ATTACHMENT J

AVAPCD AIR PERMIT APPLICATION

PERMIT APPLICATION REPORT FOR FOUR 60KW SIMPLE CYCLE TURBINES AT LANCASTER ENERGY FACILITY #1

PREPARED FOR:

Electricity Provider, Inc.
2882-C Walnut Avenue
Tustin, California 92780

FOR SUBMITTAL TO:

Antelope Valley Air Pollution Control District
43301 Division Street, Suite 206
Lancaster, California 93539

PREPARED BY:

SCEC
Air Quality Specialists
1582-1 N. Batavia Street
Orange, California 92867
(714) 282-8240

May 2001

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SECTION 1.0

INTRODUCTION

1.1 General Introduction

Electricity Provider, Inc. (EPI) is submitting permit applications to construct and operate four simple cycle 60 MW gas turbines. The proposed facility is located at 46025 Division Street at the intersection of Avenue H in the City of Lancaster. Construction of the project, known as Lancaster Energy Facility #1, is to begin as soon as possible in order for the turbines to be operational by September 30, 2001. The project is also being reviewed under the California Energy Commission (CEC) 21-day emergency siting process. EPI requests, therefore, that AVAPCD take step to expedite processing of the applications.

1.2 Project Summary

EPI proposes to construct the four gas turbines with selective catalytic reduction (SCR) systems and CO oxidation systems. Significant demand for emission control technology, however, may dictate that the Lancaster Energy Facility #1 be constructed and operated in two phases. The first phase will commence as soon as possible after construction. During the first phase, EPI proposes to operate the turbines with water injection technology capable of meeting NO_x levels of 25 PPMV. CO emissions will be limited to 15 ppmv.

The second phase will commence upon installation of SCR and CO oxidation units. The installation of emission control equipment will reduce NO_x emissions to less than 2.5 ppmv and CO emissions to less than 3.5 ppmv. These levels are generally considered to be reflective of Best Available Control Technology (BACT) for gas turbines. While EPI will take all reasonable steps toward installing SCR and CO as soon as possible, project construction and operating schedules, combined with significant demand for SCR systems, may force delayed implementation of control technology. EPI is committed, however, to having SCR and CO oxidation units installed prior to the peak summer 2002 operating season. This delayed installation of BACT reflects the California Air Resources Board's policy and guidance for peaking gas turbines than can otherwise be online by September 30, 2001.

EPI proposes permit conditions that would not limit operations of the turbines. Unlimited operations will trigger emission-offset requirements for NO_x, ROC and PM_{10}. EPI has initiated discussions with offset credit brokers and regulators to acquire suitable emission offset credits (ERCs) for the project and will continue to coordinate with AVAPCD accordingly during the application review process. If EPI is unable to adequately demonstrate that suitable ERCs are available at the time the permit to construct is to be issued, EPI is willing to accept permit restrictions that would limit annual operations to the extent that the need for emission offsets can be reduced or eliminated.

1.3 Technical Project Contacts

Larry Backus, Vice President
Electricity Provider, Inc.
2882-C Walnut Ave.
Tustin, CA 92780

Phone: (714) 505-0874

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1582-1 N. Batavia St.
Orange, CA 92867

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Fax: (714) 282-8247

SECTION 2.0

FACILITY AND EQUIPMENT INFORMATION

2.1 Facility Description

The Lancaster Energy Facility #1 will be owned by EPI. It is currently undeveloped and zoned for industrial use. The facility is surrounded by industrial and undeveloped property and is located near an existing 66-kV Southern California Edison (SCE) circuit that ties into the SCE Lancaster Substation approximately two miles to the south of the project site. The facility's proximity to the existing transmission infrastructure makes it an ideal site for power generation. The facility location is listed below. Appendix B contains facility maps and plot plans.

Lancaster Energy Facility #1
46025 Division Street (at Avenue H)
Lancaster, California

2.2 Equipment Description

EPI is proposing to construct four simple-cycle General Electric Frame 7B gas turbines, nominally rated at 60 MW each. Engelhard Corp., or equivalent, SCR and CO oxidation systems will be installed on each of the turbines. Additionally, four above-ground aqueous ammonia tanks will be located at the site. Each tank will have a storage capacity of 25,000 gallons, or less. Tables 2-1 through 2-3 contain summaries of equipment specifications. Additional equipment information is contained in Appendix C.

Table 2-1
Equipment Summary
Four 60 MW Gas Turbines
Lancaster Energy Facility #1

Specification	Description (per turbine)
Manufacturer:	General Electric
Model:	Frame 7B
Rating:	60 MW (nominal)
Fuel :	Pipeline Natural Gas
Fuel Consumption:	692,343 cf/hr
Exhaust Flow:	305,305 SCFM @ 60°, 268,974 DSCFM, 851,331 ACFM
Exhaust Temperature:	990° F
Stack Height:	70 ft.
Stack Length and Width:	16.5 ft. x 10.0 ft.

Table 2-2
Equipment Summary
Four SCR / CO Oxidation Systems
Lancaster Energy Facility #1

Specification	Description (per system)
Manufacturer:	Engelhard
Model:	TBD
Reagent:	Aqueous Ammonia, 19.5% solution
Ammonia Solution Throughput:	25.8 gpm.
Exhaust Flow:	367,345 SCFM @ 60°, 914,897 ACFM
Exhaust Temperature:	860° F
Stack Height:	70 ft.
Stack Length and Width:	16.5 ft. x 10.0 ft.
Catalyst Cross Section:	30.58 ft. x 30.58 ft.
Catalyst Length:	22ft.
Catalyst Space Velocity:	5,000 ft./min.

Table 2-3
Equipment Summary
One Aqueous Ammonia Storage Tank
Lancaster Energy Facility #1

Specification	Description
Capacity:	25,000 Gallons
Turnovers:	12 per year
Roof:	Fixed
Control:	Vapor recovery during filling operations
Containment:	Secondary steel

SECTION 3.0

EMISSIONS INFORMATION

3.1 Criteria Pollutant Emissions Summary

Estimated uncontrolled and controlled emission rates are summarized in table 3-1. The turbine vendor provided uncontrolled NOx and CO emission rates. Controlled NO_x and CO emission rates reflect control system vendor guarantees. ROC concentrations reflect generally accepted BACT determinations. SO_x emission rates were derived from South Coast Air Quality Management District (SCAQMD) annual emission reporting factors. PM10 emission rates were extracted from US EPA's AP-42 for gas turbines.

Estimated criteria pollutant emissions are summarized in Table 3-2 for each unit, and Table 3-3 for the entire facility. A maximum operating schedule of 24 hours per day, 30 days per month, and 8500 hours per year at 100% rated capacity was used for all maximum calculations. One startup and shutdown cycle is assumed for maximum daily emissions, with 50 cycles per year. Startup and shutdown emissions reflect the assumption that the SCR and CO oxidation are inoperable for seven minutes and 90% effective by the tenth minute. Startup and shutdown emissions also reflect fuel consumption rates equal to 70% of rated capacity by the seventh minute and 100% of rated capacity by the tenth minute.

3.2 Toxic Pollutant Emissions Summary

Toxic pollutant emissions from the proposed project were derived from factors provided by SCAQMD for natural gas fired combustion turbines. Table 3-4 provides a summary of the factors and emission estimates. Additional toxic emissions information can be found in Appendix D.

Table 3-1
Criteria Pollutant Emission Rates
Lancaster Energy Facility #1

Pollutant	Uncontrolled Emission Factor	Source	Controlled Emission factor	Source
NO_x	25 ppmv	Manufacturer	2.5 ppmv	Manufacturer
ROC	2 ppmv	BACT	2 ppmv	BACT
CO	15 ppmv	Manufacturer	3.5 ppmv	Manufacturer
SO_x	0.0006 lb. / MMBtu	SCAQMD	0.0006 lb./MMBtu	SCAQMD
PM_{10}	0.066 lb. / MMBtu	AP-42	0.066 lb./MMBtu	AP-42

Table 3-2
Criteria Pollutant Emissions Summary
One Gas Turbine
Lancaster Energy Facility #1

		One Turbine 22 hrs.	One Turbine Startup 2 hrs.	Maximum One Turbine
NO_x	lb./hr (max)	6.62	8.04	8.04
	lb./day	145.7	16.1	161.8
	tons/year	27.8	0.4	28.2
ROC	lb./hr (max)	1.84	1.84	1.84
	lb./day	40.6	3.4	43.9
	tons/year	7.7	0.1	7.8
CO	lb./hr (max)	5.65	6.31	6.31
	lb./day (max)	124.2	12.6	136.8
	tons/year	23.7	0.3	24.0
SO_x	lb./hr (max)	0.44	0.40	0.44
	lb./day	9.6	0.8	10.4
	tons/year	1.8	0.0	1.9
PM_{10}	lb./hr (max)	4.80	4.40	4.80
	lb./day	105.6	8.8	115.2
	tons/year	20.2	0.2	20.4

Table 3-3
Criteria Pollutant Emissions Summary
Entire Facility
Lancaster Energy Facility #1

		Four Turbines 22 hrs.	Four Turbines Startup 2 hrs.	Maximum Four Turbines
NO_x	lb./hr (max)	26.50	32.18	32.18
	lb./day	583.0	64.4	647.3
	tons/year	111.3	1.6	112.9
ROC	lb./hr (max)	7.37	7.37	7.37
	lb./day	162.2	13.5	175.8
	tons/year	31.0	0.3	31.3
CO	lb./hr (max)	22.58	25.22	25.22
	lb./day (max)	496.8	50.4	547.3
	tons/year	94.8	1.3	96.1
SO_x	lb./hr (max)	1.74	1.60	1.74
	lb./day	38.4	3.2	41.9
	tons/year	7.3	0.1	7.4
PM_{10}	lb./hr (max)	19.19	17.60	19.19
	lb./day	422.2	35.2	460.6
	tons/year	80.6	0.9	81.5

Table 3-4
Toxic Pollutant Emissions Summary
4 – 60MW Gas Turbines
Lancaster Energy Facility #1

Compound	Turbine Emission Factor (lb./MMcf)	Gas Turbine Emissions (4) (lb./hr)	(lb./yr.)	(tons/yr.)
Acetaldehyde	0.037	0.10247	870.96	0.4
Acrolein	0.009	0.02492	211.85	0.1
Ammonia	1.769	4.89895	41641.08	20.8
Benzene	0.011	0.03129	265.99	0.1
Ethylbenzene	0.013	0.03656	310.72	0.1
Formaldehyde	0.094	0.26032	2212.70	1.1
Naphthalene	0.0008	0.00222	18.83	0.009
PAH'S	0.0002	0.00055	4.71	0.00
Propylene	1.052	2.91389	24768.09	12.4
Toluene	0.073	0.20105	1708.96	0.9
Xylene	0.030	0.08253	701.47	0.4

Notes:
1. Emission factors provided by SCAQMD.

SECTION 4.0

AIR QUALITY IMPACT ANALYSIS AND HEALTH RISK ASSESSMENT

4.1 Air Dispersion Modeling

SCEC completed air dispersion modeling for the project using the ISCST3 computer model. The model was set up with flat terrain grid extending 10 kilometers from the project site and operated with normalized emission rates of 1.0 gram per second for each turbine. Actual meteorological data from the Lancaster weather station was used and the model was executed using regulatory default options. No significant buildings were located on-site, so building induced down wash and wake effects were not factors. Detailed modeling information can be found in Appendix E.

4.2 Air Quality impact Analysis

An air quality impact analysis (AQIA) was conducted for NO_2, CO, and PM emissions in accordance with AVAPCD requirements. Annual operations were assumed to be 8,500 hours with NO_x and CO emissions controlled through the use of SCR and CO oxidation. Maximum one-hour NO_2 impacts reflect startup conditions, while annual impacts reflect typical operating conditions. Maximum one-hour CO impacts reflect startup conditions, while eight-hour impacts reflect two hours of startup conditions and six hours of typical operating conditions. All PM and SO_2 impacts reflect typical hourly operations.

Results of the AQIA are summarized in Table 4-1. Detailed analysis input and output data are included in Appendix E. For all pollutants, other than 1-hr PM, the project's impacts are not expected to add to or cause an exceedance of applicable air quality standards. While both baseline and resulting ambient one-hour particulate levels exceed state standards, the increase in the ambient PM emission level is within accepted levels of significance. It is reasonable to conclude, therefore, that the project will not cause or add to a violation of any state or federal ambient air quality standard.

4.3 Health Risk Assessment

A Tier 3 health risk assessment was conducted in accordance with AVAPCD Rule 1401 to evaluate the projects potential cancer, chronic and acute health risks. The assessment included the use of ISCST3 air dispersion model to determine down-wind pollutant concentrations. These concentrations were then used with SCAQMD calculation methodologies to determine health risks.

The results of the health risk assessment indicate that the proposed project meets the standards set forth in AVAPCD Rule 1401 for cancer, chronic, and acute health risks. The results of the assessment are summarized in Table 4-2. Additional risk assessment information can be found in Appendix E.

Table 4-1
Summary of Air Quality Impact Analysis
Lancaster Energy Facility #1

Pollutant	Averaging Time	Ambient Background	Project Impact	Projected Ambient Level	Ambient Air Quality Standard
NO_x	1 – Hour	0.068 ppm	0.004 ppm	0.1 ppm	0.25 ppm
NO_x	Annual	0.02 ppm	0.0002 ppm	0.02 ppm	0.0534 ppm
CO	1 – Hour	7.2 ppm	0.01 ppm	7.2 ppm	20.0 ppm
CO	8 – Hour	5.4 ppm	0.002 ppm	5.4 ppm	9.0 ppm
PM	24 – Hour	85 ug/m^3	1.08 ug/m^3	86.1 ug/m^3	50.0 ug/m^3
PM_{10}	Annual	25.6 ug/m^3	0.22 ug/m^3	25.8 ug/m^3	30.0 ug/m^3

Table 4-2
Summary of Tier 3 Health Risk Assessment
Lancaster Energy Facility #1

	MICR Summary		HIC Summary		HIA Summary	
Compound	Unit Risk Factor	MICR	REL Factor	HIC	REL Factor	HIA
Acetaldehyde	2.70E-06	3.13E-09	9.00E+00	0.00013	n/a	n/a
Acrolein	n/a	n/a	n/a	n/a	1.90E-01	0.03144
Acrolein	n/a	n/a	2.00E+02	0.00028	3.20E+03	0.00037
Benzene	2.90E-05	1.03E-08	6.00E+00	0.000059	1.30E+03	0.00001
Ethylbenzene	n/a	n/a	2.00E+03	0.000000	n/a	n/a
Formaldehyde	6.00E-06	1.76E-08	3.00E+00	0.000980	9.40E+01	0.00066
Naphthalene	n/a	n/a	9.00E+00	0.000003	n/a	n/a
PAH'S	1.70E-03	1.35E-07	n/a	n/a	n/a	n/a
Propylene	n/a	n/a	3.00E+03	0.000011	n/a	n/a
Toluene	n/a	n/a	3.00E+02	0.000008	3.70E+04	0.00000
Xylene	n/a	n/a	7.00E+02	0.000001	2.20E+04	0.00000
	Total MICR	1.66E-07	Total HIC	0.00147	Total HIA	0.03248

SECTION 5.0

REGULATORY INFORMATION

5.1 AVAPCD Regulatory Analysis

The following is a discussion of compliance issues and applicable AVAPCD Rules and Regulations.

Regulation II

Rule 212 - Standards for Approving Permits:
This equipment is not located within 1000 feet of a school and does not present a cancer risk in excess of $1x10^{-6}$, but the proposed facility will have potential NO_x and CO emissions in excess of the thresholds specified in Rule 212 (g). A 30-day public notice is required. EPI requests that any public notification regarding the proposed project be made as soon as possible to ensure swift permit processing in conjunction with the CEC emergency permitting process.

Regulation IV

Rule 401 - Visible Emissions:
The opacity limits established in Rule 401 are not expected to be exceeded since the equipment will be fired on natural gas. Compliance with Rule 401 is expected.

Rule 402 - Nuisance:
Based upon experience with similar equipment, operation of this system is not expected to emit air contaminants so as to cause a nuisance. Compliance with Rule 402 is expected.

Rule 431.1 - Sulfur Content of Gaseous Fuels:
The equipment proposed for this project will be fired on pipeline quality natural gas. Compliance with Rule 431.1 is expected.

Regulation IX

Subpart GG – Standards of Performance for Stationary Gas Turbines
The maximum NO_x concentration allowed under Subpart GG is 0.0235% of exhaust volume at 15% O_2. The turbines are expected to emit at a rate below 0.0025% of exhaust volume at 15% O_2 when controlled by water injection, and below 0.00025% of exhaust volume at 15% O_2 when controlled by SCR. Compliance with Subpart GG is expected.

Regulation XI

Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines
Rule 1134 does not apply to new gas turbines. Emissions from new turbines are controlled through AVAPCD BACT implementation, which is more stringent than that RACT standards contained in Rule 1134.

Regulation XIII

Rule 1302(B)(1)(a)(iv) - Class I Area Visibility Protection:
The nearest Class I Area, Death Valley National Monument, is located approximately 90 miles from the facility. No visibility analysis is required.

Rule 1302(C)(2)(b) - Air Quality Impact Analysis:
Potential NO_x and PM_{10} emissions from the proposed facility will exceed the thresholds specified in Rule 1303 (B). An air quality impact analysis was conducted for the proposed facility. The analysis indicates that the proposed project will not add to or cause exceedances of national air quality standards. Compliance with Rule 1302(C)(2)(b) is demonstrated. Analysis methodology and results are discussed in Section 4.0 and Appendix E.

Rule 1302 (C)(2)(c) – New Source Review of Carcinogenic Air Contaminants
A health risk analysis was conducted to determine the anticipated cancer risk that can be attributed to the facility. A total cancer risk of 1.66×10^{-7} was estimated based upon a Tier III analysis. Compliance with this requirement is therefore demonstrated. AVAPCD Rule 1401 requirements are discussed in a subsequent section of this report. The health risk analysis methods and results are also discussed in Section 4.0 and Appendix E.

Rule 1302 (C) - Determination of Offsets
Based upon 8,500 hours of operation, annual emissions of NO_x, ROC and PM_{10} are expected to exceed the offset thresholds specified in Rule 1303(B). NOx and ROC emissions are expected to be offset at a ratio of 1.3:1, while PM_{10} emissions are expected to be provided at a ratio of 1.0:1. Total offset requirements are summarized in Table 5-1.

Rule 1302(5)(b) specifies that AVAPCD cannot issue an authority to construct the facility unless the applicant demonstrates that suitable offsets can be obtained prior to operation of the facility. EPI will pursue offsets from the CARB emergency bank, available local ERCs, inter-district ERCs and road paving projects to secure necessary emission offsets. Based upon guidance from AVAPCD, if EPI cannot make an adequate demonstration of its ability to secure suitable offsets at the close of the public notice period, it will accept appropriate annual operating restrictions aimed at reducing or eliminating offset requirements.

Table 5-1
Emission Offset Requirements
Lancaster Energy Facility #1

Pollutant	Annual Emissions (tons)	Daily Emissions (pounds)	Offsets Required (pounds)
NO_x	113	647.3	841
ROC	31.3	175.8	229
CO	96.1	547.3	0
SO_x	7.4	41.9	0
PM_{10}	81.5	460.6	461

Rule 1303 - Best Available Control Technology (BACT):
Achieved in Practice BACT for prime power gas turbines generally consists of 2.5 – 5.0 ppmv for NO_x and 6.0 ppmv for CO. EPI is proposing to ultimately install SCR and CO oxidation capable of reducing NOx concentrations to 2.5 ppmv and CO concentrations to approximately 3.5 ppmv.

Rule 1303 – Offsets Required:
Potential NO_x, ROC and PM_{10} emissions exceed the offset thresholds of 25 tons per year for NO_x or ROC and 15 tons per year for PM_{10}. 100% of NO_x and ROC emissions must be offset at a ratio of 1.3:1 and 100% of PM_{10} emissions must be offset at a ratio of 1.0:1. Additional offset ratios may be applied if ROC emission reductions are used to offset increased NO_x emissions.

Regulation XIV

Rule 1401 - New Source Review of Toxic Air Contaminants:
As required in Rule 1401, a Tier III Risk Assessment was performed. An annual operating schedule of 8500 hours and local toxic emission factors were used to conduct the analysis. Each unit is expected to result in a MICR of 1.66×10^{-7}, a HIA of 0.00147 and a CIA of 0.03248. Compliance with Rule 1401 is demonstrated. The results of the 1401 analysis are summarized in Section 4.0. Detailed input and results are included in Appendix E.

Regulation XVII

Rule 1701 – Prevention of Significant Deterioration (PSD) Applicability:
It is assumed that EPA's delegation of authority to implement Regulation XVII was also passed on to AVAPCD and that AVAPCD will enforce the requirements of Regulation XVII.

NO_2, CO and PM_{10} exceed the PSD applicability threshold of 40 tons per year for unlisted source categories. Local PSD requirements are applicable for these three pollutants.

Rule 1703 – PSD Analysis:

Rule 1703 (a)(2) requires installation of BACT for applicable pollutants. The proposed SCR and CO oxidation units are generally considered to be BACT for gas turbines. Additionally, the use of natural gas typically constitutes BACT for PM.

Rule 1703 (a)(3)(A) requires that the applicant certify compliance with standards or limitations contained in the State Implementation Plan. The proposed facility is expected to be in compliance with all such standards, with the possible exception of delayed BACT implementation. If necessary, EPI will commit to a compliance schedule for BACT implementation. Compliance with 1703 (a)(3)(A) is expected.

Rule 1703 (3)(C) requires that an AQIA be conducted to demonstrate that the proposed facility will not cause or add to an exceedance of state or federal ambient air quality standard. Such analysis was conducted and included in Appendix E.

Rule 1703 (3)(D) requires ambient monitoring prior to construction of the source. Rule 1704 (b), however, provides an exemption from this requirement if impacts are below specified thresholds. The Regulation XIII AQIA demonstrated eligibility for the exemption. Ambient monitoring should not be required.

Rule 1703 (30(E) requires that an analysis of growth; impairment to soil and vegetation; and impairment of visibility that would occur as a result of the project. The project is intended to provide electricity that will be distributed over a wide region in the state. Construction of the project will last only a few months and operation of the project will require only a minimal number of employees. It is not anticipated that the facility will have significant effect on growth in the region.

An AQIA was conducted to demonstrate that the proposed project will not cause or add to a violation of air quality standards. These standards are intended to protect biological resources, as well as human health. Impacts from the project are not expected to have significant adverse effects on soils or vegetation.

The facility burns natural gas and will result in minimal concentrations of pollutants that may impair visibility. Additionally, the facility is not located near a Class I area and is not subject to a visibility analysis pursuant to Regulation XIII. It is not likely, therefore, that the project would have significant visibility impacts.

APPENDIX A

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
PERMIT TO CONSTRUCT APPLICATION FORMS
(COPIES)

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
P.O. Box 4038, Lancaster, CA 93539-4038
(661) 723-8070 Fax (661) 723-3450
Charles L. Fryxell
Air Pollution Control Officer

APPLICATION FOR
AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE

PLEASE REMIT FEES IN ACCORDANCE WITH DISTRICT RULE 301

1. Permit to be issued to:

ELECTRICITY PROVIDER, INC

Business license name of organization to receive permit.

Name(s) of owner or principal partners doing business as (DBA) above organization.

2. Mailing (Billing) Address:

2882-C WALNUT AVENUE, TUSTIN, CALIFORNIA 92780

3. Equipment Address (if same, enter "Same"):

46025 DIVISION STREET, LANCASTER, CALIFORNIA 93539

4. Contact Name:	Phone No.:	Fax No.:
STEVEN P. WILBURN	**(714) 505-0874**	

Contact Title:	Contact Email Address:
PRESIDENT	

5. Application is hereby made for Authority To Construct (ATC) and Permit To Operate the following equipment:

GAS TURBINE #3, GE FRAME 7B, RATED AT 60 MW, AND 727 MMBTU THROUGHPUT

Air Pollution Control Equipment (if any):

ENGELHARD SCR AND CO OXIDATION SYSTEM

6. If this equipment had a previous written permit, state name of pervious permit holder that operated this equipment, and state previous Air Pollution Control District permit number.

Name of corporation, company, or individual owner — Previous permit number

7. Application is for: [X] New Construction [ ] Modification [ ] Change of Location [ ] Change of Operator

8. Type of Organization (check one):

[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. General Nature of Business:	10. Principal Product:
POWER GENERATION	**ELECTRICITY**

11. Percent Annual Throughput by Quarters:				12. Normal Operating Hours of Equipment:		
25 %	**25** %	**25** %	**25** %	**24**	**7**	**52**
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Hrs/Day	Days/Wk	Wks/Yr

13. Do you claim Confidentiality of Data (if yes, state nature of data in Remarks)? [ ] Yes [X] No

14. Signature of Responsible Official:	Official Title:	
Typed or Printed Name of Responsible Official:	Phone Number: **(714) 505-0874**	Date:

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
APPLICATION FOR ATC AND PTO, continued

15. Stack Emissions Information:

Stack No.	Stack Height	Stack Diameter	Exhaust Temp	Exhaust Flow Rate	Exhaust Velocity
1					
2					
3	70'	14.5'	860	914,897 acfm	92.4

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)
Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)
If using cross-sectional area (A in square feet), equivalent diameter is D = (1.273A)^0.5
Exhaust Temp in degrees F, acutal or estimated to nearest 50 deg F
Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)
Exhaust Velocity in feet per second, design or measured

16. Remarks (basis for confidentiality of data, process description, modification description, etc.):

Application is to construct one of four gas turbines, with SCR and CO oxidation system.

Stack parameters reflect post-SCR conditions. Turbine exhaust (851,331 ACFM @ 990° F) is duluted by adding 63,566 scfm ambient air to achieve final acfm and temperature. Cooled exhaust passes through CO oxidation and SCR before exiting stack.

Attached application report contains project description, equipment specifications, emissions estimates and regulatory analysis.

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
P.O. Box 4038, Lancaster, CA 93539-4038 Charles L. Fryxell
(661) 723-8070 Fax (661) 723-3450 Air Pollution Control Officer

APPLICATION FOR
AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE

 PLEASE REMIT FEES IN ACCORDANCE WITH DISTRICT RULE 301

1. Permit to be issued to:
ELECTRICITY PROVIDER, INC
Business license name of organization to receive permit.

Name(s) of owner or principal partners doing business as (DBA) above organization.

2. Mailing (Billing) Address:
2882-C WALNUT AVENUE, TUSTIN, CALIFORNIA 92780

3. Equipment Address (if same, enter "Same"):
46025 DIVISION STREET, LANCASTER, CALIFORNIA 93539

4. Contact Name:	Phone No.:	Fax No.:
STEVEN P. WILBURN	**(714) 505-0874**	

Contact Title:	Contact Email Address:
PRESIDENT	

5. Application is hereby made for Authority To Construct (ATC) and Permit To Operate the following equipment:
SCR / CO OXIDATION SYSTEM #4

Air Pollution Control Equipment (if any):
ENGELHARD SCR AND CO OXIDATION SYSTEM

6. If this equipment had a previous written permit, state name of pervious permit holder that operated this equipment, and state previous Air Pollution Control District permit number.

Name of corporation, company, or individual owner | Previous permit number

7. Application is for: [X] New Construction [ ] Modification [ ] Change of Location [ ] Change of Operator

8. Type of Organization (check one):
[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. General Nature of Business:	10. Principal Product:
POWER GENERATION	**ELECTRICITY**

11. Percent Annual Throughput by Quarters:				12. Normal Operating Hours of Equipment:		
25 %	**25** %	**25** %	**25** %	**24**	**7**	**52**
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Hrs/Day	Days/Wk	Wks/Yr

13. Do you claim Confidentiality of Data (if yes, state nature of data in Remarks)? [ ] Yes [X] No

14. Signature of Responsible Official:	Official Title:	
Typed or Printed Name of Responsible Official:	Phone Number: **(714) 505-0874**	Date:

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
APPLICATION FOR ATC AND PTO, continued

15. Stack Emissions Information:

Stack No.	Stack Height	Stack Diameter	Exhaust Temp	Exhaust Flow Rate	Exhaust Velocity
4	70'	14.49'	860	914,897 acfm	92.4
2					
3					

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)
Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)
If using cross-sectional area (A in square feet), equivalent diameter is D = (1.273A)^0.5
Exhaust Temp in degrees F, acutal or estimated to nearest 50 deg F
Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)
Exhaust Velocity in feet per second, design or measured

16. Remarks (basis for confidentiality of data, process description, modification description, etc.):

Application is to construct one of four SCR and CO oxidation systems.

Stack parameters reflect post-SCR conditions. Turbine exhaust (851,331 ACFM @ 990° F) is duluted by adding 63,566 scfm ambient air to achieve final acfm and temperature. Cooled exhaust passes through CO oxidation and SCR before exiting stack.

Attached application report contains project description, equipment specifications, emissions estimates and regulatory analysis.

If you wish to specify process information as proprietary or confidential, space is provided for this purpose. The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
P.O. Box 4038, Lancaster, CA 93539-4038
(661) 723-8070 Fax (661) 723-3450

Charles L. Fryxell
Air Pollution Control Officer

APPLICATION FOR
AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE

PLEASE REMIT FEES IN ACCORDANCE WITH DISTRICT RULE 301

1. Permit to be issued to:

ELECTRICITY PROVIDER, INC

Business license name of organization to receive permit.

Name(s) of owner or principal partners doing business as (DBA) above organization.

2. Mailing (Billing) Address:

2882-C WALNUT AVENUE, TUSTIN, CALIFORNIA 92780

3. Equipment Address (if same, enter "Same"):

46025 DIVISION STREET, LANCASTER, CALIFORNIA 93539

4. Contact Name:	Phone No.:	Fax No.:
STEVEN P. WILBURN	**(714) 505-0874**	

Contact Title:	Contact Email Address:
PRESIDENT	

5. Application is hereby made for Authority To Construct (ATC) and Permit To Operate the following equipment:

AQUEOUS AMMONIA STORAGE TANK #4, 25,000 GALLONS, 19.5% SOLUTION

Air Pollution Control Equipment (if any):

6. If this equipment had a previous written permit, state name of pervious permit holder that operated this equipment, and state previous Air Pollution Control District permit number.

Name of corporation, company, or individual owner

Previous permit number

7. Application is for: [X] New Construction [ ] Modification [ ] Change of Location [ ] Change of Operator

8. Type of Organization (check one):

[ ] Individual Owner [ ] Partnership [X] Corporation [ ] Utility [ ] Local Agency [ ] State Agency [ ] Federal Agency

9. General Nature of Business:	10. Principal Product:
POWER GENERATION	**ELECTRICITY**

11. Percent Annual Throughput by Quarters:				12. Normal Operating Hours of Equipment:		
25 %	**25** %	**25** %	**25** %	**24**	**7**	**52**
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Hrs/Day	Days/Wk	Wks/Yr

13. Do you claim Confidentiality of Data (if yes, state nature of data in Remarks)? [ ] Yes [X] No

14. Signature of Responsible Official:	Official Title:	
Typed or Printed Name of Responsible Official:	Phone Number: **(714) 505-0874**	Date:

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

ANTELOPE VALLEY AIR POLLUTION CONTROL DISTRICT
APPLICATION FOR ATC AND PTO, continued

15. Stack Emissions Information:

Stack No.	Stack Height	Stack Diameter	Exhaust Temp	Exhaust Flow Rate	Exhaust Velocity
1					
2					
3					

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)
Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)
If using cross-sectional area (A in square feet), equivalent diameter is D = (1.273A)^0.5
Exhaust Temp in degrees F, acutal or estimated to nearest 50 deg F
Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)
Exhaust Velocity in feet per second, design or measured

16. Remarks (basis for confidentiality of data, process description, modification description, etc.):

Application is to construct one of four aqueous ammonia storage tanks.

19.5% aqueous ammonia solution is vaporized and injected into the SCR system.
Storage tank capacity is 25,000 gallons. Solution feed rate is 25.8 gallons per hour.
Twelve tank turnovers per year are planned.

Attached application report contains project description, equipment specifications, emissions estimates and regulatory analysis.

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

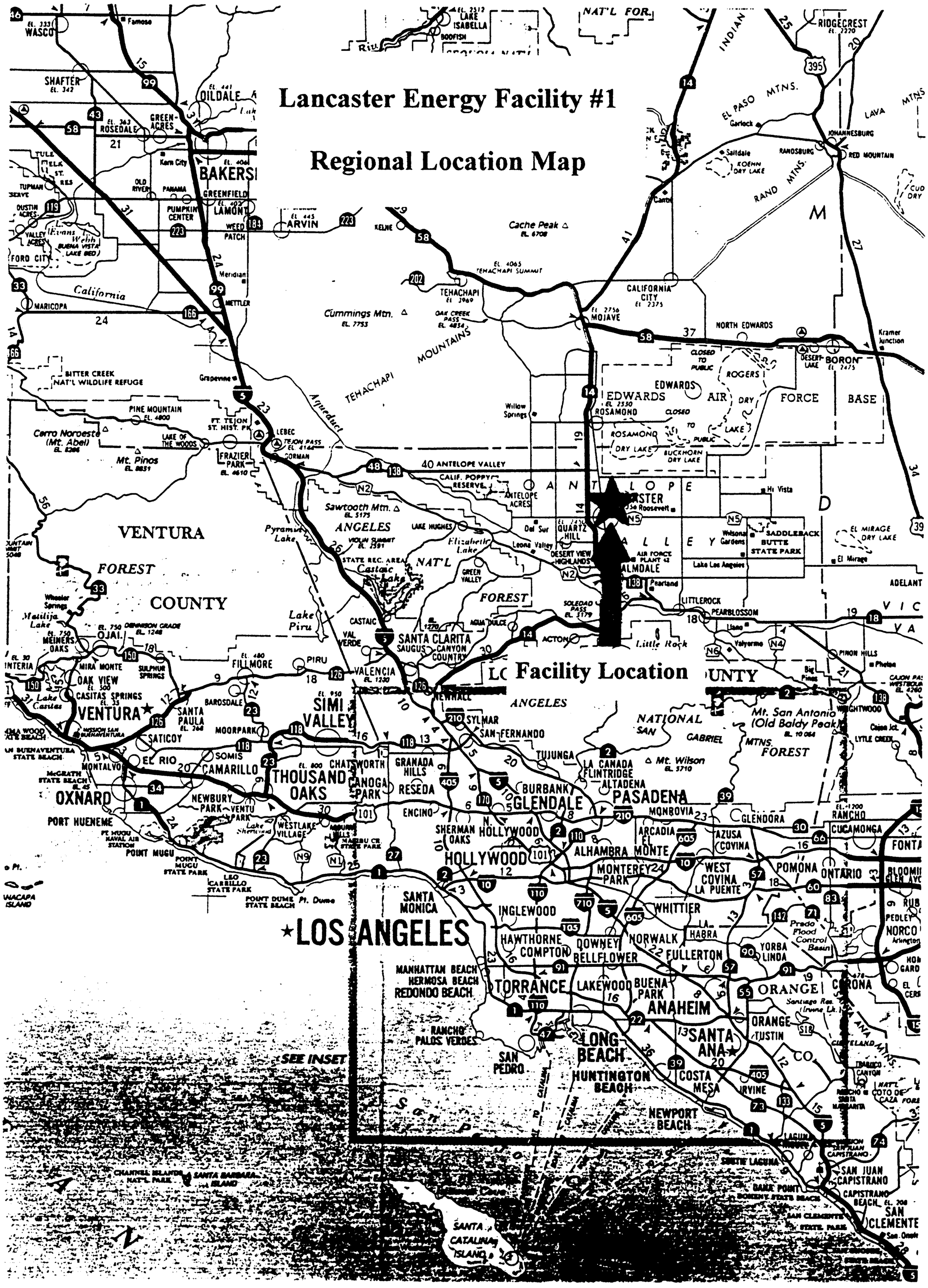
SCEC

APPENDIX B

FACILITY LOCATION MAPS AND DIAGRAMS

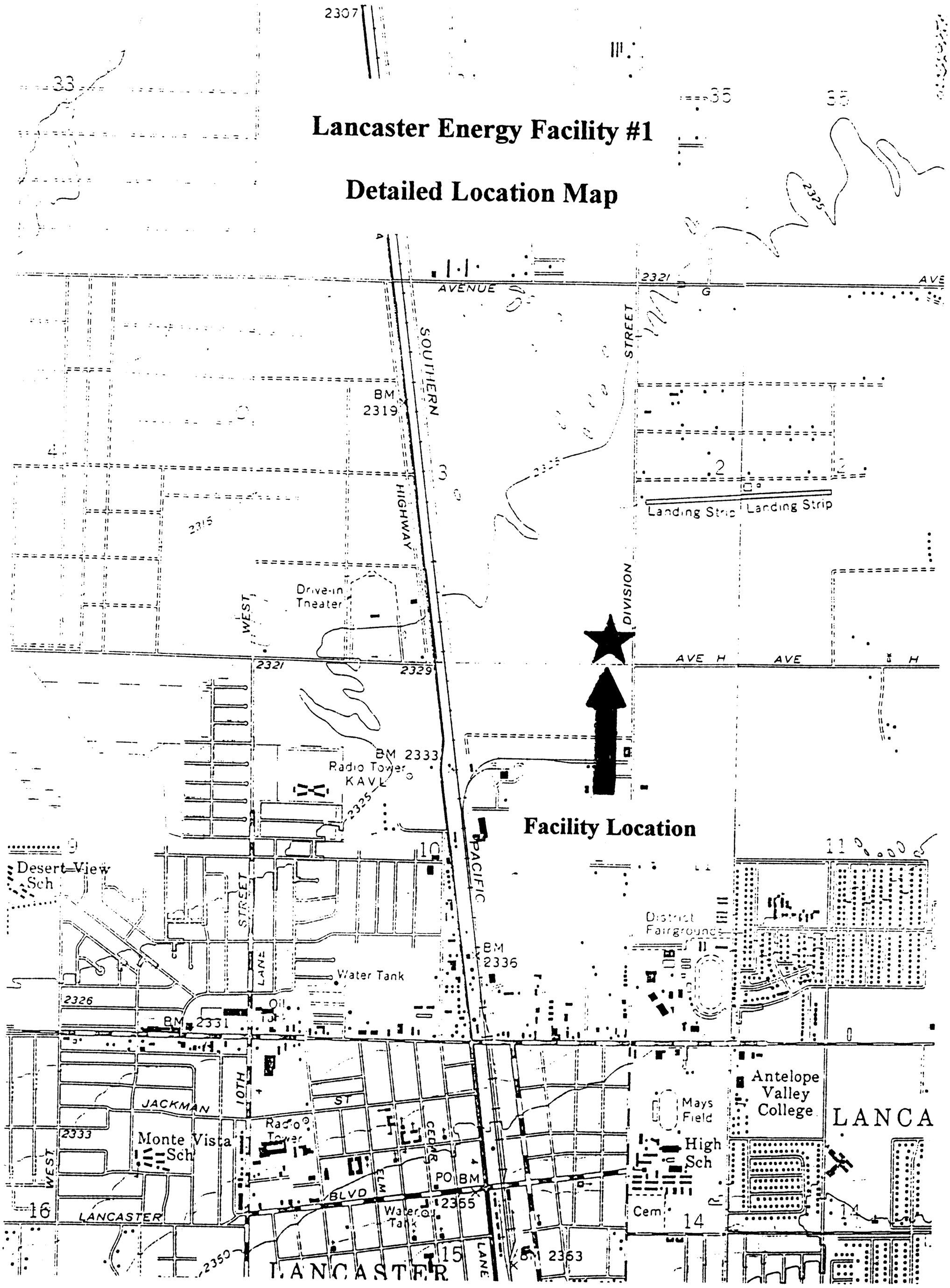
Lancaster Energy Facility #1

Regional Location Map



Lancaster Energy Facility #1

Detailed Location Map



Lancaster Energy Facility #1

Detailed Location Map

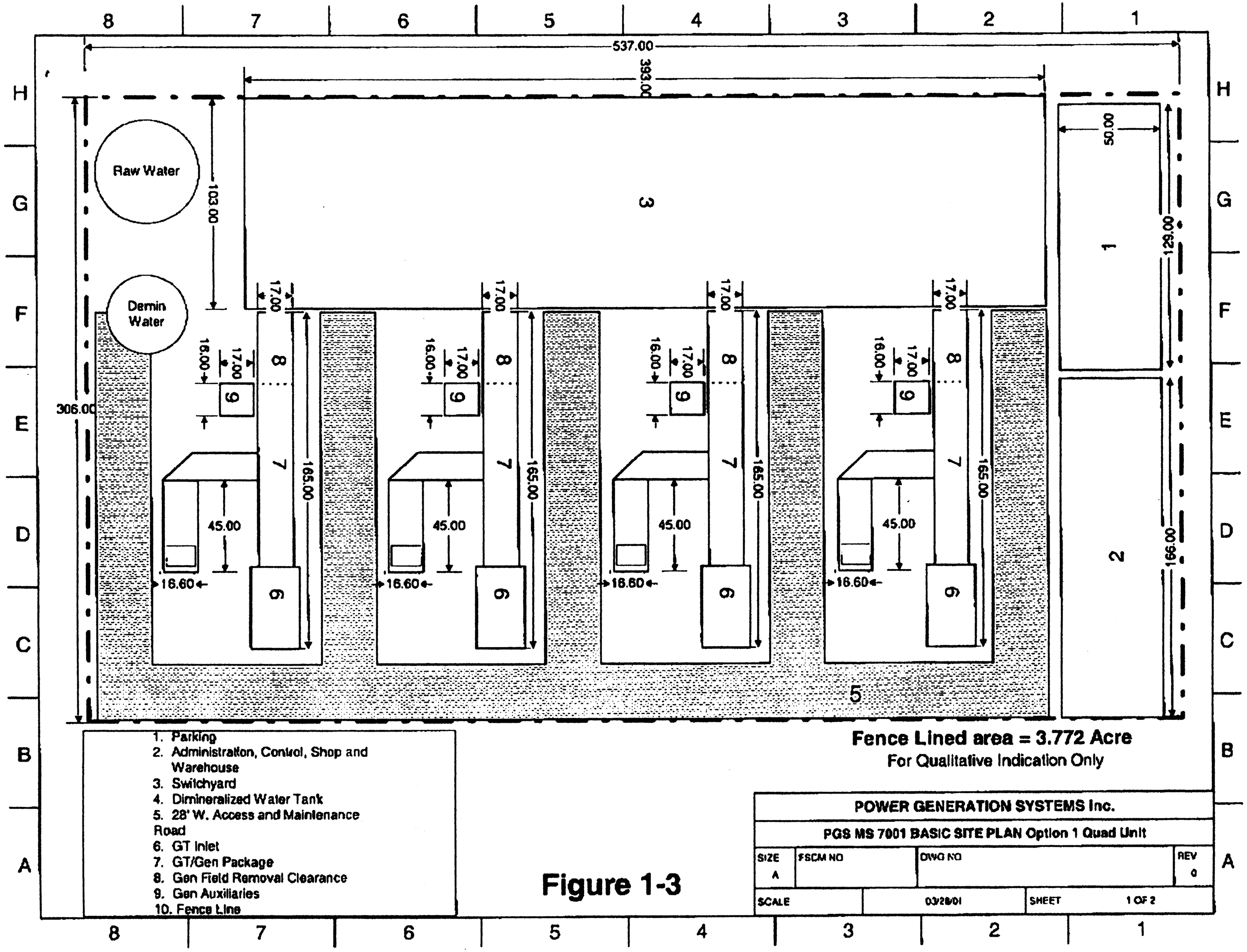
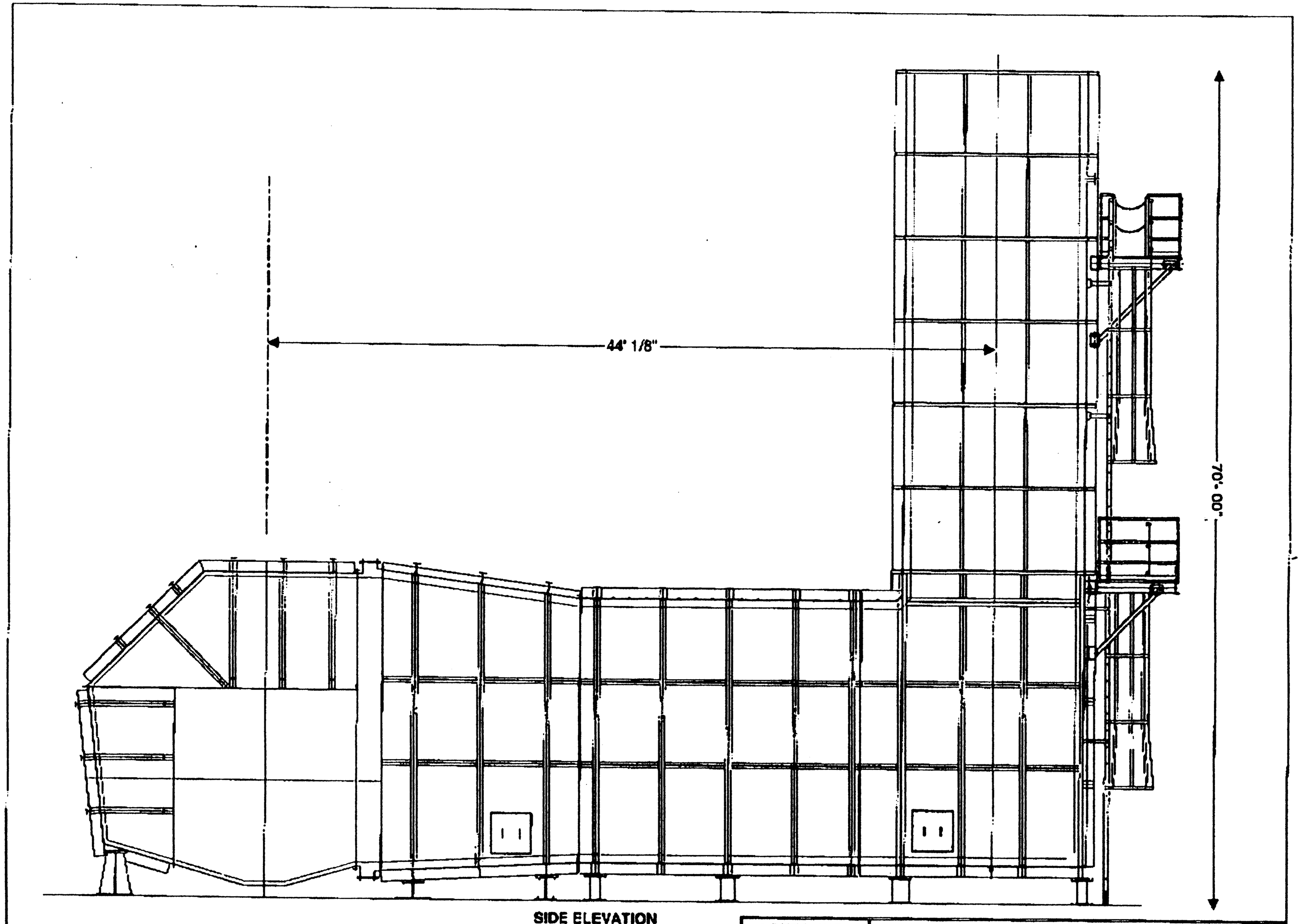


Figure 1-3

Figure 01-3 3/16/2001 2:25:28 PM



SIDE ELEVATION

Figure 1-5

LOTEC, INC.
120 S. DENTON TAP RD.
SUITE 450C-190
PH (972) 462-7684
FAX (972) 462-7179

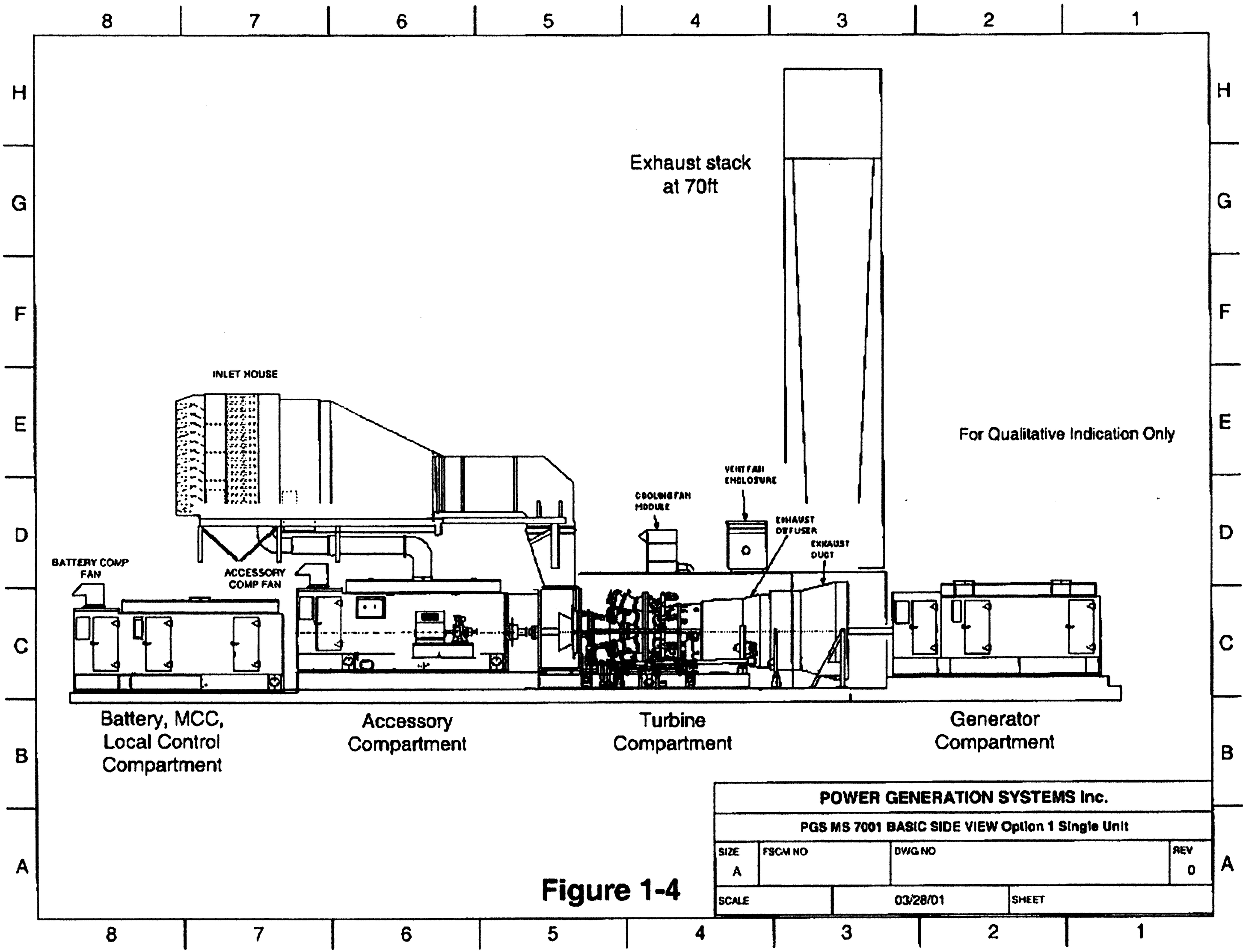
FRAME 7 EXHAUST SYSTEM

SCEC

APPENDIX C

TURBINE EQUIPMENT MANUFACTURER INFORMATION

003/004
BE-NAVIGANT CONS
05/11/01 16:59 FAX 916 852 6385



POWER GENERATION SYSTEMS Inc.			
PGS MS 7001 BASIC SIDE VIEW Option 1 Single Unit			
SIZE A	FSCM NO	DWG NO	REV 0
SCALE	03/28/01	SHEET	

Figure 1-4

05/11/01 16:59 FAX 916 852 6385 BE-NAVIGANT CONS 002/004

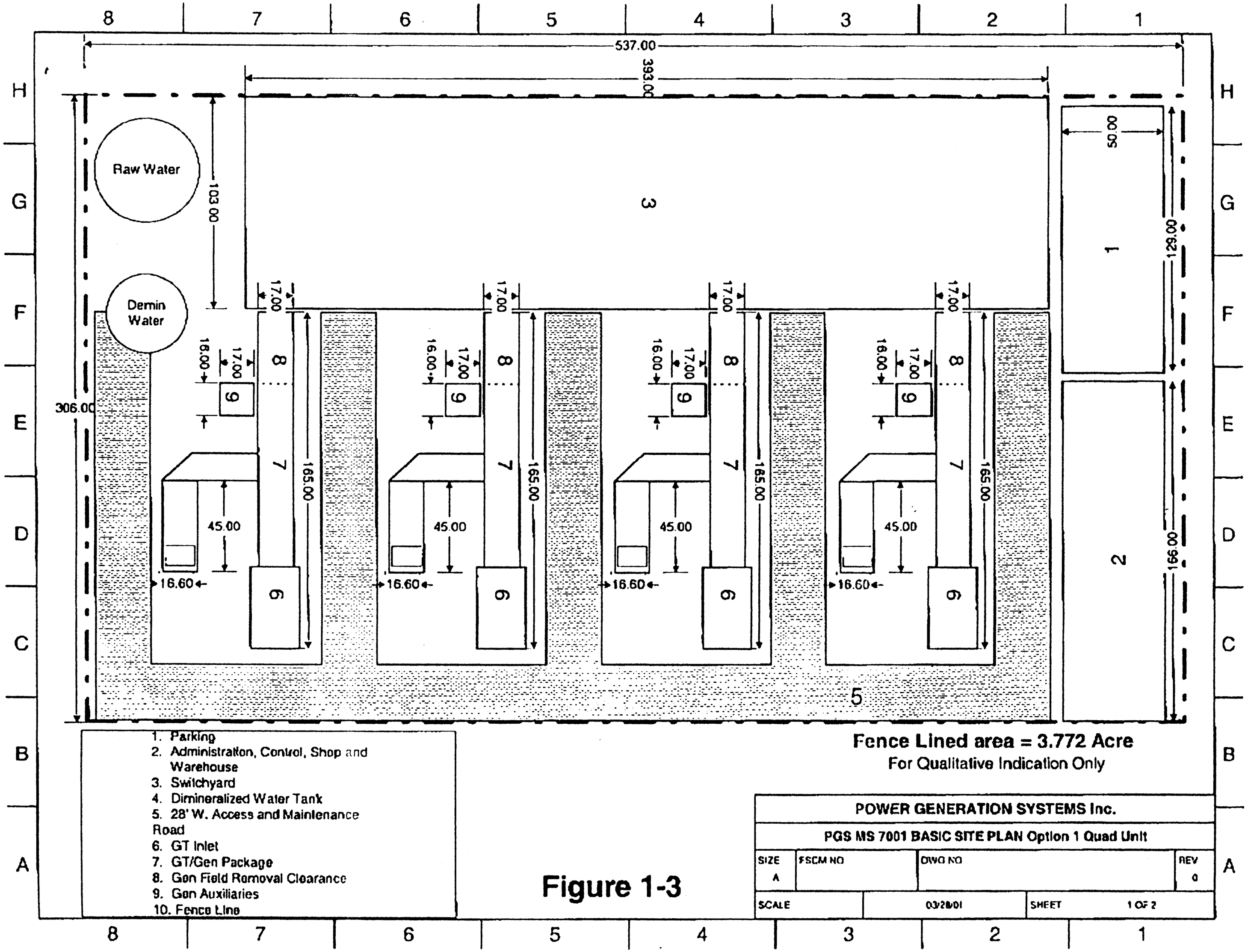


Figure 1-3

Figure 01-3 5/11/2001 2:25:28 PM

Lancaster Energy Facility #1@ 2,340 ft

Line	Elevation @ 2340 f RH% =	50%	Site Temp.	Site Temp.	Site Temp.	Site Temp.	Site Temp.	Site Temp.
4	Gas Turbine GE 7-B		Temp.	Temp.	Temp.	Temp.	Temp.	Temp.
5	Site Ambient Conditions:		20F	60F	80F	90	100	110
6	Total Water Injection (gpm)		62.91	61.69	86.13	81.75	84.62	83.62
7	Exhaust Flow in lb/sec		558	523	505	493	483	471
8	Exhaust Temp. (F)		972	984	990	994	996	1001
9	Exhaust Composition (Mole Fraction)							
10		N2+Ar	0.7349	0.7347	0.7218	0.7179	0.7097	0.7009
11		O2	0.127	0.1304	0.1269	0.1268	0.125	0.1233
12		CO2	0.0342	0.0325	0.0325	0.032	0.0318	0.0315
13		H2o	0.1039	0.1025	0.1189	0.1233	0.1334	0.1443
14								
15		NOx ppmmvd	28.51	31.45	32.98	33.05	33.85	34.61
16		SCR @ 90%	25.659	28.305	29.682	29.745	30.465	31.149
17		Total	2.851	3.145	3.298	3.305	3.385	3.461
18		CO ppmvd	11.4	12.58	13.19	13.22	13.54	13.85
19		CO @ 90%	10.26	11.322	11.871	11.898	12.186	12.465
20		Total	1.14	1.258	1.319	1.322	1.354	1.385
21		Voc ppmvd	4.56	5.03	5.28	5.29	5.42	5.54
22		PM-10 ton/yr	31.5	24.9	23.6	23.6	23	22.3
23								

24	Catalyst Manufacture:		Open
25	Oxidation Catalyst Manufacture:		Open
26	Pressure Drop Across SCR/CO:		7"
27	Controls for Aqueous Injection (PLC/Turbine Control):		
28	Type of Catalyst:		Honeycomb
29	Catalyst Volume (est) cuft:		1,058
30	Mimimum Temperature for Aqueous Injection:		N/A
31	Inlet NOx ppmvd @ 15% O@:		35
32	Manufacture Guarantee for Efficiency for NOx:	2.5 =	92.90%
33	Inlet CO ppmvd @ 15% O@:		15
34	Manufacture Guarantee for Efficiency for CO:	1 =	93.30%
35	Catalyst Life:		3 Years
36	SCR Package Total Cost:		$2.3 Million
37	Catalyst Replacement Cost:		N/A
38	Aqueous @		19.50%
39	Ammonia Consumption lb/hr as NH3		42.2
40	19.5% Ammonia usage, gpm		0.43
41	Storage Tank Size (Days)		31
42	Storage Tank Capacity gals.		25,000
43	Temperature Range for Optimum Performance:		860 +/- 20F
44	NH3 Slip ppmvd @ 15% O2 or lb/hr		5
45	NOx Catalyst Pressure Drop in W.C."		4.8
46	CO Catalyst Pressure Drop in W.C."		1.7
47	Stack Cooling Fan (SCFM) :		63,566
48	Stack Height:		70 ft
49	Stack Size:		16' 6" x 10'
50	Exhaust Duct Cross Section sqft		945
51	Exhaust Inlet Gas Path Size.		30' 7" x 30"7"
52	Exhaust Outlet Gas Path Size.		Same
53	Exhaust length.		22
54	Exhaust Area sqft,		2,732
55	Space Velocity (Stack):		5,000 ft/min
56			

Lancaster Energy Facility #1@ 2,340 ft

Site Ambient Conditions: **110F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
57,827	11,433	56,792	11,641
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
733,587	*12,691*		*12,922*
LHV/kBTU/h	TIT	TET	M/A/Inlet
661,119	1,915	1,001	453

Site Ambient Conditions: **100F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
62,868	11,095	61,812	11,285
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
773,974	*12,315*		*12,526*
LHV/kBTU/h	TIT	TET	M/A/Inlet
697,516	1,930	994	475

Site Ambient Conditions: **90F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
62,868	11,095	61,812	11,285
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
773,974	*12,315*		*12,526*
LHV/kBTU/h	TIT	TET	M/A/Inlet
697,516	1,930	994	475

Site Ambient Conditions: **80F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
66,249	10,915	65,164	11,096
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
802,346	*12,116*		*12,317*
LHV/kBTU/h	TIT	TET	M/A/Inlet
723,086	1,937	990	485

Site Ambient Conditions: **60F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
69,368	10,719	68,281	10,889
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
825,025	*11,898*		*12,087*
LHV/kBTU/h	TIT	TET	M/A/Inlet
743,525	1,949	984	505

Site Ambient Conditions: **20F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
74,405	10,718	73,317	10,877
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
885,063	*11,897*		*12,073*
LHV/kBTU/h	TIT	TET	M/A/Inlet
797,632		939	539

SCEC
1582-1 N. Batavia
Orange, CA 92667
(714) 282-2450 Fax (714) 282-2455

Project: Navigant - 2021 - EP1

Project # Date: 5/15

By: KAL / LAJ Checked by: Page of

O_2 = 12.7% F = 8710 T_s = 1450 P.sM = 29.92

Fuel = 692,343 scf/hr H_2O = 11.9% $T_{s\,TD}$ = 520 P_s = 29.92

- DSCFM = fuel scf/hr $\cdot \frac{1\,hr}{60\,min} \cdot F \cdot 0.00105 \times \frac{20.9}{20.9-12.7}$

= 692,343 cf/hr $\cdot \frac{1\,hr}{60\,min} \cdot 8710 \cdot 0.00105 \cdot \frac{20.9}{20.9-12.7}$

= 268,974 DSCFM

- SCFM = DSCFM $\cdot \frac{1}{H_2O\%}$

= 268,974 DSCFM $\cdot \frac{1}{.119}$

= 305,305 SCFM

- ACFM = SCFM $\times \frac{T_s}{T_{std}} \cdot \frac{P_{std}}{P_s\ 29.92}$

= 305,305 SCFM $\cdot \frac{1450}{520} \cdot \frac{29.92}{29.92}$

= 851,331 ACFM

SCEC

APPENDIX D

CRITERIA AND TOXIC POLLUTANT EMISSIONS INFORMATION

Lancaster Energy Facility #1
Emission Summary

		One Turbine	One Turbine Startup	Maximum One Turbine	Four Turbines	Four Turbine Startup	Maximum Four
	lb/hr (max)	6.62	8.04	**8.04**	26.50	32.18	**32.18**
NOx	lb/day	145.7	16.1	**161.8**	583.0	64.4	**647.3**
	tons/year	27.8	0.4	**28.2**	111.3	1.6	**112.9**
	lb/hr (max)	1.84	1.84	**1.84**	7.37	7.37	**7.37**
VOC	lb/day	40.6	3.4	**43.9**	162.2	13.5	**175.8**
	tons/year	7.7	0.1	**7.8**	31.0	0.3	**31.3**
	lb/hr (max)	5.65	6.31	**6.31**	22.58	25.22	**25.22**
CO	lb/day (max)	124.2	12.6	**136.8**	496.8	50.4	**547.3**
	tons/year	23.7	0.3	**24.0**	94.8	1.3	**96.1**
	lb/hr (max)	0.44	0.40	**0.44**	1.74	1.60	**1.74**
SO2	lb/day	9.6	0.8	**10.5**	38.4	3.2	**41.9**
	tons/year	1.8	0.0	**1.9**	7.3	0.1	**7.4**
	lb/hr (max)	4.80	4.40	**4.80**	19.19	17.60	**19.19**
PM10	lb/day	105.6	8.8	**115.2**	422.2	35.2	**460.6**
	tons/year	20.2	0.2	**20.4**	80.6	0.9	**81.5**

Lancaster Energy Facility #1
On-line Emission Summary

Basis:

60,000	kw	Turbine output
727.0	MMBtu/hr	Heat Input Rating
12,116	Btu/kW-hr	Heat rate
1,050	Btu/scf	Natural gas heat value
692,343	scf/hr	Fuel Flow - Volume
15	%O2	Concentration Correction
8,710	dscf/MMBtu	F-Factor

Operating Schedule:

22	hrs/day
8400	hrs/year

Stack Information (Turbine):

Height:	70	ft
Diameter:	10 x 16.5	
	165.0	sq. ft
Temp:	990	F
Velocity	86.0	fps
	5,160	fpm
Flowrate:	1,818,000	lb/hr
	851,331	ACFM
	305,305	SCFM @ 60F

Stack Information (w/ SCR):

Height:	70	ft
Diameter:	10 x 16.5	
	165.0	sq. ft
Temp:	860	F
Velocity	92.4	fps
	5,545	fpm
Flowrate:	1,642,516	lb/hr
	914,897	ACFM
	367,345	SCFM @ 60F

Contaminant		Emissions	Basis	Emissions -- Per Turbine Lb/hr	Lb/day	TPY	Emissions -- Four Turbines Lb/hr	Lb/day	TPY	MW lb/lb-mol	Notes
NOx		2.5	ppmv	6.62	145.7	27.8	26.50	583.0	111.3	46	Manufacturer
VOC	(as CH4)	2	ppmv	1.84	40.6	7.7	7.37	162.2	31.0	16	BACT
CO		3.5	ppmv	5.65	124.2	23.7	22.58	496.8	94.8	28	Manufacturer
SO2		0.0006	lb/MMBtu	0.44	9.6	1.8	1.74	38.4	7.3	64	SCAQMD
PM10		0.0066	lb/MMBtu	4.80	105.6	20.2	19.19	422.2	80.6	NA	AP-42

Lancaster Energy Facility #1
Startup Emission Summary

Operating Schedule:

2 hrs/day
100 hrs/year

Contaminant	Emissions -- Per Turbine			Emissions -- Four Turbines		
	Lb/hr	Lb/day	TPY	Lb/hr	Lb/day	TPY
NOx	8.04	16.1	0.4	32.18	64.4	1.6
VOC (as CH4)	1.69	3.4	0.1	6.76	13.5	3.6
CO	6.31	12.6	0.3	25.22	50.4	1.3
SO2	0.40	0.8	0.0	1.60	3.2	0.1
PM10	4.40	8.8	0.2	17.60	35.2	0.9

Startup / Shutdown and Commissioning Emissions
(per turbine)

Emission Rates (lb/hr) @ Various Loads

Load	Uncontrolled NOx (Lb/hr)	Control Efficiency	Controlled NOx (Lb/hr)	Uncontrolled CO (Lb/hr)	Control Efficiency	Controlled CO (Lb/hr)	ROG (Lb/hr)	PM10 (Lb/hr)	SOx (Lb/hr)	Fuel Consumption Factor
100%	66.25	90.000%	**6.625**	24.20	76.50%	**5.686**	1.84	4.80	0.44	1
50%	46.37	40%	**27.825**	16.94	0%	**16.937**	1.29	3.36	0.31	0.70
0%	0.66	0%	**0.662**	0.24	0%	**0.242**	0.02	0.05	0.00	0.0100

Notes: For all pollutants hourly emission rates based upon prior calculations.

Part load ROG emissions based upon CO trend, relative to 100% load.
Partload SOx and PM emissions based upon assumed no change in lb/MMBTU emission rate.

Hourly Emissions During Startup and Shutdown

Load	Uncontrolled NOx (Lb/hr)	Controlled NOx (Lb/hr)	Uncontrolled CO (Lb/hr)	Controlled CO (Lb/hr)	ROG (Lb/hr)	PM10 (Lb/hr)	SOx (Lb/hr)
7min (0-50%)	2.74	**1.66**	1.00	**1.00**	0.08	0.20	0.02
3 min(50-100%)	2.82	**0.86**	1.03	**0.57**	0.08	0.20	0.02
50min (100%)	55.21	**5.52**	20.16	**4.74**	1.54	4.00	0.36
Total per startup or shutdown	**60.77**	**8.04**	**22.19**	**6.31**	**1.69**	**4.40**	**0.40**

Note: Emission rates based upon simple average of initial and achieved load per time period

Initial Commissioning Emissions (0% Load)

Hourly	0.66	0.24	0.02	0.05	0.00
Daily (5 hr/day)	3.31	1.21	0.09	0.24	0.02
Total 2-Week Peri	19.87	7.26	0.55	1.44	0.13

Lancaster Energy Facility #1
Commissioning Emissions

Basis:

60,000	kw	Turbine output
727.0	MMBtu/hr	Heat Input Rating
12,116	Btu/kW-hr	Heat rate
1,050	Btu/scf	Natural gas heat value
692,343	scf/hr	Fuel Flow - Volume
15	%O2	Concentration Correction
8,710	dscf/MMBtu	F-Factor

Operating Schedule:

5	hrs/day
30	hrs/year

Stack Information:

Height:	70	ft
Diameter:	10 x 16.5	
	165.0	sq. ft
Temp:	990	F
Velocity	86.0	fps
	5,160	fpm
Flowrate:	1,818,000	lb/hr
	851,331	ACFM
	305,305	SCFM @ 60F

Contaminant		Emissions	Basis	Emissions -- Per Turbine Lb/hr	Lb/day	TPY	Emissions -- Four Turbines Lb/hr	Lb/day	TPY	Notes
NOx		25	ppmv	66.2	331	1.0	265.0	1,325	4.0	Manufacturer
VOC	(as CH4)	2	ppmv	1.84	9.2	0.03	7.37	36.9	0.11	BACT
CO		15	ppmv	24.2	121	0.4	96.8	484	1.5	Manufacturer
SO2		0.0006	lb/MMBtu	0.4	2.2	0.01	1.7	8.7	0.03	SCAQMD
PM10		0.0066	lb/MMBtu	4.8	24	0.1	19.2	96	0.3	AP-42

SCEC
1582-1 N. Batavia
Orange, CA 92667
(714) 282-2450 Fax (714) 282-2455

Project: Navigant - 2021 - EPI

Project # Date: 5/15

By: KAL / LAJ Checked by: Page of

O_2 = 12.7% F = 8710 T_s = 1450 $P_{s,M}$ = 29.92

Fuel = 692,343 scf/hr H_2O = 11.9% $T_{s,TD}$ = 520 P_s = 29.92

- DSCFM = fuel scf/hr · $\frac{1\,hr}{60\,min}$ · F · 0.00105 × $\frac{20.9}{20.9-12.7}$

= 692,343 cf/hr · $\frac{1\,hr}{60\,min}$ · 8710 · 0.00105 · $\frac{20.9}{20.9-12.7}$

= 268,974 DSCFM

- SCFM = DSCFM · $\frac{1}{H_2O\%}$

= 268,974 DSCFM · $\frac{1}{.119}$

= 305,305 SCFM

- ACFM = SCFM × $\frac{T_s}{T_{std}}$ · $\frac{P_{std}}{P_s\ 29.92}$

= 305,305 SCFM · $\frac{1450}{520}$ · $\frac{29.92}{29.92}$

= 851,331 ACFM

Lancaster Energy Facility #1@ 2,340 ft

Line	Elevation @ 2340 f RH% =	50%	Site Temp. 20F	Site Temp. 60F	Site Temp. 80F	Site Temp. 90	Site Temp. 100	Site Temp. 110
4	Gas Turbine GE 7-B							
5	Site Ambient Conditions:							
6	Total Water Injection (gpm)		62.91	61.69	86.13	81.75	84.62	83.62
7	Exhaust Flow in lb/sec		558	523	505	493	483	471
8	Exhaust Temp. (F)		972	984	990	994	996	1001
9	Exhaust Composition (Mole Fraction)							
10		N2+Ar	0.7349	0.7347	0.7218	0.7179	0.7097	0.7009
11		O2	0.127	0.1304	0.1269	0.1268	0.125	0.1233
12		CO2	0.0342	0.0325	0.0325	0.032	0.0318	0.0315
13		H2o	0.1039	0.1025	0.1189	0.1233	0.1334	0.1443
14								
15		NOx ppmmvd	28.51	31.45	32.98	33.05	33.85	34.61
16		SCR @ 90%	25.659	28.305	29.682	29.745	30.465	31.149
17		Total	2.851	3.145	3.298	3.305	3.385	3.461
18		CO ppmvd	11.4	12.58	13.19	13.22	13.54	13.85
19		CO @ 90%	10.26	11.322	11.871	11.898	12.186	12.465
20		Total	1.14	1.258	1.319	1.322	1.354	1.385
21		Voc ppmvd	4.56	5.03	5.28	5.29	5.42	5.54
22		PM-10 ton/yr	31.5	24.9	23.6	23.6	23	22.3
23								

24	Catalyst Manufacture:		Open
25	Oxidation Catalyst Manufacture:		Open
26	Pressure Drop Across SCR/CO:		7"
27	Controls for Aqueous Injection (PLC/Turbine Control):		
28	Type of Catalyst:		Honeycomb
29	Catalyst Volume (est) cuft:		1,058
30	Mimimum Temperature for Aqueous Injection:		N/A
31	Inlet NOx ppmvd @ 15% O@:		35
32	Manufacture Guarantee for Efficiency for NOx:	2.5 =	92.90%
33	Inlet CO ppmvd @ 15% O@:		15
34	Manufacture Guarantee for Efficiency for CO:	1 =	93.30%
35	Catalyst Life:		3 Years
36	SCR Package Total Cost:		$2.3 Million
37	Catalyst Replacement Cost:		N/A
38	Aqueous @		19.50%
39	Ammonia Consumption lb/hr as NH3		42.2
40	19.5% Ammonia usage, gpm		0.43
41	Storage Tank Size (Days)		31
42	Storage Tank Capacity gals.		25,000
43	Temperature Range for Optimum Performance:		860 +/- 20F
44	NH3 Slip ppmvd @ 15% O2 or lb/hr		5
45	NOx Catalyst Pressure Drop in W.C."		4.8
46	CO Catalyst Pressure Drop in W.C."		1.7
47	Stack Cooling Fan (SCFM) :		63,566
48	Stack Height:		70 ft
49	Stack Size:		16' 6" x 10'
50	Exhaust Duct Cross Section sqft		945
51	Exhaust Inlet Gas Path Size.		30' 7" x 30"7"
52	Exhaust Outlet Gas Path Size.		Same
53	Exhaust length.		22
54	Exhaust Area sqft,		2,732
55	Space Velocity (Stack):		5,000 ft/min
56			

Lancaster Energy Facility #1@ 2,340 ft

Site Ambient Conditions: **110F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
57,827	11,433	56,792	11,641
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
733,587	*12,691*		*12,922*
LHV/kBTU/h	TIT	TET	M/A/Inlet
661,119	1,915	1,001	453

Site Ambient Conditions: **100F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
62,868	11,095	61,812	11,285
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
773,974	*12,315*		*12,526*
LHV/kBTU/h	TIT	TET	M/A/Inlet
697,516	1,930	994	475

Site Ambient Conditions: **90F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
62,868	11,095	61,812	11,285
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
773,974	*12,315*		*12,526*
LHV/kBTU/h	TIT	TET	M/A/Inlet
697,516	1,930	994	475

Site Ambient Conditions: **80F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
66,249	10,915	65,164	11,096
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
802,346	*12,116*		*12,317*
LHV/kBTU/h	TIT	TET	M/A/Inlet
723,086	1,937	990	485

Site Ambient Conditions: **60F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
69,368	10,719	68,281	10,889
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
825,025	*11,898*		*12,087*
LHV/kBTU/h	TIT	TET	M/A/Inlet
743,525	1,949	984	505

Site Ambient Conditions: **20F**

Engine Performance			
kW-G	HR/G/LHV	kW-Net	HR/N/LHV
74,405	10,718	73,317	10,877
HHV/kBTU/h	HR/G/HHV		HR/N/HHV
885,063	*11,897*		*12,073*
LHV/kBTU/h	TIT	TET	M/A/Inlet
797,632		939	539

APPENDIX A - DEFAULT EMISSION FACTORS FOR COMBUSTION EQUIPMENT

Table 1
Default Emission Factors for External Combustion Equipment for Forms B1 and B1U

Fuel Type (fuel unit)	Organic Gases (lb/unit)	Methane (lb/unit)	Nitrogen Oxides (lb/unit)	Sulfur Oxides (lb/unit)	Carbon Monoxide (lb/unit)	Particulate Matter (lb/unit)
Natural Gas (mmcf) / Boilers Only	5.50	2.30	100.00	0.60	84.00	7.60
Natural Gas (mmcf) / Other Equipment	7.00	2.30	130.00	0.83	35.00	7.50
LPG, Propane, Butane (1000 gal.)	0.26	0.28	12.80	4.60	3.20	0.28
Distillate Oil 0.05%S (1000 gal.)	0.20	0.05	20.00	7.10	5.00	2.00

Table 2
Default Emission Factors for Internal Combustion Engines for Forms B2 and B2U

Fuel Type (fuel unit)	Organic Gases (lb/unit)	Methane (lb/unit)	Nitrogen Oxides (lb/unit)	Sulfur Oxides (lb/unit)	Carbon Monoxide (lb/unit)	Particulate Matter (lb/unit)
Natural gas (mmcf)	280.00	1,120.00	3,400.00	0.60	430.00	----
LPG, Propane, Butane (1000 gal.)	83.00	----	139.00	0.35	129.00	5.00
Diesel Oil (1000 gal.)	37.50	----	469.00	7.10	102.00	33.50
Gasoline (1000 gal.)	206.00	----	102.00	5.30	3,940.00	6.50

Table 3
Rule-Based Emission Factors for Combustion Equipment for Forms B1 and B2

Fuel Type (fuel unit)	Nitrogen Oxides (lb/unit)
A) E.F. based on Rule 1146 for Form B1	
Natural Gas (mmcf)	49.80
LPG, Propane, Butane (1000 gal.)	4.50
B) E.F. based on Rule 1146.1 for Form B1	
Natural Gas (mmcf)	37.40
LPG, Propane, Butane (1000 gal.)	3.40
C) E.F. based on Rule 1110.2 for Form B2	
Natural gas (mmcf)	238.70
LPG, Propane, Butane (1000 gallons)	15.30
Gasoline (1000 gallons)	21.50
Diesel Oil (1000 gallons)	33.40

Toxics Emission Factors from Combustion Process

Table I-EF FOR NATURAL GAS COMBUSTION (LB / MMCF)

		*EXTERNAL COMBUSTION **			
POLLUTANT	**CAS NO.**	**<10 MMBTUH**	**10-100 MMBTUH**	**>100 MMBTUH**	**FLARE**
Benzene	71432	0.008	0.0058	0.0017	0.1152
Formaldehyde	50000	0.017	0.0123	0.0036	1.1376
PAH'S **	1151	0.0004	0.0004	0.0004	0.0273
Naphthalene	91203	0.0003	0.0003	0.0003	N/A
Acetaldehyde	75070	0.0043	0.0031	0.0009	0.1138
Acrolein	107028	0.0027	0.0027	0.0008	0.0114
Propylene	115071	0.731	0.53	0.01553	2.016
Toluene	108883	0.0366	0.0265	0.0078	0.0576
Xylenes	1210	0.0272	0.0197	0.0058	0.0576
Ethylbenzene	100414	0.0095	0.0069	0.002	N/A
Hexane	110543	0.0063	0.0046	0.0013	N/A

		INTERNAL COMBUSTION		
POLLUTANT	**CAS NO.**	**< 1000 HP**	**> 1000 HP**	**TURBINE**
Benzene	71432	3.257	3.9084	0.0113
Formaldehyde	50000	32.4963	38.9956	0.094
PAH'S **	1151	0.1964	0.1964	0.001
Naphthalene	91203	0.1785	0.1785	0.0008
Acetaldehyde	75070	0.944	1.1328	0.037
Acrolein	107028	0.3783	0.454	0.009
Propylene	115071	16.2259	19.4711	1.0522
Toluene	108883	1.1145	1.3374	0.0726
Xylenes	1210	0.4048	0.4858	0.0298
Hexane	115043	0.7491	0.8989	1.75
Ethylbenzene	100414	0.3257	0.3908	0.0132

*** Such as Boilers, Furnaces, Kilns, Ovens**

**** Including Naphthalene**

POLLUTANT	**CAS NO.**	***EXTERNALCOMBUSTION***	***INTERNAL COMBUSTION***
Benzene	71432	0.0044	0.1863

Formaldehyde	50000	0.3506	1.7261
PAH'S	1151	0.0498	0.0559
Naphthalene	91203	0.0053	0.0197
Acetaldehyde	75070	0.3506	0.7833
Acrolein	107028	0.3506	0.0339
1,3-butadiene	106990	0.0148	0.2174
Chlorobenzene	108907	0.0002	0.0002
Dioxins		N/D	N/D
Furans		N/D	N/D
Propylene	115071	0.01	0.467
Hexane	115043	0.0006	0.0269
Toluene	108883	0.0044	0.1054
Xylenes	1210	0.0016	0.0424
Ethylbenzene	100414	0.0003	0.0109
Hydrogen chloride	7647010	0.1863	0.1863
Arsenic	7440382	0.0016	0.0016
Beryllium	7440417	N/D	N/D
Cadmium	7440439	0.0015	0.0015
Total Chromium		0.0006	0.0006
Hexavalent chromium	18540299	0.0001	0.0001
Copper	7440508	0.0041	0.0041
Lead	7439921	0.0083	0.0083
Manganese	7439965	0.0031	0.0031
Mercury	7439976	0.002	0.002
Nickel	7446020	0.0039	0.0039
Selenium	7782492	0.0022	0.0022
Zinc	7440666	0.0224	0.0224

Table I & II-Source of data: Ventura County APCD AB2588 test data dated 8/24/95

Last Updated on 6/2/00

By mohan balagopalan@toxics@ssc

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AQMD Home Page

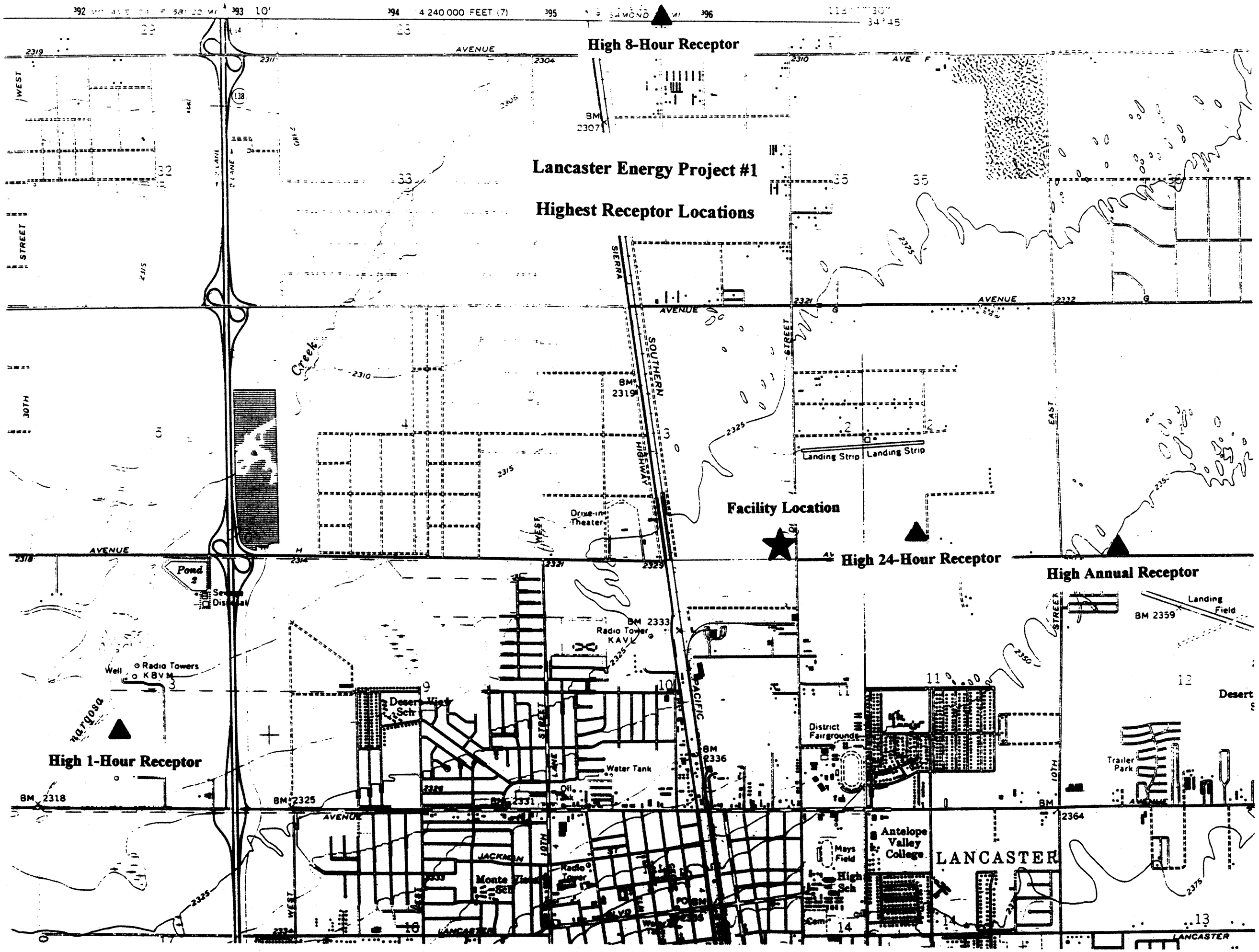
Previous Page

Last Update: 06/06/2000

SCEC

APPENDIX E

AIR QUALITY MODELING, AMBIENT AIR QUALITY IMPACT ANALYSIS AND HEALTH RISK ASSESSMENT INFORMATION



High 8-Hour Receptor
Lancaster Energy Project #1
Highest Receptor Locations
Facility Location
High 24-Hour Receptor
High Annual Receptor
High 1-Hour Receptor
4 240 000 FEET (7)
AVENUE
SIERRA
SOUTHERN
HIGHWAY
PACIFIC
Creek
Landing Strip
Landing Strip
Drive-in Theater
Pond 2
Radio Tower KAVL
Radio Towers KBVM
Desert View Sch
Water Tank
District Fairgrounds
Antelope Valley College
LANCASTER
Mays Field
High Sch
Monte Vista Sch
Radio Tower
Trailer Park
Landing Field
Desert
BM 2318
BM 2325
BM 2331
BM 2336
BM 2333
BM 2319
BM 2307
BM 2359
BM 2364

Summary of Ambient Air Quality Analysis
4 - 60MW Gas Turbines
Lancaster Energy Facility #1

Ambient Air Quality Analysis:

Pollutant	Averaging Time	Projects Impacts	Ambient Background	Total Impacts (Project + Ambient)	Ambient Standard
NO_x	1 - Hour (ppm)	0.004	0.08	0.1	0.25
NO_x	Annual (ppm)	0.0002	0.02	0.02	0.0534
CO	1 - Hour (ppm)	0.01	7.2	7.2	20.0
CO	8 - Hour (ppm)	0.002	5.4	5.4	9.0
PM	24 - Hour ($\mu g/m^3$)	1.08	85.0	86.1	50.0
PM_{10}	Annual ($\mu g/m^3$)	0.22	25.60	25.8	30.0

Note: Increase in 24-hr abmient PM is below established levels of significance

Modeling Summary
Lancaster Energy Facility

Facility Information:

UTM Coordinates:	N3842300
	E396280
Local Land Use:	Mixed Urban, Rural, Industrial
Local Topography:	Mostly Flat
Operating Schedule:	24-Hours/Day, 7-Days/Week, 356 Days/Year

Source Information:

Modeled Emission Rate:	4.0 g/s for site (1.0 g/s for each of 4 stacks)
Site Elevation:	2330'
Stack Height:	70'
Stack Diameter:	16.5' x 10.0' (I.D.)
Stack Temperature:	860^0 F
Stack Flow Rate:	914.897 acfm
Stack Velocity:	21.3 m/s

Additional Notes:

No significant buildings on-site or near stacks.
Modeling grid is 10000m square with 100m spacing and terrain elevations.

Emission Parameters
4 - 60MW Gas Turbines
Lancaster Energy Facility #1

Equipment Information:

Equipment Type: 4 Gas Turbines	Capacity: -	Fuel: Natural Gas
Manufacturer: GE	Output (MW): 60 MW each	HHV: 1050
Model: Frame 7B		

Emission Rates:

Pollutant	Emission Rate (lbs/hr)		Emission Rate (g/s)		Comments
NO_x	8.04		1.01	1-Hour	Emissions scaled by %25.
NO_x	8.04		1.01	Annual	Emissions scaled by %25.
CO	6.31		0.80	1-Hour	Emissions scaled by %25.
CO	6.31		0.80	8-Hour	Emissions scaled by %25.
PM_{10}	4.80		0.61	24-Hour	Emissions scaled by %25.
PM_{10}	4.80		0.61	Annual	Emissions scaled by %25.
SO_x	0.44		0.06	24-Hour	Emissions scaled by %25.
SO_x	0.44		0.06		

Note: Emissions are scaled by 25% to accommodate normalized AQIA input of 1 g/s/turbine, or 4 g/s/project.

Ambient NO_2 Analysis
4 - 60MW Gas Turbines
Lancaster Energy Facility #1

1-Hour NO_2 Analysis:

1. Convert NO2 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO2 = ($\mu g/m^3$) (0.0245/NO2 MW)

Where:

NO2 1-Hour $\mu g/m^3$:	7.7
NO2 MW:	46.0
Conversion:	0.0245

So:

ppm NO2=	**0.004**

2. Add NO2 1-hour background ambient data to projects modeling impacts.

ppm NO2 = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	0.004	
Ambient background data (ppm):	0.083	**(from LancasterStation)**

So:

Project + Background (ppm):	**0.09**
State NO2 1-Hour Standard (ppm):	**0.25**

Annual NO_2 Analysis:

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO2 = ($\mu g/m^3$) (0.0245/NO2 MW)

Where:

NO2 1-Annual $\mu g/m^3$:	0.36
NO2 MW:	46.0
Conversion:	0.0245

So:

ppm NO2 =	**0.0002**

2. Add NO2 annual background ambient data to projects modeling impacts.

ppm NO2 = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	0.0002	
Ambient background data (ppm):	0.018	**(from Lancaster Station)**

So:

Project + Background (ppm):	**0.0182**
Federal NO2 Annual Standard (ppm):	**0.0534**

Ambient CO Analysis
4 - 60MW Gas Turbines
Lancaster Energy Facility #1

1-Hour CO Analysis:

1. Convert CO 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm CO = ($\mu g/m^3$) (0.0245/CO MW)

Where:

CO 1-Hour $\mu g/m^3$:	6.0
CO MW:	28.0
Conversion:	0.0245

So:

ppm CO =	**0.005**

2. Add CO 1-hour background ambient data to projects modeling impacts.

ppm CO = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	**0.005**	
Ambient background data (ppm):	**7.2**	**(from Lancaster Station 1/6/99)**

So:

Project + Background (ppm):	**7.21**
State CO 1-Hour Standard (ppm):	**20.0**

8-Hour CO Analysis:

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm CO = ($\mu g/m^3$) (0.0245/CO MW)

Where:

CO 8-Hour $\mu g/m^3$:	2.6
CO MW:	28.0
Conversion:	0.0245

So:

ppm NO2=	**0.002**

2. Add CO 8-Hour background ambient data to projects modeling impacts.

ppm CO = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	**0.002**	
Ambient background data (ppm):	**5.41**	**(from Lancaster Station)**

So:

Project + Background (ppm):	**5.41**
State CO 8-Hour Standard (ppm):	**9.0**

Ambient PM10 Analysis
4 - 60MW Gas Turbines
Lancaster Energy Facility #1

24-Hour PM10 Analysis:

1. Add PM10 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ($\mu g/m^3$):	1.1	
Ambient background data ($\mu g/m^3$):	85.0	(from Lancaster Station)

So:

Project + Background ($\mu g/m^3$):	**86.1**
State PM10 24-Hour Standard ($\mu g/m^3$):	**50.0**

Annual PM10 Analysis:

1. Add PM10 Annual background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ($\mu g/m^3$):	0.217	
Ambient background data ($\mu g/m^3$):	25.6	(from Lancaster Station)

So:

Project + Background ($\mu g/m^3$):	**25.82**
State PM10 Annual Standard ($\mu g/m^3$):	**30.0**

View this page for another pollutant:

Hourly O_3
8-Hour O_3
PM 10
PM 2.5
CO
NO_2
SO_2
TACS

Start Over:

Data Statistics Home

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

and Number of Days Above the Hourly Standard

at Lancaster-W Pondera Street

parts per million

	1998		1999		2000	
High	Nov 16	0.077	Nov 4	0.083	Oct 17	0.062
2nd High	Oct 11	0.069	Jan 11	0.078	Sep 6	0.061
3rd High	Oct 21	0.063	Nov 2	0.074	Jul 25	0.061
4th High	Jan 26	0.059	Nov 5	0.068	Jul 24	0.060
*Days > State Standard		0		0		0
Annual Average		0.016		0.018		0.014
**Year Coverage		93		92		77

Go Backward a Year
Make a New Request

* The number of days at least one measurement was greater than the level of the state hourly standard (0.25 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.

** Year Coverage is an indicator of how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available.

View this page for another pollutant:

Hourly O_3

8-Hour O_3

PM 10

[illegible]

CO

NO_2

[illegible]

[illegible]

Start Over:

Data Statistics Home

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages

and Number of Days Above the 8-Hour Standards

at Lancaster-W Pondera Street

parts per million

	1998		1999		2000	
High	Dec 30	3.59	Jan 6	5.41	Jan 14	2.89
2nd High	Nov 14	3.56	Jan 2	3.99	Jan 13	2.79
3rd High	Nov 20	3.43	Dec 17	3.97	Jan 6	2.64
4th High	Dec 29	3.14	Jan 5	3.91	Jan 7	2.39
*Days > State Standard		0		0		0
*Days > Nat'l Standard		0		0		0
**Year Coverage		99		97		53

Go Backward a Year [illegible]

Make a New Request

* The number of days at least one non-overlapping 8-hour average was greater than the level of the state 8-hour standard (9.0 parts per million) or the national 8-hour standard (9 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.

** Year Coverage is an indicator of how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available.

California Air Resources Board

Hourly Carbon Monoxide Measurements

Lancaster-W Pondera Street

January 6, 1999

Maximum:	7.2
during Hour:	19
Maximum's Rank within Year:	1
Maximum 8-Hour Average:	5.41
with a First Hour of:	20
Average's Rank within Year:	1
Hours above State Standard:	0
Hours above National Standard:	0
Averages above National Standard:	0

Start Time	AM	PM
12:00	2.0	1.4
1:00	1.6	1.2
2:00	1.8	1.1
3:00	2.5	1.0
4:00	2.9	1.8
5:00	3.2	5.5
6:00	4.4	5.9
7:00	6.6	7.2
8:00	6.2	6.3
9:00	3.1	5.6
10:00	1.6	4.9
11:00	1.4	

Previous Day | Next Day

Make a New Request

Notes: All measurements expressed in parts per million.
All measurements represent hourly average concentrations starting at the hour listed.
Hours listed are in Pacific Standard Time. Add one hour to convert time to Pacific Daylight Time.
The number of hours above a standard is not necessarily related to a violation of the standard.

View this page for another pollutant:

Hourly O_3
8-Hour O_3
PM 10
PM 2.5
CO
NO_2
SO
H2S

Start Over:
Data Statistics Home

Highest 4 Daily PM10 Measurements and Annual PM10 Statistics

at Lancaster-W Pondera Street

micrograms per cubic meter

	1998		1999		2000
High	Dec 31	80.0	Dec 2	85.0	
2nd High	Apr 27	58.0	Jan 6	51.0	
3rd High	Apr 17	48.0	Nov 2	50.0	
4th High	Jul 16	46.0	May 6	44.0	
Measured:					
*Days > State Standard		2		2	
*Days > Nat'l Standard		0		0	
Calculated:					
*Days > State Standard		12.0		12.0	
*Days > Nat'l Standard		0.0		0.0	
99th Percentile		80		85	
**3-Year Average 99th		67		73	
***State Annual Average		22.3		25.6	
***Nat'l Annual Average		26.0		28.7	
**3-Year Nat'l Average		28		28	
****Year Coverage		85		95	

← Go Backward a Year
Make a New Request

* Measured days are those days that an actual measurement was greater than the level of the state daily standard (50 micrograms per cubic meter) or the national daily standard (150 micrograms per cubic meter). Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

** The 3-year statistics include data from the listed year and the two years before the listed year.

*** The state annual average is a geometric mean of all measurements. The national annual average is an arithmetic average of the 4 arithmetic quarterly averages.

**** Year Coverage is an indicator of how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the

Tier 3 Screening Analysis
4 - 60 MW Gas Turbines
Lancaster Energy Facility #1

Screening Parameters:

X/Q ($\mu g/m^3$)/(annual)	X/Q ($\mu g/m^3$)/(hourly)	MET	LEA
0.0896	1.9006	1	1.00

X/Q values are scaled to 25% because AQIA was normalized at 4.0 g/s.

Emission Calculations:

Compound	Emission Parameters (lb/hr)	(lb/yr)	(ton/yr)	(g/sec)	X/Q ($\mu g/m^3$)/(annual)	X/Q ($\mu g/m^3$)/(hourly)
Acetaldehyde	0.10247	870.96	0.43548	0.01292	0.00116	0.02456
Acrolein	0.02492	211.85	0.10593	0.00314	0.00028	0.00597
Ammonia	4.89895	41641.08	20.82054	0.61781	0.05535	1.17421
Benzene	0.03129	265.99	0.13300	0.00395	0.00035	0.00750
Ethylbenzene	0.03656	310.72	0.15536	0.00461	0.00041	0.00876
Formaldehyde	0.26032	2212.70	1.10635	0.03283	0.00294	0.06239
Naphthalene	0.00222	18.83	0.00942	0.00028	0.00003	0.00053
PAH'S	0.00055	4.71	0.00235	0.00007	0.00001	0.00013
Propylene	2.91389	24768.09	12.38404	0.36747	0.03292	0.69842
Toluene	0.20105	1708.96	0.85448	0.02536	0.00227	0.04819
Xylene	0.08253	701.47	0.35074	0.01041	0.00093	0.01978

Tier 3 Screening Analysis:

	Maximum Individual Cancer Risk (MICR)			**Chronic Hazard Index (HIC)**			**Acute Prameters**	
Compound	Unit Risk Factor	MP Factor	**MICR**	REL Factor	MP Factor	**HIC**	REL Factor	**HIA**
Acetaldehyde	2.70E-06	1.0	**3.13E-09**	9.00E+00	1.0	**0.00013**	n/a	**n/a**
Acrolein	n/a	n/a	**n/a**	n/a	n/a	**n/a**	1.90E-01	**0.03144**
Ammonia	n/a	n/a	**n/a**	2.00E+02	1.0	**0.00028**	3.20E+03	**0.00037**
Benzene	2.90E-05	1.0	**1.03E-08**	6.00E+00	1.0	**0.000059**	1.30E+03	**0.00001**
Ethylbenzene	n/a	n/a	**n/a**	2.00E+03	1.0	**0.000000**	n/a	**n/a**
Formaldehyde	6.00E-06	1.0	**1.76E-08**	3.00E+00	1.0	**0.000980**	9.40E+01	**0.00066**
Naphthalene	n/a	n/a	**n/a**	9.00E+00	1.0	**0.000003**	n/a	**n/a**
PAH'S	1.70E-03	12.7	**1.35E-07**	n/a	n/a	**n/a**	n/a	**n/a**
Propylene	n/a	n/a	**n/a**	3.00E+03	1.0	**0.000011**	n/a	**n/a**
Toluene	n/a	n/a	**n/a**	3.00E+02	1.0	**0.000008**	3.70E+04	**0.00000**
Xylene	n/a	n/a	**n/a**	7.00E+02	1.0	**0.000001**	2.20E+04	**0.00000**
		Total MICR:	**1.66E-07**		**Total HIC:**	**0.00147**		**0.03248**

Notes:
- Benzene uses an HAI adjustment factor of 0.88 to reflect its 6-hour average period.

ISCST3 - (DATED 99155)

ISCST3X PC (32 BIT) VERSION 3.3.1
(C) COPYRIGHT 1991-2000, TRINITY CONSULTANTS

Run Began on 5/16/2001 at 14:19:11

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** BREEZE ISC SUITE v3.3.2 - C:\Model\Lancaster\Lancaster.dat
** Trinity Consultants, Dallas, TX

CO STARTING
CO TITLEONE  La Jolla Energy - Lancaster - Unit Emission Rate - DDD May01
CO TITLETWO  4 GE7B Turbines Steam Injection - 1981 Lancaster SCAQMD Met
CO MODELOPT  CONC  URBAN  NOCALM
CO AVERTIME  1  3  8  24  ANNUAL
CO POLLUTID  OTHER
CO TERRHGTS  FLAT
CO RUNORNOT  RUN
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
SO LOCATION  GE7B_D  POINT  396535.0  3842279.0  0
** SRCDESCR  GE7B_D
SO LOCATION  GE7B_C  POINT  396505.0  3842279.0  0
** SRCDESCR  GE7B_C
SO LOCATION  GE7B_B  POINT  396515.0  3842279.0  0
** SRCDESCR  GE7B_B
SO LOCATION  GE7B_A  POINT  396525.0  3842279.0  0
** SRCDESCR  GE7B_A
SO SRCPARAM  GE7B_D  1.000000E+00  21.3  732.7  28.17  3.8
SO SRCPARAM  GE7B_C  1.000000E+00  21.3  732.7  28.17  3.8
SO SRCPARAM  GE7B_B  1.000000E+00  21.3  732.7  28.17  3.8
SO SRCPARAM  GE7B_A  1.000000E+00  21.3  732.7  28.17  3.8
SO SRCGROUP  ALL
SO FINISHED
```

**MODELOPTs:
CONC URBAN FLAT NOCALM

*** THE MAXIMUM 10 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE7B_D , GE7B_C , GE7B_B , GE7B_A ,

** CONC OF OTHER IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	7.60250	(81012607)	AT	(392277.00, 3841233.00)	DC	6.	7.59410	(81031505)	AT	(400777.00, 3842733.00)	DC
2.	7.59950	(81112906)	AT	(398277.00, 3846233.00)	DC	7.	7.59235	(81101605)	AT	(393277.00, 3845233.00)	DC
3.	7.59757	(81011007)	AT	(396777.00, 3846733.00)	DC	8.	7.59197	(81031406)	AT	(394277.00, 3838733.00)	DC
4.	7.59687	(81010807)	AT	(392277.00, 3843733.00)	DC	9.	7.58982	(81122504)	AT	(396777.00, 3846733.00)	DC
5.	7.59480	(81010903)	AT	(400777.00, 3842233.00)	DC	10.	7.58958	(81033106)	AT	(400777.00, 3842733.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

**MODELOPTs:
CONC URBAN FLAT NOCALM

*** THE MAXIMUM 10 3-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE7B_D , GE7B_C , GE7B_B , GE7B_A ,

** CONC OF OTHER IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	7.21901	(81052803)	AT	(400777.00, 3842233.00)	DC	6.	7.00900	(81082203)	AT	(396277.00, 3847733.00)	DC
2.	7.19683	(81052803)	AT	(400277.00, 3842233.00)	DC	7.	7.00046	(81052803)	AT	(401777.00, 3842233.00)	DC
3.	7.14108	(81052803)	AT	(401277.00, 3842233.00)	DC	8.	6.97766	(81082203)	AT	(396277.00, 3847233.00)	DC
4.	7.01893	(81052803)	AT	(399777.00, 3842233.00)	DC	9.	6.97076	(81101603)	AT	(396777.00, 3847233.00)	DC
5.	7.01085	(81110421)	AT	(397777.00, 3839233.00)	DC	10.	6.96757	(81082203)	AT	(396277.00, 3848233.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

**MODELOPTs:
CONC URBAN FLAT NOCALM

*** THE MAXIMUM 10 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE7B_D , GE7B_C , GE7B_B , GE7B_A ,

** CONC OF OTHER IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	3.31327	(81121408)	AT	(395777.00, 3846233.00)	DC	6.	3.16391	(81082208)	AT	(396277.00, 3847233.00)	DC
2.	3.27933	(81121408)	AT	(395777.00, 3846733.00)	DC	7.	3.14980	(81112708)	AT	(401277.00, 3842733.00)	DC
3.	3.22057	(81121324)	AT	(399277.00, 3841233.00)	DC	8.	3.14034	(81121408)	AT	(395777.00, 3845733.00)	DC
4.	3.17720	(81082208)	AT	(396277.00, 3846733.00)	DC	9.	3.13772	(81082208)	AT	(396277.00, 3846233.00)	DC
5.	3.16690	(81112708)	AT	(401777.00, 3842733.00)	DC	10.	3.12817	(81080708)	AT	(400277.00, 3842233.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

**MODELOPTs:
CONC URBAN FLAT NOCALM

*** THE MAXIMUM 10 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE7B_D , GE7B_C , GE7B_B , GE7B_A ,

** CONC OF OTHER IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	1.79215	(81060724)	AT	(397377.00, 3842333.00)	DC	6.	1.72489	(81060724)	AT	(397577.00, 3842333.00)	DC
2.	1.78144	(81060724)	AT	(397477.00, 3842333.00)	DC	7.	1.71937	(81052824)	AT	(400777.00, 3842233.00)	DC
3.	1.75277	(81052824)	AT	(399777.00, 3842233.00)	DC	8.	1.70504	(81061224)	AT	(397377.00, 3842233.00)	DC
4.	1.75074	(81052824)	AT	(400277.00, 3842233.00)	DC	9.	1.70458	(81052824)	AT	(399277.00, 3842233.00)	DC
5.	1.72547	(81060724)	AT	(397277.00, 3842333.00)	DC	10.	1.70109	(81061224)	AT	(397277.00, 3842233.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

**MODELOPTs:
CONC URBAN FLAT NOCALM

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.35837 AT (	398777.00, 3842233.00, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.35688 AT (	399277.00, 3842233.00, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.34550 AT (	399777.00, 3842233.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.34110 AT (	398277.00, 3842233.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	0.33389 AT (	399277.00, 3841733.00, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	0.33179 AT (	399777.00, 3841733.00, 0.00, 0.00)	DC	NA
	7TH HIGHEST VALUE IS	0.32937 AT (	400277.00, 3842233.00, 0.00, 0.00)	DC	NA
	8TH HIGHEST VALUE IS	0.32671 AT (	399777.00, 3842733.00, 0.00, 0.00)	DC	NA
	9TH HIGHEST VALUE IS	0.32577 AT (	399277.00, 3842733.00, 0.00, 0.00)	DC	NA
	10TH HIGHEST VALUE IS	0.32559 AT (	398777.00, 3841733.00, 0.00, 0.00)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY