes			
8	Date of Refrigerant Gauge Calibration	Less than 1 month ago		(must be re-calibrated monthly)	
9	Date of Thermocouple Calibration	Less than 1 month ago		(must be re-calibrated monthly)	

	Measured Temperatures (°F)	Notes			
10	System Name or Identification/Tag	See Diagram			
11	Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,db}$)	See Diagram			
12	Return (evaporator entering) air dry-bulb temperature ($T_{return,db}$)	See Diagram			
13	Return (evaporator entering) air wet-bulb temperature ($T_{return,wb}$)	See Diagram			
14	Evaporator saturation pressure (P_{evap}) from BLUE low side gauge	See Diagram			
15	Evaporator saturation temperature ($T_{Evap,\ sat}$)	From P/T Table and #14 or STMS			
16	Condenser saturation pressure ($P_{condenser}$) from RED high side gauge	See Diagram			
17	Condenser saturation temperature ($T_{condensor,\ sat}$)	From P/T Table and #16 or STMS			
18	Suction line temperature ($T_{suction}$)	See Diagram			
19	Liquid line temperature (T_{liquid})	See Diagram			
20	Condenser (entering) air dry-bulb temperature ($T_{condensor,\ db}$)	See Diagram			

	Minimum Airflow Requirement	Notes			
	Temperature Split Method Calculations for determining Minimum Airflow Requirements for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.				
(21)	System Name or Identification/Tag	Same as Line 1			
(22)	Calculate: Actual Temperature Split = $T_{return,db}$ - $T_{supply,db}$ 78.7 - 55.1	Line 12 - Line 11	23.6		
(23)	Target Temperature Split from Table RA3.2-3 using $T_{return,wb}$ & $T_{return,db}$	Line 13 & Line 12 Go to Table	20.6		
(24)	Calculate difference: Actual Temperature Split - Target Temp. Split =	Line 22 - Line 23	3.0		
(25)	Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	High temp split usually means low airflow Line 24 ≤ 4 = Pass	Pass		
	Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3 if actual cooling coil airflow is measured, the value must be equal to or greater than Calculated Minimum Airflow Requirement in the table below.				

	Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)				
(26)	System Name or Identification/Tag				
(27)	Calculated Minimum Airflow Requirement (CFM) 3	Tons X 300	900		
(28)	Measured Airflow using RA3.3 procedures (CFM)	flow hood, flow grid or plenum pressure match	1320		
(29)	Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	Line 28 ≥ Line 27 = Pass	Pass		

	Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems.				
(30)	System Name or Identification/Tag				
(31)	Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator,sat}$	Line 18 - Line 15			
(32)	Target Superheat from Table RA3.2-2 using $T_{return,wb}$ & $T_{condenser,db}$	Line 13 & Line 20 Go to Table			
(33)	Calculate difference: Actual Superheat - Target Superheat	Line 31 - Line 32			
(34)	System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	-6 ≤ Line 33 ≤ 6 = Pass			

	Subcooling Charge Method Calculations for Refrigerant Charge Verification. This Procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
		Notes			
(35)	System Name or Identification/Tag	Same as Line 1			
(36)	Calculate: Actual Subcooling = $T_{condenser,sat} - T_{liquid}$ 73 - 67.8	Line 17 - Line 19	5.8=5.2		
(37)	Target Subcooling specified by manufacturer	From Condenser	9		
(38)	Calculate difference: Actual Subcooling - Target Subcoling =	Line 36 - Line 37	3.8		
(39)	System Passes if difference is between -4°F and +4°F **Enter Pass or Fail**	-4 ≤ Line 38 ≤ 4 = Pass	Pass		

	Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
(40)	System Name or Identification/Tag	Same as Line 1			
(41)	Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$ 47.7-37	Line 18 - Line 15	10.7		
(42)	Enter allowable superheat range from manufacturers specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	Have installer provide target from manufacturer's literature or use range given	3-26		
(43)	System passes if actual superheat is within the allowable superheat range. **Enter Pass or Fail**	3 ≤ Line 42 ≤ 26 = Pass or use manuf #	Pass		

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Tim O'Neil Logged In [Logout]

Test Results for [redacted] (System 2)

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Lot	Address	City	State	Zip	Certificate	Result	Rating Company	Type	QA
Lot	[redacted] (System 2)	[redacted]	CA	[redacted]	CC-1798587456	See Below	Valley Duct Testing	Alterations SFR	Report QA

2008 Standards

Installers for this Address:
CF-6R-MECH-21-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman
CF-6R-MECH-RCA-HERS CSLB: 162634 Beutler Corporation Michelle Ackerman

Address	Duct Leakage Existing CF-4R-MECH-21	Refrigerant Charge CF-4R-MECH-RCA
[redacted] (System 2) (246874)	TESTED (White, Donald Scott)	TESTED (White, Donald Scott)

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QA Report Results: [redacted] (System 2), [redacted] CA [redacted]

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Status: COMPLETED - PASS Effective Year: 2011

Comments:

Duct Leakage: Pass. Rater recorded 95 cfm and a target of 180. QA recorded 141 cfm @ 25,0 Pa.
Refrigerant Charge: Pass. TMAHs: Pass. RCA:Rater recorded T/S of -0.4 degrees. QA recorded 3.0. RCV: Pass. Rater recorded subcooling differential of 3 degrees. QA recorded 3.8. TXV: Pass. Rater recorded a superheat differential of 13 degrees. QA recorded 10.7.
Note: Flow Hood: 1320 cfm.

SAVE

Tested Features:

Tested Feature	CEC Form	Status	Action	Comments
Duct Leakage Existing	CF-4R-MECH-21	Complete	System 1	[Comments]
Refrigerant Charge	CF-4R-MECH-RCA	Complete	System 1	[Comments]
Test Data Collection Form		Complete	[Results]	

PHOTOS: MISSING PHOTOS
[CLICK HERE] to view Photos.

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QA Report Detail

Public Home
Secure Home
Projects
CF-1R Registration
QA Projects
My Builders
My Energy Consultants
My Installers
My Raters
View/Pay Invoice
User Admin
General Admin
Training Schedule
My Signature Agreements
My Info
Customer Info
Reports
DBA
Compliance Forms
Website Updates
Log Out

Date / Time: 01/27/2012 / 11:00
Cust. Name: [redacted] **Cust. Phone:** 916-787-1287
Address: [redacted] (System 2)
City/State/Zip: [redacted] CA [redacted] **# of Floors:** 2

RESULTS FOR SYSTEM 2

Type of System: Split
Is the unit a HEAT ONLY unit? NO

Condenser Make:	Amana **Model:** ASZ140361BA **# of Vents:** 10 **# of Returns:** 1 **SEER:** 14
F.A.U. Make:	Amana **Model:** AVPCTC426014 **AFUE:** 100 **HSPF:** 8.7 **Output BTU:** 33,000 **Location:** Crawl
Coil Make:	Amana **Model:** AVPCTC426014 **EER:**

Coil Number: 1107678517 **Ducts:** R4

Questions:

What is the general DUCT CONDITION?	Good
Has anyone done work near the ducts?	No
Have you stored or removed anything from the duct area?	No
Any new work on Heater or A/C?	No
Any new construction?	No
Have you replaced the FURNACE filter?	No
Have you replaced the RETURN filter?	No

Notes: No Notes
Attic Investigation: Investigated, but saw nothing to indicate decreased system efficiency
NO Photos

Registered CF-4R Data

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(877-437-7787)
Fax: 916-985-3402
Contact Us

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-21
Duct Leakage Test – Existing Duct System	**(Page 1 of 2)**

Site Address:	**Enforcement Agency:**	**Permit Number:**
[redacted] (System 2), [redacted] CA [redacted] (System 1)	City of Roseville	BD-143307

Enter the Duct System Name or Identification/Tag: **System 1**

Enter the Duct System Location or Area Served: **Whole House**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **3** x 400 = **1200** CFM

✓ ☐ Heating system method: 21.7 x ____ Output Capacity in Thousands of Btu/hr = ____ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ____ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1200** x 0.15 = **180** CFM Actual Leakage = **95** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow ____ x 0.10 = ____ CFM Actual Leakage to outside = ____ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ____ CFM Final leakage after sealing all accessible leaks using smoke test = ____ CFM Initial leakage ____ - Final leakage ____ = Leakage reduction ____ CFM ((Leakage reduction ____ / Initial leakage ____) x 100% = ____ **%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] (System 2), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587456**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **9/19/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 1 of 2)**
Site Address: [redacted](System 2), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Enter the Duct System Name or Identification/Tag: **System 2**

Enter the Duct System Location or Area Served: **Downstairs**

Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test - Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test - existing duct system

Select one compliance method from the following four choices.

☑ 1. Measured leakage less than 15% of fan flow

☐ 2. Measured leakage to outside less than 10% of Fan Flow

☐ 3. Reduce leakage by 60% and conduct smoke and fix all leaks

☐ 4. Fix all accessible leaks using smoke and HERS rater verify

Note: (One of Options 1, 2, or 3 must be attempted before utilizing Option 4.)

Determine nominal Fan Flow using one of the following three calculation methods.

✓ ☑ Cooling system method: Size of condenser in Tons **3** x 400 = **1200** CFM

✓ ☐ Heating system method: 21.7 x ___ Output Capacity in Thousands of Btu/hr = ___ CFM

✓ ☐ Measured system airflow using RA3.3 airflow test procedures: ___ CFM

1	**Option 1** used then: Allowed leakage = Fan Flow **1200** x 0.15 = **180** CFM Actual Leakage = **141** CFM **Pass if Leakage Actual is less than Allowed**	☑ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Flow **1200** x 0.10 = **120** CFM Actual Leakage to outside = ___ CFM **Pass if Leakage Actual is less than Allowed**	☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work = ___ CFM Final leakage after sealing all accessible leaks using smoke test = ___ CFM Initial leakage ___ - Final leakage ___ = Leakage reduction ___ CFM ((Leakage reduction ___ / Initial leakage ___) x 100% = ___ **%** Reduction **Pass if % Reduction > 60%**	☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke. HERS rater must verify (No sampling). No smoke allowed to leak from system. Including ducts, plenums, air handler and door panel. **Pass if all accessible leaks have been repaired using smoke**	☑ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		**(Page 2 of 2)**
Site Address: [redacted] (System 2), [redacted] CA [redacted] (System 1)	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Additional QA Questions:

Heating System Method: 21.7 X **33,000** Output Capacity in Thousands of Btu/hr = **716.1** CFM

Measured Airflow Method (RA3.3): Measured fan flow is **1320** CFM

☑ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

☑ All supply and return register/boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

☑ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

☑ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587456**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: **Tim O'Neil**	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed: **1/27/2012**	

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] (System 2), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 1**			
System Location or Area Served			**Whole House**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 1**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 1**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 2 of 5)**
Site Address: [redacted] (System 2), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 1**			
System Location or Area Served	**Whole House**			
Outdoor Unit Serial #	**1108554236**			
Outdoor Unit Make	**Amana**			
Outdoor Unit Model	**ASZ140361BA**			
Nominal Cooling Capacity Btu/hr	**36000**			
Date of Verification	**9/19/2011**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**9/1/2011**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**9/1/2011**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 1**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**57**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**75**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**64**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**48**			
Condensor saturation temperature ($T_{condensor, sat}$)	**104**			
Suction line temperature ($T_{suction}$)	**63**			
Liquid Line Temperature (T_{liquid})	**96**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**86**			

INSTALLATION CERTIFICATE	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 3 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 2), [redacted] CA [redacted]	City of Roseville	BD-143307

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Temperature Split = $T_{return, db}$ - $T_{supply, db}$	**18.00**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**17.9**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**0.1**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction}$ - $T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] (System 2), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**8.0**			
Target Subcooling specified by manufacturer	**7**			
Calculate difference: Actual Subcooling - Target Subcooling =	**1**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 1**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**15.0**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted](System 2), [redacted] CA [redacted]	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 1**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587456**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Donald Scott White**	Responsible Rater's Signature: **Donald Scott White**	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2005544**	Date Signed: **9/19/2011**	

QA

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 1 of 5)**
Site Address: [redacted] (System 2), [redacted] CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Additional QA Questions:

Ambiant Temperature: **59.7°F**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (Instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)

Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			**System 2**			
System Location or Area Served			**Downstairs**			
1	☑ Yes	☐ No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☑ Yes	☐ No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.				Enter Pass or Fail	✓ ☑ Pass	✓ ☐ Fail

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			**System 2**			
3	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 3, 4, and 5 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			**System 2**			
6	☐ Yes	☐ No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐ Yes	☐ No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐ Yes	☐ No	When attached to a digital thermometer, the sensor provides an indication of the saturation temperature of the coil.			
Yes to 6, 7, and 8 is a pass. Enter N/A if STMS are not applicable. Otherwise enter Pass or Fail				✓ ☑ N/A	✓ ☐ Pass	✓ ☐ Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING	CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure	**(Page 2 of 5)**

Site Address:	Enforcement Agency:	Permit Number:
[redacted] (System 2), Roseville CA	City of Roseville	BD-143307

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55°F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55°F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	**System 2**			
System Location or Area Served	**Downstairs**			
Outdoor Unit Serial #	**1108554236**			
Outdoor Unit Make	**Amana**			
Outdoor Unit Model	**ASZ140361BA**			
Nominal Cooling Capacity Btu/hr	**36000**			
Date of Verification	**01/27/2012**			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	**01/25/2012**	(must be re-calibrated monthly)
Date of Thermocouple Calibration	**01/25/2012**	(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	**System 2**			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply, db}$)	**48.1**			
Return (evaporator entering) air dry-bulb temperature ($T_{return, db}$)	**71.7**			
Return (evaporator entering) air wet-bulb temperature ($T_{return, wb}$)	**55.8**			
Evaporator saturation temperature ($T_{evaporator, sat}$)	**37**			
Condensor saturation temperature ($T_{condensor, sat}$)	**73**			
Suction line temperature ($T_{suction}$)	**47.7**			
Liquid Line Temperature (T_{liquid})	**67.8**			
Condenser (entering) air dry-bulb temperature ($T_{condenser, db}$)	**61.7**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 3 of 5)**
Site Address: [redacted] (System 2), [redacted] CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	**System 2**			
Calculate: Actual Temperature Split = $T_{return, db} - T_{supply, db}$	**23.60**			
Target Temperature Split from Table RA3.2-3 using $T_{return, wb}$ and $T_{return, db}$	**20.6**			
Calculate difference: Actual Temperature Split - Target Temperature Split =	**3**			
Passes if difference is between -4°F and +4°F or, upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	**PASS**			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag				
Calculated Minimum Airflow Requirement (CFM)				
Measured Airflow using RA3.3 procedures (CFM)				
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**				

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag				
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$				
Target Superheat from Table RA3.2-2 using $T_{return, wb}$ and $T_{condenser, db}$				
Calculate difference: Actual Superheat - Target Superheat =				
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**				

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 4 of 5)**
Site Address: [redacted] (System 2) [redacted] CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 2**			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	**5.2**			
Target Subcooling specified by manufacturer	**9**			
Calculate difference: Actual Subcooling - Target Subcooling =	**-3.8**			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	**PASS**			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.

System Name or Identification/Tag	**System 2**			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	**10.7**			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	**3-26**			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	**PASS**			

INSTALLATION CERTIFICATE		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		**(Page 5 of 5)**
Site Address: [redacted] System 2), [redacted] CA	**Enforcement Agency:** City of Roseville	**Permit Number:** BD-143307

Standard Charge Measurement Summary:
System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.

System Name or Identification/Tag	**System 2**			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	**PASS**			

CalCERTS, Inc.®

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) **BEUTLER CORPORATION**		
Responsible Person's Name: **Michelle Ackerman**	CSLB License: **162634**	
HERS Provider Data Registry Information		
Sample Group # (if applicable): **N/A**	☑ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information **CalCERTS Certificate # CC1-1798587456**		
HERS Rater Company Name: **Valley Duct Testing**		
Responsible Rater's Name: **Tim O'Neil**	Responsible Rater's Signature: Tim O'Neil	
Responsible Rater's Certification Number w/ this HERS Provider: **CC2006047**	Date Signed: **1/27/2012**	