

HEARING  
BEFORE THE  
CALIFORNIA ENERGY RESOURCES CONSERVATION  
AND DEVELOPMENT COMMISSION

In the Matter of: )  
 )  
Application for Certification ) Docket No.  
for the Metcalf Energy Center ) 99-AFC-3  
(Calpine Corporation and )  
Bechtel Enterprises, Inc.) )  

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COYOTE GRANGE HALL  
412 MONTEREY ROAD  
COYOTE, CALIFORNIA

WEDNESDAY, FEBRUARY 28, 2001

2:45 p.m.

Reported by:  
James Ramos  
Contract No. 170-99-001

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

COMMITTEE MEMBERS PRESENT

Robert A. Laurie, Commissioner, Presiding Member

Gary Fay, Hearing Officer

Mike Smith, Adviser to Chairman Keese

STAFF PRESENT

Dick Ratliff

Kerry Willis

Paul C. Richins, Jr.

APPLICANT

Jeffery D. Harris, Attorney,  
Ellison, Schneider and Harris  
for Calpine Corporation/Bechtel Enterprises

Kenneth E. Abreu, Development Manager  
Calpine Corporation  
Metcalf Energy Center

John L. Carrier, Senior Project Manager  
Debra J. Crowe  
CH2MHILL

Steve DeYoung  
Calpine Corporation/Bechtel Enterprises

Gary Rubenstein  
Sierra Research, Calpine Corporation

INTERVENORS

Scott Scholz  
South San Jose.com

William J. Garbett  
T.H.E.P.U.B.L.I.C.

Issa Ajlouny

Jeffrey Wade

INTERVENORS

Elizabeth Cord  
Steven Nelson  
Philip Mitchel  
Suzanna Wong  
Santa Teresa Citizens Action Group

Helene Leckman Leichter, City Attorney  
City of Morgan Hill

Roger Beers, Attorney  
Kelly R. Tilton, Attorney  
Coyote Valley Research Park

ALSO PRESENT

Mollie Dent  
City of San Jose

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

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1 P R O C E E D I N G S

2 2:45 p.m.

3 HEARING OFFICER FAY: Good afternoon.

4 This is the official beginning of evidentiary  
5 hearings in the Metcalf Energy Center application  
6 for certification case, docket number 99-AFC-03.

7 Prior to this we held an off-the-record  
8 discussion about a policy statement hearing for  
9 March 16th, a comment hearing for March 23rd, and  
10 the Committee's initial proposal for a schedule  
11 for briefs in the case.

12 At this time I'd like to take  
13 introductions. Mr. Harris.

14 MR. HARRIS: My name is Jeff Harris with  
15 Ellison, Schneider and Harrison, counsel for the  
16 Calpine/Bechtel joint venture. To my right is Mr.  
17 Ken Abreu, who is the Project Manager for the  
18 Calpine/Bechtel joint venture. And to my left are  
19 Steve DeYoung, who is the Environmental Project  
20 Manager and John Carrier with CH2MHILL. And the  
21 rest of our folks are witnesses you'll meet in a  
22 minute.

23 HEARING OFFICER FAY: Thank you. Mr.  
24 Ratliff.

25 MR. RATLIFF: Dick Ratliff, counsel for

1 staff. Also with us is Kerry Willis, counsel for  
2 staff. And Paul Richins, sitting behind me, who  
3 is the Project Manager. And we have several  
4 witnesses who will be introduced when it's their  
5 turn.

6 HEARING OFFICER FAY: Thank you. Other  
7 parties?

8 MR. BEERS: Yes, my name is Roger Beers;  
9 I'm an attorney for Coyote Valley Research Park.  
10 And with me is Steven Radis, who will be a witness  
11 representing us. And also Kelly Tilton with  
12 Grueneich Resource Advocates.

13 HEARING OFFICER FAY: Thank you.

14 MS. LEICHTER: Helene Leichter, City  
15 Attorney, City of Morgan Hill.

16 MS. DENT: Molli Dent, City Attorney's  
17 Office, City of San Jose.

18 MR. WADE: Jeff Wade, intervenor.

19 MR. AJLOUNY: Issa Ajlouny, local  
20 resident, intervenor.

21 MR. SCHOLZ: Scott Scholz, local  
22 resident, intervenor.

23 MS. CORD: I'm Elizabeth Cord; Santa  
24 Teresa Citizen Action Group is who I represent.  
25 To my left is Steve Nelson, who's also working

1 with me representing the Santa Teresa Citizen  
2 Action Group today.

3 HEARING OFFICER FAY: Could you repeat  
4 that? Which group?

5 MS. CORD: Santa Teresa Citizen Action  
6 Group.

7 HEARING OFFICER FAY: Thank you.

8 MS. CORD: You're welcome.

9 HEARING OFFICER FAY: Any others? Thank  
10 you. I'd like to, at Mr. Valkosky's request, he  
11 asked that I repeat this.

12 This is the fifth set of evidentiary  
13 hearings for the proposed Metcalf Energy Center.  
14 The Committee noticed this set of hearings in a  
15 notice and order issued on January 12, 2001, and  
16 that document also contained filing dates for  
17 testimony.

18 Notice of this location, which is a  
19 change from the original order, was sent to all  
20 parties on February 16th.

21 In addition to the October 2000 staff  
22 assessment and the AFC document and its associated  
23 supplements, other filings pertinent to this set  
24 of hearings include applicant's group 3B testimony  
25 dated January 26th; applicant's group 3B rebuttal

1 testimony dated February 21st; staff's group 3B  
2 rebuttal testimony dated February 21st; the  
3 BAAQMD, that's the Bay Area Air Quality Management  
4 District, rebuttal testimony of Glen E. Long dated  
5 February 20th.

6 CVRP's group 3B testimony dated February  
7 13th; CVRP errata to group 3B testimony dated  
8 February 21st; City of Morgan Hill 3B testimony  
9 dated February 12th, and then a revised version  
10 dated February 27th; and then STCAG Group 3B  
11 testimony on transmission issues and public health  
12 dated February 13th.

13 Is there any other testimony that is  
14 proposed today that I have not mentioned?

15 MR. RATLIFF: Yes, Mr. Fay, there is one  
16 additional piece of testimony that has been filed  
17 by the Bay Area District. We have copies with us;  
18 it was late filed yesterday with a motion for  
19 leave for late filing. This is a witness we had  
20 previously identified; the witness is Ken Lim for  
21 the District.

22 We will make these copies -- we have  
23 copies of the testimony; the written testimony is  
24 quite brief. Paul Richins, the Project Manager,  
25 has the testimony. And we realize that testimony

1 filed yesterday, nobody could have had a proper  
2 chance to read and determine what kind of cross-  
3 examination they would want to have on such a  
4 witness, so what we would propose to do is if  
5 anyone so desires to cross-examine Mr. Lim, we  
6 would offer to bring him back at the next set of  
7 hearings and allow the cross-examination to go  
8 forward at that time.

9 HEARING OFFICER FAY: All right. I have  
10 discussed this matter with Mr. Ratliff off the  
11 record, and I was aware that this was coming in  
12 late. And I can anticipate your objections.

13 I think the fairest way to address this  
14 is for him to distribute copies of Mr. Lim's  
15 testimony. And why don't you do that in the next  
16 few minutes so people have that. Allow Mr. Lim to  
17 testify on direct, and any party that wishes to  
18 cross-examine him today, we'll allow them to do  
19 so. But if people feel the need to have more  
20 time, he will be made available on March 12th at  
21 the beginning of our next set of hearings.

22 But I would need to hear from any party  
23 that wishes to cross-examine him, just in case  
24 nobody does, and then he can save the trip here.

25 MS. CORD: Mr. Fay, I'd like to object.

1 I appreciate you making that offer that he be  
2 available at some future point, but I'd like to  
3 object as to why we have a schedule if the Energy  
4 Commission, itself, isn't following this schedule.

5 HEARING OFFICER FAY: Well, I note your  
6 objection. As I say, I anticipated it. This is a  
7 problem. And it's a serious one. I think the  
8 best we can do to cure the problem is to make the  
9 witness available at a later time after you've had  
10 a chance to review his testimony and consider  
11 questions for cross-examination.

12 MS. CORD: Thank you, and I appreciate  
13 your trying to be helpful, but I would suggest the  
14 best cure is that this witness isn't really part  
15 of the schedule and really shouldn't be allowed to  
16 be testifying today or in the future.

17 HEARING OFFICER FAY: Okay, apparently  
18 staff identified the witness previously, --

19 MR. RATLIFF: We have identified the  
20 witness previously. Of course, the testimony is  
21 late. Obviously the Energy Commission Staff  
22 cannot control the schedule for filing testimony  
23 done by a sister agency.

24 But the Commission has, and by  
25 memorandum of understanding, must rely on the area

1 Districts for air quality information. And for  
2 that reason we think it's important that the  
3 District be allowed to testify.

4 MS. CORD: You know, my comment about  
5 that is that we've just been given this whole  
6 schedule of dates that we're supposed to be  
7 preparing briefs for many other subjects. If we  
8 have to continue to work on air quality for the  
9 next two weeks after air quality is over, in order  
10 to address testimony we've only just gotten today,  
11 I don't know how we can possibly achieve this  
12 schedule, as well.

13 I think this is a serious burden on the  
14 public, and certainly on the intervenors.

15 HEARING OFFICER FAY: Okay, well, your  
16 objection is noted. We're going to go ahead and  
17 hear Mr. Lim, and make him available, as I  
18 indicated. And we'll take your concerns into  
19 account.

20 MS. CORD: Can I just make sure that the  
21 record notes that you had made that decision  
22 before hearing from the intervenors?

23 HEARING OFFICER FAY: Well, I did hear  
24 from you.

25 MS. CORD: I understand that, I'd like

1 the record to note --

2 HEARING OFFICER FAY: Okay.

3 MS. CORD: -- that you had made that  
4 decision without notifying or hearing any comments  
5 from the intervenors.

6 HEARING OFFICER FAY: I understand.

7 MR. AJLOUNY: And for the record I'd  
8 like to object. I know it might seem a little  
9 different, but a lot of us intervenors are  
10 counting on people that do have the finances and  
11 can afford lawyers.

12 And I know Coyote Valley Research Park  
13 has put a lot of time, and I'm not trying to speak  
14 for them, but I do know money is a consideration.  
15 And now for them to want to cross-examine there  
16 are going to be more funds expended to accommodate  
17 their people to come back in two weeks in the air  
18 issue. And they might decide not to.

19 And a lot of us are counting on them to  
20 come out with things that we don't have the  
21 capability of doing or the skill to do or the time  
22 to do.

23 HEARING OFFICER FAY: Okay. All right,  
24 anything further on that?

25 The purposes and procedures we'll follow

1           today are the same as in previous evidentiary  
2           hearings. Basically a party sponsoring a witness  
3           shall briefly establish the witness'  
4           qualifications and have the witness orally  
5           summarize the prepared testimony before requesting  
6           that the testimony be moved into evidence.

7                     An alternative would be if a party  
8           simply wanted to submit the testimony in writing  
9           with a declaration and waive cross-examination on  
10          that.

11                    Relevant exhibits may be offered into  
12          evidence at that time, as well. At the conclusion  
13          of the witness' direct testimony the Committee  
14          will provide the other parties an opportunity for  
15          cross-examination, followed by redirect and  
16          recross-examination as appropriate.

17                    At the conclusion of each topic area  
18          we'll provide an opportunity for public comment on  
19          that topic.

20                    Parties are encouraged to consolidate  
21          presentations by witnesses and/or cross-  
22          examination to the greatest extent possible in  
23          order to minimize duplication and conserve hearing  
24          time.

25                    And towards that end I think we'll

1 probably be hearing from some panels today, of  
2 witnesses. And the witnesses will give their  
3 direct testimony as a panel, and then be made  
4 available as a panel, as well.

5 Any other preliminary matters before we  
6 begin? Yes.

7 MR. AJLOUNY: -- the document that we  
8 just received from your staff is -- it looks like  
9 just a short paragraph and then a declaration of  
10 Dr. Kenneth Lim. Is there anything else that we  
11 didn't get, or is there -- I don't see any  
12 testimony here other than --

13 HEARING OFFICER FAY: Mr. Ratliff?

14 MR. RATLIFF: I believe the declaration  
15 is both the combined testimony and typical  
16 declaration form. That was the form in which it  
17 was filed.

18 HEARING OFFICER FAY: So, it's six pages  
19 total?

20 MR. AJLOUNY: Of declaration, there's no  
21 text --

22 MR. RATLIFF: At most, I believe, it may  
23 be less. Six pages including the cover page, yes.

24 MR. AJLOUNY: So where does the  
25 testimony begin?

1 HEARING OFFICER FAY: Mr. Ratliff, we  
2 have a question there. Where does the testimony  
3 begin? Is it with the declaration? It appears to  
4 be so. It looks like the first sheet is a  
5 facsimile transmittal sheet. The second sheet is  
6 a cover letter.

7 MR. RATLIFF: It's paragraphs 8, 9 and  
8 10, it appears.

9 HEARING OFFICER FAY: All right. Okay,  
10 let's proceed then. Yes, Ms. Willis.

11 MS. WILLIS: On the exhibit list that I  
12 was just handed out, it ends on page 8 at exhibit  
13 80. I believe we're into 100 at this point. I  
14 don't know if I have a list that's incorrect, or -  
15 -

16 HEARING OFFICER FAY: I apologize,  
17 apparently -- you have a longer one? Some of  
18 these copies perhaps were not complete. Let's go  
19 off the record.

20 (Off the record.)

21 HEARING OFFICER FAY: I apologize that  
22 some of the copies of the tentative exhibit list  
23 are incomplete. Apparently they stop on page 8 at  
24 exhibit 80, when in fact we go up to exhibit 109.  
25 But I think we're going to get that corrected.

1           Anyway, be sure that you have a complete copy of  
2           the exhibit list before you rely on it.

3                         And now I'd like to begin receiving  
4           evidence on air quality and public health.  And  
5           we'll begin with the applicant, as we have before.  
6           Mr. Harris.

7                         MR. HARRIS:  Thank you.  I'd ask that  
8           the witnesses be sworn, and we'll present our air  
9           quality and public health witnesses as a panel.

10                        HEARING OFFICER FAY:  Please swear the  
11           witnesses.

12           Whereupon,

13                        GARY RUBENSTEIN and JOHN A. LOWE  
14           were called as witnesses herein, and after first  
15           having been duly sworn, were examined and  
16           testified as follows:

17                        MR. HARRIS:  Thank you.  As I said,  
18           we're going to present our public health and air  
19           quality testimony as a panel.  We have Mr.  
20           Rubenstein and Mr. Lowe.

21                        We will begin with air quality and go  
22           through Mr. Rubenstein's testimony and then follow  
23           up with Mr. Lowe before we make the witnesses  
24           available for cross-examination.

25           //

1 DIRECT EXAMINATION

2 BY MR. HARRIS:

3 Q Mr. Rubenstein, can you state your name  
4 for the record and spell it for the recorder,  
5 please.

6 MR. RUBENSTEIN: Yes, my name is Gary  
7 Rubenstein, spelled G-a-r-y R-u-b-e-n-s-t-e-i-n.

8 MR. HARRIS: And what subject matter  
9 testimony are you here to sponsor today?

10 MR. RUBENSTEIN: I'm here today to  
11 sponsor testimony in air quality and supporting  
12 testimony in public health.

13 MR. HARRIS: And I understand the  
14 documents that you're sponsoring were prefiled as  
15 attachment 1 to your prefiled testimony, is that  
16 correct?

17 MR. RUBENSTEIN: Yes, that's correct.

18 MR. HARRIS: I have the exhibit list,  
19 and it's quite a lengthy one. I think that may  
20 take more time than our testimony, but let's go  
21 ahead and go through that.

22 Again, it's attachment 1 to Mr.  
23 Rubenstein's prefiled testimony. Those documents  
24 are first several that are part of exhibit 1, AFC  
25 chapter 8.1; AFC appendix 8.1A; supporting air

1 quality analysis for AFC chapters 8.2, biological  
2 resources; supporting air quality analysis for AFC  
3 chapters 8.6, public health; and supporting plume  
4 visibility analysis for AFC chapter 8.11, visual  
5 resources.

6 I'm going to move through with exhibit  
7 numbers in the remaining ones. We have exhibit 4;  
8 exhibit 5; a new item which is supplement C to the  
9 AFC errata sheet, that's a new exhibit and that's  
10 got to be given a number.

11 HEARING OFFICER FAY: Exhibit 110.

12 MR. HARRIS: Then we have exhibit 13.  
13 Then a new exhibit, response to CEC informal data  
14 request AQ-1 is a new exhibit.

15 HEARING OFFICER FAY: Exhibit 111.

16 MR. HARRIS: Response to CEC informal  
17 data request AQ-2 through AQ-7 is a new exhibit.

18 HEARING OFFICER FAY: Exhibit 112.

19 MR. HARRIS: Continuing on, exhibit 16A,  
20 16B, 17, 57, 88; a new exhibit, responses to CVRP  
21 data request numbers 1, 2, 3, 4, set 7.

22 HEARING OFFICER FAY: Exhibit 113.

23 MR. HARRIS: Responses to CVRP data  
24 requests part A, number 1; part B, numbers 1 and 2  
25 of set 8.

1 HEARING OFFICER FAY: Exhibit 114.

2 MR. HARRIS: Exhibit 24; exhibit 23;  
3 exhibit 16A again; a letter dated May 14, 1999  
4 from MEC to Lorraine White, CEC, transmitting a  
5 copy of a May 5, 1999 letter from the Metcalf  
6 Energy Center to Bay Area AQMD, including attached  
7 air quality permit application, CEC docket number  
8 11095, a new exhibit.

9 HEARING OFFICER FAY: Exhibit 115.

10 MR. HARRIS: A letter dated May 7, 1999,  
11 from Sierra Research to the BAAQMD transmitting  
12 original signed certificate statement.

13 HEARING OFFICER FAY: It's exhibit 116.

14 MR. HARRIS: Letter dated June 14, 1999  
15 from Sierra Research to the BAAQMD responding to  
16 BAAQMD questions.

17 HEARING OFFICER FAY: Exhibit 117.

18 MR. HARRIS: Letter dated November 2,  
19 1999 from Sierra Research to Mike Ringer -- is it  
20 all right if I abbreviate these at this point,  
21 Gary?

22 HEARING OFFICER FAY: Sure.

23 MR. HARRIS: Okay.

24 HEARING OFFICER FAY: That's exhibit  
25 118.

1                   MR. HARRIS: Letter dated February 15,  
2                   2000, from MEC to CEC transmitting five CDs of  
3                   revised air dispersion modeling.

4                   HEARING OFFICER FAY: Exhibit 119.

5                   MR. HARRIS: Letter dated March 6, 2000  
6                   from Sierra Research to Paul Richins.

7                   HEARING OFFICER FAY: Exhibit 120.

8                   MR. HARRIS: Letter dated April 7, 2000  
9                   from MEC to Paul Richins/Roger Johnson.

10                  HEARING OFFICER FAY: Exhibit 121.

11                  MR. HARRIS: Letter dated April 7, 2000  
12                  from Sierra Research to Magdy Badr.

13                  HEARING OFFICER FAY: Exhibit 122.

14                  MR. HARRIS: Letter dated April 12, 2000  
15                  from Sierra Research to intervenor Jeff Wade.

16                  HEARING OFFICER FAY: Exhibit 123.

17                  MR. HARRIS: Letter dated June 14, 2000  
18                  from MEC to Paul Richins.

19                  HEARING OFFICER FAY: Exhibit 124.

20                  MR. HARRIS: Letter dated July 12, 2000  
21                  from MEC to Paul Richins.

22                  HEARING OFFICER FAY: Exhibit 125.

23                  MR. HARRIS: Letter dated August 9, 2000  
24                  from MEC to Paul Richins.

25                  HEARING OFFICER FAY: Exhibit 126.

1                   MR. HARRIS: And CEC data request air  
2                   quality number 8.

3                   HEARING OFFICER FAY: Exhibit 127.

4                   MR. HARRIS: Letter dated August 9,  
5                   transmitting letter dated August 3 from Sierra  
6                   Research to the BAAQMD.

7                   HEARING OFFICER FAY: Exhibit 128.

8                   MR. HARRIS: Letter dated August 30,  
9                   2000 from MEC to Paul Richins.

10                  HEARING OFFICER FAY: Exhibit 129.

11                  MR. HARRIS: Letter dated August 22,  
12                  2000 from MEC to Paul Richins.

13                  HEARING OFFICER FAY: Exhibit 130.

14                  MR. HARRIS: Email dated August 8, 2000  
15                  from Sierra Research to Mike Ringer.

16                  HEARING OFFICER FAY: Exhibit 131.

17                  MR. HARRIS: Letter dated September 14,  
18                  2000 from MEC to Paul Richins.

19                  HEARING OFFICER FAY: Exhibit 132.

20                  MR. HARRIS: Letter dated November 17,  
21                  2000 from Sierra Research to the BAAQMD.

22                  HEARING OFFICER FAY: Exhibit 133.

23                  MR. HARRIS: Our group 3B direct  
24                  testimony.

25                  HEARING OFFICER FAY: And all of that

1 together would be exhibit 134.

2 MR. HARRIS: Okay, thank you.

3 Mr. Rubenstein, I understand that there  
4 are also three additions or corrections to your  
5 testimony, is that correct?

6 MR. RUBENSTEIN: Yes, that's correct.

7 MR. HARRIS: Those additions and  
8 corrections are exhibit 47. As an addition, a new  
9 document, responses to CVRP data request part A  
10 numbers 1D and 4D of set 3B is a new exhibit --  
11 I'm sorry, 4A.

12 HEARING OFFICER FAY: That will be  
13 exhibit 135.

14 MR. HARRIS: And then exhibit 30, which  
15 is PSA comment set 9. Apologize for the length of  
16 that recitation.

17 Mr. Rubenstein, now with those  
18 corrections and clarifications were these  
19 documents prepared either by you or at your  
20 direction?

21 MR. RUBENSTEIN: Yes.

22 MR. HARRIS: And in your testimony you  
23 state that you've reviewed the final staff  
24 assessment and the conditions of certification.  
25 And specifically on page 2 of your testimony you

1 state that Calpine/Bechtel has reviewed these  
2 conditions and have no substantive objections to  
3 any of them at the present time.

4 Can you clarify that for us, please?

5 MR. RUBENSTEIN: Yes. I've reviewed all  
6 of the proposed conditions of certification for  
7 air quality and public health. And the applicant  
8 has no objections. The only qualification that I  
9 made was with respect to proposed condition AQ-52,  
10 which deals with the use of control equipment on  
11 diesel-fired construction equipment.

12 It's my understanding that that  
13 condition has been evolving at the Commission over  
14 the last several months. It is a standardized  
15 condition and we would hope that the latest  
16 version of that condition would be reflected in  
17 the final conditions of approval, as opposed to  
18 the version that's in the final staff assessment.

19 MR. HARRIS: So you're just looking for  
20 that updated standard condition to be included, is  
21 that correct?

22 MR. RUBENSTEIN: That's correct.

23 MR. HARRIS: And we'll work with staff  
24 on that, too. Okay, with that exception now, are  
25 the facts stated therein true to the best of your

1 knowledge?

2 MR. RUBENSTEIN: Yes.

3 MR. HARRIS: And are the opinions stated  
4 in your testimony your own?

5 MR. RUBENSTEIN: Yes, they are.

6 MR. HARRIS: And do you adopt this as  
7 your testimony for this proceeding?

8 MR. RUBENSTEIN: Yes, I do.

9 MR. HARRIS: Could you review your  
10 qualifications for the Committee, please?

11 MR. RUBENSTEIN: Yes, I have a bachelor  
12 of science degree in engineering from the  
13 California Institute of Technology. I have  
14 approximately 30 years of experience in the field  
15 of air pollution research and control.

16 That experience includes approximately  
17 eight years with the staff of the California Air  
18 Resources Board. When I left the Air Resources  
19 Board in 1981 I was the Deputy Executive Officer  
20 for Technical Programs.

21 I then co-founded Sierra Research, the  
22 consulting firm that currently employs me, and  
23 have been with Sierra Research ever since.

24 Included in my experience is  
25 participation in various aspects of over 25 siting

1 cases before the California Energy Commission,  
2 totaling generation capacity of over 10,000  
3 megawatts.

4 MR. HARRIS: Thank you. I'd like to go  
5 now into your direct testimony. Could you provide  
6 a summary of your role and the analysis you  
7 performed for the project, please.

8 MR. RUBENSTEIN: Yes. Our  
9 responsibility with respect to this project was to  
10 evaluate the air quality impacts of the project  
11 and insure that the project would comply with all  
12 of the applicable air quality requirements.

13 If I could just briefly summarize those  
14 requirements, they fall really into two  
15 categories. The first category of requirements is  
16 intended to address local air quality issues. And  
17 the second category looks at more regional issues.

18 There are three elements of the analysis  
19 that focus on local air quality. The first is the  
20 requirement that a project has to use best  
21 available control technology. It's the  
22 fundamental cornerstone of any licensing process,  
23 that new facilities have to use the cleanest  
24 technologies available.

25 By insuring that those projects use

1 clean technologies to start, you insure that the  
2 impacts on the local environment are minimized.

3 Second aspect of our local analysis had  
4 to do with looking at the air quality impacts of  
5 the project. In performing our air quality impact  
6 analyses we take a look at worst case emissions,  
7 the maximum expected emissions from the plant  
8 under a variety of different operating scenarios.  
9 We take worst case weather conditions. And we  
10 take a look at existing air quality levels.

11 We superimpose those conservative  
12 assumptions one on top of the other in our  
13 analysis even in cases where that superposition is  
14 physically impossible.

15 For example, the worst case of emissions  
16 from a power plant might occur during winter  
17 conditions when the ambient temperatures are  
18 lowest and the mass flow through the engines are  
19 highest.

20 The worst case meteorological conditions  
21 for dispersion might occur in the summer. And we  
22 would, nonetheless, assume that those worst case  
23 emissions aspects of the wintertime apply during  
24 the summer meteorological conditions, even that is  
25 not physically possible.

1           The purpose of all of those conservative  
2           assumptions is to make sure that the project will  
3           not cause any violations of any state or air  
4           quality standards at anytime under any weather  
5           conditions and under any operating conditions.

6           And we believe that the analysis that  
7           we've performed, and it's been reviewed by the  
8           staff, confirms that conclusion.

9           Third element of the local analysis is a  
10          screening level health risk assessment. The  
11          purpose of that risk assessment is to insure that  
12          the project will not create any significant health  
13          risk from the trace amounts of toxic compounds  
14          that are emitted from the plant.

15          And, again, that analysis is designed  
16          specifically to make sure that the plant does not  
17          result in any significant impacts in the local  
18          area.

19          In addition to satisfying all those  
20          requirements, to make sure that the plant is clean  
21          and safe, we also have to take a look at regional  
22          impacts. And there are also three aspects of the  
23          regional impacts.

24          First of all, we prepared a cumulative  
25          air quality impacts analysis. That cumulative air

1 quality impact analysis looked at the impacts of  
2 the project in addition to existing background air  
3 quality levels.

4 And once again, as with the local air  
5 quality analysis, we used conservative assumptions  
6 on top of conservative assumptions. So that, for  
7 example, if the highest PM10 levels currently in  
8 this region occur in the wintertime, and if the  
9 highest project impacts for PM10 were to occur in  
10 the summertime, we would nonetheless assume that  
11 they occurred at the same time.

12 Add them together, and with that level  
13 of conservatism we demonstrated the project will  
14 not cause any new violations of any state or  
15 federal air quality standards.

16 That analysis did conclude that the  
17 project contributes to existing violations of the  
18 state ozone standard and the state PM10 standard.

19 The second cumulative impacts analysis  
20 that was performed took a look at the combined  
21 impacts of this project in conjunction with  
22 proposed Coyote Valley Research Park and the  
23 Coyote Valley Urban Reserve.

24 That analysis, which is also summarized  
25 in the final staff assessment, once again

1 indicated that these projects would contribute to  
2 existing violations of air quality standards.  
3 They also indicated that the impacts from these  
4 other projects would be much greater than those  
5 from the Metcalf Energy Center.

6 Another aspect of the regional analysis  
7 we did has to do with the provision of emissions  
8 offsets. Emissions offsets are one of the most  
9 misunderstood aspects of the air quality  
10 regulatory program

11 Emission offsets are not intended to  
12 protect local air quality. They never have been,  
13 and they do not. Emission offsets are part of a  
14 regional mitigation program designed to insure  
15 that new plants of any type can be constructed  
16 while still making sure that progress towards  
17 cleaner air is maintained.

18 Emission offsets are not an option that  
19 can be elected by a project applicant to avoid any  
20 other requirements. Emission offsets are mandated  
21 by local regulations and state law and federal  
22 law.

23 We provided offsets for this project as  
24 required by the Bay Area Air Quality Management  
25 District. And those are offsets for precursors of

1 ozone, hydrocarbons and oxides of nitrogen.

2 Although the Bay Area District's  
3 regulations allow those offsets to come from  
4 anywhere within the Bay Area District's  
5 jurisdiction, because ozone is a regional air  
6 quality problem, we elected to provide all of our  
7 offsets from within the San Jose-Mountain View  
8 areas for ozone precursors.

9 The third element of the regional  
10 analysis has to do with additional mitigation.  
11 And in particular, as a result of concerns raised  
12 by the Commission Staff, and by the community  
13 regarding PM10 impacts from the project, we  
14 proposed additional mitigation in the form of  
15 emission reduction credits to mitigate the PM10  
16 impacts from the project.

17 The direct PM10 impacts from the project  
18 do not require mitigation under the Bay Area  
19 District rules, because our emissions were so low.  
20 But nonetheless, because of the concerns that were  
21 raised, we provided additional PM10 mitigation.

22 The bottomline of the analysis is that  
23 we took a look at local impacts and confirmed that  
24 the project would be safe at all times, under all  
25 operating conditions, and under all weather

1 conditions.

2 That analysis didn't take into account  
3 emission offsets or any other mitigation. That  
4 was based on the project design.

5 After making that demonstration to  
6 provide regional air quality benefits, we  
7 performed the cumulative impacts analysis,  
8 provided emissions offsets, and provided the  
9 additional PM10 mitigation.

10 And that complete the summary of my  
11 testimony.

12 MR. HARRIS: Thank you. I want to ask  
13 you a couple questions, if I can, and I want to go  
14 to the issues of startups and shutdowns. A lot of  
15 issues raised about that.

16 Can you please provide a summary of your  
17 analysis on the issues of startup and shutdowns?

18 MR. RUBENSTEIN: Yes. In table 2 of my  
19 testimony I presented a summary of the frequency  
20 with which turbine startup and shutdown for a  
21 number of projects that have been proved by the  
22 California Energy Commission, and compared that  
23 frequency with the startup and shutdown frequency  
24 proposed for the Metcalf Energy Center.

25 What the data indicate is that different

1 project developers, looking at different  
2 locations, different market conditions, may  
3 propose different frequencies of startups and  
4 shutdowns for individuals projects. There's quite  
5 a bit of variability.

6 But the bottomline is that the frequency  
7 of startups and shutdowns proposed for the Metcalf  
8 Energy Center is certainly not outside the range.  
9 Some projects propose more, some projects propose  
10 less. And we believe that the frequency is one  
11 that is, like I said, not unusual for plants in  
12 California in the current market.

13 All of the air quality analyses that  
14 were done reflected this frequency of startups and  
15 shutdowns. And despite that frequency, which  
16 again is within the range of other projects, we  
17 believe that the data show the project will be  
18 safe at anytime under all weather conditions at  
19 all locations.

20 MR. HARRIS: Thank you. I want to turn  
21 now to the issue of PM10 emission rates. Again,  
22 this is an issue that's been raised by several  
23 parties in the proceeding.

24 Can you summarize your analysis on the  
25 issue of PM10 emission rates?

1                   MR. RUBENSTEIN: Yes. There's a summary  
2 of PM10 emission rates in table 1 of my direct  
3 testimony. And what that summary indicates is  
4 that there is a range of PM10 emission rates that  
5 have been proposed for gas-fired gas turbines over  
6 the last several years.

7                   That range goes from 9 pounds an hour,  
8 consistent with the proposal for the Metcalf  
9 Energy Center, in the unfired case, to over 25  
10 pounds per hour.

11                   The reasons for that variability, in my  
12 opinion, are principally related to the assessment  
13 of risk by turbine vendors, due to uncertainties  
14 in the methods that are used to measure  
15 particulate emissions.

16                   The uncertainty of those test  
17 measurements is due to the fact that we're trying  
18 to use a test method that's perhaps 30 or 40 years  
19 old, designed to measure particulate emissions  
20 from sources that are much dirtier, and use them  
21 to measure particulate emissions from gas-fired  
22 combustion equipment which, until ten years ago,  
23 were typically viewed as simply having negligible  
24 particulate emissions, and nobody bothered to  
25 measure them.

1           The result is that you can see, if you  
2           evaluate the data, a large amount of variability  
3           in particulate test results, not due to variation  
4           in emission rates, but due to uncertainties in the  
5           test method.

6           And I can certainly appreciate the  
7           position of turbine vendors who are required to  
8           make commercial guarantees for the performance of  
9           their equipment, that those guarantees will take  
10          into account that uncertainty.

11          That uncertainty also gets reflected in  
12          the specification sheets, which are different from  
13          the commercial guarantees. And in my experience,  
14          sometimes the specification sheets that are  
15          provided to applicants have higher emission rates  
16          than what ultimately ends up in the guarantee.  
17          Sometimes they have lower emission rates than what  
18          ultimately ends up in the guarantee. Because the  
19          guarantee is ultimately a commercial negotiation.

20          What we used in preparing the PM10  
21          emission rates for this project is what we believe  
22          to be sound engineering judgment. And that  
23          judgment was based both on commercial guarantees  
24          for other projects, and also on a review of  
25          available particulate test data, which indicated

1 to us that the emissions from the plant would best  
2 be represented by maximum of 9 pounds an hour  
3 unfired, and 12 pounds an hour in the fired case.

4 It's my professional opinion, based on  
5 all of the data that I've looked at, that when a  
6 particulate emissions test is properly conducted  
7 on a turbine of this size, that the particulate  
8 emissions will be on the order of 5 to 7 pounds  
9 per hour, well below the 9 pound per hour level  
10 that we're proposing.

11 There is a table in the rebuttal  
12 testimony which is table 2 on page 4, and which I  
13 extracted from a summary table prepared and  
14 included in CVRP's direct testimony, a subset of  
15 the test results which come closest to  
16 representing, in my opinion, the correct way to  
17 measure particulate emissions from gas-fired gas  
18 turbines. This is not exactly what I recommend,  
19 but it comes closest of all the tests.

20 And the two key elements included in  
21 this list are a minimum sample collection time of  
22 four hours, or 240 minutes. And the use of a test  
23 method that separates PM10, or 10 micron size  
24 particles from larger particles.

25 Those two elements, as you can see if

1       you look at the data, result in far less  
2       variability in the results than does the broader  
3       list included in CVRP's testimony.

4               And in fact, the average for these tests  
5       are approximately 5 pounds per hour when  
6       extrapolated up to a combustion turbine size of  
7       200 megawatts.

8               And I want to quibble with the CVRP's  
9       approach, because as you can see from the column  
10      towards the left, these turbines are all ranging  
11      in sizes from 44 to 82 megawatts. None of them  
12      are, in fact, the same size as the turbine  
13      proposed for MEC.

14              But as I said, I don't want to quibble  
15      with the extrapolation. The bottomline is that I  
16      believe this data supports my position that by and  
17      large the emissions from turbines of this class  
18      will be in the range of 5 to 7 pounds per hour.  
19      And that that is a fact, notwithstanding that  
20      turbine vendors may distribute specification  
21      sheets, or even propose commercial guarantees for  
22      much higher emission rates.

23              MR. HARRIS: Thank you. I want to turn  
24      now to another set of testimony, the testimony  
25      received by the City of Morgan Hill, actually as

1 revised yesterday.

2           You've have a chance to review that  
3 testimony. Can you provide us with a summary of  
4 your analysis of that testimony, please?

5           MR. RUBENSTEIN: Yes. The analysis that  
6 was included in the Morgan Hill testimony is a  
7 little like saying the sky is blue and therefore  
8 the sky is falling.

9           There's no doubt that the sky is blue.  
10 But unquestionably, the sky is not falling. And  
11 we don't believe -- I don't believe that the  
12 analysis contained in the Morgan Hill testimony  
13 leads one to that conclusion.

14           I don't believe that it leads to the  
15 conclusion that the impacts that we have evaluated  
16 are understated in any way.

17           The Morgan Hill testimony has three  
18 principal premises that it relies on. First is  
19 that the Coyote Valley is a geographic entity, a  
20 topographic entity that traps pollutants; under  
21 certain meteorological conditions that's certainly  
22 true.

23           The Morgan Hill testimony also indicates  
24 that strong inversions can inhibit the mixing of  
25 plumes and inhibit dispersion. That's absolutely

1 correct under certain conditions.

2 The Morgan Hill testimony also indicates  
3 that models are simplistic representations of  
4 reality. That's certainly true.

5 Notwithstanding that, that doesn't mean  
6 that the analyses that have been performed  
7 necessarily understate the impacts from our  
8 project. In fact, the Coyote Valley, for example,  
9 traps pollutants not just from sources within the  
10 valley, as would be the proposed Metcalf Energy  
11 Center. Under certain meteorological conditions  
12 it will trap pollutants from the entire South Bay  
13 area.

14 As we all know, from having worked in  
15 the air quality field in this area for a number of  
16 years now, there are three principal outlets for  
17 air from the Bay Area, one of which is the pass  
18 running through the Coyote Valley; the second is  
19 the Altamont Pass; and the third is the Carquinez  
20 Strait.

21 All of the pollution generated in this  
22 basin has to leave through one of those three  
23 exits. And the Metcalf Energy Center will  
24 contribute incrementally to the burden of  
25 pollution traveling through the Coyote Valley. By

1 my estimate that fractional increase is between .2  
2 and .5 percent increase.

3 The second point regarding inversions.  
4 It's quite true that strong inversions inhibit  
5 mixing. It's also true that when you have a plume  
6 from a source like a gas turbine, the lower the  
7 inversion height is, then the hotter and faster  
8 the plume is moving at the time that it intersects  
9 that inversion height. A plume leaving a stack  
10 from a project such as this will be leaving at a  
11 relatively high temperature compared to the  
12 ambient, at a fairly high velocity.

13 As that plume goes up and rises into the  
14 air, it will cool off and it will slow down. The  
15 lower the inversion the more energy that plume has  
16 as it reaches the inversion, and the greater the  
17 tendency of that plume to burst through the  
18 inversion.

19 The higher up the inversion is the  
20 weaker the plume becomes by the time it reaches  
21 the bottom of the inversion, and consequently it's  
22 less likely to break through.

23 The times that the Morgan Hill testimony  
24 refers to as being of most concern is periods when  
25 the plume is the lowest. Those are the conditions

1 when the plume is most likely to break through.

2 And, in fact, it specifically to insure  
3 that the modeling analysis is conservative and  
4 does not reflect plumes breaking through inversion  
5 layers, and specifically to make sure we don't  
6 look at that condition, that the Bay Area District  
7 insisted that we do all of our modeling analyses  
8 using a plume height of 600 meters -- excuse me,  
9 use an inversion height of 600 meters, to make  
10 sure that the plume stays below that level,  
11 doesn't burst through, and then can be mixed and  
12 brought down to the ground.

13 With respect to the third major point in  
14 the Morgan Hill testimony, that the model is  
15 simplistic, as I said, that's absolutely true.  
16 They are simplistic representations of reality,  
17 and they are designed deliberately to overstate  
18 the impacts.

19 The analyses that we performed for this  
20 project indicated that the worst case  
21 meteorological conditions had to do with a  
22 condition referred to as downwash. That's a  
23 condition when you have moderate wind speeds that  
24 can bring a plume quickly down to the ground  
25 before it has a chance to fully disperse.

1           In the case of the Metcalf Energy Center  
2           that condition is combined with the proximity of  
3           the terrain. And consequently the worst case  
4           impacts that we found were under downwash  
5           conditions, not the normal up-valley/down-valley  
6           flows, but cross-valley flows going roughly from  
7           east to west.

8           And those worst case conditions were  
9           compounded, as I said, by a combination of  
10          meteorology that contributes to downwash, bringing  
11          the plumes down closer to the ground, and  
12          impacting on the terrain on the Tulare Hill to the  
13          west, or on Coyote Ridge to the east.

14          There's nothing in the analyses that I  
15          saw that were prepared by -- for Morgan Hill, that  
16          in any way discussed those conditions. And I  
17          firmly believe that the conditions that we looked  
18          at are in fact, the worst case.

19          The bottomline is that I believe that  
20          the Metcalf Energy Center is safe, and will meet  
21          all of the air quality standards under all  
22          operating conditions, under all meteorological  
23          conditions and at all locations based on a super-  
24          positioning of conservative assumptions regarding  
25          background or existing air quality, operating

1 levels, emission rates and meteorology.

2 And that concludes my testimony.

3 MR. HARRIS: Thank you, Mr. Rubenstein.

4 I'd like to move now to the second witness on our  
5 panel, Mr. Lowe, for a discussion of the public  
6 health.

7 So, Mr. Lowe, can you state your name  
8 for the record and spell it for the recorder,  
9 please?

10 MR. LOWE: John Lowe, J-o-h-n L-o-w-e.

11 MR. HARRIS: And, Mr. Lowe, what subject  
12 matter testimony are you here to sponsor today?

13 MR. LOWE: I'm here to sponsor testimony  
14 in public health.

15 MR. HARRIS: And were the documents that  
16 you're sponsoring previously identified in section  
17 1D of your prefiled testimony?

18 MR. LOWE: Yes.

19 MR. HARRIS: Let me go through that list  
20 for you. We have exhibit 1, exhibit 3, exhibit 5,  
21 exhibit 13, exhibit 20; newly marked exhibit 136;  
22 exhibit 16A -- oh, I'm sorry, I got ahead of  
23 myself here. We do have a new one, the responses  
24 to CEC informal data request numbers PH1 to PH3 is  
25 a new exhibit. I'd ask that that be given a

1 number.

2 HEARING OFFICER FAY: And that would be  
3 exhibit 136.

4 MR. HARRIS: Correct, being more  
5 efficient than I should, I'm sorry.

6 Let's see, moving on, I mentioned 16A  
7 and 16B. Exhibit 60, a new item, responses to  
8 Rancho Santa Teresa Swim and Racquet Club data  
9 request numbers 1 to 4, set 2, is a new exhibit.

10 HEARING OFFICER FAY: That's exhibit  
11 137.

12 MR. HARRIS: And also have exhibit 24.  
13 And then there's one additional piece of testimony  
14 for the panel, the applicant's group 3B rebuttal  
15 testimony for air quality and public health is a  
16 new exhibit.

17 HEARING OFFICER FAY: Exhibit 138.

18 MR. HARRIS: Thank you.

19 HEARING OFFICER FAY: And what about the  
20 last listing on your -- is that just a  
21 duplication?

22 MR. HARRIS: Yes, that's 134, that's  
23 applicant's group 3B testimony. It's previously  
24 marked as 134.

25 HEARING OFFICER FAY: I'm sorry, the

1 last one is exhibit 138, is that correct, the  
2 rebuttal testimony is the one we just --

3 MR. HARRIS: Right, the rebuttal  
4 testimony is 138.

5 HEARING OFFICER FAY: Okay.

6 MR. HARRIS: Okay, with those documents,  
7 John, do you have any changes, corrections or  
8 clarifications to your testimony?

9 MR. LOWE: No, I do not.

10 MR. HARRIS: And were those documents  
11 prepared either by you or at your direction?

12 MR. LOWE: Yes, they were.

13 MR. HARRIS: And are the facts stated  
14 therein true to the best of your knowledge?

15 MR. LOWE: Yes.

16 MR. HARRIS: And are the opinions stated  
17 therein your own?

18 MR. LOWE: Yes.

19 MR. HARRIS: And you adopt this as your  
20 testimony for this proceeding?

21 MR. LOWE: Yes.

22 MR. HARRIS: Can you summarize your  
23 qualifications, please, for the Committee?

24 MR. LOWE: For more than 20 years my  
25 work has involved assessing the potential for

1 adverse effects to human health associated with  
2 contaminants in the environment.

3 Currently I am a risk assessor for the  
4 firm of CH2MHILL. I received my bachelor of  
5 sciences degree in environmental toxicology from  
6 the University of California at Davis in 1979.

7 In 1985 I was certified in comprehensive  
8 practices in industrial hygiene by the American  
9 Board of Industrial Hygiene. I've led the  
10 preparation of health risk assessments addressing  
11 air quality and waste management issues both for  
12 private and government clients.

13 In addition to my role on the Metcalf  
14 Energy Center project currently, I am the lead  
15 risk assessor for a cleanup formed under the  
16 Resource Conservation and Recovery Act of an  
17 industrial facility in Ohio.

18 I am also currently leading the  
19 preparation of risk assessments for the cleanup of  
20 two Air Force Bases in Missouri, and preparation  
21 of a risk assessment addressing air quality issues  
22 for a Naval Research facility in West Virginia.

23 MR. HARRIS: Thank you. Before we get  
24 into some of the details of your testimony, can  
25 you provide us with just an overview of your

1 testimony and your findings, please?

2 MR. LOWE: Yes, I can. My testimony  
3 summarizes the analysis of potential human health  
4 consequences associated with emissions from this  
5 facility.

6 We performed this analysis using a  
7 health risk assessment. This health risk  
8 assessment was based on conservative approaches  
9 that are intended to protect human health. The  
10 health risk assessment was prepared according to  
11 guidelines developed by the State of California  
12 and the U.S. Environmental Protection Agency.

13 The results of this analysis are that  
14 there are no significant increases in human health  
15 risks from the facility emissions.

16 MR. HARRIS: Let's turn now to those  
17 results, your specific results. What were your  
18 specific results and findings using that health  
19 risk assessment?

20 MR. LOWE: The specific results are that  
21 excess lifetime cancer risks associated with the  
22 facility emissions fall below a cancer risk  
23 threshold of one in one million. Increased cancer  
24 burden associated with the facility emissions is  
25 less than a significance level of one.

1                   Evaluation of noncancer health effects  
2                   shows that there would be no potential chronic or  
3                   long-term noncancer health effects, or acute or  
4                   short-term noncancer health effects, associated  
5                   again with the facility emissions.

6                   MR. HARRIS: All right. Let's go  
7                   through each of those quickly. Start first with  
8                   the concept of excess lifetime cancer risk. Can  
9                   you summarize your findings there, please?

10                  MR. LOWE: Well, the maximum individual  
11                  excess lifetime cancer risk for emissions during  
12                  operation of the facility is 0.2 in one million.  
13                  This potential impact, which is projected to occur  
14                  approximately one-half mile to the west of the  
15                  facility is lower than the U.S. Environmental  
16                  Protection Agency's most conservative cancer risk  
17                  threshold of one in one million.

18                  The maximum individual excess lifetime  
19                  cancer risk associated with emissions from the  
20                  emergency diesel fire pump is 0.89 in one million.  
21                  This potential impact, which is projected to occur  
22                  at the point where the closest residence to the  
23                  facility is located, is again lower than the U.S.  
24                  Environmental Protection Agency's most  
25                  conservative cancer risk threshold of one in one

1 million.

2 MR. HARRIS: Just so we're clear on the  
3 relative impacts there, the diesel fire pump  
4 burden is about you said .89, is that correct?

5 MR. LOWE: That's correct.

6 MR. HARRIS: And from the operation of  
7 the 600 megawatt power plant it's a 0.2, is that  
8 right?

9 MR. LOWE: That's correct.

10 MR. HARRIS: So approximately four and a  
11 half times greater for that one diesel fire pump?

12 MR. LOWE: That's correct.

13 MR. HARRIS: Thanks. Let's move on to  
14 the second issue. You talked about the cancer  
15 burden. What were your findings in terms of  
16 cancer burden?

17 MR. LOWE: The cancer burden associated  
18 with facility emissions was less than 1.  
19 Specifically, the volume that we calculated was  
20 0.051. This means that there would be no new  
21 cancer cases associated with emissions from the  
22 facility. Essentially the Metcalf Energy Center  
23 would put nothing into the air that would cause  
24 more than one cancer case in the surrounding  
25 population.

1                   MR. HARRIS: And the third category of  
2 noncancer effects, can you summarize your  
3 findings, please?

4                   MR. LOWE: Well, the health risk  
5 assessment also examined the potential for the  
6 facility emissions to produce systemic toxic  
7 effects other than cancer, which are also known as  
8 noncancer effects.

9                   And these include adverse effects to  
10 organ systems, for example the respiratory tract.  
11 The results of the health risk assessment were  
12 that facility emissions would not result in either  
13 long-term or short-term noncancer health effects.

14                   This evaluation of potential noncancer  
15 effects was based on a comparison of facility  
16 impacts to levels of exposure that are protective  
17 of sensitive individuals to the most sensitive  
18 health effects.

19                   Therefore, the risk assessment compared  
20 facility impacts with the lowest levels of  
21 exposure that would be associated with health  
22 effects in humans.

23                   MR. HARRIS: I want to talk about the  
24 methodologies you used to arrive at those  
25 conclusions, and specifically can you describe for

1 us the risk assessment methodology that you  
2 employed for this project?

3 MR. LOWE: The health risk assessment  
4 methodology consists of a four-step process. The  
5 first step is a hazard identification. The second  
6 step is an exposure assessment. The third step is  
7 a dose response assessment. And the fourth step  
8 is a risk characterization.

9 The first step, hazard identification,  
10 describes what chemicals could be emitted from the  
11 facility, and what adverse effects are known to be  
12 associated with those chemicals.

13 The second step, the exposure  
14 assessment, determines the levels of chemicals  
15 that people could inhale or ingest from emissions  
16 from the facility.

17 The third step, the dose response  
18 assessment, examines what are the kinds of adverse  
19 effects associated with different levels of  
20 exposure.

21 Finally, the fourth step, the risk  
22 characterization, examines -- or combines the  
23 results of the exposure assessment and the dose  
24 response assessment to provide a resulting  
25 estimate of risk to human health.

1                   MR. HARRIS: So this four-step hazard  
2 risk analysis, is that based on any particular set  
3 of guidelines?

4                   MR. LOWE: Yes, the health risk  
5 assessment methodology we used is based on  
6 guidelines developed by CAPCOA, or the California  
7 Air Pollution Control Officers Association, in  
8 collaboration with the California Air Resources  
9 Board and the Office of Environmental Health  
10 Hazard Assessment.

11                   It is consistent with risk assessment  
12 methods developed by the U.S. Environmental  
13 Protection Agency. This methodology has  
14 widespread scientific acceptance and has undergone  
15 peer review at the highest levels of the federal  
16 government.

17                   MR. HARRIS: Now, you've laid out some  
18 of the steps in the methodology. I want to talk  
19 about some of the conservative assumptions that go  
20 into that methodology.

21                   Can you summarize for us all, please,  
22 some of the conservatism that goes into your  
23 analysis?

24                   MR. LOWE: Well, the health risk  
25 assessment was prepared in a conservative manner

1 that substantially overstates the risks associated  
2 with facility emissions to assure protection of  
3 public health.

4 The health risk assessment starts by  
5 estimating maximum worst case emissions from the  
6 facility. This worst case emission scenario does  
7 not have to be feasible from an operational or  
8 economic perspective.

9 Next the health risk assessment uses a  
10 dispersion model to estimate the concentrations of  
11 chemicals in the air based on worst case  
12 meteorological conditions. These worst case  
13 meteorological conditions are the wind speed and  
14 direction that would result in the highest  
15 concentrations in the air from the facility  
16 emissions.

17 Next the risk assessment estimates the  
18 potential human exposure to a maximally exposed  
19 individual. This maximally exposed individual is  
20 assumed to be located at the point where the  
21 highest pollutant concentrations would be found.  
22 The maximum exposed individual is assumed to be  
23 located at that point continuously, 24 hours a  
24 day, 365 days a year for a 70-year period.

25 Therefore, the health risk assessment is

1 based on the highest level of exposure possible  
2 associated with the facility emissions.

3 MR. HARRIS: You went through a lot of  
4 information. I want to make sure that I'm  
5 following you on the maximum exposed individual.  
6 You say you use the worst case meteorological data  
7 and the worst case emissions data, is that  
8 correct?

9 MR. LOWE: That's correct.

10 MR. HARRIS: And then you also assume  
11 that at that point of highest concentration that  
12 an individual would be exposed 24 hours a day,  
13 seven days a week, 365 days a year for 70 years,  
14 is that correct?

15 MR. LOWE: Yes, that's correct.

16 MR. HARRIS: And you make those  
17 assumptions even though it would be humanly  
18 impossible to remain in one point for 70 years?

19 MR. LOWE: That's correct.

20 MR. HARRIS: Okay, thank you. Continue  
21 on, now. Talk about the potential pathway  
22 exposures, please.

23 MR. LOWE: Well, to close out this  
24 maximally exposed individual assumed to be exposed  
25 through all potential exposure pathways, this

1 includes inhalation, soil ingestion, ingestion of  
2 fruits and vegetables, ingestion of meat and milk  
3 products, ingestion of breast milk as an infant,  
4 and skin contact with soil.

5 MR. HARRIS: What about the  
6 methodologies used for your cancer risk  
7 assessment?

8 MR. LOWE: Well, the methods used in the  
9 health risk assessment to evaluate cancer risks  
10 are designed to provide the highest possible or  
11 upper bound estimate of the risks associated with  
12 exposure to the maximum exposed individual.

13 While these cancer risks are calculated  
14 in a very highly protective manner, we've compared  
15 them to very stringent thresholds. For purposes  
16 of our analysis we've compared the cancer risk  
17 from the facility emissions to a cancer risk  
18 threshold of one chance in one million based on  
19 exposure to the maximum exposed individual.

20 This means that the maximum exposed  
21 individual must have less than a one in one  
22 million chance of getting cancer in order for the  
23 project impact to be considered less than  
24 significant.

25 MR. HARRIS: Thank you. How about your

1 methodologies related to adverse noncancer  
2 effects?

3 MR. LOWE: The methods used to evaluate  
4 the kinds of adverse, such as noncancer effects,  
5 are based on protection of the sensitive members  
6 of the population. In this case, the maximum  
7 exposure level as compared with the reference  
8 exposure level, a reference exposure level in air  
9 is intended to protect the public, including  
10 sensitive populations. And it's based on the most  
11 sensitive health effect associated with that  
12 pollutant.

13 If exposure to the maximally exposed  
14 individual falls below that reference exposure  
15 level, there's little likelihood that emissions  
16 from the facility will produce adverse health  
17 effects.

18 Also this analysis is more conservative  
19 because the comparison is made to an exposure  
20 level estimated for the maximally exposed  
21 individual. In other words, it's a level of  
22 exposure that's substantially overstated.

23 The cumulative effect of all these  
24 assumptions that risks associated with emissions  
25 from the facility are substantially overstated.

1 Human health risks associated with emissions from  
2 the facility are unlikely to be higher at any  
3 other location than the location of the maximum  
4 exposed individual.

5 And if there is no significant impact  
6 associated with the concentrations in the air at  
7 the maximum of exposed individual location, it is  
8 unlikely there will be significant health impacts  
9 at any other location in the vicinity of the  
10 facility.

11 MR. HARRIS: Thank you. Can you, once  
12 again, just lay out your bottomline conclusions  
13 for the Committee and the people here today?

14 MR. LOWE: Again, my results of the  
15 analysis that support the bottomline conclusion  
16 are that excess lifetime cancer risks associated  
17 with the facility emissions fall below the cancer  
18 risk threshold of one in a million.

19 The increased cancer burden associated  
20 with the facility emissions is less than the  
21 significance criteria of one.

22 Evaluation for noncancer health effects  
23 shows that there would be no potential chronic  
24 noncancer health effects, or acute noncancer  
25 health effects associated with the facility

1 emissions.

2 MR. HARRIS: Thank you. Does that  
3 complete your testimony?

4 MR. LOWE: That completes my testimony.

5 MR. HARRIS: I will wait to move the  
6 documents in until after cross-examination, but I  
7 think at this point I'll make our witnesses  
8 available for cross.

9 HEARING OFFICER FAY: All right. Does  
10 staff have any cross-examination of the panel?

11 MR. RATLIFF: Some brief cross-  
12 examination for each witness, please.

13 CROSS-EXAMINATION

14 BY MR. RATLIFF:

15 Q First, Mr. Rubenstein, if an air quality  
16 monitor were placed in the Santa Teresa  
17 neighborhood would you expect that monitor to be  
18 able to detect whether or not the facility that is  
19 proposed here would be on or off?

20 MR. RUBENSTEIN: No, not under any  
21 meteorological conditions and not under any plant  
22 operating conditions. Under no circumstances  
23 could I envision a monitor in the Santa Teresa  
24 neighborhood being able to detect whether the  
25 plant was on or off.

1                   MR. RATLIFF:  Would your answer change  
2                   if we were talking about the CVRP project site?

3                   MR. RUBENSTEIN:  I think a project even  
4                   as large as the CVRP project would have impacts  
5                   that would not be detectable in the Santa Teresa  
6                   neighborhood.

7                   MR. RATLIFF:  My question, though, if  
8                   you place the monitor --

9                   MR. RUBENSTEIN:  Oh, I'm sorry.

10                  MR. RATLIFF:  -- CVRP site, would you be  
11                  able to detect whether or not the project was  
12                  operating?

13                  MR. RUBENSTEIN:  No, definitely not.  
14                  The same answer.

15                  MR. RATLIFF:  And a question for Mr.  
16                  Lowe.  The reference exposure level for acrolein  
17                  for eye irritation, I wanted to ask you there's a  
18                  reference exposure level for eye irritation.

19                  MR. LOWE:  Yes.

20                  MR. RATLIFF:  And is that different from  
21                  the reference exposure level for inhalation  
22                  difficulties?

23                  MR. LOWE:  The acute reference exposure  
24                  level for acrolein is based on eye irrigation.  
25                  That value was revised about two years ago by the

1 Office of Environmental Health Hazard Assessment  
2 to change from respiratory irritation to eye  
3 irritation.

4 That change, and going to a more mild  
5 adverse effect resulted in the reference exposure  
6 level decreasing.

7 MR. RATLIFF: Is there a different  
8 acrolein reference exposure level for inhalation?

9 MR. LOWE: Let me try to explain the  
10 reference exposure levels. There are two  
11 reference exposure levels for acrolein. There is  
12 one for acute effects which you compare to a one-  
13 hour average concentration. There is a reference  
14 exposure level for chronic effects, which you  
15 compare to an annual average concentration.

16 They don't necessarily represent a  
17 gradation from one adverse effect to another; they  
18 represent different averaging periods.

19 The acute REL for acrolein is based on  
20 eye irritation. The chronic REL for acrolein,  
21 which again to compare with an annual average  
22 concentration, is based on protection against  
23 respiratory effects.

24 MR. RATLIFF: So the two RELs are in  
25 different categories of health risk assessment,

1       then, --

2               MR. LOWE:  That is correct.

3               MR. RATLIFF:  -- and are comprised by  
4       different numbers.

5               MR. LOWE:  Yes, they are.

6               MR. RATLIFF:  Secondly, and turning away  
7       from acrolein, but just to the theme of the health  
8       risk of gas-fired power plants, are you familiar  
9       with any peer review literature which would  
10      describe acrolein from gas-fired power plants as  
11      constituting a significant health risk?

12              MR. LOWE:  None that I'm aware of.

13              MR. RATLIFF:  Do the BAAQMD rules  
14      require the calculation of cancer risk at the  
15      nearest residence, to your knowledge?

16              MR. LOWE:  I believe they do for  
17      purposes of establishing permit conditions or  
18      control technologies.

19              MR. RATLIFF:  Did I understand you, in  
20      your prior testimony, to testify that the cancer  
21      risk of the diesel backup turbine at the nearest  
22      residence would be far greater than from the power  
23      plant, itself?  I'm sorry, from the diesel backup  
24      generator.

25              MR. LOWE:  I'm sorry, could you repeat

1 that, please?

2 MR. RATLIFF: Did you testify that the  
3 health risk comprised by the diesel backup  
4 generator is higher than from the power plant,  
5 itself?

6 MR. LOWE: That is correct.

7 MR. RATLIFF: And if you were to  
8 disregard the calculation at the nearest residence  
9 and just turn that to the macro level, is the  
10 cancer risk comprised by the diesel backup  
11 generator higher than from the facility, itself?

12 MR. LOWE: That is correct.

13 MR. RATLIFF: I have no further  
14 questions.

15 HEARING OFFICER FAY: All right. City  
16 of San Jose.

17 MS. DENT: Well, in the interests of  
18 moving this along, since we didn't file testimony  
19 on this issue, I would like to ask if I could  
20 defer my questions until after folks who did file  
21 testimony on this issue.

22 I'll go now if you want me to, but I  
23 think it might take longer if I do, to be honest  
24 with you.

25 HEARING OFFICER FAY: The panel won't be

1 available later.

2 MS. DENT: No, I mean for the rest of  
3 the people that are here today to do cross-  
4 examination.

5 HEARING OFFICER FAY: Oh, I see. You'd  
6 like to be last in line?

7 MS. DENT: Not necessarily last, but at  
8 least after the folks that filed direct testimony  
9 if they'd like to go first.

10 HEARING OFFICER FAY: Fine. Let's go to  
11 the City of Morgan Hill, then.

12 MS. LEICHTER: Thank you. I have a few  
13 questions for Mr. Rubenstein.

14 CROSS-EXAMINATION

15 BY MS. LEICHTER:

16 Q Is it your testimony, sir, that the  
17 model that you used accounts for the worst  
18 possible meteorological conditions?

19 MR. RUBENSTEIN: The model, itself,  
20 doesn't account for meteorological conditions.  
21 The model simulates what happens to the plume  
22 based on meteorological data that are provided as  
23 an input to the model.

24 The meteorological data that we used was  
25 a years worth of data collected at the IBM

1 facility at Cottle Road for, I believe it was  
2 1993. And so it represents 8760 hours of weather  
3 conditions which we believe to be representative  
4 of the project site.

5 The model evaluated all 8760 hours of  
6 meteorological conditions and indicated to us that  
7 the worst case impacts were, as I said, associated  
8 with downwash conditions.

9 In addition to that analysis we did an  
10 additional analysis of fumigation conditions using  
11 a screening model called Screen3, and that  
12 simulates another severe weather condition. And  
13 all of those results were included in the AFC and  
14 are reflected in the final staff assessment.

15 MS. LEICHTER: And when you say we, who  
16 did that analysis?

17 MR. RUBENSTEIN: That analysis was done  
18 by my staff at Sierra Research, and then was  
19 reviewed by each of the regulatory agencies: The  
20 Bay Area Air Quality Management District,  
21 California Air Resources Board, the California  
22 Energy Commission Staff and the U.S. Environmental  
23 Protection Agency.

24 MS. LEICHTER: And are those members of  
25 your staff available for cross-examination today?

1                   MR. RUBENSTEIN: All of that work was  
2 reviewed by me and I'm prepared to answer any  
3 questions you might have about it.

4                   MS. LEICHTER: I'm a little bit  
5 confused. Are you a meteorological expert?

6                   MR. RUBENSTEIN: No. I've been  
7 supervising meteorologists for 20 years, and I am  
8 prepared to answer any questions about the  
9 modeling analyses that my staff prepared.

10                  MS. LEICHTER: Are you familiar with a  
11 term called reflection?

12                  MR. RUBENSTEIN: Excuse me?

13                  MS. LEICHTER: Reflection.

14                  MR. RUBENSTEIN: Yes.

15                  MS. LEICHTER: And does the model  
16 account for that? Did it take into consideration  
17 data?

18                  MR. RUBENSTEIN: Did it take into  
19 consideration data?

20                  MS. LEICHTER: Correct. If the  
21 inversion layer is lowered is it possible that the  
22 plume can reflect?

23                  MR. RUBENSTEIN: Can reflect off of  
24 what?

25                  MS. LEICHTER: The inversion layer. I

1 believe you testified that the lower the inversion  
2 layer that I believe the term used was that the  
3 plume was hotter?

4 MR. RUBENSTEIN: Yes.

5 MS. LEICHTER: And is it your testimony  
6 that the lower the inversion layer because the  
7 plume is hotter, that it will simply rise through  
8 that lower inversion layer, that there's no  
9 reflection?

10 MR. RUBENSTEIN: Under certain  
11 conditions, yes. And in terms of the condition  
12 you're getting to, perhaps it's a terminology  
13 problem, the condition you're referring to, I  
14 think we simulate as fumigation. It's related to,  
15 there's some reflection coefficient there.

16 MS. LEICHTER: You said under certain  
17 conditions. Under what conditions would it not go  
18 through the inversion layer?

19 MR. RUBENSTEIN: When the plume was too  
20 weak compared to the strength of the inversion  
21 layer.

22 MS. LEICHTER: And what percentage of  
23 the time did you account for that difference?

24 MR. RUBENSTEIN: As many hours of the  
25 year when the input meteorological data and the

1 source configuration indicated would happen. I  
2 don't have a precise count. That's all internal  
3 to the model.

4 MS. LEICHTER: Do you have an estimate,  
5 do you recall?

6 MR. RUBENSTEIN: No.

7 MS. LEICHTER: Was it less than 10  
8 percent? Was it more than 10 percent? Was it 50  
9 percent of the time?

10 MR. RUBENSTEIN: I have no idea. But  
11 whatever the data reflected the model took that  
12 into account.

13 MS. LEICHTER: Now you've stated that  
14 you've accounted for, I believe you called it  
15 cross-valley winds.

16 MR. RUBENSTEIN: Yes, the meteorological  
17 data set we used indicated a frequency of cross-  
18 valley winds and all of those were evaluated by  
19 the model in our analysis.

20 MS. LEICHTER: And the cross-valley  
21 winds were taken entirely from the IBM facility  
22 data at Cottle Road, is that correct?

23 MR. RUBENSTEIN: Yes, that's correct.

24 MS. LEICHTER: And is that the only site  
25 that your data came from?

1           MR. RUBENSTEIN: In terms of our  
2 modeling analysis that's correct. But when we  
3 evaluated a variety of different met data sets, we  
4 prepared windrows that were included in the  
5 modeling protocol we provided to the Bay Area  
6 District in February of 1999. And those met data  
7 sets included data collected at Moffet Field, San  
8 Jose, the IBM site at Cottle Road, and also a site  
9 in Morgan Hill.

10           And all of those sites indicated the  
11 same general pattern of a predominant wind flow  
12 upwind and downwind in the orientation of the  
13 valley, with some slight orientation differences  
14 for, for example, Moffet Field versus the IBM site  
15 because of channeling effects.

16           And all of those data sets indicated a  
17 small frequency of roughly east-west, or as you  
18 characterize them, cross-valley winds.

19           MS. LEICHTER: Okay. In the case, I  
20 believe, that you're adopting the model that  
21 states that the final plume rise for stability --  
22 is approximately 650 feet, is that correct?

23           MR. RUBENSTEIN: I'm sorry, could you  
24 repeat that question?

25           MS. LEICHTER: In your model that you're

1 using, --

2 MR. RUBENSTEIN: Um-hum.

3 MS. LEICHTER: -- what is the final  
4 plume rise?

5 MR. RUBENSTEIN: The final plume rise is  
6 calculated by the model for each hour depending on  
7 the stack conditions and the meteorological  
8 conditions.

9 MS. LEICHTER: And what is the highest  
10 it could possibly go, do you recall?

11 MR. RUBENSTEIN: No. You mean what was  
12 the highest plume rise that the model calculated  
13 for --

14 MS. LEICHTER: Correct.

15 MR. RUBENSTEIN: -- the 8000 hours? No,  
16 I don't recall what that number is.

17 MS. LEICHTER: Do you recall a range of  
18 how high or how low it could be?

19 MS. LEICHTER: No. The model doesn't  
20 output, as a matter of routine, what the final  
21 plume rise is. It's an internal calculation that  
22 the model uses to determine dispersion.

23 My rough recollection is that the range  
24 of final plume rise is anywhere from a couple of  
25 hundred feet to, I think, 1500 to 2000 feet.

1 MS. LEICHTER: I'm sorry, could you  
2 repeat that?

3 MR. RUBENSTEIN: Yes. A range of from a  
4 couple of hundred feet at the low end, to a range  
5 of 1500 to 2000 feet at the high end. I believe  
6 that's the range of plume rises that the model  
7 calculated using this meteorological data set for  
8 this project at this location.

9 MS. LEICHTER: At the lower end of the  
10 plume rise, say 300 feet or lower, and if you're  
11 talking about the plume dispersion, is it your  
12 testimony that the model that you have run, or the  
13 models, show that that plume will not hit Tulare  
14 Hill?

15 MR. RUBENSTEIN: No, that's not my  
16 testimony.

17 MS. LEICHTER: What is your testimony on  
18 that point?

19 MR. RUBENSTEIN: My testimony is that,  
20 as I said earlier, the worst case conditions  
21 associated with this project are meteorological  
22 conditions in which downwash occurs, combined with  
23 plume impaction on the terrain. And that the  
24 worst case concentrations are found, depending on  
25 the averaging period you look at, either on Tulare

1 Hill to the west of the site, or on Coyote Ridge  
2 to the northeast.

3 MS. LEICHTER: And what percentage time  
4 did the worst case conditions occur?

5 MR. RUBENSTEIN: In order to answer that  
6 question what I'd have to do is tabulate all 8760  
7 hours at each of the several thousand receptors.  
8 I'm not sure what you mean how often does the  
9 worst case occur.

10 There is a single maximum concentration;  
11 and by definition that occurs once. Because it is  
12 the maximum. There are other less severe  
13 conditions which occur with increasing frequency.

14 So, unless there's some specific cutoff  
15 point that you're trying to use, I'm not sure I  
16 can answer your question.

17 MS. LEICHTER: Well, sir, you keep using  
18 the term in your testimony the worst case  
19 conditions. I'm asking you what are the worst  
20 case conditions and what percentage of the time  
21 are those applicable to the plume emissions from  
22 this project.

23 MR. RUBENSTEIN: The meteorological  
24 condition that resulted in the maximum  
25 concentration that we modeled for this project

1 occurred during one hour, out of 8760.

2 For all the remaining hours the  
3 concentrations were less, to some degree. And may  
4 have been at the same location or at other  
5 locations.

6 MS. LEICHTER: And I'm sorry, perhaps  
7 you've gone over this before, but that one hour, I  
8 believe, you testified occurred in winter  
9 conditions with a downwash, is that correct?

10 MR. RUBENSTEIN: No, no, I was --

11 MS. LEICHTER: Okay.

12 MR. RUBENSTEIN: -- using those as  
13 hypotheticals. I did say that the worst case  
14 condition is a downwash condition. I don't recall  
15 offhand what exact season or what hour or day of  
16 the year it was.

17 MS. LEICHTER: Could you tell us  
18 precisely what you consider to be a downwash  
19 condition?

20 MR. RUBENSTEIN: It's not a judgment I  
21 make. It's a judgment that the model makes based  
22 on a combination of meteorology and stack  
23 conditions.

24 Downwash is a condition in which the  
25 wind speeds are such that they cause a small

1 cavity of low pressure to form on the lee side of  
2 the building or other structure. That cavity has  
3 the ability to draw the plume down to the ground  
4 more quickly than it would if that cavity were not  
5 present.

6 The sooner the plume impacts the ground  
7 the higher the concentration is going to be,  
8 because the plume doesn't have as much time to  
9 disperse.

10 MS. LEICHTER: Now you used the term the  
11 building. Did you ever look at whether Tulare  
12 Hill possesses the topography to cause a downwash?

13 MR. RUBENSTEIN: Yes, we did. We  
14 concluded that it did not, and certainly not to an  
15 extent as severe as the structures on the project  
16 site are.

17 MS. LEICHTER: Nothing further, sir.

18 HEARING OFFICER FAY: Nothing for the  
19 other witness?

20 MS. LEICHTER: No, sir.

21 HEARING OFFICER FAY: Okay. Thank you.

22 CVRP.

23 CROSS-EXAMINATION

24 BY MR. BEERS:

25 Q Yes, Mr. Lowe, I'd like to ask you some

1 questions about your testimony. As I understand  
2 it, you performed a risk assessment for acute and  
3 chronic noncancerous health effects, is that  
4 correct?

5 MR. LOWE: That's correct.

6 MR. BEERS: And part of your object in  
7 doing that was to have absolutely the most  
8 conservative set of assumptions that you could  
9 possibly have in reaching your conclusions, is  
10 that correct?

11 MR. LOWE: The risk assessment was  
12 prepared in accordance with guidance developed by  
13 the State of California and consistent with  
14 guidance with the U.S. Environmental Protection  
15 Agency. The intent of those practices and the  
16 assumptions that you used in the risk assessment  
17 are to be protective of human health and the  
18 environment.

19 It would be erroneous to couch a  
20 description of those assumptions as being the  
21 absolutely most conservative or most protective.  
22 That's an ideal that you can't really achieve.

23 What you can do is in each step of the  
24 risk assessment where you have judgments to make,  
25 is to take steps to err on the side of

1 protectiveness.

2 MR. BEERS: And did you seek to do that  
3 in constructing your risk assessment, that is err  
4 on the side of protectiveness?

5 MR. LOWE: As was stated earlier, the  
6 emissions estimates are conservative. They're  
7 based on assumptions about facility operations  
8 that are unlikely to be exceeded in actual  
9 practice. These emissions estimates are  
10 overlaying on meteorological conditions and  
11 dispersion modeling that are highly conservative.

12 We assess risks at the point of maximum  
13 impact. And then that impact is compared with a  
14 conservative reference exposure level.

15 MR. BEERS: So is the answer to my  
16 question yes, that you did seek to err on the side  
17 of protectiveness in preparing your risk  
18 assessment?

19 MR. LOWE: That is correct.

20 MR. BEERS: Okay. And in insuring that  
21 your risk assessment contains a set of  
22 conservative assumptions, do you seek to insure  
23 that you are basing your risk assumptions on  
24 reliable data as to emissions?

25 MR. RUBENSTEIN: Perhaps I can answer

1           that question since we did --

2                   MR. BEERS:  I don't think so since it  
3           was addressed to Mr. Lowe in terms of the opinion  
4           that he is advancing.  In other words I'm asking  
5           him for the predicates that he personally used in  
6           constructing his opinion.

7                   MR. HARRIS:  I want to interject at this  
8           point that the witnesses are available as a panel.  
9           And to the extent one witness has more knowledge  
10          on a subject then I would like that witness to be  
11          able to answer the question.

12                   MR. BEERS:  And I appreciate that, and  
13          undoubtedly on some questions I really will want  
14          simply the best information available.  But for  
15          the moment I was asking Mr. Lowe about his --

16                   MR. HARRIS:  My witnesses, I want to  
17          have the ability to confer with each other to make  
18          sure that they're understanding your question, and  
19          give you the best available information.  So  
20          that's the way we're proceeding.

21                   MR. BEERS:  Mr. Lowe.

22                   MR. LOWE:  Could you restate your  
23          question, please?

24                   MR. BEERS:  In the process of preparing  
25          a conservative risk assessment that you did here,

1 did you seek to make sure that you were basing it  
2 on the most reliable data as to emissions?

3 MR. LOWE: The risk assessment is based  
4 on the emissions estimates that were developed as  
5 a part of both the air quality impact analysis and  
6 the risk assessment.

7 All the appropriate data was considered  
8 in developing those estimates. Keep in mind this  
9 assessment was interdisciplinary and Sierra  
10 Research and I worked as a team in developing  
11 this. They may be better suited to answer that  
12 question.

13 MR. BEERS: I understand. But, for  
14 purposes of your doing your risk assessment, I  
15 guess I really would just like an answer to a  
16 pretty simple question, and that is did you seek  
17 to insure that your risk assessment was based on  
18 reliable data as to emissions from the Metcalf  
19 Energy facility?

20 MR. LOWE: Yes, --

21 MR. HARRIS: I would actually like it  
22 if, I'm going to object on the basis that I want  
23 you to define what you mean by reliable data. I'm  
24 not sure what you mean by reliable data.

25 MR. BEERS: I don't know, we could have

1 semantic quarrels about that. I think the witness  
2 understood the term.

3 HEARING OFFICER FAY: Mr. Harris, I'm  
4 going to overrule the objection. I think we can  
5 just move forward.

6 MR. BEERS: Yeah. And I take it as part  
7 of that, Mr. Lowe, you actually took a look at  
8 some of the source tests that had been done in  
9 terms of at least of the emissions factors that  
10 were generated by that source test for purposes of  
11 arriving at your conclusion as to whether or not  
12 you were using a sufficiently conservative set of  
13 assumptions about emission rates, correct?

14 MR. LOWE: I, myself, did not look at  
15 the source test data. It was reviewed by Sierra  
16 Research and incorporated into the risk  
17 assessment.

18 MR. BEERS: Well, let's take acrolein,  
19 for example. When you arrived at the conclusion  
20 that you have on page 16 of your testimony that  
21 the health risk assessment indicates that  
22 potential noncancer health effects associated with  
23 chronic or acute exposures fall below thresholds  
24 used for regulating emissions or toxic pollutants  
25 to the air, were you including acrolein in that

1 overall conclusion?

2 MR. LOWE: Yes.

3 MR. BEERS: And were you including in  
4 your work that allowed you to arrive at that  
5 conclusion your understanding of what emissions of  
6 acrolein from this facility were likely?

7 MR. LOWE: Yes.

8 MR. BEERS: Okay. And I assume  
9 therefore that you had certain data that you were  
10 able to look at, and you drew some conclusions in  
11 arriving at your judgment about this as to whether  
12 or not that data fairly and accurately represented  
13 the likely acrolein emissions from the plant, is  
14 that correct?

15 MR. LOWE: I'd have to understand better  
16 what your definition of barely or likely reference  
17 would mean.

18 MR. BEERS: Well, in the work that you  
19 do in preparing risk assessments I assume that you  
20 want to make sure that you're not relying on data  
21 which is incomplete, for example, is that true,  
22 Mr. Lowe, that you're not relying on data that's  
23 incomplete?

24 MR. LOWE: Again, risk assessment is an  
25 interdisciplinary practice and I rely on the

1 experts in that particular discipline to be  
2 providing reliable information.

3 MR. BEERS: I understand, but in other  
4 words when you've got a set of data to work with  
5 in terms of what the tests indicate are the likely  
6 emissions from a particular facility, I'm assuming  
7 that if you want your risk assessment to be  
8 conservative then you want to make sure that the  
9 data set that you're getting is a complete data  
10 set, and that it's accurate, right?

11 MR. LOWE: What you want to do is work  
12 with all available data that you have, and  
13 evaluate it conscientiously. And use what  
14 representative data you can.

15 MR. BEERS: Well, you indicated in your  
16 testimony that you'd been involved in making  
17 judgments about acrolein, and I believe what's  
18 been marked as exhibit 133, if you have that in  
19 front of you, or if it can be placed in front of  
20 you, is a letter from you, as one of the co-  
21 signers of the letter, to Dennis Jang dated  
22 November 17, 2000. Do you have a copy of that in  
23 front of you?

24 MR. LOWE: Yes, I do.

25 MR. BEERS: And that letter begins by

1 saying in response to questions raised by  
2 interested parties regarding emissions of  
3 formaldehyde, acetaldehyde and acrolein during low  
4 turbine operations, and then describes certain  
5 tests that were conducted, do you personally know  
6 who those interested parties were that are being  
7 referred to there?

8 MR. LOWE: I do --

9 MR. BEERS: My question was, Mr. Lowe,  
10 do you personally know who those interested  
11 parties were?

12 MR. LOWE: No, I do not.

13 MR. BEERS: Okay. This letter contains  
14 the results of a series of different tests that  
15 were run, is that correct?

16 MR. LOWE: That's correct.

17 MR. BEERS: And all the tests were run  
18 on a facility in Pasadena, Texas, is that correct?

19 MR. LOWE: That's correct.

20 MR. BEERS: And the tests were run in  
21 July and September of last year, is that right?

22 MR. LOWE: That's correct.

23 MR. BEERS: And these particular tests  
24 were used to form the basis for your conclusions  
25 as to acute health risks, if any, that might be

1 associated with aldehyde emissions from this  
2 facility, is that correct?

3 MR. LOWE: That's correct.

4 MR. BEERS: And I take it you reviewed  
5 these particular results, at least in the sense of  
6 understanding what's in the tables here on pages 2  
7 and 3 of this exhibit before reaching your  
8 conclusion about the risks associated, if any,  
9 with exposure to aldehydes from this facility,  
10 correct?

11 MR. LOWE: Well, the results were  
12 reviewed by specialists in emissions estimation  
13 before being used in dispersion modeling, and then  
14 before being incorporated into a risk analysis.

15 MR. BEERS: I know, but you were aware,  
16 yourself, right, in the course of preparing your  
17 analysis, right?

18 MR. LOWE: Yes.

19 MR. BEERS: Okay, and on the chart on  
20 page 3, if I may refer you to that, under acrolein  
21 emissions there is one of the results for July 21  
22 and the footnote at the bottom under the table  
23 says the test result was not used because of  
24 suspected contamination. Do you see that?

25 MR. LOWE: Yes.

1                   MR. BEERS:  And would you agree that  
2                   that's by far the highest result showing acrolein  
3                   emissions in all of the tests that are listed  
4                   there?

5                   MR. LOWE:  It's the highest value on  
6                   that column of the table.  Whether it's the  
7                   highest result of the emissions test could be  
8                   debated.

9                   MR. BEERS:  Well, was there a higher  
10                  value that you're aware of?

11                  MR. LOWE:  No.

12                  MR. BEERS:  Okay.  And that particular  
13                  result was excluded from the basis upon which you  
14                  did your risk assessment, is that correct?

15                  MR. LOWE:  That result wasn't used in  
16                  the emissions calculations, and if you'll note,  
17                  there is a footnote 2, --

18                  MR. BEERS:  Mr. Lowe, this is a question  
19                  that can be, either be answered yes or no.  Did  
20                  you use that particular sample result in doing  
21                  your health risk calculations?

22                  MR. LOWE:  No.

23                  MR. BEERS:  And again, in your effort to  
24                  make sure that you're being conservative in doing  
25                  your health risk assessment, did you make any

1 inquiry whatsoever as to why that particular  
2 sample result was being excluded in developing the  
3 emissions to use in your health risk calculations?

4 MR. LOWE: Yes, I discussed this finding  
5 with Sierra Research.

6 MR. BEERS: Okay. And did you make any  
7 effort to determine whether or not there was any  
8 problem with that particular result?

9 MR. LOWE: Yes. Again, we discussed the  
10 significance of that. What the possible causes  
11 were, and the consistency with other information  
12 developed during the emissions test.

13 MR. BEERS: Okay, and I take it all of  
14 this was for purposes of your satisfying yourself  
15 that it was appropriate to exclude that value for  
16 purposes of arriving at your risk assessment as it  
17 dealt with acrolein, is that right?

18 MR. LOWE: That's correct.

19 MR. BEERS: And did you satisfy yourself  
20 that it was appropriate?

21 MR. LOWE: Yes.

22 MR. BEERS: Did you make any inquiry as  
23 to whether or not there was any particular problem  
24 with that sample?

25 MR. LOWE: Yes, we discussed the

1 possible causes for this. Again, looked at it in  
2 light of consistency with the other data collected  
3 during the --

4 MR. BEERS: Okay.

5 MR. LOWE: -- emissions test.

6 MR. BEERS: And what conclusion did you  
7 reach was the appropriate reason for excluding  
8 that sample from your risk analysis?

9 MR. LOWE: I was satisfied with the  
10 information presented to me that that value was  
11 not consistent with the concentrations measured  
12 for the other constituents during the emissions  
13 test.

14 MR. BEERS: And was that your reason,  
15 that in other words you thought that the value for  
16 acrolein had to be consistent with the measured  
17 results for entirely different constituents in  
18 order to be accepted as an accurate value, or as a  
19 valid result?

20 MR. LOWE: That's correct, they were  
21 similar constituents.

22 MR. BEERS: Okay. And is there a  
23 protocol that you're relying on there for throwing  
24 out a sample result because it doesn't match up in  
25 some way with other constituents that are sampled?

1           MR. LOWE: Again, this is something we  
2           rely upon the judgment of the people that are  
3           supervising the emissions test.

4           MR. BEERS: Okay, so, you, yourself, had  
5           no basis for reaching that conclusion other than  
6           relying on somebody else, is that right?

7           MR. LOWE: That's correct.

8           MR. BEERS: And would it disturb you in  
9           doing a conservative risk assessment to know that  
10          the highest value was thrown out here, stated to  
11          be because of suspected contamination, when the  
12          source test for doing the source testing had  
13          indicated in their reports that there was no  
14          contamination that they were aware of?

15          MR. LOWE: Again, you need to look at it  
16          in terms of comparison with the other aldehyde  
17          data that this value was sampled with. But the  
18          answer is that no, I wouldn't be unduly concerned.

19          MR. BEERS: You wouldn't be unduly  
20          concerned about that?

21          MR. LOWE: That's correct.

22          MR. BEERS: Would it concern you also to  
23          learn that the lab that conducted the testing on  
24          this also confirmed that they were unable to find  
25          any contamination in that particular sample?

1                   MR. LOWE: Yeah, I was aware of that  
2 finding.

3                   MR. BEERS: Okay. And the footnote here  
4 says test result not used because of suspected  
5 contamination. Is that what you meant when you  
6 said that it was your understanding that the  
7 measure for acrolein in that result didn't match  
8 up with the measurement for other constituencies?

9                   MR. LOWE: That's correct.

10                  MR. BEERS: And is that a -- so you drew  
11 from that the conclusion that there was suspected  
12 contamination in it?

13                  MR. LOWE: I drew from that the  
14 conclusion that the other test results were  
15 probably more reasonable estimation of the  
16 emissions.

17                  MR. BEERS: Okay. And more reasonable  
18 in what sense?

19                  MR. LOWE: More consistent with the  
20 other aldehydes tested.

21                  MR. BEERS: Okay. And did you go  
22 through and do a similar sort of analysis for all  
23 of the other aldehydes here to see if every one of  
24 them matched up in some regular proportionate way  
25 to the others as a means of determining whether

1 that was valid data or not?

2 MR. LOWE: No. Our analysis focused on  
3 acrolein.

4 MR. BEERS: Okay. So, do you have any  
5 sense of how your analysis of the health hazard  
6 index associated with acrolein would have been  
7 affected if the value we're talking about here had  
8 been included in your analysis?

9 MR. LOWE: No, I do not.

10 MR. BEERS: Isn't that a pretty easy  
11 calculation to do?

12 MR. LOWE: No, there's multiple steps  
13 that would be involved to make that determination.

14 MR. BEERS: Well, you indicate in this  
15 letter that acrolein is 97 percent of the health  
16 hazard index that's calculated there, correct?

17 MR. LOWE: Yes.

18 MR. BEERS: Okay. And I believe you  
19 indicate in here that with the calculations that  
20 you've done that you end up with a health hazard  
21 index for acrolein of .8 or .9, is that right?

22 MR. LOWE: Yes.

23 MR. BEERS: Okay, so if acrolein is 97  
24 percent of that health hazard index of .8 or .9,  
25 then it wouldn't take very much more concentration

1 of acrolein in the sample results to push it above  
2 1, correct?

3 MR. LOWE: If that sample result is  
4 representative of emissions.

5 MR. BEERS: Well, I'm assuming that  
6 we're only using sample results that we've gotten  
7 from a source test from a facility which has been  
8 chosen to be representative of this plant, was  
9 that your understanding? That that was the reason  
10 for choosing the Pasadena plant?

11 MR. LOWE: Yes.

12 MR. BEERS: Okay. Well, I'll tell you  
13 what, can you -- I'd be interested in -- I can  
14 tell you what my calculations have shown, and I  
15 don't think it's going to take that long to do the  
16 math.

17 My calculations indicate --

18 MR. HARRIS: I'm going to object, --

19 MR. BEERS: Okay, then let's do the  
20 math.

21 MR. HARRIS: -- it's a question --

22 MR. BEERS: Let's do the math.

23 MR. HARRIS: It's not --

24 HEARING OFFICER FAY: As long as it's a  
25 question, Mr. Beers.

1                   MR. BEERS: I'd be happy to have him do  
2 the math. I don't think it's going to be that  
3 hard.

4                   If you could, calculate the average  
5 emissions with the discarded value. Do you have a  
6 calculator and you can just add up what they would  
7 be with the discarded value?

8                   MR. RUBENSTEIN: You still want Mr. Lowe  
9 to answer that question, is that correct?

10                  MR. BEERS: Yes.

11                  MR. LOWE: One moment here.

12                  MR. BEERS: Sure.

13                  PRESIDING MEMBER LAURIE: While we're  
14 waiting for the witness, at this time I'll ask all  
15 members of the audience to check their cell phones  
16 and turn them off.

17                  HEARING OFFICER FAY: Or put it on  
18 vibration, if possible.

19                  PRESIDING MEMBER LAURIE: But we're  
20 getting interrupted here.

21                  MR. LOWE: Okay, your question was,  
22 again?

23                  MR. BEERS: My question is calculate the  
24 average emissions with the discarded value.

25                  MR. LOWE: With the discarded value.

1                   MR. BEERS:  What I come out with is  
2                   .04850 ppm.  Is that right?

3                   MR. LOWE:  Get the same value.

4                   MR. BEERS:  Okay, calculate the average  
5                   emissions without the discarded value.

6                   MR. LOWE:  That's the value that's in  
7                   the table.

8                   MR. BEERS:  Okay, and that's .0102,  
9                   correct?

10                  MR. LOWE:  Correct.

11                  MR. BEERS:  And can you now tell me what  
12                  the ratio of those two numbers is?

13                  MR. LOWE:  It's a little more than  
14                  fourfold.

15                  MR. BEERS:  Okay, so if you took the  
16                  health hazard index that you've calculated without  
17                  that value of .8 to .9 and multiplied it by a  
18                  little bit more than fourfold, then you're going  
19                  to get something on the order of 3.8 to 4.3,  
20                  correct?

21                  MR. LOWE:  Yeah, you get something over  
22                  1, yes.

23                  MR. BEERS:  Well, you'd get something  
24                  close to 3.8 or 4.3, if you wanted to be precise  
25                  about the math, right?

1 MR. LOWE: Yes.

2 MR. BEERS: Okay. And you didn't do any  
3 further inquiry than what you've just testified to  
4 to determine whether or not you were making the  
5 most conservative assumption there, namely simply  
6 finding out that there wasn't apparently a precise  
7 correlation between that particular sample result  
8 with respect to acrolein, and the findings for  
9 other constituencies?

10 MR. LOWE: I'm sorry, can you ask that  
11 again?

12 MR. BEERS: My understanding was that in  
13 doing the risk assessment you sought to have the  
14 most conservative assumptions in place in order to  
15 be protective of health, right?

16 MR. LOWE: Again, we sought to be  
17 protective in places where we made assumptions.

18 MR. BEERS: Okay. And we just  
19 established that from the calculation that you've  
20 done that had that discarded value been included,  
21 then the health hazard index would have been above  
22 1, namely on the order of 3.8 to 4.3, correct?

23 MR. LOWE: Yes.

24 MR. BEERS: And my question to you is  
25 knowing that that single value made that much of a

1 difference, that was being excluded, you made no  
2 more effort to determine whether or not you were  
3 being appropriately conservative in excluding it  
4 than simply to have someone else tell you that the  
5 points didn't match up the same way, correct?

6 MR. LOWE: The people I had telling me  
7 this were the ones who had overseen the emissions  
8 testing.

9 MR. BEERS: But you did no more than  
10 that, is that right?

11 MR. LOWE: I'm sorry, I --

12 MR. BEERS: No more than finding out  
13 that from those individuals? You didn't seek to  
14 do any further inquiry, correct?

15 MR. LOWE: I spoke with the individuals  
16 who oversaw the emissions --

17 MR. BEERS: Testing. You've also  
18 indicated, if I understood your testimony, that  
19 your risk assessment sought to establish the  
20 maximum worst case emissions as the basis for your  
21 risk assessment, is that true?

22 MR. LOWE: Yes.

23 MR. BEERS: And did I understand your  
24 correctly in your saying that this maximum worst  
25 case emission scenario was not one that had to be

1 feasible from an operating perspective?

2 MR. LOWE: Yes.

3 MR. BEERS: What did you mean by that?

4 MR. LOWE: Well, you're basically  
5 assuming conditions that may not actually occur  
6 during operation of the facility.

7 MR. BEERS: Give me an example. I mean  
8 what you do you mean conditions that may not occur  
9 during the operation of the facility?

10 MR. LOWE: I don't know, you're probably  
11 best asking Mr. Rubenstein who --

12 MR. BEERS: Okay.

13 MR. LOWE: -- oversaw preparation of the  
14 emissions estimates.

15 MR. BEERS: All right. Now, if your  
16 risk assessment is intended to represent the  
17 maximum worst case emission scenario, I'm assuming  
18 that you went to some effort to make sure that  
19 there wasn't some operating condition which would  
20 produce higher emissions, correct?

21 MR. LOWE: Again, you'd probably be best  
22 to ask the person who prepared the emissions  
23 estimates.

24 MR. BEERS: Well, for the moment I'm  
25 asking you whether, since you're the one that just

1 testified that your risk assessment was based on  
2 the conservative assumption that you were making  
3 that is of a maximum worst case emission  
4 situation, I'm asking you whether or not you made  
5 any effort, yourself, to determine whether or not  
6 there were any operating conditions which could  
7 produce higher emissions that weren't included?

8 MR. LOWE: I relied on the judgment of  
9 the expert preparing the emissions estimates.

10 MR. BEERS: Okay, so does that mean you  
11 didn't, yourself, make any effort in that  
12 direction?

13 MR. LOWE: No, --

14 MR. BEERS: Other than --

15 MR. LOWE: Relying on --

16 MR. BEERS: -- relying --

17 MR. LOWE: -- the judgment of --

18 MR. BEERS: Okay.

19 MR. LOWE: -- of the experts preparing  
20 the emissions.

21 MR. BEERS: Did you, yourself, make any  
22 effort to determine whether or not there were  
23 lower load conditions for the operation of the  
24 facility than those that had been tested for that  
25 might produce higher emissions values?

1                   MR. LOWE: I'm not sure I understand  
2 your question.

3                   MR. BEERS: Well, let me refer you again  
4 to the letter to Dennis Jang that's dated November  
5 17, 2000, and this is the letter that we've been  
6 referring to before as exhibit 133. And it  
7 reports on the results of operating at loads of  
8 approximately 70 percent, correct?

9                   MR. LOWE: Can you direct me to which  
10 page you're looking at?

11                  MR. BEERS: If you'll look on page 3,  
12 second full paragraph, 70 percent.

13                  MR. LOWE: Yes.

14                  MR. BEERS: Okay. And these are  
15 described variously in this letter as being low  
16 load operations, is that correct?

17                  MR. LOWE: That's what it says in the  
18 letter, yes.

19                  MR. BEERS: Okay. Did you understand 70  
20 percent to be a low load operation?

21                  MR. LOWE: I relied on the judgment of  
22 the people overseeing the test. I'm not a  
23 specialist in emissions estimates.

24                  MR. BEERS: Well, but I take it you are  
25 a specialist in making sure that when you do a

1 risk assessment it's going to cover all of the  
2 various operating conditions of the facility to  
3 the extent that any of them might led to higher  
4 emissions, correct?

5 MR. LOWE: To the extent that you rely  
6 on the judgments of the people overseeing the  
7 development of that information.

8 MR. BEERS: Well, Mr. Lowe, don't you  
9 have some responsibility in doing a health risk  
10 assessment to say to yourself, I need to make sure  
11 that when I come here and testify in a proceeding  
12 like this, that I have done a risk assessment that  
13 was based on the maximum emissions rate under  
14 conditions even that are infeasible, or may be  
15 infeasible? Don't you have some responsibility to  
16 insure that, indeed, the assessment that you've  
17 done is based on all of those kinds of operating  
18 conditions?

19 MR. LOWE: Yes.

20 MR. BEERS: Okay. And my question to  
21 you is how was the selection of 70 percent based  
22 upon, as far as you know?

23 MR. LOWE: I can't answer that question.  
24 You would have to ask the people overseeing the  
25 emissions test that.

1                   MR. BEERS: All right. And did you make  
2                   any effort in doing your risk assessment to  
3                   determine or make any inquiry about whether or not  
4                   it was possible or likely that a higher level of  
5                   aldehydes emissions might occur at a load lower  
6                   than 70 percent?

7                   MR. LOWE: Again, I relied on the  
8                   judgments of the people overseeing the emissions  
9                   testing.

10                  MR. BEERS: That wasn't my question. My  
11                  question was in doing your risk assessment, in  
12                  which you testified to us that you had done a risk  
13                  assessment that was based on the maximum level of  
14                  emissions that could be expected from this plant  
15                  under any operating conditions, right? Isn't that  
16                  your testimony?

17                  MR. LOWE: Yes.

18                  MR. BEERS: Okay, in doing your risk  
19                  assessment did you, yourself, make any inquiry of  
20                  anybody about whether or not there was any other  
21                  condition of operation below 70 percent load which  
22                  might lead to a higher level of aldehydes  
23                  emissions?

24                  MR. LOWE: Sierra Research had made that  
25                  judgment in developing the test.

1                   MR. BEERS:  Again, I want my question  
2 answered.  Did you make any --

3                   PRESIDING MEMBER LAURIE:  Mr. Beers, --

4                   MR. BEERS:  Yes.

5                   PRESIDING MEMBER LAURIE:  -- sir, that  
6 question calls for a yes or no answer.  Please  
7 refrain from the argumentative nature of the  
8 question.  Please be more directly responsive to  
9 the question.  You can answer that question yes or  
10 no.

11                   MR. LOWE:  I will.  Can you re-ask the  
12 question again?

13                   MR. BEERS:  Certainly.  And my question  
14 is really did you, yourself, personally, make any  
15 effort to determine whether or not there was any  
16 operating condition at a lower load than 70  
17 percent that might produce higher emissions of  
18 aldehydes?

19                   MR. LOWE:  No, I relied on Sierra  
20 Research to make that judgment.

21                   MR. BEERS:  Did you ask Sierra Research  
22 at any time whether or not there was a lower load  
23 condition that might produce higher emissions of  
24 aldehydes?

25                   MR. LOWE:  No.

1                   MR. BEERS: And do you, yourself, have  
2 any knowledge on that subject as to whether or not  
3 lower load conditions might produce higher  
4 emissions of aldehydes?

5                   MR. LOWE: Myself, no.

6                   MR. BEERS: Okay.

7                   MR. HARRIS: Can I ask that the panel be  
8 able to respond to these questions because what we  
9 have going on here is the questions are being  
10 asked of one witness, when the other witness is  
11 the proper witness to answer the questions.

12                   MR. BEERS: Well, I'm afraid I don't  
13 understand that. I mean, Mr. Lowe is the witness  
14 on the acute health effects.

15                   MR. HARRIS: And you're asking him about  
16 emissions.

17                   MR. BEERS: Mr. Lowe --

18                   MR. HARRIS: And Mr. Rubenstein is our -  
19 -

20                   MR. BEERS: Mr. Lowe --

21                   MR. HARRIS: I'm sorry.

22                   HEARING OFFICER FAY: Excuse me, Mr.  
23 Beers, I gather that you're trying to determine to  
24 what degree Mr. Lowe had personal knowledge of the  
25 best information, et cetera, as opposed to relying

1 on Sierra Research, is that correct?

2 MR. BEERS: Well, I'm trying to find out  
3 what Mr. Lowe did in order to reach a conclusion  
4 which he affirmatively presented here, namely that  
5 he'd done a conservative risk assessment. That  
6 the risk assessment had demonstrated that there  
7 was no significant health risk associated with  
8 aldehyde emissions. And that conservative  
9 assumption that he made was based on the maximum  
10 emissions from the facility.

11 Flat out, okay, well, I'm trying to find  
12 out what Mr. Lowe based that on.

13 HEARING OFFICER FAY: Okay, it's clear  
14 that he relied heavily on data he received from  
15 Sierra Research. So I think if your question is  
16 whether he did it independently, then I'll allow  
17 this line to continue.

18 If your question is was it actually a  
19 conservative database, then it's clear that Mr.  
20 Rubenstein is more qualified, since his company  
21 gathered the data.

22 MR. BEERS: I understand. And my  
23 questions are really just devoted not to the  
24 database, itself, but to Mr. Lowe's conclusions  
25 here in which he offered certain conclusions as a

1 risk assessment expert, and purported to base  
2 those conclusions on his judgments as to maximum  
3 levels of emissions and as to having done a  
4 conservative set of assumptions.

5 And the question I asked him was really  
6 whether or not he had made any inquiry of anybody  
7 to determine whether there were other operating  
8 conditions that would potentially have higher  
9 emissions of aldehydes.

10 Because this witness, Mr. Lowe, has said  
11 that his testimony is that he's done it on the  
12 basis of all operating --

13 HEARING OFFICER FAY: I understand.

14 MR. HARRIS: I don't object to that  
15 question, by the way. The question that I object  
16 to are, did anybody look at. Did you look, you,  
17 John, look at lower than 70 percent load. The  
18 answer to that question is no. But did anybody on  
19 my panel look at that, and the answer to that  
20 question is yes, Mr. Rubenstein did.

21 And the allusion that's being created is  
22 that --

23 HEARING OFFICER FAY: That's fine, Mr.  
24 Harris, and I assume on redirect you can address  
25 that. I think Mr. Beers' line of questioning is

1 reasonable and I'm going to allow it.

2 I would like to get an estimate of time  
3 from you, though, how long you plan to continue,  
4 how much more cross-examination do you have of the  
5 panel?

6 MR. BEERS: I always find it  
7 terrifically hard to make an estimate.

8 HEARING OFFICER FAY: Try.

9 MR. BEERS: I would expect another hour  
10 or hour and a half, conceivably.

11 HEARING OFFICER FAY: All right, go  
12 ahead.

13 MR. BEERS: And I'll try to do my  
14 best --

15 MR. HARRIS: I want to note my objection  
16 for the record. We kept our testimony down to 45  
17 minutes, specifically on the instruction that we  
18 were going to try to move things along.

19 And if Mr. Beers is going to be allowed  
20 an hour and a half on cross-examination, I think  
21 that that's inconsistent with the procedures to  
22 date.

23 MR. AJLOUNY: I'd like to object that  
24 the --

25 HEARING OFFICER FAY: Objection noted.

1                   MR. AJLOUNY:  -- hours we had to listen  
2                   on visual that everyone knew --

3                   HEARING OFFICER FAY:  All right,  
4                   that's --

5                   MR. AJLOUNY:  -- so --

6                   HEARING OFFICER FAY:  I understand, I  
7                   understand.  Go ahead, Mr. Beers.

8                   MR. BEERS:  Thank you.

9                   Mr. Lowe, did you have anything to do  
10                  with determining whether or not certain test  
11                  methods would be used for measuring acrolein in  
12                  the sample results that we're talking about from  
13                  exhibit 133?

14                  MR. LOWE:  I was not involved in their  
15                  selection.

16                  MR. BEERS:  Okay.  Did you, yourself,  
17                  make any judgment about the adequacy of those  
18                  sample methods for purposes of arriving at a  
19                  conclusion?

20                  MR. LOWE:  No, I relied on the Sierra  
21                  Research for that.

22                  MR. BEERS:  It is the case that there  
23                  was a switch in the model that was used in this  
24                  instant, is that correct?

25                  MR. LOWE:  There were two different

1 models that were used. One, I believe, was more  
2 refined than the other.

3 MR. BEERS: Okay. And the model that  
4 was first used produced a result that was a health  
5 hazard index of above 1, is that correct?

6 MR. LOWE: I believe the initial  
7 modeling result produced a result like that.

8 MR. BEERS: Okay, and that model was the  
9 ISC-ST3 model, is that correct?

10 MR. LOWE: That's what it says in the  
11 letter, yes.

12 MR. BEERS: And is it your understanding  
13 that that's a standard model that's used for risk  
14 assessments before the California Energy  
15 Commission?

16 MR. LOWE: It's one of the standard  
17 models. Again, I'm not a modeling expert, and  
18 Sierra Research performed that analysis.

19 MR. BEERS: Okay, and as a result of  
20 that analysis being performed and producing a  
21 conclusion that the acrolein emissions or  
22 aldehyde, or health hazard index was substantially  
23 above 1, another model was chosen, is that  
24 correct?

25 MR. LOWE: That's correct.

1           MR. BEERS: And that model was run and  
2 the health hazard index, as a result of running  
3 that model, was reduced to just barely below 1,  
4 correct?

5           MR. LOWE: Could you point to me in the  
6 letter where you're seeing this?

7           MR. BEERS: I'm not, I'm just asking  
8 you. I mean another model was run, correct? And  
9 that produced the result that was just barely  
10 below 1.

11          MR. LOWE: Excuse me. That's correct,  
12 the other model CTScreen was run and produced the  
13 results you're talking about.

14          MR. BEERS: Okay. Mr. Lowe, do I  
15 understand you to be saying in the November 17,  
16 2000 letter that's been marked as exhibit 133 that  
17 there's any problem with using the REL for  
18 acrolein in this case?

19          MR. LOWE: Could you clarify what you  
20 mean by any problem?

21          MR. BEERS: Let me restate the question.  
22 Are you recommending to this Commission that they  
23 not use the REL for acrolein in this case?

24          MR. LOWE: I don't believe that's the  
25 intent of my comments in the letter. The purpose

1 for the information presented was to provide some  
2 perspective on the nature, conservative nature of  
3 that REL.

4 MR. BEERS: Okay. And so it's fair to  
5 say that you're willing to take your chances  
6 wherever the chips fall and that if the test  
7 result data that was accepted included the higher  
8 value which you just did a calculation on that  
9 leads to 3.8 or above on the health hazard index,  
10 that you'd still be saying that the REL to use is  
11 the one that OWEHA has adopted, correct?

12 MR. LOWE: Correct. But there's one  
13 thing to be aware of is that a hazard index, which  
14 is the ratio of the concentration to an REL, a  
15 hazard index greater than 1, according to OWEHA  
16 does not necessarily mean there will be a  
17 significant health effect.

18 MR. BEERS: Okay, but I'm saying, I just  
19 want to be clear that you're not, in that  
20 circumstance, saying we should turn to a different  
21 number than the REL, correct?

22 MR. LOWE: That is correct.

23 MR. BEERS: Okay. And I think you  
24 indicated in response to some questions that that  
25 REL was based principally on eye effects, is that

1 correct?

2 MR. LOWE: Mild eye irritation, yes.

3 MR. BEERS: And what do you mean by mild  
4 eye irritation?

5 MR. LOWE: I believe what that means is  
6 an increased blink reflex and a detectable  
7 sensation in the eyes.

8 MR. BEERS: And is it your understanding  
9 that for sensitive individuals, for example,  
10 that's an effect that would be incurred if you got  
11 above the health hazard index of 1 for acrolein?

12 MR. LOWE: Well, the REL has several  
13 safety factors attached to it that extrapolate  
14 that level below no effect levels observed in the  
15 studies.

16 So, again, just going over a hazard  
17 index of 1 does not necessarily mean there would  
18 be a significant health effect. It --

19 MR. BEERS: I understand -- I'm sorry, I  
20 didn't mean to cut you off.

21 MR. LOWE: To put it into a little more  
22 perspective, it's important to note that that REL  
23 falls within the range of ambient concentrations  
24 of acrolein typically found in the air.

25 MR. BEERS: And typically found in the

1 air. Do you know what the ambient concentrations  
2 of acrolein are in this area?

3 MR. LOWE: Nationwide, based on studies  
4 for the --

5 MR. BEERS: Mr. -- Mr. Lowe, do you know  
6 what the ambient concentrations of acrolein are in  
7 this area?

8 MR. LOWE: Across the United States,  
9 yes. In this particular area I'm assuming they  
10 would be representative.

11 MR. BEERS: Okay. They vary greatly,  
12 don't they, the ambient concentrations?

13 MR. LOWE: They typically vary from --

14 MR. BEERS: Mr. Lowe, my question is  
15 they vary greatly, that's a yes or no question.

16 MR. HARRIS: Can the witness be allowed  
17 to answer the question without interruption?

18 HEARING OFFICER FAY: Mr. Lowe, if you  
19 can focus the answers it will move us along.

20 MR. LOWE: I will, thank you. They  
21 vary, yes, they vary by a factor of 10.

22 MR. BEERS: Okay, and you don't know  
23 where on that factor of 10 this particular area  
24 falls, correct.

25 MR. LOWE: No.

1                   MR. BEERS: Okay. So, if we assume that  
2                   the health hazard index is above 1, because for  
3                   example we've included the sample data that was  
4                   thrown out, so that indeed it's up to 3.8 or so,  
5                   the assumption prescribed is the assumption that  
6                   there will be some eye effects, correct?

7                   MR. LOWE: Yes, under limited  
8                   circumstances.

9                   MR. BEERS: Okay. And since we're  
10                  talking about something that could be a real world  
11                  situation, if for example we just had included one  
12                  sample rather than throwing it out, would you  
13                  please describe for me more precisely what's meant  
14                  by this minor eye irritation? Are we talking  
15                  about tears welling in the eyes?

16                  MR. LOWE: No. We're probably talking  
17                  about the sensation of mild pain and a blink  
18                  reflex.

19                  MR. BEERS: Pain in the eye? That's one  
20                  sensation that would be felt?

21                  MR. LOWE: Stinging in the eyes.

22                  MR. BEERS: Okay. And that stinging  
23                  would be perceived as a burning in the eyes, is  
24                  that correct?

25                  MR. LOWE: I believe so.

1           MR. BEERS: Okay. And that would have a  
2 particular impact on children, is that right?

3           MR. LOWE: It would have an impact on  
4 anybody who experienced it.

5           MR. BEERS: Well, but isn't the  
6 assumption of the REL that children are  
7 particularly sensitive?

8           MR. LOWE: I'm not sure there's any  
9 reason to believe that children would be any more  
10 sensitive to eye effects than anyone else.

11          MR. BEERS: Do you have children?

12          MR. LOWE: Yes.

13          MR. BEERS: Okay. And isn't the REL  
14 based -- aren't the RELs generally based on the  
15 notion that children are more sensitive receptors  
16 than ordinary adults that are in good health?

17          MR. LOWE: Well, the RELs are -- not  
18 necessarily. The RELs are based on no effect  
19 levels, and there's uncertainty factors to account  
20 for a range of sensitive individuals. They may  
21 not necessarily be children.

22          MR. BEERS: But it includes children?

23          MR. LOWE: It could, yes.

24          MR. BEERS: Okay. And in this case  
25 there is an elementary school how far away from

1 where the MEC facility will be built?

2 MR. LOWE: 1.4 miles away.

3 MR. BEERS: Okay. And are you familiar  
4 with the fact that there's been discussion of a  
5 daycare center being located on the premises of  
6 the Coyote Valley Research Park, for example?

7 MR. LOWE: I have heard that.

8 MR. BEERS: And the daycare center would  
9 also be for the housing of small children?

10 MR. LOWE: Yes.

11 MR. BEERS: Mr. Rubenstein, let me ask  
12 you some questions, since you seem to be the  
13 source of the data that's of concern here.

14 Mr. Lowe just indicated that he  
15 understood that the problems with the excluded  
16 source test sample was that the results didn't  
17 really match up with the results of the other  
18 ones.

19 MR. RUBENSTEIN: Yes, I heard that.

20 MR. BEERS: For other constituents. And  
21 yet the letter speaks of there being a suspected  
22 contamination of the sample. Are those two things  
23 the same thing?

24 MR. RUBENSTEIN: No.

25 MR. BEERS: Okay. Well, did you arrive

1 at a conclusion that there was suspected  
2 contamination? Well, let me restate that.

3 Did you arrive at a conclusion that this  
4 particular sample was contaminated?

5 MR. RUBENSTEIN: Yes, I did.

6 MR. BEERS: Okay. And were you involved  
7 in taking the sample?

8 MR. RUBENSTEIN: No, I was not.

9 MR. BEERS: Did you have anything to do  
10 with any of the lab work on the sample personally?

11 MR. BEERS: I worked with the laboratory  
12 scientist who developed the methods that were used  
13 for collecting and processing the sample. But I  
14 did not do any of the laboratory work, myself.

15 MR. BEERS: Okay. And so from the start  
16 of the point at which the sample was taken, and  
17 through the point at which the lab result reported  
18 the results of the sample, you were not personally  
19 involved in any of those steps so that you could  
20 make any observation of what was going on, is that  
21 correct?

22 MR. RUBENSTEIN: That's correct.

23 MR. BEERS: And it is the case, isn't  
24 it, that the source test firm reported to you that  
25 that sample appeared to be valid --

1 MR. RUBENSTEIN: Yes.

2 MR. BEERS: -- and reported also that  
3 they had no evidence that there was any  
4 contamination of that sample, is that correct?

5 MR. RUBENSTEIN: That's correct.

6 MR. BEERS: And likewise the laboratory  
7 doing the sampling work reported to you that, or  
8 at least their sampling results report doesn't  
9 indicate that there was any contamination,  
10 correct?

11 MR. RUBENSTEIN: That's correct.

12 MR. BEERS: And you wrote them back and  
13 said would you please confirm that, please  
14 determine whether or not there was any  
15 contamination in this sample, correct?

16 MR. RUBENSTEIN: That's correct.

17 MR. BEERS: And they wrote you back and  
18 said there wasn't, correct?

19 MR. RUBENSTEIN: That's correct.

20 MR. BEERS: And you've now determined,  
21 on the basis of that sample having been done, that  
22 it was contaminated, correct?

23 MR. RUBENSTEIN: That's not correct.

24 MR. BEERS: Okay. You have not  
25 determined that it was contaminated?

1                   MR. RUBENSTEIN: I have determined that  
2                   it was contaminated, that I believe it was  
3                   contaminated, but not based on that one sample. I  
4                   thought that was what you asked.

5                   MR. BEERS: Okay. Have you done a  
6                   statistical analysis on each of the samples that  
7                   were taken in the six different sample runs for  
8                   all of the different parameters to determine  
9                   whether they matched up within some range with the  
10                  results on the other samples?

11                  MR. RUBENSTEIN: I'm sorry, I'm not sure  
12                  I understood the question. You asked if I did a  
13                  statistical analysis on each sample, and there are  
14                  18 individual numbers. And you then asked if I  
15                  did some correlation between them, and those are  
16                  two separate questions. What -- could you restate  
17                  your question for me?

18                  MR. BEERS: Surely. Well, let me back  
19                  up. I gather you're not basing your conclusion  
20                  that this sample was contaminated on the basis of  
21                  anything known about the sample, itself, correct?  
22                  The result was high to you, but there's nothing  
23                  known about the sample that indicated to you that  
24                  it was contaminated, correct?

25                  MR. RUBENSTEIN: That's correct.

1           MR. BEERS: Okay, so my next question is  
2 did you do some sort of analysis on all of the  
3 sample results here to determine whether or not  
4 they fell into some appropriate range of  
5 correlation with one another?

6           MR. RUBENSTEIN: I did.

7           MR. BEERS: Okay, and is that part of  
8 the testimony you presented?

9           MR. RUBENSTEIN: The conclusion I  
10 reached is there. I did not do a written  
11 statistical analysis, if that's what your question  
12 is. I could explain the analysis I did, to you  
13 right now, if you like.

14           MR. BEERS: But, if you didn't do a  
15 written statistical analysis, did you actually do  
16 a set of calculations on each of the samples that  
17 were involved?

18           MR. RUBENSTEIN: No, no, I looked at the  
19 data and compared the data for each constituent  
20 with the comparable results from each other  
21 constituent.

22           For example, in the case of acid  
23 aldehyde, on September 19th for the first run the  
24 concentration measured was .18 ppm, which was  
25 substantially higher than any of the other runs.

1 I questioned the laboratory facility and the  
2 source test firm about that sample, as well,  
3 because it seemed out of line with all the others.  
4 They could not identify any sample contamination.

5 I then compared the results for acid  
6 aldehyde for that particular run with formaldehyde  
7 and noted that the levels for that run were not  
8 elevated compared to the others, which suggested a  
9 potential problem.

10 I then also compared the results with  
11 the acrolein results from run number one on  
12 September 19th. Those results were elevated. And  
13 because two of the three constituents had elevated  
14 results, I made the decision not to reject the  
15 formaldehyde data.

16 I did the same type of analysis when I  
17 took a look at the acrolein result from run number  
18 three on July 21st, where that number was two  
19 orders of magnitude higher than most of the other  
20 results.

21 And I could find no corroborative  
22 increase in the concentrations of the two other  
23 constituents.

24 Because both of the magnitude of the  
25 discrepancy, as well as the fact that there was no

1 other plausible physical explanation as to why  
2 acrolein emissions would be 100 times higher  
3 during that run with acid aldehyde and  
4 formaldehyde emissions being within 20 to 30  
5 percent of the other runs, I made the judgment  
6 that there had to be some laboratory based reason,  
7 notwithstanding the results I heard reported back  
8 from the laboratory.

9 MR. BEERS: Okay. And is there an  
10 accepted protocol for the kind of judgment you  
11 were making, then?

12 MR. RUBENSTEIN: Since there isn't even  
13 a regulatorily accepted test method for acrolein,  
14 no, I don't believe that there's a protocol for  
15 making the kind of judgment that I made.

16 MR. BEERS: All right, now I want to  
17 make sure that that question wasn't understood as  
18 being somehow related to whether or not there was  
19 an accepted sampling method for acrolein.

20 Let's review. I mean, you got some set  
21 of sample results; you made an inquiry as to  
22 whether or not one of them had been contaminated  
23 or not; you were told by all of the different  
24 people who were involved in anything to do with  
25 the processing of that sample that there was no

1           contamination and that it was a valid sample as  
2           far as their information indicated.

3                       And you discarded it because it was  
4           high. And because it was higher than certain  
5           other constituents were.

6                       And my question is there any established  
7           protocol which allows for the discarding of a  
8           sample on those kind of grounds?

9                       MR. RUBENSTEIN: There are different  
10          outlier techniques that one could apply.

11                      MR. BEERS: And my question is whether  
12          or not there is any established protocol that's  
13          accepted by any of the regulatory agencies for  
14          purposes of that?

15                      MR. RUBENSTEIN: No. If you're talking  
16          specifically about the emissions test data, and I  
17          answered your first question more broadly because  
18          I thought that's how it was asked, with respect to  
19          discarding emission test results, I'm not aware of  
20          any established protocols.

21                      It's my understanding and my experience  
22          that if you wish to discard data you have to  
23          disclose data that is proposed to be discarded.  
24          You have to provide a rationale. And then the  
25          agency will make an independent determination as

1 to whether they believe it was appropriate to  
2 discard that point.

3 MR. BEERS: Okay, and so you've done  
4 that, and with the help of Mr. Lowe's calculation,  
5 if the Energy Commission believed that that sample  
6 result should have been included, then they could  
7 do the calculation and come to the conclusion as  
8 to whether or not the health hazard index was  
9 exceeded here, correct?

10 MR. RUBENSTEIN: That's correct.

11 MR. BEERS: Okay. Let me ask you some  
12 questions I was asking Mr. Lowe about, because  
13 it's apparent that you were the individual that  
14 made these kind of determinations.

15 The November 17, 2000 letter that's been  
16 marked as exhibit 133, begins by saying in  
17 response to questions raised by interested parties  
18 regarding emissions of formaldehyde, acetaldehyde  
19 and acrolein during low load turbine operation  
20 Calpine had certain source testing done.

21 Do you see that?

22 MR. RUBENSTEIN: Yes.

23 MR. BEERS: And I had asked him and he  
24 didn't know, and maybe you do, who the interested  
25 parties were?

1           MR. RUBENSTEIN: Yes, the two that I can  
2 recall most immediately were the staff of the  
3 California Energy Commission and CVRP.

4           MR. BEERS: Okay. And did the staff of  
5 the California Energy Commission ask that you do  
6 an additional source test at 70 percent load?

7           MR. RUBENSTEIN: They didn't ask that we  
8 do any testing at all.

9           MR. BEERS: Okay. Then what were the  
10 questions that they raised to which this  
11 responded?

12          MR. RUBENSTEIN: CVRP had raised a  
13 question about --

14          MR. BEERS: I'm talking about the Energy  
15 Commission.

16          MR. RUBENSTEIN: I'm sorry, could you  
17 restate the question for me.

18          MR. BEERS: This says in response to  
19 questions raised by interested parties regarding  
20 emissions of formaldehyde, acetaldehyde and  
21 acrolein during low load turbine operations, and  
22 it goes on to say we did certain source tests.

23          MR. RUBENSTEIN: Yes.

24          MR. BEERS: I just asked you what were  
25 the questions that were raised by the California

1 Energy Commission Staff to which this responded.

2 MR. RUBENSTEIN: The California Energy  
3 Commission Staff asked how we would respond to the  
4 comments to the CVRP.

5 MR. BEERS: All right. Fair enough.  
6 And did you understand that CVRP had asked for  
7 tests to be done at approximately 70 percent load?

8 MR. RUBENSTEIN: No.

9 MR. BEERS: What did you understand?

10 MR. RUBENSTEIN: I understood that CVRP  
11 had provided comments, I believe, to the Bay Area  
12 Air Quality Management District enclosing a copy  
13 of a guideline document issued by the California  
14 Air Resources Board indicating that any emission  
15 factors for acrolein that were determined using  
16 ARB method 430 should be discarded as invalid.

17 And that therefore the acrolein emission  
18 factors that had been used in the original risk  
19 assessment were inappropriate.

20 CVRP's comments went on to then perform  
21 a calculation to suggest what a correct acrolein  
22 emission factor would be, based on their judgment.  
23 And I had recommended to Calpine/Bechtel that we  
24 perform a test so that we did not need to rely on  
25 CVRP's judgment.

1                   MR. BEERS: Okay. Did you understand  
2                   that CVRP had raised questions and comments to the  
3                   Bay Area Air Quality Management District and to  
4                   the Energy Commission suggesting that emissions of  
5                   aldehydes would be higher during startup  
6                   conditions?

7                   MR. RUBENSTEIN: I'd have to go back to  
8                   see whether that question was raised at that time  
9                   or not. I'm not certain. I certainly know that  
10                  that's a concern now. I don't know that that was  
11                  a concern when the issue was first raised in the  
12                  spring of 2000.

13                  MR. BEERS: Okay. But it wasn't only  
14                  because of one particular sampling method having  
15                  been questioned that you decided back in the  
16                  summer of 2000 to do what you call low load  
17                  testing, right?

18                  MR. RUBENSTEIN: I'm sorry, could you  
19                  restate that question again?

20                  MR. BEERS: I do need to restate it.  
21                  You did testing in July of 2000 at the Pasadena  
22                  facility, and you did some of that testing at 70  
23                  percent load, correct?

24                  MR. RUBENSTEIN: Yes, that is correct.

25                  MR. BEERS: And my question is why was

1       it that you decided to do testing at 70 percent  
2       load?

3               MR. RUBENSTEIN: We had already planned  
4       on, and I believe completed, testing on the units  
5       at 100 percent load based on the initial comments  
6       from CVRP, which my recollection is were based  
7       solely on the ARB guidance document.

8               And after we had made plans to perform  
9       the full load testing, which I believe was in June  
10      of 2000, at a workshop held in this room CVRP  
11      raised questions about whether full load testing  
12      was adequate and suggested that emissions during  
13      startup might be much higher.

14              MR. BEERS: Okay, and so it was in part  
15      in response to that kind of statement, that the  
16      testing was done at 70 percent load?

17              MR. RUBENSTEIN: That's correct.

18              MR. BEERS: And how did you happen to  
19      pick 70 percent load as a response to a question  
20      about whether emissions wouldn't be higher at  
21      startup?

22              MR. RUBENSTEIN: Well, actually I  
23      believe the comments were made about lower load  
24      conditions in general, and they included startup.

25              MR. BEERS: Okay.

1           MR. RUBENSTEIN: I picked 70 percent  
2 load because that is the lowest expected  
3 continuous operating load for this turbine, and  
4 because I'm not aware of any technically sound  
5 methods for measuring acrolein emissions during  
6 startup.

7           MR. BEERS: And so when you say it's the  
8 lowest operating load, you're really talking about  
9 a situation which wouldn't be a startup condition,  
10 correct?

11          MR. RUBENSTEIN: That's correct.

12          MR. BEERS: So, in other words, as  
13 matters stand now, you've done no testing intended  
14 to replicate any of the emissions that will result  
15 during the period in which the facility is  
16 starting up?

17          MR. RUBENSTEIN: You're speaking  
18 specifically about acrolein?

19          MR. BEERS: Acrolein, correct.

20          MR. RUBENSTEIN: No, we have not.

21          MR. BEERS: Okay. And isn't it true  
22 that the load during startup ranges from zero to  
23 50 percent for a significant fraction of the time?

24          MR. RUBENSTEIN: Actually in my judgment  
25 it ranges between zero and 70 percent for 100

1 percent of the time, by definition.

2 MR. BEERS: Okay. And how long a period  
3 does that last typically?

4 MR. RUBENSTEIN: It depends on the  
5 condition of the turbine, the heat recovery steam  
6 generator, and the steam turbine at the time the  
7 startup is initiated. It could be as short as 45  
8 minutes, and it could be as long as three hours.

9 MR. BEERS: Okay. And for purposes of  
10 your estimates of the startup that are likely at  
11 this facility over the period of a year, you've  
12 done that in terms of two different kinds of  
13 starts, is that correct? Cold and hot.

14 MR. RUBENSTEIN: Yes, for rough planning  
15 purposes, that's correct.

16 MR. BEERS: Okay. And the total of  
17 those end up amounting to something like 10  
18 percent of the year, is that right?

19 MR. RUBENSTEIN: No.

20 MR. BEERS: Isn't that what you said in  
21 the chart?

22 MR. RUBENSTEIN: No.

23 MR. BEERS: Or in the testimony?

24 MR. RUBENSTEIN: No. I don't believe  
25 so. Could you tell me what you're pointing at, or

1 referring to?

2 MR. BEERS: Looking at your testimony,  
3 table 2.

4 MR. RUBENSTEIN: Sorry, Mr. Beers, my  
5 testimony has gotten swallowed up in the pile of  
6 paper in front of me.

7 MR. BEERS: So are they -- do you have  
8 it in front of you? I'm sorry.

9 MR. RUBENSTEIN: Yes, I do.

10 MR. BEERS: Aren't 832 hours  
11 approximately 10 percent of the total hours in the  
12 year?

13 MR. RUBENSTEIN: Yes.

14 MR. BEERS: Okay.

15 MR. RUBENSTEIN: But it's not 832 hours  
16 per turbine.

17 MR. BEERS: I know, it's for the two of  
18 them, correct?

19 MR. RUBENSTEIN: But it would only be 10  
20 percent of the hours in the year with the turbines  
21 never started at the same time.

22 MR. BEERS: Right, so we're talking  
23 about 5 percent of the year in which both turbines  
24 would be operating at the same time, is that  
25 correct, and the startup condition would exist?

1                   MR. RUBENSTEIN: No. What my testimony  
2                   is is that up to approximately 4 or 5 percent of  
3                   the hours in a year each turbine will be in  
4                   startup or shutdown.

5                   MR. BEERS: Okay, all right. And in  
6                   that mode, have you arrived at any conclusion as  
7                   to whether or not the emissions of aldehydes,  
8                   including acrolein are higher than they are at 70  
9                   percent or 100 percent load?

10                  MR. RUBENSTEIN: No, I have not.

11                  MR. BEERS: So you don't have an opinion  
12                  on that one way or the other, is that right?

13                  MR. RUBENSTEIN: That's right.

14                  MR. BEERS: Okay. Isn't it true that  
15                  the source test you did demonstrated that  
16                  emissions were higher during 70 percent load than  
17                  during 100 percent load?

18                  MR. RUBENSTEIN: Yes.

19                  MR. BEERS: And have you examined figure  
20                  3 from Mr. Radis' testimony?

21                  MR. HARRIS: Roger, what page is that?

22                  MR. BEERS: That's what I'm looking for.

23                  37.

24                  Do you have that in front of you?

25                  MR. RUBENSTEIN: Yes, I do.

1                   MR. BEERS:  And do you see a series of  
2                   curves here?  Have you reviewed the testimony so  
3                   that you understand what this chart is intended to  
4                   demonstrate?

5                   MR. RUBENSTEIN:  Yes, I have.

6                   MR. BEERS:  And I gather you have no  
7                   information to indicate that the emissions cannot  
8                   be charted in this manner, is that correct?

9                   Strike that.

10                  You haven't conducted any review of the  
11                  question of whether or not these particular tests  
12                  that were conducted would distribute themselves  
13                  this way, is that right?

14                  MR. RUBENSTEIN:  That's correct, the  
15                  only tests that I have supervised are tests at two  
16                  points, 100 percent load and 70 percent load.

17                  MR. BEERS:  Okay.  And do you have any  
18                  information indicating that the two middle red  
19                  items, which are intended to depict one of those  
20                  test results at another Westinghouse facility, are  
21                  not correctly portrayed there in terms of the  
22                  increase in load once they get below 70 percent?

23                  MR. RUBENSTEIN:  I'm afraid, Mr. Beers,  
24                  my copy's black and white.  Could you describe  
25                  them some other way?

1                   MR. BEERS: Sorry. It cost extra for  
2 the color copies.

3                   MR. RUBENSTEIN: Thank you.

4                   MR. BEERS: Have you had a chance to  
5 look at that?

6                   MR. RUBENSTEIN: Yes, how could you tell  
7 me the question again, please?

8                   MR. BEERS: Yeah. Well, first of all,  
9 do you agree that the curve represented by the two  
10 red lines shows that emissions of formaldehyde,  
11 for example, increase as load decreases for the  
12 Westinghouse turbines?

13                   MR. RUBENSTEIN: Well, there's only one  
14 line which is actual data, which is the line for  
15 the Westinghouse 501AA which is the solid line.  
16 The Calpine 501F is, I understand it, Mr. Radis'  
17 interpolation and extrapolation from two data  
18 points, one at 100 percent and one at 70 percent.

19                   MR. BEERS: Right.

20                   MR. RUBENSTEIN: I have no reason to  
21 dispute the solid line, which is the 501AA. And I  
22 have no reason to either accept or reject Mr.  
23 Radis' extrapolation or interpolation.

24                   The 501F is a fundamentally different  
25 combustor than the 501AA. And I have no knowledge

1 at all about what this curve might look like with  
2 that engine.

3 MR. BEERS: And you would agree that  
4 accepting the assumptions that he made, that what  
5 this chart shows is that the formaldehyde  
6 increases as the load decreases for those  
7 turbines, correct?

8 MR. RUBENSTEIN: As a qualitative  
9 statement, yes, that's what it shows.

10 MR. BEERS: Okay. Have you -- there's  
11 been no attempt to do any source testing at a load  
12 operating lower than 70 percent, is that correct?

13 MR. RUBENSTEIN: I have not --

14 MR. BEERS: On your part?

15 MR. RUBENSTEIN: That's correct.

16 MR. BEERS: And is it your testimony  
17 that it's not possible to measure emissions of  
18 toxic air contaminants during startup testing  
19 using test methods approved by regulatory  
20 agencies?

21 MR. RUBENSTEIN: Yes, it is.

22 MR. BEERS: And --

23 HEARING OFFICER FAY: Excuse me, Mr.  
24 Beers, we're going to take a short break in a few  
25 minutes. Is this --

1 MR. BEERS: This is a good time.

2 HEARING OFFICER FAY: This is a good  
3 time now, okay. Let's take a five-minute break.

4 (Brief recess.)

5 MR. BEERS: Mr. Rubenstein, in my last  
6 question I really asked you a double-barreled  
7 question, whether it was your testimony that it  
8 was not possible to measure emissions of toxic air  
9 contaminants during startup using test methods  
10 approved by regulatory agencies.

11 And the kicker there, of course, is the  
12 test methods approved by regulatory agencies, when  
13 we start talking about acrolein, so I want to  
14 separate out that -- oh, I'm sorry.

15 I want to separate out of this  
16 discussion for the moment the issue about what the  
17 appropriate test method is for acrolein  
18 measurements.

19 And I want to ask you when you say it's  
20 not possible to measure emissions during startup,  
21 are you assuming that the test takes place  
22 throughout the duration of the startup? In other  
23 words, that the test starts at turbine lights off  
24 and continues until the turbine reaches 50 percent  
25 load or 708 percent load?

1 MR. RUBENSTEIN: Yes.

2 MR. BEERS: And would you agree that  
3 it's impossible to measure toxic emissions at  
4 steady state at a lower load than 70 percent used  
5 in the Pasadena source test?

6 MR. RUBENSTEIN: Would I agree that it  
7 is impossible?

8 MR. BEERS: No, that it is possible.

9 MR. RUBENSTEIN: Oh, would I agree that  
10 it is possible to measure emissions at a steady  
11 state load lower than 70 percent?

12 MR. BEERS: Right.

13 MR. RUBENSTEIN: Yes, I agree that is  
14 possible.

15 MR. BEERS: Okay. And would you agree  
16 that it's possible to do that at 25 percent?

17 MR. RUBENSTEIN: Yes.

18 MR. BEERS: Okay. And, in fact, isn't  
19 it typical for a turbine when it's being started  
20 up like this, for it to be held at varying levels  
21 during the startup for a period of time?

22 MR. RUBENSTEIN: The answer to that  
23 question depends very much on who the turbine  
24 vendor is, what the model of the turbine is,  
25 whether it's operated in simple cycle or combined

1 cycle, and what the configuration of the plant is.

2 MR. BEERS: Let's assume we're talking  
3 about combined cycle plant as we are here.

4 MR. RUBENSTEIN: In a combined cycle  
5 plant my experience is that the turbine is held  
6 for some period of minutes at full speed, no load,  
7 which is immediately after light-off.

8 And then it may be held at another load  
9 for a period of 30 or 40 minutes depending on what  
10 condition the steam turbine and heat recovery  
11 steam generator run.

12 MR. BEERS: And that second period in  
13 which it can be held for 30 to 40 minutes, within  
14 what range do you see it typically happening in  
15 terms of percentage of load?

16 MR. RUBENSTEIN: I don't recall because  
17 I don't have those curves at my fingertips.

18 MR. BEERS: Okay, but that's something  
19 that could occur at 30 percent, for example?

20 MR. RUBENSTEIN: I don't think it occurs  
21 at a load as high as 30 percent, but I could be  
22 mistaken.

23 MR. BEERS: And would you agree that  
24 toxic emissions could be measured during those  
25 hold periods that you've described?

1                   MR. RUBENSTEIN: No. I'm not certain  
2                   that they could. And the reason is that in order  
3                   to measure the kinds of low concentrations we're  
4                   looking at here, you'd want to take a sample over  
5                   a long enough period of time, and I'm not sure  
6                   that the engines would be in a steady state for  
7                   long enough to get a representative sample.

8                   MR. BEERS: Well, in fact, measurements  
9                   were made for formaldehyde in the GRI EPRI study  
10                  at 30 percent load, is that correct?

11                  MR. RUBENSTEIN: Yes. But that was not  
12                  a 30 percent hold during a startup; that was a  
13                  specially designed test at 30 percent load.

14                  MR. BEERS: Okay, and do you know how  
15                  long the tests were taken there?

16                  MR. RUBENSTEIN: No, I'd have to take a  
17                  look at the EPRI report. If you'd like, I can do  
18                  that.

19                  MR. BEERS: Sure.

20                  MR. RUBENSTEIN: Table B3 of the EPRI  
21                  report; it's in appendix page B-7. Indicates that  
22                  the duration of the formaldehyde test in the EPRI  
23                  report was 60 minutes.

24                  MR. BEERS: And are you saying that it's  
25                  physically impossible to take, for example, a

1 facility such as exists in Pasadena and run it at  
2 that load level for 60 minutes? In order to  
3 conduct such a test?

4 MR. RUBENSTEIN: I'm sorry, run it at  
5 what load level?

6 MR. BEERS: The one that was run for the  
7 EPRI GRI study.

8 MR. RUBENSTEIN: In the EPRI GRI study  
9 it was run at a number of loads.

10 MR. BEERS: Okay, and are you saying,  
11 for example, for 30 percent load, that it would be  
12 impossible physically to run the Pasadena test  
13 facility for a period of 60 minutes at 30 percent  
14 load in order to conduct the testing?

15 MR. RUBENSTEIN: It might be physically  
16 possible, I'm not certain. But it would not be  
17 representative.

18 MR. BEERS: And what do you mean it  
19 would not be representative?

20 MR. RUBENSTEIN: I mean that it would  
21 not be a representative operating condition for  
22 that engine to be at 30 percent load for 60  
23 minutes.

24 MR. BEERS: I understand, but wouldn't  
25 that give you some idea of what the emissions are

1 in relationship to other load levels for those  
2 period at which the plant is being held below 70  
3 percent?

4 MR. RUBENSTEIN: No, I believe it would  
5 only tell you the emissions at 30 percent load  
6 when the unit is held there for an extended period  
7 of time.

8 MR. BEERS: Okay. And the EPRI study  
9 was done for the purpose of determining whether or  
10 not at lower loads the level of various aldehydes  
11 increased, correct, what levels you would see?

12 MR. RUBENSTEIN: Actually my  
13 understanding of the EPRI study is that it was  
14 intended to characterize the emissions from gas-  
15 fired boilers and turbines under a variety of  
16 steady state operating conditions for a variety of  
17 different toxic air contaminants, one of which was  
18 formaldehyde.

19 MR. BEERS: Okay. So if I understand,  
20 you're not disagreeing that emissions factors for  
21 aldehydes could be higher during low loads?

22 MR. RUBENSTEIN: As I said earlier, I  
23 don't know.

24 MR. BEERS: Okay. And your position --  
25 you're also not saying that it's impossible to

1       conduct tests at the lower load levels if held for  
2       a long enough period of time?

3               MR. RUBENSTEIN: That is correct.

4               MR. BEERS: And is there any protocol  
5       that you're aware of that requires that the test  
6       be taken over a full 60 minutes for aldehydes?

7               MR. RUBENSTEIN: I'd have to actually  
8       review ARB method 430, which is the method that  
9       was used in the EPRI report to see if there is a  
10      minimum sample of time. I'm certain there is a  
11      minimum sample collection volume that's required.  
12      And that sample collection volume will translate  
13      into a minimum time. But I don't know the answer  
14      off the top of my head.

15              MR. BEERS: Okay. Well, do you remember  
16      for purposes of the testing that was done using  
17      the method that was used on the Pasadena facility  
18      at 70 percent load, what the duration was there?

19              MR. RUBENSTEIN: No, I don't remember,  
20      but I can look that up.

21              I'm looking at just one of the test  
22      reports; this is for the test reports done in  
23      September of 2000. And those test runs were  
24      performed for one hour each.

25              MR. BEERS: Okay. So is there any other

1 reason why you think that the test at a steady  
2 state at a lower load level would be  
3 unrepresentative, other than the possibility that  
4 it would be difficult to run the test for 60  
5 minutes?

6 MR. RUBENSTEIN: I'm sorry, that's not  
7 what I said. I said I believe it would be  
8 unrepresentative. And the reason is that's not a  
9 normal operating condition for the turbine.

10 You were asking questions about whether  
11 certain things were physically possible, such as  
12 running a test at a low load. And I was saying  
13 that I thought that they were physically possible.

14 MR. BEERS: Okay, but my understanding  
15 is that the reason that you believe that the  
16 testing would be difficult is because of your  
17 belief that the testing would have to take 60  
18 minutes, and that that would not be a typical  
19 length of time in which you would hold the  
20 facility at that lower level, whereas you might  
21 hold it for 30 or 45 minutes in normal operation,  
22 is that correct?

23 MR. RUBENSTEIN: If the -- let me  
24 restate your question and try to understand it. I  
25 think what you were asking is if a test could be

1 performed over a period of, say, 30 minutes that  
2 matched the typical hold time --

3 MR. BEERS: Right.

4 MR. RUBENSTEIN: -- for a turbine, would  
5 that be representative. And my answer is yes,  
6 that would be representative of that particular  
7 portion of a startup sequence.

8 MR. BEERS: Okay. And do you have any  
9 reason to believe that a turbine held at a steady  
10 state below 70 percent for 60 minutes is going to  
11 have emissions which are no higher than at 70  
12 percent?

13 MR. RUBENSTEIN: I think I said a couple  
14 of times I don't know whether the emissions at the  
15 lower load would be higher or lower.

16 One thing I am certain of is that for  
17 the type of turbine that's proposed at the Metcalf  
18 Energy Center the shape of the curve that you see  
19 in this example, which is figure 3 from CVRP's  
20 testimony, is not the shape that the curve would  
21 be for this particular turbine.

22 The reason is that this curve shows a  
23 continuous increase in emissions. None of these  
24 turbines, to the best of my recollection, except  
25 for one which is the Solar Low NOx turbine, none

1 of the other turbines have dry Low Nox combustors.  
2 Dry Low NOx combustors have a step function change  
3 in their combustion characteristics. And that  
4 step function change for this particular turbine  
5 will occur somewhere between 60 and 70 percent.

6 And whether that step function change  
7 results in an increase in aldehyde emissions or  
8 not I don't know. So the only thing I'm certain  
9 of is that this curve does not represent the low  
10 load characteristics of the turbines proposed for  
11 the Metcalf Energy Center.

12 MR. BEERS: Okay, and you're saying not  
13 that there wouldn't be an increase in the  
14 emissions at lower emission factor at lower loads,  
15 but just that you don't think that curve  
16 accurately describes this particular facility, is  
17 that correct?

18 MR. RUBENSTEIN: I'm not sure, but you  
19 said two different things. All of your previous  
20 questions have been asking about emissions and now  
21 you just talked about emission factors, and those  
22 are, as you know, very different.

23 MR. BEERS: Sure. Okay.

24 MR. RUBENSTEIN: It is certainly  
25 possible that the emission factor would be greater

1 at lower loads.

2 MR. BEERS: Right.

3 MR. RUBENSTEIN: Again, I don't believe  
4 it would follow that curve. I'm not at all  
5 certain that the emissions would be greater at  
6 lower loads.

7 MR. BEERS: Do you happen to have a copy  
8 of method 430 with you?

9 MR. RUBENSTEIN: No, I don't. If it's  
10 in this large binder I might have it.

11 MR. BEERS: I have a copy if you'd like  
12 to share that.

13 MR. RUBENSTEIN: Sure, if you have some  
14 questions about it.

15 MR. BEERS: I'm sure you're much more  
16 familiar with that than I am, and you may be able  
17 to answer this question in an instant, but do you  
18 find anything in there that states that that  
19 method can't be used during transient or startup  
20 conditions on the facility?

21 (Pause.)

22 MR. RUBENSTEIN: No, I don't find  
23 anything in here that would prohibit its use  
24 during transient conditions.

25 MR. BEERS: In the instances in which

1       you tested for acrolein at the Pasadena facility  
2       you used a SUMA canister method, is that correct?

3               MR. RUBENSTEIN: Yes, that's correct.

4               MR. BEERS: And in that method a sample  
5       of gas is collected into an evacuated canister and  
6       a portion of the gas is subsequently removed in  
7       the laboratory and analyzed for acrolein, is that  
8       correct?

9               MR. RUBENSTEIN: That's correct.

10              MR. BEERS: And isn't it true that the  
11       gas removed for that testing would be hot?

12              MR. RUBENSTEIN: Hot? When? At the  
13       time it's removed from the stack?

14              MR. BEERS: At the time it's removed.

15              MR. RUBENSTEIN: I'm sorry, there are  
16       two removals. The gas is removed from the stack  
17       into the canister; and the gas is removed from the  
18       canister to go into the analytical system. Which  
19       stage are you referring to?

20              MR. BEERS: At the time that it's  
21       removed from the stack wouldn't it be hot?

22              MR. RUBENSTEIN: It would be at stack  
23       conditions, stack temperature.

24              MR. BEERS: Okay, and that would be hot,  
25       right?

1                   MR. RUBENSTEIN: I'd rather not make a  
2 judgment, it's between 200 and 225 degrees  
3 Fahrenheit.

4                   MR. BEERS: Okay. And it would be wet,  
5 right?

6                   MR. RUBENSTEIN: There is moisture in  
7 that, the concentration being between about 7 to 9  
8 percent.

9                   MR. BEERS: Okay. And is this method of  
10 using a SUMA canister approved by the USEPA to  
11 measure acrolein in stack tests?

12                   MR. RUBENSTEIN: No. There are no  
13 methods approved by the USEPA for measuring  
14 acrolein in stacks.

15                   MR. BEERS: Okay. And how about CARB,  
16 California Air Resources Board?

17                   MR. RUBENSTEIN: At the present time  
18 there are no methods approved by CARB for  
19 measuring acrolein in stacks.

20                   MR. BEERS: Okay. And isn't it true in  
21 fact that EPA has specifically recommended against  
22 using the SUMA canister method for stack gases?

23                   MR. RUBENSTEIN: I don't believe that's  
24 correct as a general statement.

25                   MR. BEERS: Okay. Did you review the

1 exhibits to Mr. Radis' testimony, in particular  
2 exhibit 8?

3 MR. RATLIFF: Question. Can you tell us  
4 which exhibit that is?

5 MR. BEERS: I'm sorry, it's -- I don't  
6 believe it's been -- it's exhibit 8 to Mr. Radis'  
7 testimony. And it's --

8 HEARING OFFICER FAY: Is it appended to  
9 his testimony?

10 MR. BEERS: Yeah, it's appended,  
11 attached to his testimony.

12 MR. RATLIFF: Could you describe it?

13 MR. BEERS: It's entitled method 18  
14 bulletin. And it's a half a page.

15 MR. RUBENSTEIN: Yes, I reviewed it.  
16 I'm just trying to locate it again.

17 All right, I have that in front of me.

18 MR. BEERS: And do you see the top  
19 paragraph under the title method 18 bulletin?

20 MR. RUBENSTEIN: Yes.

21 MR. BEERS: And does that indicate to  
22 you that EPA, at least as expressed in this memo,  
23 disapproves of the use of those kind of canisters  
24 in that circumstance?

25 MR. RUBENSTEIN: Specifically it says

1       they disapprove of the use of those types of  
2       canisters when testing using method 18. We did  
3       not use method 18.

4               MR. BEERS: Okay. And did you read the  
5       email that was attached to Mr. Radis' testimony as  
6       exhibit 7?

7               MR. RUBENSTEIN: Actually it's a series  
8       of emails and letters. Yes, I did review them. I  
9       was copied on several of those.

10              MR. BEERS: Okay. And were you copied  
11       on the one from Robert Freeman, or Bob Freeman,  
12       that begins to whom it may concern?

13              MR. RUBENSTEIN: Not directly by Mr.  
14       Freeman, but, yeah, I did receive a copy of that  
15       email ultimately.

16              MR. BEERS: Okay, so you're -- and you  
17       reviewed some of the other emails in here which  
18       you indicated you were copied on, and in general,  
19       did the emails in here indicate to you that EPA  
20       had qualms about the use of the canister method?

21              MR. RUBENSTEIN: Actually what Dr.  
22       Freeman --

23              MR. BEERS: I'm not talking about Dr.  
24       Freeman, I'm talking about EPA.

25              MR. RUBENSTEIN: Well, I'm sorry you

1 just asked me about this email --

2 MR. BEERS: I know I did, then I changed  
3 to the question in reviewing this, you reviewed  
4 some of the other emails which you'd also received  
5 copies of, as I understand it.

6 MR. RUBENSTEIN: Yes.

7 MR. BEERS: And did you understand from  
8 reading these that the EPA was expressing qualms  
9 about the use of canisters in this situation?

10 MR. RUBENSTEIN: EPA was expressing  
11 qualms about using canisters, period, yes.

12 MR. BEERS: Okay. And you've indicated  
13 in your testimony, I believe, that somebody from  
14 your office had actually spoken with Dr. Freeman  
15 about the use of SUMA canisters in the particular  
16 circumstances in the Pasadena plant for purposes  
17 of measuring acrolein, correct?

18 MR. RUBENSTEIN: Someone in my office  
19 spoke with Dr. Freeman before the initial tests  
20 were done, and subsequent to the testing when this  
21 issue arose again, around the time of these  
22 emails, I had several conversations with Mr.  
23 Freeman about the subject.

24 MR. BEERS: And were the conversations  
25 that you had with Dr. Freeman, when did they occur

1 in time?

2 MR. RUBENSTEIN: They would have been in  
3 the fall of 2000, at the same time as all of these  
4 emails that are shown in exhibit 7 were being  
5 circulated.

6 MR. BEERS: Okay. And sometime around  
7 the period in which, for example, the Freeman  
8 email that's labeled to whom it may concern?

9 MR. RUBENSTEIN: Yes, around that time.

10 MR. BEERS: Okay, and in that email Dr.  
11 Freeman says, because my name is mentioned more  
12 than once with regards to acrolein in canisters I  
13 feel compelled to respond, if no other reason than  
14 to set the record straight, air toxics as analyzed  
15 for acrolein in ambient air, and he's capitalized  
16 ambient air, correct?

17 MR. RUBENSTEIN: Yes.

18 MR. BEERS: And he goes on to say later  
19 however I'm uncomfortable discussing acrolein  
20 within the context of stationary source emissions,  
21 the matrix is vastly different and frankly we are  
22 unable to stimulate it in the laboratory,  
23 consequently we have no way to quantitate the  
24 recovery of acrolein in a source matrix. We do --  
25 we have clients who are using -- have used

1 canisters to collect source samples, yes, we have.  
2 Are the numbers good, who knows. Personally I  
3 would be reluctant to use canisters for acrolein  
4 for anything other than ambient air.

5 And is that your understanding of his  
6 position at that time?

7 MR. RUBENSTEIN: Yes, and it still is.  
8 He is reluctant to use canisters.

9 MR. BEERS: All right.

10 MR. RUBENSTEIN: However, as a result of  
11 those discussions I asked him again whether if we  
12 were to design a completely new test program he  
13 would use canisters, and the only change he has  
14 recommended was to use Silko steel canisters  
15 instead of SUMA canisters, for the specific types  
16 of sources that we're talking about which have  
17 exhaust characteristics that, from his  
18 perspective, are close enough to ambient air to  
19 warrant an appropriate analysis.

20 MR. BEERS: Okay. I gather nothing  
21 you've said constitutes your attempt to qualify  
22 what Dr. Freeman is saying in this email to whom  
23 it may concern, is that correct?

24 MR. RUBENSTEIN: That's correct. He has  
25 concerns about this method --

1           MR. BEERS: All right. And in any of  
2 your letters to the Bay Area Air Quality  
3 Management District in which you were reporting on  
4 the results of sampling, did you make reference to  
5 the fact that contact had been made with Dr.  
6 Freeman about the use of SUMA canisters?

7           MR. RUBENSTEIN: I know that I mentioned  
8 it to District Staff, I'm not sure it shows up in  
9 any correspondence.

10          MR. BEERS: Okay. Let me refer you to  
11 exhibit 133 which is the November 17, 2000 letter  
12 from you and Mr. Lowe to Dennis Jang.

13          MR. RUBENSTEIN: I have that in front of  
14 me now.

15          MR. BEERS: Okay, and let me refer you  
16 in particular to the bottom paragraph on the first  
17 page, and if I could read into the record just a  
18 brief portion of that: To determine acrolein  
19 concentration three stack gas samples were drawn  
20 into six liter SUMA canisters to prevent sample  
21 deterioration. And the samples were analyzed  
22 using EPF8 method TO14.

23                 The test methods for the pollutants were  
24 based on recommendations from Air Toxics, Ltd.,  
25 the firm that the California Air Resources Board

1 has cited in their discussion of appropriate test  
2 methods for acrolein, acetaldehyde and  
3 formaldehyde.

4 And the statement here that it was made  
5 that it was based on the recommendation of Air  
6 Toxics, Ltd., was made on November 17, 2000,  
7 correct?

8 MR. RUBENSTEIN: That's correct.

9 MR. BEERS: And that's approximately a  
10 month after Mr. Freeman's email that we read  
11 earlier, to whom it may concern?

12 MR. RUBENSTEIN: That's correct.

13 MR. BEERS: Okay. Have you, yourself,  
14 completed any tests to validate the accuracy of  
15 this method that you've used, using the SUMA  
16 canisters for purposes of use on stacks?

17 MR. RUBENSTEIN: No, I've relied on the  
18 recommendations of Dr. Freeman.

19 MR. BEERS: And I gather you're not  
20 relying on the recommendation that's set forth in  
21 the email that we quoted, correct?

22 MR. RUBENSTEIN: There's no  
23 inconsistency between the two. If you'd like I  
24 could explain that.

25 MR. BEERS: Are you aware of anyone who

1 has performed validation work?

2 MR. RUBENSTEIN: Other than Dr. Freeman,  
3 no.

4 MR. BEERS: Okay. And has he  
5 subsequently performed validation work for using  
6 SUMA canister method on stationary sources?

7 MR. RUBENSTEIN: I don't know if he's  
8 performed any specific validations. I know that  
9 he has analyzed the SUMA canisters that we have,  
10 our firm has used to collect organic emissions  
11 from stationary sources in a number of  
12 applications over the last several years.

13 MR. BEERS: Okay, in other words your  
14 firm sent him some business and he's processed  
15 that business, correct?

16 MR. RUBENSTEIN: We consulted with him  
17 about recommended methods. He prepared the  
18 canisters. He knew what type of source we were  
19 collecting the samples from. And he analyzed the  
20 results.

21 MR. BEERS: And would it be fair to say  
22 that may have been what he had in mind when he  
23 said do we have clients who have used canisters to  
24 collect source samples, yes, we have. Are the  
25 numbers good, who knows?

1                   MR. RUBENSTEIN: No, I don't think  
2 that's what he had in mind.

3                   MR. BEERS: You don't. Okay. You  
4 indicated earlier that the Pasadena stack gases  
5 during your source test were at temperatures, I  
6 believe, of about 220 to 230, correct?

7                   MR. RUBENSTEIN: Fahrenheit, that's  
8 correct.

9                   MR. BEERS: And they contained about 7  
10 to 9 percent moisture?

11                  MR. RUBENSTEIN: That's correct.

12                  MR. BEERS: Isn't it true that this  
13 moisture condenses as liquid water into the bottom  
14 of the canister when the gas cools off?

15                  MR. RUBENSTEIN: When the water is  
16 measured in milligrams or grams, it's hard to  
17 refer to it as a like a puddle, but, yes, there is  
18 condensation and the walls of --

19                  MR. BEERS: Okay.

20                  MR. RUBENSTEIN: -- the canister would  
21 be wet.

22                  MR. BEERS: All right. That's my lay  
23 terminology, I apologize. And isn't it true that  
24 acrolein is soluble in water?

25                  MR. RUBENSTEIN: Yes, it is.

1           MR. BEERS:  And isn't it possible that  
2           acrolein, which is soluble in water, would  
3           dissolve in the moisture and end up on the bottom  
4           of the canister?

5           MR. RUBENSTEIN:  As I said, the notion  
6           that there's a puddle of water on the bottom of  
7           the canister is a misnomer.  If you actually  
8           calculated how much water would be in a six liter  
9           sample collected under these conditions there's  
10          not going to be a puddle anywhere.  The walls may  
11          be wet, and, yes, it is possible that some of the  
12          acrolein will dissolve in that moisture.

13          MR. BEERS:  Okay.  And isn't it true  
14          that acrolein in that moisture would not be  
15          measured when a gas sample is withdrawn for  
16          analysis?

17          MR. RUBENSTEIN:  That's correct.

18          MR. BEERS:  Therefore the canister  
19          method underestimates acrolein, correct?

20          MR. RUBENSTEIN:  It might to some  
21          unknown extent.

22          MR. BEERS:  Okay.  In your rebuttal  
23          testimony in table 1, you talk on page 2 about the  
24          acrolein emission factor derived from the tests  
25          that were done using the SUMA canister method,

1 correct?

2 MR. RUBENSTEIN: In table 1 I present a  
3 number of emission factors including the emission  
4 factor derived from the SUMA canister, yes.

5 MR. BEERS: And that's the top item, the  
6 final MEC emission factor, is that correct?

7 MR. RUBENSTEIN: That's correct.

8 MR. BEERS: And in your testimony you  
9 indicate that it's more than twice the default  
10 database emission factor, and nearly eight times  
11 the -- emission factor for engines comparable to  
12 those proposed for MEC, correct?

13 MR. RUBENSTEIN: That's correct.

14 MR. BEERS: And I'm not sure I  
15 understood what conclusion you were drawing from  
16 that.

17 MR. RUBENSTEIN: The conclusion that I  
18 drew from that is that for this project we have  
19 done more investigation into acrolein emissions  
20 factors from gas turbines. As a result of that  
21 investigation we are using an emission factor that  
22 is more than twice as high as all of the other  
23 projects that have been reviewed by this  
24 Commission over the last several years.

25 And therefore I believe that our

1 analyses are defensible and conservative.

2 MR. BEERS: Okay. But I gather you're  
3 not saying -- you're not using this line of  
4 reasoning to argue that you're even close to  
5 measuring the actual amount of acrolein using this  
6 method, correct?

7 MR. RUBENSTEIN: I believe we are close  
8 to measuring the actual amount of acrolein using  
9 this method.

10 MR. BEERS: And do you base that on the  
11 fact that you've found more acrolein by this  
12 method than the other methods would have?

13 MR. RUBENSTEIN: No.

14 MR. BEERS: Okay.

15 MR. RUBENSTEIN: Base that on the design  
16 of the method.

17 MR. BEERS: Okay. And have you done any  
18 analysis, yourself, to determine the extent to  
19 which acrolein is winding up in moisture on the  
20 side of the canister and not being measured in the  
21 testing that's done?

22 MR. RUBENSTEIN: Only to the extent of  
23 trying to calculate how much moisture would be  
24 found in a six liter SUMA canister. Nothing  
25 beyond that.

1           MR. BEERS:  And have you -- so I want to  
2           be clear, you're not arguing that the fact that  
3           this is greater than the emission factors  
4           determined by these other methods shows the  
5           validity of this method, or its accuracy, is that  
6           correct?

7           MR. RUBENSTEIN:  I'm concluding that --

8           PRESIDING MEMBER LAURIE:  Let's take a  
9           time out, please.

10           (Off the record.)

11           MR. BEERS:  I'm trying to make sure, Mr.  
12           Rubenstein, that I haven't misread your testimony.  
13           Let's be clear about this, the final MEC emission  
14           factor that's listed in table 1 was one derived  
15           using the SUMA canisters, which we've been talking  
16           about, correct?

17           MR. RUBENSTEIN:  That's correct.

18           MR. BEERS:  And the others were derived  
19           using AB430, is that right?

20           MR. RUBENSTEIN:  ARB method 430,  
21           correct.

22           MR. BEERS:  Okay.  And ARB does not  
23           recommend 430 any longer, correct?  For acrolein.

24           MR. RUBENSTEIN:  That's correct.

25           MR. BEERS:  Okay.  I want to make sure

1       you're not saying here that it's proof of the  
2       accuracy or evidence of the accuracy of the final  
3       MEC emission factor that you've got here, and the  
4       use of SUMA canisters, that the number is higher  
5       than the number achieved by invalid measurement.

6               MR. RUBENSTEIN: I haven't drawn the  
7       conclusion that the method 430 results are  
8       invalid. You indicated whether or not ARB has  
9       approved them. This Commission has approved  
10      projects as recently as December of 2000 based on  
11      that same emission factor based on method 430. So  
12      I'm not aware that the Commission has reached the  
13      conclusion that those emission factors are  
14      invalid.

15              The point I was making with this  
16      analysis is that the emission factor we're using  
17      in this case, based on what I believe to be a  
18      superior method, is more conservative and higher  
19      than the emission factors that have been relied  
20      upon by this Commission in previous cases.

21              MR. BEERS: Okay, but you are aware that  
22      method 430 is not approved by the Air Resources  
23      Board for the testing of stationary sources in the  
24      way it was done for purposes of the other items in  
25      this table?

1                   MR. RUBENSTEIN: That's right, at the  
2 present time there are no methods approved for  
3 acrolein --

4                   MR. BEERS: All right. Okay. If I  
5 could have just a minute with my notes just to  
6 make sure that I am reaching the point of not  
7 having anything further.

8                   (Pause.)

9                   MR. BEERS: Am I to understand that we  
10 should be asking questions now relating to this  
11 witness' rebuttal testimony, and that the witness  
12 will -- that this is the appropriate time to do  
13 that?

14                   HEARING OFFICER FAY: Yes, you presented  
15 the panel with all their testimony. Yes, this is  
16 the time to do that.

17                   MR. BEERS: Okay. In your rebuttal  
18 testimony, Mr. Rubenstein, you argue that 41 of  
19 the 48 source tests that were presented in Mr.  
20 Radis' table 1, section 2.2, should have been  
21 tossed out because they didn't use particular EPA  
22 methods, or that the sampling duration was less  
23 than four hours, correct?

24                   MR. HARRIS: Roger, which page are you  
25 on?

1                   MR. BEERS: I think this is -- it's his  
2                   rebuttal testimony, page 4.

3                   MR. RUBENSTEIN: I don't believe I said  
4                   what you indicated.

5                   MR. BEERS: Okay, correct me, then.

6                   MR. RUBENSTEIN: The testimony speaks  
7                   for itself. I presented a summary of a subset of  
8                   the results based on test methods that I believe  
9                   are best suited for measuring PM10 emissions from  
10                  gas turbines. And that summary is presented in  
11                  the table. And that is a summary of seven sets of  
12                  results.

13                  MR. BEERS: Okay. But I understand you  
14                  to be saying that you didn't think it was  
15                  appropriate to use the other source tests in the  
16                  table as Mr. Radis had done because they used  
17                  other EPA methods, or the sampling duration was  
18                  less than four hour, correct?

19                  MR. RUBENSTEIN: For purposes of  
20                  estimating what the true PM10 emissions from the  
21                  turbine, that's correct. I don't believe those  
22                  other tests should be used.

23                  MR. BEERS: Okay. And let's take the  
24                  use of the particular EPA methods first, because  
25                  my understanding is that you rejected some of the

1 tests that he had included because they did not  
2 use EPA methods 201-202, or 201A, is that right?

3 MR. RUBENSTEIN: That's correct.

4 MR. BEERS: And isn't it true, in fact  
5 you tossed out all of the source tests that Mr.  
6 Radis had in his table that used EPA method 5,  
7 SCAQMD method 5.2, and CARB method 5, right?

8 MR. RUBENSTEIN: That's correct.

9 MR. BEERS: And isn't it true that these  
10 three methods all measure total particulates?

11 MR. RUBENSTEIN: That's correct.

12 MR. BEERS: And isn't it true that  
13 Metcalf's permit limits would be expressed in  
14 terms of PM10?

15 MR. RUBENSTEIN: That's correct.

16 MR. BEERS: And did you reject these  
17 particular test methods because they measure the  
18 total amount of particulates, rather than simply  
19 PM10?

20 MR. RUBENSTEIN: Yes.

21 MR. BEERS: Okay. But isn't it also the  
22 case that PM10 and total particulate matter are  
23 synonymous in gas turbines? In other words, that  
24 100 percent of the particulate matter in gas  
25 turbine exhaust has a diameter of much less than

1 10 microns?

2 MR. RUBENSTEIN: That is the popular  
3 theory, but I believe it's incorrect.

4 MR. BEERS: Okay. And what do you base  
5 your belief that it's incorrect on?

6 MR. RUBENSTEIN: That when I take a look  
7 at particulate analyses in more detail where the  
8 filterable component is separated into the probe  
9 wash, and the filter catch, I find that there's a  
10 substantial amount of variability in the probe  
11 wash particulate test results.

12 And that in most cases where you have  
13 high filterable particulates, you can trace that  
14 high level to high concentrations found in the  
15 probe wash, while the amount of particles measured  
16 on the filter remain extremely low.

17 Now, the probe catch, or the probe wash  
18 consists of particles that have physically  
19 impacted on the inside of the sample probe as it  
20 leads from inside the stack towards the filter  
21 housing. For particles to impact on the inside of  
22 the probe they have to be sufficiently large that  
23 they do not behave like a gas.

24 And in my judgment those particles are  
25 almost certainly going to be larger than 10

1       microns in size. Because when the gas stream  
2       bends the particles go straight ahead.

3               And I believe that that is one  
4       explanation as to why there is such variability in  
5       test results. And that is why I rejected, for  
6       purposes of my analysis, all of the tests that  
7       were conducted using method 5, because they don't  
8       separate out the larger particles which are larger  
9       than 10 microns in size.

10              MR. BEERS: Okay. And, AP42 is the EPA  
11       bible for estimating emissions, correct?

12              MR. RUBENSTEIN: In cases where you  
13       don't have source specific data, yes, that's --

14              MR. BEERS: Okay.

15              MR. RUBENSTEIN: -- the document you  
16       refer to.

17              MR. BEERS: And are you familiar with  
18       the fact that the April 2000 support document for  
19       stationary gas turbines, part of AP42, says total  
20       PM is the sum of the condensible PM and the  
21       filterable PM? PM emissions from combustion  
22       turbines are considered PM10 emissions.

23              MR. RUBENSTEIN: I don't have that  
24       section memorized, but that sounds correct.

25              MR. BEERS: Okay. So EPA is there

1       expressing a view that's different than the one  
2       you're expressing, is that correct?

3               MR. RUBENSTEIN: I think that's wrong.

4               MR. BEERS: You think they're wrong?

5               MR. RUBENSTEIN: Correct.

6               MR. BEERS: Okay. Now you also threw  
7       out those tests results which were short of four  
8       hours in duration, is that right?

9               MR. RUBENSTEIN: That's correct.

10              MR. BEERS: And is there anything in the  
11      methods that you're aware of, statement of the  
12      methods that you're aware of for those particular  
13      items thrown out that demonstrate that there's a  
14      minimum sampling duration that was violated?

15              MR. RUBENSTEIN: Yes, there is, and I  
16      can't point you to the specific location, but I've  
17      just gone through this discussion with two source  
18      test firms in preparation for upcoming source  
19      tests at another Calpine plant.

20              And both test firms confirmed to me that  
21      in order to have adequate sample collection  
22      volumes using method 201, that a minimum  
23      collection time of four hours would be required.

24              MR. BEERS: Okay, so you've heard this  
25      from another firm, but you can't, at the moment,

1 say that there's anything in the statement of the  
2 methods, themselves, that says that there is a  
3 minimum duration of time in which the samples must  
4 be taken?

5 MR. RUBENSTEIN: I've heard this  
6 independently from two other firms, and right now  
7 I can't point you to that. To that citation and  
8 the method. But with a little research I could  
9 find it for you if you'd like.

10 MR. BEERS: So is it your testimony that  
11 you must sample for at least four hours to have  
12 valid PM10 source tests?

13 MR. RUBENSTEIN: Using method 201 for  
14 combustion turbines fired on natural gas, yes.

15 MR. BEERS: And do you consider yourself  
16 to be an expert on source testing in general?

17 MR. RUBENSTEIN: On this particular  
18 issue I do.

19 MR. BEERS: And that would be PM10  
20 source testing?

21 MR. RUBENSTEIN: That's correct.

22 MR. BEERS: Have you ever conducted a  
23 PM10 source test?

24 MR. RUBENSTEIN: No.

25 MR. BEERS: Have you ever read the

1 particulate matter test methods referenced in Mr.  
2 Radis' table 4, and that is SCAQMD method 5.2, EPA  
3 method 5, EPA method 201A, EPA method 201, EPA  
4 method 202?

5 MR. RUBENSTEIN: I have at one time or  
6 another in my career read EPA method 5, CARB  
7 method 5. I have skimmed EPA method 201. And I  
8 have skimmed methods 8 and 202.

9 But I could not quote from them to you  
10 tonight.

11 MR. BEERS: And is it your testimony  
12 that all of those specify a minimum sampling  
13 duration that would last four hours?

14 MR. RUBENSTEIN: No.

15 MR. BEERS: Okay. Is it your testimony  
16 that they establish a minimum sampling duration of  
17 two hours?

18 MR. RUBENSTEIN: No, I'm not aware that  
19 any of the methods specify a minimum sample  
20 duration. I believe that the methods 5 and 201  
21 specify minimum sample collection volumes which  
22 ultimately translate into sample collection times.

23 MR. BEERS: Okay, and did those  
24 samples --

25 HEARING OFFICER FAY: Excuse me,

1 Mr. Beers. If you've got just another question  
2 for transition, otherwise we'd like to break for  
3 dinner.

4 MR. BEERS: This probably would be a  
5 good time.

6 HEARING OFFICER FAY: Okay. Fine.  
7 We'll break now for dinner. And there will be a  
8 \$5 charge for dinner, I'm told. And that's for  
9 everybody.

10 How much longer do you have in your  
11 questioning?

12 MR. BEERS: I think probably with the  
13 advantage of having a break five or ten minutes I  
14 would think.

15 HEARING OFFICER FAY: Okay, good. All  
16 right, thank you.

17 (Whereupon, at 6:23 p.m., the hearing  
18 was adjourned, to reconvene at 7:00  
19 p.m., this same evening.)

20 --o0o--

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25



1 FSA. So you are at least familiar with the  
2 report?

3 MR. RUBENSTEIN: Generally, yes.

4 MR. MITCHEL: I'm going to just quickly  
5 go through some of the conclusions in that report  
6 to see whether or not the model reflects the  
7 conclusions.

8 MR. HARRIS: Do you have a copy of the  
9 report for the witness?

10 MR. MITCHEL: Sure.

11 MR. HARRIS: And how about for counsel?

12 MR. MITCHEL: Do you need another one?

13 MR. HARRIS: Yes, please.

14 MR. MITCHEL: There's a section entitled  
15 Bay Area climate, and I don't have the page number  
16 in front of me, but let me just read you the  
17 conclusion I would like to highlight.

18 The air pollution potential of the Santa  
19 Clara Valley is high -- it goes on to talk about  
20 pollution moving down from northern counties.  
21 Goes on to say geographically the valley tends to  
22 channel pollutants to the southeast with its  
23 northwest-southeast orientation, and concentrate  
24 pollutants by its narrowing to the southeast.

25 Would you agree with that assessment?

1 MR. RUBENSTEIN: In general, yes.

2 MR. MITCHEL: It goes on to say  
3 meteorologically on high ozone low inversion  
4 summer days the pollutants can be recirculated by  
5 the prevailing northwesterlies in the afternoon,  
6 and the light drainage flow in the late evening  
7 and early morning, increasing the impact of  
8 emissions significantly.

9 Do you agree with that statement?

10 MR. RUBENSTEIN: Yes.

11 MR. MITCHEL: Could you describe how the  
12 model takes that into account?

13 MR. RUBENSTEIN: Sure. If you take a  
14 look at the windrows for the meteorological data  
15 that we used, and that is in the AFC --

16 MR. MITCHEL: I'm familiar with the  
17 windrows.

18 MR. RUBENSTEIN: For the record I just  
19 wanted to clarify where it was. It's in figure  
20 8.1-5. The windrows indicates that the met data  
21 that we used has a predominant wind flow pattern  
22 that runs roughly northwest to southeast.

23 And during the summertimes that data set  
24 encompasses periods when the sloshing, if you  
25 will, of the winds back and forth up and down the

1 axis of the valley occurs.

2 MR. MITCHEL: Okay, now tell me how the  
3 model would specifically account for the  
4 increasing impact of emissions, the recirculation  
5 in particular. How would it account for the  
6 pollutants that say move south at one point in  
7 time, and now are moving north?

8 MR. RUBENSTEIN: The model only takes a  
9 look at each individual hour. And looks at the  
10 worst case impacts. In a multi-hour sloshing  
11 situation the plume will become so dilute that the  
12 burden is better represented by the incremental  
13 increase in emissions, and not by anything  
14 predicted by a specific model.

15 MR. MITCHEL: Let me see if I follow  
16 that. You're saying -- I think I heard you say  
17 that the model really doesn't take into account  
18 the pollutant accumulation, if you will, from the  
19 recirculation. It simply looks at the emission,  
20 at hourly increments from the pollution source,  
21 itself?

22 MR. RUBENSTEIN: It looks at the  
23 emissions impacts in each hour, not --

24 MR. MITCHEL: From --

25 MR. RUBENSTEIN: -- over a period of

1 multiple hours. From the pollution source.

2 MR. MITCHEL: Only the pollution source?

3 MR. RUBENSTEIN: That's correct. And  
4 then separately outside of the model we combine  
5 that with background concentrations to predict  
6 what the worst case ambient impacts would be.

7 MR. MITCHEL: Okay, so I think you  
8 clarified that the model really does not take into  
9 account the pollutants already emitted. Okay.

10 Let me go on to another section of that  
11 same report. Section entitled topography. The  
12 statement is made, the San Francisco Bay Area is  
13 characterized by complex terrain consisting of  
14 coastal mountain ranges, inland valleys and bays.

15 Would you agree that it's characterized  
16 by complex terrain?

17 MR. RUBENSTEIN: Yes.

18 MR. MITCHEL: Okay, and how was that  
19 accounted for in the model?

20 MR. RUBENSTEIN: The model that we used,  
21 and actually we've used a series of models, but  
22 most specifically the ISC model that we used is a  
23 model that evaluates impacts both in simple  
24 terrain and complex terrain.

25 And the terrain elevations are input to

1 the model as specific receptor locations, and the  
2 model predicts what the plume concentrations will  
3 be at those elevated locations.

4 MR. MITCHEL: Okay. And it goes on in  
5 the section entitled inversions to say, moreover  
6 the terrain of the Bay Area may induce significant  
7 variations from point to point.

8 I'm particularly interested in the  
9 narrowing of the valley at this point, and the  
10 width of the valley at the point the IBM met data  
11 was collected versus the width of the valley at  
12 the point at which the plant is proposed to be  
13 built. Could you comment on that?

14 MR. RUBENSTEIN: Could you be more  
15 specific? What about the met data are you  
16 concerned about?

17 MR. MITCHEL: As I understand your  
18 testimony earlier you mentioned that the met data  
19 that was used was collected from the IBM site?

20 MR. RUBENSTEIN: That's right.

21 MR. MITCHEL: Which is to the north.

22 MR. RUBENSTEIN: Right.

23 MR. MITCHEL: And that was applied at  
24 the site, itself. Can you talk about the relative  
25 width of the valleys at the two points? The point

1 at which the met data was collected and the point  
2 at which the met data was used?

3 If it helps there's a map at the back of  
4 the climate report that you might want to refer  
5 to.

6 MR. RUBENSTEIN: Actually I'm looking at  
7 a map right now. It would appear to me that the  
8 width of the valley at the location of the IBM met  
9 station is somewhat wider than it is at the  
10 location of the Metcalf project, depending on  
11 where on the ridges, on the hills you decide to  
12 define the boundary of the valley. But in general  
13 I agree that it's wider at the IBM met site.

14 MR. MITCHEL: So can you quantify  
15 somewhat wider?

16 MR. RUBENSTEIN: Not easily, not without  
17 figuring out some way to decide how high up the  
18 hill you go before you decide that's the hill.

19 I think it's safe to say generally that  
20 the valley is broader at that location than it is  
21 at the project site.

22 MR. MITCHEL: And considerably broader?

23 MR. RUBENSTEIN: That's a relative term.  
24 Not as broad as it is downtown San Jose, and  
25 certainly not as narrow as it is at the Metcalf

1 site.

2 MR. MITCHEL: Okay, let's move on. Also  
3 from the same report in the section entitled  
4 pollution potential related to emissions, the  
5 report talks about the air pollution potential at  
6 the given location depends upon the emission  
7 density in the surrounding area as well as the  
8 atmospheric potential.

9 Primary pollutant emission densities are  
10 highest in areas with high population density,  
11 heavy vehicle use or industrialization.

12 Talks about how San Francisco has a low  
13 atmospheric pollution potential and does not  
14 produce high ambient CO levels. Goes on to say  
15 the Bay Area's highest CO concentrations are found  
16 in San Jose where both the atmospheric pollution  
17 potential and the emissions are high.

18 MR. RUBENSTEIN: I see where the report  
19 says that.

20 MR. MITCHEL: Would you have any reason  
21 to disagree with that statement?

22 MR. RUBENSTEIN: No. That's consistent  
23 with my observations about CO levels in the Bay  
24 Area.

25 MR. MITCHEL: Okay. So given that as a

1 preamble, and I've already asked you about a  
2 couple of the points, but I'd like to understand  
3 how the various factors that are mentioned in this  
4 report are really accounted for in the modeling.

5 I think the main point I wanted to make  
6 was on, you know, whether or not the model  
7 accounted for the winds changing direction and  
8 therefore accumulating pollutants. I think I  
9 heard the model really doesn't account for  
10 accumulated pollutants.

11 I'd like to talk a little bit about  
12 inversion layers. We talked, there was a  
13 discussion earlier about low inversion layers.  
14 What I don't think was asked in that conversation  
15 was whether or not they have the potential to trap  
16 and accumulate pollutants.

17 I think I heard you testify that the  
18 mountain, in fact, Tulare Hill, could hold  
19 pollutants underneath an inversion. Was that your  
20 testimony?

21 MR. RUBENSTEIN: I think what I said was  
22 that the worst case impacts from the project are  
23 associated with downwash conditions and plume  
24 impaction on terrain including Tulare Hill.

25 That that was a condition that was

1 unrelated to the presence or absence of an  
2 inversion.

3 MR. MITCHEL: Okay, then let me ask the  
4 question more directly. What about the impact of  
5 an inversion layer that is lower than the top of  
6 the Tulare Hill?

7 MR. RUBENSTEIN: First of all, I don't  
8 think that there's any data, including the data  
9 presented in the Morgan Hill testimony, that  
10 suggests an inversion height lower than the top of  
11 Tulare Hill.

12 But if an inversion were, in fact, that  
13 low, then as I said earlier, the plume from the  
14 project would be more likely to penetrate through  
15 that inversion.

16 There is one meteorological condition  
17 where the plume is really trapped by an inversion  
18 layer. That's called fumigation. That is a  
19 meteorological condition that we analyzed using  
20 the Screen3 model and the impacts under those  
21 conditions were substantially lower than the worst  
22 case impacts we saw with ISC, which as I said  
23 earlier, were primarily due to downwash.

24 MR. MITCHEL: If an inversion layer were  
25 to set up below either Tulare Hill or hills

1 surrounding the project site, there are higher  
2 hills, particularly to the east, could that  
3 inversion layer, in fact, trap pollutants?

4 MR. RUBENSTEIN: It would trap  
5 vertically pollutants if the plume was weak enough  
6 that it could not penetrate. And as I said, it's  
7 unlikely to be the case when you have a low  
8 inversion. It would be more likely when you have  
9 a higher inversion.

10 And what would be trapped would be the  
11 pollutants from this plant, as well as all of the  
12 other pollutants draining into the Coyote Valley  
13 from the South Bay area.

14 And when I look at evaluating what would  
15 be the incremental impact on air quality in the  
16 Coyote Valley under those conditions, I think the  
17 best representation of that is to take a look at  
18 the ratio of the emissions from this plant to the  
19 ratio of all of the other pollutants draining into  
20 the Coyote Valley. And that impact is on the  
21 order of a half percent or less.

22 MR. MITCHEL: And you're using as your  
23 marker nitrous oxide, or nitrogen oxide?

24 MR. RUBENSTEIN: That comment was made  
25 with respect to all ozone precursors, so oxides of

1 nitrogen and organic compounds. I think a similar  
2 conclusion would be true for all PM10 precursors.

3 MR. MITCHEL: PM10, itself, or --

4 MR. RUBENSTEIN: It would certainly be  
5 true for PM10. And I believe it would be true  
6 for PM10 precursors, as well.

7 MR. MITCHEL: Okay, I think I heard you  
8 say it would not likely -- it would not be a  
9 likely case where an inversion layer might trap  
10 these pollutants, but are you saying that  
11 pollutants would not be trapped by an inversion  
12 layer under any condition? Or --

13 MR. RUBENSTEIN: No, I'm not saying  
14 that. There are conditions where pollutants would  
15 be trapped by an inversion layer. In terms of  
16 trapping pollutants from this plant, that's most  
17 likely to occur when you have a higher inversion  
18 base rather than a lower inversion base.

19 MR. MITCHEL: But they could occur even  
20 at the lower condition?

21 MR. RUBENSTEIN: I can't really fathom,  
22 if the inversion that you're hypothesizing is  
23 below the top of Tulare Hill, I cannot --

24 MR. MITCHEL: I said Tulare Hill or the  
25 surrounding hills. The surrounding hills are

1 considerably higher.

2 MR. RUBENSTEIN: Right. But if you go  
3 up to the level of the surrounding hills then the  
4 lid isn't as tight as you might think because  
5 there are plenty of lower topographic features  
6 where the air mass can move around.

7 MR. MITCHEL: Okay, but in any case, if  
8 they were to be trapped, and we can debate how  
9 likely a scenario that might be, pollutants, in  
10 fact, would accumulate?

11 MR. RUBENSTEIN: The pollutants from  
12 this plant would accumulate, along with all of the  
13 other pollutants from the South Bay area that  
14 drain into this area.

15 MR. MITCHEL: And, again I'll ask, does  
16 this model then account for such accumulation?

17 MR. RUBENSTEIN: No. As I said, that's  
18 an analysis you'd have to do outside the model.

19 MR. MITCHEL: Did you consider in the  
20 modeling the stability factors in the model?

21 MR. RUBENSTEIN: Yes, the meteorological  
22 data that are used in the model include stability  
23 classes.

24 MR. MITCHEL: And what stability classes  
25 were in fact used?

1           MR. RUBENSTEIN: There's a whole range  
2 of stability classes that are used based on wind  
3 speed and indications of cloud cover, I believe.  
4 That's all done by meteorological preprocessor,  
5 and then that information is input into the model.

6           MR. MITCHEL: I believe the FSA on page  
7 41 says for stability D wind at 5 meters per  
8 second, the final plume height was 656 feet. Does  
9 that sound about right?

10          MR. RUBENSTEIN: Yes, I see where that  
11 quote it. That's referring to a specific type of  
12 meteorological condition.

13          MR. MITCHEL: What would the final plume  
14 rise be for stability E and F?

15          MR. RUBENSTEIN: I don't have that  
16 information at my fingertips. I think I said when  
17 a similar question was answered earlier, the final  
18 plume rise is calculated by the model as an  
19 internal calculation --

20          MR. MITCHEL: But --

21          MR. RUBENSTEIN: -- and it's not  
22 normally --

23          MR. MITCHEL: I understand that, but  
24 would it tend, under those stability conditions to  
25 be higher or lower than stability D?

1           MR. RUBENSTEIN: I don't know the answer  
2 to that question.

3           MR. MITCHEL: Okay. I wanted to ask  
4 about EPA model guidance part 51, appendix W. I  
5 don't seem to have it. I do have some of the  
6 questions written down in spite of that.

7           There's a section called 2.0 suitability  
8 of models in that guidance. Talks about the  
9 extent to which specific air quality model is  
10 suitable for the evaluation of source impact.  
11 Depends upon several factors.

12           Goes on to say these include one, the  
13 meteorological and topographic complexities of the  
14 area. It goes through several factors. It ends  
15 with a statement in item D of those factors, it  
16 should be recognized that under some sense of  
17 physical circumstances and accuracy requirements,  
18 no present model may be appropriate.

19           Thus consideration of these factors  
20 above should not lead to selection of an  
21 inappropriate model.

22           Would you agree with that EPA guidance?

23           MR. RUBENSTEIN: As a general statement,  
24 yes.

25           MR. MITCHEL: Going back to the

1 statement about the meteorological and  
2 topographical complexities of the area must be  
3 factored in, I think you agreed earlier that this  
4 is complex terrain.

5 MR. RUBENSTEIN: That's a term of art,  
6 we should clarify, and I think you may be using it  
7 in a lay sense. Complex terrain refers to terrain  
8 that has an elevation that is above the final  
9 plume rise.

10 And I think you may be using the term to  
11 say complicated terrain. And I think both are  
12 true here. I just wanted to make sure we were --

13 MR. MITCHEL: Yeah, you're referring to  
14 the definition that's used in the actual model,  
15 correct, the complex --

16 MR. RUBENSTEIN: The complex terrain in  
17 the modeling guidelines, that's right.

18 MR. MITCHEL: Right, and that's -- and I  
19 think what they're talking about here is simply  
20 the meteorological and topographic complexities of  
21 the area, they aren't talking about the modeling  
22 complex terrain model.

23 MR. RUBENSTEIN: That's right.

24 MR. MITCHEL: Okay, that's how I meant  
25 it.

1 MR. RUBENSTEIN: Okay.

2 MR. MITCHEL: And what I'm asking is the  
3 model that was used, did it fully take into  
4 account the meteorological and topographic  
5 complexities of the area?

6 MR. RUBENSTEIN: Yes, we believe that it  
7 did. We prepared a protocol that was provided to  
8 the Bay Area District in February of 1999 where we  
9 specifically identified the project location, the  
10 topography surrounding it, and we indicated both  
11 the meteorological data and the models that we  
12 proposed to use for the analysis.

13 In that protocol we explained why we  
14 believed this model and this data were appropriate  
15 for use at that site. And both the Energy  
16 Commission Staff and the Bay Area District Staff  
17 reviewed that protocol and concurred in our use of  
18 both the data and the model.

19 MR. MITCHEL: And yet, as you testified  
20 earlier, you would make that statement in spite of  
21 the fact that it really doesn't take into account  
22 any accumulation of pollutants?

23 MR. RUBENSTEIN: As I said earlier, the  
24 accumulation of pollutants is, if you will, a  
25 macro air quality issue that you have to address

1 outside of dispersion models.

2 And the way that I addressed it was by  
3 taking a look at the added pollutant burden that  
4 this project would add to the region.

5 The accumulation of pollutants is not  
6 something that is evaluated by the traditional  
7 regulatory models.

8 MR. MITCHEL: Okay. I think we can just  
9 agree that's a limitation of the modeling. Do you  
10 agree?

11 MR. RUBENSTEIN: Yes.

12 MR. MITCHEL: Since you mentioned you  
13 looked at background concentrations, that's  
14 actually the next area I wanted to ask about.

15 Within the FSA there is air quality  
16 table 10, maximum cumulative impacts.

17 MR. RUBENSTEIN: Yes.

18 MR. MITCHEL: Are all of the cumulative  
19 impacts shown below the limiting standard?

20 MR. RUBENSTEIN: No, they're not.

21 MR. MITCHEL: Could you identify which  
22 pollutants are above the limiting standard and for  
23 which averaging times?

24 MR. RUBENSTEIN: Yes. The one-hour  
25 average NO2 concentrations are above the state

1 one-hour standard. And the 24-hour PM10 levels  
2 are above the state and federal PM10 standards.

3 And the annual PM10 level is above the  
4 state PM10 standard.

5 MR. MITCHEL: And just for the record,  
6 this table takes the pollutant shows the average  
7 of time, the impact from the project, the  
8 background air quality, total impact, the limiting  
9 standard and the percent of the standard.

10 MR. RUBENSTEIN: Not exactly. I'd amend  
11 that by saying it shows the combined impacts from  
12 the Metcalf Energy Center, the Coyote Valley  
13 Research Park and the Coyote Valley Urban Reserve  
14 all together. And add those to background levels.

15 If you want to take a look at the  
16 impacts of the Metcalf Energy Center in  
17 conjunction with the same background levels,  
18 you'll see that on air quality table 9. And what  
19 you'll see there is that only the 24-hour PM10  
20 standard is over the state standard, and that is  
21 due to preexisting violations of that standard.

22 MR. MITCHEL: But the reason I want to  
23 focus on table 10 is because that is the impact  
24 that's of most concern to residents in the area.

25 MR. RUBENSTEIN: I agree that it should

1 be, and that something ought to be done to reduce  
2 the impacts from CVRP and the Coyote Valley Urban  
3 Reserve.

4 MR. MITCHEL: And also I would note MEC,  
5 but let me then follow up my line of questions.

6 Given that the standards are exceeded in  
7 several instances, in this case, that's without  
8 the impact of accumulation of pollutants that  
9 isn't accounted for by the modeling.

10 Let's go back to just the impacts for  
11 clarity from Metcalf and add it to the background  
12 that is on table 9. The one that you said is  
13 above standards on that table is PM10 24-hour, is  
14 that correct?

15 MR. RUBENSTEIN: That's correct.

16 MR. MITCHEL: And what is the percent of  
17 standard?

18 MR. RUBENSTEIN: The --

19 MR. MITCHEL: For the --

20 MR. RUBENSTEIN: -- percent of standards  
21 that's shown in the table is 247 percent. And as  
22 I said, that's principally due to the preexisting  
23 violations of that standard.

24 The maximum impact from the Metcalf  
25 project is approximately 20 percent of the most

1 stringent standard.

2 MR. MITCHEL: So we're taking -- my  
3 point is we're taking a situation where we're  
4 already well above the limiting standard and we're  
5 exacerbating that by the introduction of Metcalf,  
6 is that correct?

7 MR. RUBENSTEIN: That's correct, and  
8 that's why the Energy Commission has required  
9 mitigation for the project.

10 MR. MITCHEL: The other point I wanted  
11 to make on this chart is carbon monoxide, I wanted  
12 to ask about the eight-hour carbon monoxide  
13 impacts of the plant.

14 MR. RUBENSTEIN: Um-hum.

15 MR. MITCHEL: Without the plant the  
16 background is roughly 82 percent of the standard.  
17 With the plant it's roughly 87 percent of the  
18 standard, is that correct?

19 MR. RUBENSTEIN: Yes.

20 MR. MITCHEL: So, the impact is that you  
21 get to 87 percent of the CO standard.

22 MR. RUBENSTEIN: That's what the  
23 conservative analysis show. In reality the  
24 numbers will be much much lower.

25 MR. MITCHEL: And let's see here, the

1 other questions -- you raised mitigation of PM10.  
2 Could you explain briefly how the mitigation will  
3 impact the directly surrounding areas around the  
4 proposed site?

5 MR. RUBENSTEIN: As I said during my  
6 direct testimony, the mitigation isn't intended to  
7 have a localized effect. And the purpose of the  
8 mitigation is to provide a regional benefit. And  
9 so what it ends up doing is helping to reduce that  
10 maximum background concentration rather than  
11 reducing the project impacts directly.

12 MR. MITCHEL: And so would those  
13 reductions in background be seen at the vicinity  
14 of the project site?

15 MR. RUBENSTEIN: I don't think any of  
16 these impacts would actually be measurable. I  
17 don't think the impacts from the project would be  
18 measurable, and I don't think the impacts from the  
19 mitigation would be measurable.

20 MR. MITCHEL: I am curious how you can  
21 make the statement that the concentrations would  
22 be lower, in fact, than you've modeled. But,  
23 perhaps you can just explain that?

24 MR. RUBENSTEIN: Sure. You were  
25 specifically talking about CO levels and whether

1       they would be at 87 percent of the air quality  
2       standard. But my statement holds true for the  
3       other pollutants, as well.

4               The reason is twofold. First of all,  
5       the maximum background concentrations are just  
6       that, they are the maximum levels measured at the  
7       site near the project site during the last three  
8       to five years. We used the last three years, I'm  
9       not sure what the staff used in the final staff  
10      assessment.

11              But in any event, it represents the  
12      single highest hour or day or annual concentration  
13      during that historical period.

14              To that we add the maximum modeled  
15      concentration which could be associated with a  
16      completely different weather condition than would  
17      cause the maximum background concentration.

18              And that maximum modeled concentration  
19      from the project is based on not only the worst  
20      case meteorology, as identified by the model, but  
21      also worst case assumptions regarding project  
22      emission rates.

23              And when I add all of that conservatism  
24      together my conclusion is that the actual impacts  
25      you see from the project will be substantially

1 lower than what's shown in that table.

2 MR. MITCHEL: And yet layered on top of  
3 that is the fact that the valley tends to channel  
4 pollutants and concentrate pollutants by narrowing  
5 to the southeast, the background concentrations  
6 were typically taken from the north where the  
7 valley's much wider. And I think you testified  
8 that the model really doesn't take into account  
9 accumulation of pollutants from winds changing  
10 direction and low inversion layers and things like  
11 that.

12 HEARING OFFICER FAY: Is that a  
13 question?

14 MR. MITCHEL: I'm getting to a question,  
15 yes. Would those factors tend to be conservative  
16 or not conservative?

17 MR. RUBENSTEIN: I think overall the  
18 analysis is extremely conservative.

19 MR. MITCHEL: That wasn't my question.  
20 My question was would those factors tend to raise  
21 or lower the predicted concentrations?

22 MR. RUBENSTEIN: Then let's take the  
23 factors one at a time. First of all, the question  
24 was would the narrowing of the valley affect the  
25 predicted concentrations. The answer to that is

1 no.

2 MR. MITCHEL: The question specifically  
3 was in response to the Air District saying that  
4 the valley tends to channel pollutants and  
5 concentrate pollutants by its narrowing to the  
6 southeast.

7 Are you saying that's not a factor, that  
8 doesn't happen?

9 MR. RUBENSTEIN: No. I'm saying that  
10 the narrowing of the valley does not affect the  
11 accuracy of the modeling results for the project.

12 MR. MITCHEL: Is that because -- this  
13 sounds like circular logic to me. You've already  
14 said the model does not take that into account.

15 MR. RUBENSTEIN: No, what I said is the  
16 model didn't take into account the multi-hour  
17 recirculation.

18 MR. MITCHEL: Okay, then let me go  
19 backwards, let me ask the question, does the model  
20 take into account the narrowing valley  
21 concentrating pollutants statement that the Air  
22 District makes?

23 How does the model take that into  
24 account?

25 MR. RUBENSTEIN: The model takes into

1 account the narrowing of the valley because the  
2 model uses the actual topography of the site  
3 location.

4 The model doesn't take into account the  
5 effect the narrowing of the valley has on  
6 background concentrations because we don't model  
7 background concentrations.

8 MR. MITCHEL: So, if I can clarify your  
9 last statement, the background concentrations at  
10 the site could, in fact, be different from the  
11 background concentrations that were used in the  
12 analysis?

13 MR. RUBENSTEIN: That's correct. And  
14 there are two factors that would go in opposite  
15 directions. One would tend to raise those  
16 concentrations and one would tend to lower the  
17 concentrations.

18 MR. MITCHEL: Okay, that's all I wanted  
19 to bring out, thank you.

20 MR. RUBENSTEIN: Okay.

21 MR. MITCHEL: Now, the next point was  
22 the winds changing direction accumulating  
23 pollutants.

24 MR. RUBENSTEIN: Again, there's two  
25 parts to that. The model does take into account

1 the winds changing direction because the changing  
2 directions is reflected in the met data that we  
3 used in the model.

4 The model does not reflect the  
5 accumulation of pollutants because the model takes  
6 a look at the worst case impacts during any hour  
7 and accumulation is a multi-hour effect.

8 MR. MITCHEL: So when you say the worst  
9 case, again for the record, when you say worst  
10 case concentration at these hourly points, you're  
11 talking about only from the pollution source at  
12 that point in time, is that correct?

13 MR. RUBENSTEIN: That's right, which is  
14 then added to the maximum background concentration  
15 from all other sources.

16 MR. MITCHEL: Okay, so again you're  
17 agreeing with me, I think, that the model does  
18 not -- and so my question to you originally in  
19 this matter was would that tend to raise or lower  
20 the pollutant values? If you were to add in the  
21 accumulating pollutants from the changing wind  
22 direction.

23 MR. RUBENSTEIN: I believe that if we  
24 were to model the kinds of weather conditions that  
25 can lead to that accumulation and took that

1 accumulation into account, the maximum impacts  
2 from this project would be lower than what is  
3 presented in air quality table 9 of the AFC.

4 Because for this project I don't believe  
5 that is the worst case meteorological condition.

6 One example of that, Phil, would be if  
7 you take a look at air quality table 7, there's a  
8 discussion here -- and I'm not trying to be  
9 difficult, this is a very complicated topic, so  
10 hopefully bear with me here.

11 Air quality table 7 has a summary of  
12 some of the modeling results. It shows, for  
13 example, the modeling results for fumigation  
14 impacts.

15 Fumigation is a meteorological condition  
16 that comes closest to representing the kind of low  
17 inversion conditions where you could have high  
18 concentrations associated with the plume coming  
19 down to the ground early.

20 Now, this fumigation model that was  
21 used, I'm not sure it takes into account the plume  
22 reflection effect off of terrain. That effect  
23 might potentially --

24 MR. MITCHEL: I'm sorry, I didn't --  
25 what did you say about reflection?

1                   MR. RUBENSTEIN: Plume reflection off of  
2 terrain. That's where you would get --

3                   MR. MITCHEL: Right.

4                   MR. RUBENSTEIN: -- the accumulation,  
5 where it might build up.

6                   MR. MITCHEL: Right, and did you say the  
7 model --

8                   MR. RUBENSTEIN: The model does not take  
9 this --

10                  MR. MITCHEL: Does not take that into  
11 account, okay.

12                  MR. RUBENSTEIN: That effect would  
13 roughly double those concentrations. There is a  
14 model called RTDM, rough terrain dispersion model,  
15 which does take that into account. In the user  
16 manual for that model it indicates that that  
17 reflection factor will vary between 1 and 2,  
18 meaning that the reflection will either not  
19 significantly change the concentration, or at most  
20 double it.

21                  So, if we were to take the fumigation  
22 numbers from air quality table 7 and double them,  
23 and then compare that with the facility impact  
24 numbers in table 9, you might get a better  
25 perspective as to why I'm saying that even if we

1 were to take that into account it would not be  
2 more conservative.

3 Just looking, as an example, the  
4 fumigation impacts for one-hour NO2 are 13  
5 micrograms per cubic meter. If you were to double  
6 that, for example, that would be 26.

7 MR. MITCHEL: But let me ask, the  
8 fumigation modeling is for a one-hour period. It,  
9 again, is really not taking accumulation into  
10 account.

11 MR. RUBENSTEIN: No, as I said, it  
12 doesn't. So I'm doing something outside the  
13 model, that's where the factor of two comes from.

14 MR. MITCHEL: Right, but that's  
15 speculative, at best.

16 Okay, I think that's most of my  
17 questions at this point. I'm going to turn this  
18 over to Steve Nelson on our team.

19 CROSS-EXAMINATION

20 BY MR. NELSON:

21 Q Just a first question -- Steve Nelson,  
22 for the record.

23 Do you have any type of license to  
24 practice air pollution modeling in terms of the  
25 State of California engineering certificate or --

1                   MR. RUBENSTEIN: I'm a Qualified  
2                   Environmental Professional certified by the  
3                   Institute for Professional Environmental Practice,  
4                   and that's about as close as you get to a license.  
5                   There are no formal licensing procedures.

6                   MR. NELSON: But you're not a  
7                   professional engineer --

8                   MR. RUBENSTEIN: There is no  
9                   professional engineer for air pollution, I'm  
10                  afraid. There wasn't when I graduated college and  
11                  still isn't.

12                 MR. NELSON: So, you're not a P.E., as  
13                  many are that are in this modeling business, at  
14                  least from the Bay Area Air Quality Management  
15                  District?

16                 MR. RUBENSTEIN: My professional  
17                  experience is most modelers are not P.E.s.

18                 MR. NELSON: Okay. When you talk about  
19                  the accumulation or the lack of accountability of  
20                  accumulation, there are 24-hour averaging, and  
21                  like a number of the statistics that you present  
22                  talk about like the 24-hour averaging time.

23                 In a sense you're looking at -- you're  
24                  providing numbers that are based on a certain  
25                  amount of time. And you said that the modeling

1 accounts for the geography.

2 And when you said that, is this a 3-D  
3 model in a sense that it knows about the wind  
4 patterns and how they are affected by the  
5 geography?

6 MR. RUBENSTEIN: The ISC model is a  
7 simplistic model in that it presumes that plumes  
8 will essentially hit terrain, which is a very  
9 conservative assumption from a modeling  
10 perspective.

11 You saw some graphical representation of  
12 that in the revised testimony from the City of  
13 Morgan Hill, where it shows that the central line  
14 of the plume is presumed to stay within roughly 10  
15 meters of the terrain --

16 MR. NELSON: But, I guess, more  
17 specifically, in the input run file for ISC SD3  
18 you list a number of geographic points, X,Y,Z type  
19 coordinates. Does the model then, when it sees  
20 one of those points, then effect the wind patterns  
21 based on that geographic data?

22 MR. RUBENSTEIN: No, it doesn't. And  
23 that's why I said the model is very conservative  
24 in that way --

25 MR. NELSON: Okay, but it's very simple

1 in the sense that it's a steady state model from  
2 what I understand.

3 MR. RUBENSTEIN: That's right, it  
4 assumes that a plume smacks into a hillside, when  
5 the reality is it does not.

6 MR. NELSON: Okay, but in terms of how  
7 wind currents move through this area, and move  
8 around geography, does the model account for the  
9 geographic data and its impact on the wind  
10 currents?

11 MR. RUBENSTEIN: No, and again that's a  
12 conservative assumption, because if it did it  
13 would predict concentrations much lower because  
14 there'd be more turbulent mixing.

15 MR. NELSON: Okay, but once the  
16 pollution moves from the stack and moves out  
17 towards the hills, in the ISC SD3 how is it  
18 averaging that if it's, I mean if it's  
19 accumulating in the valley, how does the ISC SD3  
20 account for that over like a 24-hour period?

21 MR. LOWE: As I said, it doesn't. It  
22 only takes into account that first hour. And  
23 during that first hour it assumes the plume smacks  
24 into the hillside.

25 And that's what makes the model so

1 conservative because that's physically not what  
2 happens.

3 MR. NELSON: But, I mean, but  
4 subsequent, as more pollution is emitted from the  
5 stack, and moved in that direction, what is  
6 happening to the previous pollution that was  
7 accounted for in the previous hour?

8 MR. RUBENSTEIN: It is continuing to  
9 disperse and blend in with the background air.

10 MR. NELSON: But even if there are hills  
11 and it's not continuing to disperse in our area,  
12 is that accounted for in the model?

13 MR. RUBENSTEIN: There are hills and it  
14 does continue to disperse. The air doesn't stop.

15 MR. NELSON: Sure, but I mean it's not  
16 going to disperse in the way that the model knows  
17 about, correct?

18 MR. RUBENSTEIN: No, it's going to  
19 disperse more greatly than the model knows about  
20 because the terrain is going to increase mixing.  
21 And the model doesn't know about the terrain. And  
22 consequently it doesn't predict that increased  
23 mixing.

24 MR. NELSON: But the mixing, I mean  
25 you've got mixing going on, but you've also got

1       like a space containing this pollution, and it  
2       would seem that the pollution has no way to escape  
3       this area, is that correct?

4               MR. RUBENSTEIN: No. The pollution  
5       always has a way to escape. There is never a  
6       period of time when the valley completely bottles  
7       up and nothing moves at all anywhere. There is  
8       never a period of time like that; there's always  
9       some --

10              MR. NELSON: But the model doesn't tell  
11       us about this, correct?

12              MR. RUBENSTEIN: That's right. The  
13       model does not look at that kind of --

14              MR. NELSON: Okay. Did you model also  
15       the cooling tower emissions?

16              MR. RUBENSTEIN: Yes, we did.

17              MR. NELSON: And the primary pollutant  
18       from the cooling towers is?

19              MR. RUBENSTEIN: Is particulates.

20              MR. NELSON: Okay. And in terms of the  
21       IBM met data, there's a section in the FSA that  
22       discussed the appropriateness of using the met  
23       data for modeling.

24              Let's see -- I think it's on page 41 of  
25       the FSA.

1                   MR. RUBENSTEIN: Yes, I have that in  
2 front of me.

3                   MR. NELSON: It does an analysis and  
4 talks about the ratio of terrain height to stack  
5 plume height. But I don't see any mention of the  
6 cooling tower plume height.

7                   MR. RUBENSTEIN: That's right because  
8 roughly 90 percent of the particulate emissions  
9 comes from the gas turbines and heat recovery  
10 steam generators --

11                  MR. NELSON: But, still, we need to be  
12 concerned about the PM10 modeling. We need to  
13 know what the impact is of the cooling towers,  
14 correct?

15                  MR. RUBENSTEIN: Yes, and the modeling  
16 showed that.

17                  MR. NELSON: Okay, but I'm just saying,  
18 but now I'm discussing the appropriateness of the  
19 met data at the IBM site to the modeling of the  
20 emissions from the cooling towers.

21                  So, did you analyze the plume in a  
22 similar way from the cooling tower, whether or not  
23 the met data from IBM was appropriate for modeling  
24 the cooling tower emissions?

25                  MR. RUBENSTEIN: No, we did not look at

1 the cooling tower separately when answering the  
2 question of whether or not the IBM met data were  
3 appropriate for --

4 MR. NELSON: Why not?

5 MR. RUBENSTEIN: Because 90 percent of  
6 the emissions came from the heat recovery steam  
7 generators and we believed that was the  
8 appropriate way to analyze --

9 MR. NELSON: Okay, but, so you're  
10 telling me that you don't know how accurate then  
11 the modeling is for the cooling towers? Whether  
12 the met data is appropriate.

13 MR. RUBENSTEIN: I believe the modeling  
14 of particulate emissions from the cooling towers  
15 is just as conservative, if not moreso --

16 MR. NELSON: But that wasn't the  
17 question. Is the met data appropriate from IBM  
18 for modeling the cooling towers?

19 MR. RUBENSTEIN: I'm sorry, that's a  
20 different question. The answer --

21 MR. NELSON: Okay, well, I'm sorry, I'm  
22 not a lawyer, I get --

23 MR. RUBENSTEIN: I'm just trying to keep  
24 up --

25 MR. NELSON: Okay.

1 MR. RUBENSTEIN: -- with your --

2 MR. NELSON: I guess that's the real  
3 question I wanted to ask, is the met data from the  
4 IBM appropriate to use to get an accurate modeling  
5 result for the cooling towers?

6 MR. RUBENSTEIN: Yes, I believe it is.

7 MR. NELSON: And what do you base that  
8 on?

9 MR. RUBENSTEIN: I base that on the fact  
10 that we did analyze several factors. One of which  
11 was the ratio of the terrain height to the stack  
12 and plume height.

13 And that for the majority of the  
14 emissions all of the criteria were met, and all of  
15 the criteria were met for a majority of the  
16 sources.

17 MR. NELSON: That doesn't -- that answer  
18 is -- let me ask more questions to clarify.

19 Comparing the plume height from the main  
20 stack to the cooling towers, which one is -- how  
21 doe that compare? Is the cooling tower emission  
22 plume rise higher or lower than the main stacks  
23 plume?

24 MR. RUBENSTEIN: I would expect it to be  
25 lower.

1 MR. NELSON: Do you know why how much?

2 MR. RUBENSTEIN: No, I don't have that  
3 number here.

4 MR. NELSON: Do you have a range of what  
5 that plume height would be?

6 MR. RUBENSTEIN: No, I don't have that  
7 number here.

8 MR. NELSON: Okay. So, when you say  
9 here, you don't know, or you've --

10 MR. RUBENSTEIN: As I've said several  
11 times this evening, the effective plume height is  
12 calculated by the model as an internal calculation  
13 and --

14 MR. NELSON: So, --

15 MR. RUBENSTEIN: -- it's not printed  
16 out. So, --

17 MR. NELSON: So you've never then  
18 explicitly examined the plume height of the  
19 cooling tower emissions?

20 MR. RUBENSTEIN: I did not.

21 MR. NELSON: Okay, and so then how could  
22 you make a statement then that the met data for  
23 IBM would be appropriate for cooling tower  
24 modeling?

25 MR. RUBENSTEIN: I believe I already

1 answered that question --

2 MR. NELSON: But I mean wouldn't one  
3 aspect of that analysis be knowing the plume  
4 height of the cooling tower emissions?

5 MR. RUBENSTEIN: No. For example, --

6 MR. NELSON: Yes or no, I don't --

7 MR. RUBENSTEIN: Can I answer the  
8 question, Steve?

9 MR. NELSON: Well, if you can answer it  
10 in a yes or no, or a quick answer; trying to move  
11 along.

12 HEARING OFFICER FAY: He can answer yes  
13 or no and then he can explain the answer.

14 MR. NELSON: Okay. Would it be  
15 important to know the plume height from the  
16 cooling tower emissions to determine whether or  
17 not the met data from IBM is appropriate?

18 MR. RUBENSTEIN: If the cooling tower  
19 were the dominant source of PM10, the answer would  
20 be yes.

21 MR. NELSON: But even if it's a minor  
22 source, shouldn't we account for it, because there  
23 will be, let's just say, people spending their  
24 time within this area. It would seem that that  
25 would be an important factor to know. Would you

1 agree?

2 MR. RUBENSTEIN: If you're asking me to  
3 provide the effective plume height for the cooling  
4 tower, I could do that, but not tonight.

5 MR. NELSON: But I'm just saying, you've  
6 argued, though, that the met data is appropriate  
7 for the analysis of the impacts of the Metcalf  
8 Energy Center, correct?

9 MR. RUBENSTEIN: Yes, and I understand  
10 that you disagree with that.

11 MR. NELSON: Well, it's not that I  
12 disagree, I'm just trying to figure out how you  
13 came to that conclusion.

14 And so, to me, being a lay person, it  
15 would seem that knowing the plume height of the  
16 emissions from the cooling tower would be an  
17 essential element of whether or not the met data  
18 for IBM is appropriate.

19 MR. RUBENSTEIN: It is an element, I  
20 don't believe it's an essential element.

21 MR. NELSON: So, what are the other  
22 elements that you looked at to determine that the  
23 cooling tower emissions would be effected, or that  
24 the met data would be appropriate for the cooling  
25 tower emission modeling?

1           MR. RUBENSTEIN: The aspect ratio of the  
2 terrain, the slope of the terrain and the  
3 correlation of the terrain features to the  
4 prevailing meteorological conditions. In addition  
5 to --

6           MR. NELSON: Okay, so, --

7           MR. RUBENSTEIN: In addition we took a  
8 look a windrows from four different locations and  
9 the modeling protocol, all of which indicated the  
10 same predominant patterns. That's --

11          MR. NELSON: Okay, then --

12          MR. RUBENSTEIN: -- why we believed --

13          MR. NELSON: -- that's fine, but --

14          MR. RUBENSTEIN: Can I finish?

15          MR. NELSON: -- none of those sites for  
16 the met data was analyzed --

17          MR. HARRIS: Could the witness finish  
18 answering the question before the next one comes?

19          MR. NELSON: Sure, I was just trying to  
20 move along in the interest of time.

21          MR. HARRIS: Well, I think you're going  
22 to have to let him answer the question --

23          MR. NELSON: Okay.

24          HEARING OFFICER FAY: -- before you ask  
25 the next one.

1 MR. NELSON: Okay.

2 MR. RUBENSTEIN: My closing point was  
3 that that was why we believe the IBM met data  
4 ultimately were representative, was because the  
5 wind patterns at that location were substantially  
6 similar to the wind patterns at other surrounding  
7 locations.

8 MR. NELSON: But were any of those other  
9 locations that met data was taken from, were they  
10 behind Tulare Hill, in the sense that being south  
11 of Tulare Hill, tucked in behind the hill?

12 MR. RUBENSTEIN: Well, tucked in behind,  
13 no. But Morgan Hill was certainly behind Tulare  
14 Hill, and that was one of the sites we looked at.

15 MR. NELSON: Okay, but were any of those  
16 locations that were analyzed, were they from the  
17 site of where the cooling tower would be located?

18 MR. RUBENSTEIN: The other data set that  
19 we looked at, not those four, the other data set  
20 that we looked at was data that was collected at  
21 the PG&E substation at Metcalf. And that data  
22 demonstrated exactly the same wind flow patterns.

23 MR. NELSON: But, so the question that I  
24 asked was were any of those sites the met data was  
25 analyzed, were they in the location of where the

1 cooling tower will be located?

2 MR. RUBENSTEIN: No.

3 MR. NELSON: Okay, thank you. Do you  
4 think that having met data from the site would  
5 have any impact on the cooling tower modeling?

6 MR. RUBENSTEIN: No.

7 MR. NELSON: So, no difference in your  
8 mind between the analysis done with the met data  
9 at IBM and the analysis done like onsite?

10 MR. RUBENSTEIN: I should clarify that.  
11 I answered too quickly. I don't think that there  
12 would be any difference great enough to chance the  
13 conclusions of our analysis.

14 There would certainly be differences  
15 because any time you use a different  
16 meteorological data set you're going to get  
17 different answers.

18 MR. NELSON: But you don't think that  
19 this would be significant?

20 MR. RUBENSTEIN: If by significant, I  
21 mean I don't think it would change any of our  
22 conclusions regarding project impacts.

23 MR. NELSON: Do you think it would  
24 change the maximum impact point for PM10 from the  
25 cooling tower?

1 MR. RUBENSTEIN: You mean the location?

2 MR. NELSON: Yes.

3 MR. RUBENSTEIN: No, I don't think it  
4 would change the location.

5 MR. NELSON: So you think the impact  
6 point would be identical using met data from IBM  
7 versus met data from onsite?

8 MR. RUBENSTEIN: Generally. Do I mean  
9 to the same two feet, no. But in terms of the  
10 same predominant locations, yes.

11 MR. NELSON: Predominant, okay.

12 MR. RUBENSTEIN: Predominant meaning  
13 that most of the impacts that we've seen as the  
14 worst case impacts on the project are either  
15 associated with Tulare Hill to the west of the  
16 site, or on Coyote Ridge to the northeast of the  
17 site; or in the case of impacts that are related  
18 to the diesel-fire pump, on the property line.

19 I think those general statements would  
20 still be true, even if we had met data collected  
21 right where the cooling tower is.

22 MR. NELSON: But without knowing the  
23 plume height, you can still make these statements?

24 MR. RUBENSTEIN: Yes.

25 MR. NELSON: And so if Tulare Hill were

1 higher than the plume height you would still make  
2 these statements?

3 MR. RUBENSTEIN: Yes.

4 MR. NELSON: So you're saying that  
5 Tulare Hill blocking wind coming from the north,  
6 and the plume of the cooling tower being behind  
7 the hill would have no impact on the analysis of  
8 the modeling for the cooling tower?

9 MR. RUBENSTEIN: That's correct. And  
10 the reason is that the worst case impacts, as I've  
11 said before, are associated with nighttime  
12 drainage conditions when the flows are across the  
13 valley and not north and south.

14 And so having a met tower south of  
15 Tulare Hill isn't going to change the fact that at  
16 night the predominant flows are going to be  
17 downslope --

18 MR. NELSON: But I thought previously  
19 you said most of the wind is traveling in a north  
20 to south direction?

21 MR. RUBENSTEIN: That's right. Most of  
22 the time it is, but the worst case impacts are not  
23 associated with that predominant wind condition.

24 MR. NELSON: Okay, but we don't have an  
25 accurate modeling of the cooling tower emissions

1 is from what I'm hearing. I'm mean --

2 MR. RUBENSTEIN: I was waiting for a  
3 question.

4 MR. NELSON: Okay. I'm not a lawyer so  
5 it's always hard to think in questions.

6 MR. RUBENSTEIN: Sorry, I've been  
7 getting a lot of questions today so I'm just  
8 waiting for the next one.

9 MR. NELSON: I guess I'm collecting my  
10 thoughts here.

11 So I think from a neighborhood point of  
12 view, there would be concern that the modeling of  
13 the cooling tower emissions, even though smaller  
14 than the main stack, would need to be accurately  
15 known. Do you think that's a fair concern?

16 MR. RUBENSTEIN: You're asking me is it  
17 a fair concern for the community? I don't know.  
18 Do I think that there is reason to be concerned?  
19 No.

20 MR. NELSON: So, I mean when you say  
21 there's no reason to be concerned, that's based on  
22 the amount of pollutants coming from the cooling  
23 tower?

24 MR. RUBENSTEIN: It's based on the  
25 amount of pollutants coming from the cooling

1 tower, the meteorological data and the modeling  
2 analysis that we've done.

3 MR. NELSON: Okay. But for example,  
4 people working in the Cisco location, would this  
5 be something that we should know about, whether  
6 there would be impacts from the cooling tower in  
7 that area?

8 MR. RUBENSTEIN: Should you know about  
9 it? Yes. That's what this process is about.  
10 Would there be any impacts at the Cisco location  
11 to be concerned about, not from this project.  
12 Maybe from the diesel generators they're  
13 proposing, but not from this project.

14 MR. NELSON: Okay. But I mean have you  
15 done any analysis of let's just say Cisco  
16 buildings that might be built in the location of  
17 the power plant?

18 MR. RUBENSTEIN: Are you referring to  
19 the effect that the Cisco buildings might have  
20 on --

21 MR. NELSON: Well, just --

22 MR. RUBENSTEIN: -- downwash --

23 MR. NELSON: I would guess -- no, not  
24 downwash, but I would guess that they are multi-  
25 storied and most the air intake might be from the

1 roof. Was there any modeling done to determine  
2 if -- I mean does a modern building, I guess,  
3 where is the air intakes, and are they air  
4 conditioning type intakes. Most buildings I know  
5 it's on the roof.

6 MR. RUBENSTEIN: I guess, yes.

7 MR. NELSON: I mean is that a fair  
8 guess?

9 MR. RUBENSTEIN: You know, I don't know.  
10 In my office building the air intake is just  
11 infiltration from all the doors, so.

12 MR. NELSON: Okay.

13 HEARING OFFICER FAY: Mr. Nelson, five  
14 more minutes.

15 MR. NELSON: What's the guideline?

16 HEARING OFFICER FAY: Based on the  
17 estimate that your partner gave us, you have five  
18 minutes.

19 MS. CORD: We haven't done our public  
20 health questions yet.

21 HEARING OFFICER FAY: Well, your  
22 representative said an hour of cross-examination.

23 MS. CORD: Right, I said an hour.

24 Right, I'm aware of that. We weren't told we'd be  
25 stopped at an hour. We were asked to give a

1 general ballpark figure by Mr. Valkosky.

2 HEARING OFFICER FAY: Okay, perhaps you  
3 can --

4 MR. NELSON: Right, did you --  
5 Elizabeth, did you have any questions?

6 MS. CORD: Yes.

7 MR. NELSON: Okay.

8 MS. CORD: I think the one hour was for  
9 air quality, and I think we had an additional hour  
10 for public health.

11 HEARING OFFICER FAY: I just asked  
12 tonight. I don't believe you were here when we  
13 asked everybody to try --

14 MS. CORD: Oh, I thought you meant at  
15 the prehearing conference sometime ago.

16 HEARING OFFICER FAY: No, I was  
17 referring to tonight. And your partner said an  
18 hour. So, we'd like to stick to that.

19 MS. CORD: I think he was talking about  
20 air quality. We have public health, as well.

21 In any case, I'll just finish up with  
22 air quality here before we turn it over to Dr.  
23 Wong for some public health questions.

24 CROSS-EXAMINATION

25 BY MS. CORD:

1           Q     My first question, this is to Mr.  
2 Rubenstein, you talked earlier about the testimony  
3 that's been submitted from Morgan Hill, you said  
4 something about the sky is blue.

5           MR. RUBENSTEIN: I'm sorry?

6           MS. CORD: You said something about the  
7 testimony submitted by Dr. Chang, I think your  
8 comment was the sky is blue and something beyond  
9 that.

10          MR. RUBENSTEIN: I used that phrase,  
11 yes.

12          MS. CORD: Okay. Now, I remember you  
13 mentioned you had a bachelors degree. Do you hold  
14 a degree in meteorology?

15          MR. RUBENSTEIN: No, I don't.

16          MS. CORD: Okay, and a bachelors is your  
17 highest degree?

18          MR. RUBENSTEIN: Yes.

19          MS. CORD: Okay, and you stated a number  
20 of cases that you've testified, I think you said  
21 25?

22          MR. RUBENSTEIN: Yes.

23          MS. CORD: Okay, are those -- in those  
24 cases were you mostly speaking on behalf of  
25 applicants or developers?

1                   MR. RUBENSTEIN: In I think 20 of them I  
2 was speaking on behalf of applicants or  
3 developers, and five of them I was speaking on  
4 behalf of the California Air Resources Board.

5                   MS. CORD: So it's fair to say that most  
6 of them you were speaking on behalf of applicants  
7 or developers?

8                   MR. RUBENSTEIN: Yes.

9                   MS. CORD: Good, okay. Let me ask you  
10 this, are you -- just a second here -- are you  
11 paid to be here tonight, Mr. Rubenstein?

12                  MR. RUBENSTEIN: Yes, I am.

13                  MS. CORD: Okay. And you and/or Sierra  
14 Research, are you anticipating a bonus if this  
15 project is approved?

16                  MR. RUBENSTEIN: No.

17                  MS. CORD: Okay. Can you give us a  
18 figure of how much you and/or Sierra Research --

19                  MR. HARRIS: I'm going to object.

20                  HEARING OFFICER FAY: Sustained. That's  
21 not allowed.

22                  MS. CORD: Oh, it's not? Okay. Thank  
23 you for that guidance.

24                  Dr. Wong has some questions on public  
25 health now.

1 CROSS-EXAMINATION

2 BY DR. WONG:

3 Q I want to address the questions to Mr.  
4 Lowe. Would there be odorants added to that  
5 natural gas?

6 MR. LOWE: I'm sorry, could you repeat  
7 the question, please?

8 DR. WONG: Would there be any odorants  
9 added to the natural gas?

10 MR. LOWE: I believe odorants are added  
11 to natural gas, not at the project site, though.

12 DR. WONG: Because residential natural  
13 gas do have odorants added to it. I'm just asking  
14 whether, as a commercial supply for the natural  
15 gas, whether you have added odorants.

16 MR. RUBENSTEIN: It's the same natural  
17 gas supply, and it does have odorants in it.

18 DR. WONG: Okay. Mr. Lowe, do you  
19 believe that if there are air releases that are  
20 not included in the analysis then the estimates  
21 that you are getting will be underestimated? Do  
22 you agree with that?

23 MR. LOWE: I would, but I believe we've  
24 accounted for all the air releases that would be  
25 associated with operation of the facility.

1 DR. WONG: Okay. Let me ask you these  
2 questions. Are these air releases included in  
3 your public health risk assessment, and if you  
4 will answer yes, no, or partially. And if your  
5 answer is partially, then what part and from which  
6 sources is it included.

7 Nitrogen oxide, is it included in your  
8 public health assessment?

9 MR. LOWE: No, it's part of the air  
10 quality assessment.

11 DR. WONG: Okay. Silver dioxide.

12 MR. LOWE: Part of the air quality  
13 assessment, not in public health.

14 DR. WONG: Not in public health, okay.  
15 PM10.

16 MR. LOWE: Part of the air quality  
17 assessment, not in public health.

18 DR. WONG: Carbon monoxide.

19 MR. LOWE: Same answer. Part of air  
20 quality, not in public health.

21 DR. WONG: VOC emissions.

22 MR. LOWE: Part of air quality, not in  
23 public health.

24 DR. WONG: Ozone.

25 MR. RUBENSTEIN: The plant doesn't emit

1 ozone, but the ozone impacts are discussed in the  
2 air quality section.

3 DR. WONG: Okay, so all of these are not  
4 in the public health assessment. Carbon dioxide.

5 MR. LOWE: Carbon dioxide is not a toxic  
6 air contaminant. It's not addressed in the public  
7 health section.

8 DR. WONG: Okay, but there may be  
9 aspects that relates to risk assessment. Water  
10 vapor.

11 MR. LOWE: Water vapor is not a toxic  
12 air contaminant. It's not addressed --

13 DR. WONG: So they are not toxic --

14 MR. LOWE: -- in the public health --

15 DR. WONG: -- as not toxic. Air  
16 releases from wastewater treatment facility.

17 MR. LOWE: I'm not aware there's a  
18 wastewater treatment facility.

19 DR. WONG: My understanding is that  
20 there are additional wastewater treatment in the  
21 facility, so. Am I correct on that?

22 MR. HARRIS: Not for wastewater, no.

23 MS. CORD: To retrieve the recycled  
24 water.

25 DR. WONG: Yes.

1 MR. HARRIS: Not for wastewater.

2 DR. WONG: My understanding is that  
3 there will be additional wastewater treatment at  
4 the facility, itself, in addition to what's coming  
5 from the --

6 MS. CORD: South Bay Water --

7 DR. WONG: Yeah. The recycling --

8 MS. CORD: Recycled --

9 DR. WONG: -- recycle plant.

10 MS. CORD: To retrieve the recycled  
11 water.

12 MR. HARRIS: Could you point to the  
13 portion of the witness' testimony where this  
14 subject is covered, please?

15 DR. WONG: I think in the FSA there are  
16 certain portions that mentions about the  
17 wastewater treatment, and then there will be  
18 additional wastewater treatment at the facility,  
19 itself.

20 (Off-the-record conversations.)

21 MS. CORD: That's the treatment of the  
22 recycled water before it's returned.

23 DR. WONG: One or the other.

24 MR. HARRIS: I don't know where she is.

25 DR. WONG: I don't know whether it's

1 before or after, but there are --

2 MR. RUBENSTEIN: I'm not aware of any  
3 air emission releases associated with treatment of  
4 water --

5 DR. WONG: I can point you to page 93 of  
6 the FSA, -- recycled water --

7 MR. HARRIS: 93, she's not in air. What  
8 section of the FSA are you in?

9 SPEAKER: It's public health.

10 DR. WONG: Page 93, public health.

11 MR. HARRIS: 93?

12 DR. WONG: Yes.

13 MR. RUBENSTEIN: Dr. Wong, the  
14 discussion that I'm seeing in here all refers to  
15 the water pollution control plant that is offsite,  
16 that's not a part of the project.

17 DR. WONG: So you are saying that there  
18 would not be any additional wastewater treatment  
19 either before it goes into the cooling tower or  
20 after it goes back to the wastewater facility?

21 MR. RUBENSTEIN: Yes, there is  
22 additional treatment, and it's discussed on page  
23 95 of the public health section.

24 DR. WONG: So there are additional  
25 wastewater treatment in the facility of the plant?

1 Of the power plant facility.

2 MR. RUBENSTEIN: Just to clarify, the  
3 water that's received at the plant is not  
4 wastewater. It is tertiary treated water, which  
5 comes on site.

6 DR. WONG: Yeah, to me it's wastewater.  
7 I mean it's wastewater recycled. And my  
8 understanding is that there are additional  
9 treatment at your facility in addition to the  
10 wastewater supplier.

11 MR. RUBENSTEIN: Right, and that water  
12 treatment -- the treatment of the water that's  
13 received at the facility is discussed in the  
14 public health section of the FSA at page 95.

15 DR. WONG: Right, but they are not  
16 included in the public health risk assessment. Am  
17 I correct?

18 MR. LOWE: That is correct.

19 DR. WONG: Okay. Are the drift of the  
20 toxic substances in the wastewater after  
21 additional treatment, as they included in the  
22 public health assessment?

23 MR. RUBENSTEIN: I'm sorry, could you  
24 repeat that?

25 DR. WONG: The drift of the toxic

1 substances that are in the wastewater. After  
2 additional treatment -- my understanding is that  
3 the wastewater plant supplies the wastewater to  
4 the facility, and then there are additional  
5 treatment.

6 MR. RUBENSTEIN: There is no wastewater  
7 that is received at the facility.

8 DR. WONG: Well, recycled water, if you  
9 want to call it, but --

10 MR. RUBENSTEIN: Thank you.

11 DR. WONG: -- recycled wastewater  
12 that --

13 (Laughter.)

14 DR. WONG: -- goes -- recycled  
15 wastewater that goes into the plant and that are  
16 then used. And they will be used in the cooling  
17 tower understanding, and so that recycled  
18 wastewater has a certain level of toxic substances  
19 in it.

20 And so there will be drift associated  
21 from that. Have you accounted for those in your  
22 public health assessment?

23 MR. RUBENSTEIN: Yes.

24 DR. WONG: In what way?

25 MR. RUBENSTEIN: In the analysis that

1 was done in the screening level health risk  
2 assessment there was an assessment of the various  
3 toxic air contaminants contained in the wastewater  
4 as well as toxic air contaminants --

5 DR. WONG: But I --

6 MR. RUBENSTEIN: -- now you got me  
7 saying --

8 DR. WONG: -- I -- I do not believe that  
9 it includes the chlorine and all those things,  
10 because from the description in the FSA it does  
11 not seem to be complete.

12 So I don't -- if it's not complete I  
13 don't know how you could have included in your  
14 risk assessment.

15 MR. LOWE: In a data response we did  
16 address other constituents that were considered to  
17 be present in the recycled water.

18 DR. WONG: So are you saying that you  
19 have changed the analysis subsequent? Because in  
20 the tables, these tables apparently is coming from  
21 the supplement C tables. And I don't know when  
22 you have changed any of these numbers.

23 MR. LOWE: We --

24 DR. WONG: But things like chlorine, you  
25 know, dioxin, PCB, chloroform, nitrification

1 chemicals, biocides, conditioned chemicals for  
2 corrosion and mineral scales, are those included?

3 MR. LOWE: Just the metals that are  
4 present in the water --

5 DR. WONG: Okay, so they are included.  
6 How about natural gas impurities, such as sand,  
7 radon, hydrogen sulfide and others? My  
8 understanding is that natural gas can also have  
9 contaminants like sulfate reducing bacteria, acid  
10 producing bacteria that may not be combustible.  
11 For example, sand is not all, they may be  
12 combusted and then they can still come out from  
13 complete combustion, or they might have combustion  
14 products.

15 Are these natural gas impurities  
16 included in those emission factors that you have?

17 MR. RUBENSTEIN: Some of those that you  
18 listed are -- I'm not sure I caught all of them.

19 DR. WONG: Sand, radon, --

20 MR. RUBENSTEIN: Sand as in silica?

21 DR. WONG: Yeah.

22 MR. RUBENSTEIN: To the extent that  
23 there is any sand in natural gas, the maximum  
24 emission rates from the turbine would have to  
25 include that passing through. And so, yes, that

1 would be implicitly included.

2 DR. WONG: Okay, but it's not clear that  
3 you have anything that's related to, you know,  
4 silicon dioxide or things like that.

5 MR. RUBENSTEIN: I have never seen any  
6 data on the sand content of natural gas.

7 DR. WONG: Okay. Okay. So some may  
8 have been included, but may not have all of them.  
9 Okay.

10 How about natural gas leakage, including  
11 these impurities, are they included in the public  
12 health assessment? Natural gas leakages. So they  
13 are not, I assume?

14 MR. RUBENSTEIN: No.

15 MR. HARRIS: I don't even know where to  
16 start. Could we have references to these  
17 witnesses' testimony to help guide us through  
18 this? I mean because right now I'm hearing  
19 testimony but it's not coming from my witnesses.

20 HEARING OFFICER FAY: Yes, I think  
21 that's reasonable --

22 DR. WONG: I'm asking the questions  
23 whether these are included in the public health  
24 assessment. So, I thought the applicants know  
25 that facilities well enough to know whether those

1 are or not, and the analysis well enough or not.

2 If not, please let me know.

3 Exhausts from fires and explosions, are  
4 those included in your public health risk  
5 assessment?

6 MR. HARRIS: I'm going to object, and  
7 again ask that we somehow focus on the testimony  
8 of these witnesses and not the testimony filed by  
9 Ms. Wong.

10 DR. WONG: Testimony of these --

11 HEARING OFFICER FAY: Well, I'm --

12 DR. WONG: -- witnesses --

13 HEARING OFFICER FAY: -- sorry, counsel.

14 I heard a question. She asked --

15 DR. WONG: Oh, you mean --

16 HEARING OFFICER FAY: -- certain

17 things --

18 DR. WONG: -- I cannot ask questions of  
19 you? I'm sorry?

20 HEARING OFFICER FAY: Just a minute, Dr.

21 Wong. Dr. Wong, just a minute, I'm ruling on

22 this.

23 DR. WONG: Okay.

24 HEARING OFFICER FAY: I heard Dr. Wong

25 ask a question as to whether certain things were

1 included in the testimony. I think that's  
2 reasonable.

3 But, Dr. Wong, if you're asking specific  
4 questions regarding their testimony, if you could  
5 help focus where in that testimony you're  
6 referring, that would help speed things along.

7 DR. WONG: Okay. How about diesel  
8 exhaust from -- engines beyond the annual 100-hour  
9 testing and usage limit, are they included in the  
10 public health assessment?

11 MR. RUBENSTEIN: No.

12 DR. WONG: Okay. How about startup  
13 emissions, are they included in the health safety  
14 assessment?

15 MR. RUBENSTEIN: They're included in the  
16 air quality assessment, and as part of the health  
17 risk assessment for the turbines overall, they're  
18 included, yes.

19 DR. WONG: So part of it is, part of it  
20 not. Okay. The exhaust, I can ask that?

21 MS. CORD: I don't think you asked that.

22 DR. WONG: Okay. One is the exhausts  
23 from fires and explosions. Are they included?

24 MR. LOWE: No.

25 DR. WONG: Okay. Do you agree that if

1       these are included that there may be additional  
2       risk to your risk estimates?

3               MR. RUBENSTEIN:  The health risk  
4       assessment guidelines that we followed don't  
5       involve accidental releases.  Those are dealt with  
6       in the hazardous materials analyses that are dealt  
7       with separately.

8               DR. WONG:  Okay, but they nevertheless  
9       do affect public health in the sense that it may  
10      result in, you know, loss of life or injuries to  
11      the public.  I assume you agree with that.

12              MR. RUBENSTEIN:  Something like a fire  
13      would certainly fall in that category, yes.

14              DR. WONG:  Right, okay, thank you.

15              I have -- Mr. Lowe, you mention at the  
16      beginning that you based your data from all that's  
17      available.  Can you describe a little bit more  
18      about what you mean by all available, the data?  
19      Is it supplied to you by the applicant?  Or do you  
20      give those estimates?

21              MR. LOWE:  Could you --

22              HEARING OFFICER FAY:  Dr. Wong, I don't  
23      know, before he answers I'm not sure if you were  
24      here.  But Mr. Beers went through that to great  
25      extent.  So perhaps --

1 DR. WONG: Of all available data?

2 HEARING OFFICER FAY: -- the witness can  
3 refer --

4 DR. WONG: Oh, okay.

5 HEARING OFFICER FAY: -- to that and  
6 summarize.

7 DR. WONG: Okay, thank you then. Okay,  
8 now I have a material safety data sheet for  
9 natural gas, which describes in there, health  
10 hazardous data section, under the health hazards  
11 acute and chronic item, it says --

12 MR. HARRIS: May I ask what this  
13 document is, and do we have copies for my  
14 witnesses, please.

15 DR. WONG: I'm reading to you and then I  
16 have the question. If you'd just let me read it,  
17 I can show --

18 HEARING OFFICER FAY: And from what are  
19 you reading?

20 DR. WONG: It's a health data sheet that  
21 I have seen in which it describes the following,  
22 and it is in the testimony because I did include  
23 that sentence, I think, in there.

24 I'm just reading you the complete quote.  
25 It says: TLV simple asphyxiant natural gas is

1 nontoxic, however it acts as a simple asphyxiant  
2 by displacing or partially displacing the air  
3 required to support life.

4 And listed under control measures for  
5 other protective clothing or equipment, as  
6 where -- eye, skin contact may be a problem. Wear  
7 or use appropriate protective equipment.

8 So I take this as saying that natural  
9 gas is a hazard. Do you agree with me that  
10 natural gas is a hazard and has it been included  
11 in the public health risk assessment?

12 MR. LOWE: Natural gas would not be an  
13 asphyxiant hazard in outdoor ambient air.

14 DR. WONG: Under -- it depends on the  
15 circumstances, doesn't it? I've seen in the  
16 television about the Bellingham bursting of the  
17 pipelines. And people, you know, children died  
18 out of that.

19 So I think it really is still an open  
20 air situation, and accidents like that do occur.  
21 And I take it that --

22 PRESIDING MEMBER LAURIE: Ma'am, I'm  
23 going to have to ask you to --

24 DR. WONG: -- it is a --

25 PRESIDING MEMBER LAURIE: -- to ask a

1 question. You are arguing and you're testifying.

2 DR. WONG: Okay. Well, because is in  
3 response to saying that it is not a hazard --

4 PRESIDING MEMBER LAURIE: This witness  
5 responded in his opinion no.

6 DR. WONG: Okay. So natural gas is not  
7 included in the public health risk assessment?

8 MR. LOWE: Natural gas is not included,  
9 that's correct.

10 DR. WONG: Okay. I have also an article  
11 which says titled, blasts but not from the  
12 present. And it's from a July 17, 2000 issue of a  
13 magazine, the U.S. --

14 MR. HARRIS: Mr. Fay, I hate to  
15 interrupt again, but we're going down this road  
16 again. Does she have copies for our witness, or  
17 at least some kind of reference? I don't see this  
18 as part of our testimony --

19 HEARING OFFICER FAY: Dr. Wong, I think  
20 that's a reasonable request. If you're going to  
21 be asking a long question by reading something  
22 into the record from an article, you need to  
23 provide that --

24 DR. WONG: Yeah, right, I --

25 HEARING OFFICER FAY: -- for the

1 witnesses.

2 DR. WONG: -- I'm just giving you the  
3 reference, that's all. Okay, --

4 MR. HARRIS: Mr. Fay, --

5 DR. WONG: -- it is the --

6 MR. HARRIS: -- can I --

7 DR. WONG: -- U.S. News and World  
8 Report. It describe a chemical accident from  
9 residue of butadiene -- and my questions is 1,3  
10 butadiene is a compound that is a toxic emission,  
11 according to the FSA on page 92. That it is one  
12 of the emission, and it is a very reactive  
13 compound.

14 Would you describe the source of this  
15 compound? This chemical. Page 92.

16 MR. LOWE: Page 92 of the final staff  
17 assessment?

18 DR. WONG: Yeah, in the FSA, page 92.

19 MR. LOWE: 1,3 butadiene --

20 DR. WONG: Where does this come from?

21 MR. LOWE: I'm trying to answer your  
22 question. 1,3 butadiene comes from the combustion  
23 of all fuels, including natural gas, gasoline and  
24 diesel.

25 DR. WONG: Okay, could there be residues

1 built up from this chemical within our outside the  
2 facility?

3 MR. LOWE: No, not at the emission rates  
4 that we expect from this facility.

5 DR. WONG: Okay. Are these chemicals --  
6 can there be chemicals that have residues built up  
7 and can cause chemical accidents similar to what  
8 happened with the residues for butadiene?

9 MR. LOWE: 1,2 butadiene is one of the  
10 most common toxic air pollutants in urban  
11 atmospheres coming from motor vehicles --

12 DR. WONG: I know that, um-hum.

13 MR. LOWE: -- and so if there was any  
14 deposit build up we would see it already. And I  
15 don't believe there's any evidence of any.

16 DR. WONG: Okay. Can you state the --  
17 compare the emissions of the 1,2 butadiene with  
18 whatever is from the automobile? Would you be  
19 able to help me with it, to figure out, you know,  
20 how it corresponds to what one car, in terms of  
21 hours of the car, you know, burning fuel?

22 MR. LOWE: No. I'm afraid I don't have  
23 that emission factor with me tonight.

24 DR. WONG: Okay. Are you aware that the  
25 negligence of workers and associates as this

1 chemical accident appear to be coming from can  
2 jeopardize public health? Do you agree with it?  
3 That negligence of workers or associates can  
4 jeopardize public health, do you agree with it?

5 MR. LOWE: I'm not an expert in that  
6 field. As a lay person I would agree with it, but  
7 I don't --

8 DR. WONG: Okay.

9 MR. LOWE: -- have expertise in that  
10 area.

11 DR. WONG: Thank you. Are you aware  
12 that events like fires and explosions can cause  
13 stress, property damage and physical harm to  
14 nearby residents? Do you agree with it?

15 MR. LOWE: In general that would be  
16 correct.

17 DR. WONG: Okay. Thank you. 1,3  
18 butadiene is included only in the inhalation  
19 cancer risk assessment according to the FSA page  
20 92. Are you on that page? Can I ask the  
21 question?

22 MR. LOWE: Yes.

23 DR. WONG: Okay. Is only checked for  
24 the cancer risk assessment, so it's not included  
25 in the acute noncancer and the chronic noncancer

1 risk assessment.

2 I have a reference book which says that  
3 1,3 butadiene and actually many chemicals from the  
4 emissions have harmful effects on the eyes.

5 Now, and I may be able to answer more  
6 questions tomorrow when I testify, but I want to  
7 know whether is the chronic exposures of eyes to  
8 the synergistic effects of acid aerosol formation  
9 from air releases of the power plant and from the  
10 air releases are -- if included in the public  
11 health risk assessment.

12 MR. LOWE: 1,3 butadiene would only be  
13 an eye irritant at concentrations far higher than  
14 are projected to be emitted from the Metcalf  
15 Energy facility.

16 We looked at the effects that are of  
17 greater concern for lower level exposures. So,  
18 no, eye irritation was not considered in the  
19 health risk assessment; adverse effects more  
20 pertinent to the situation were considered.

21 DR. WONG: Right, and they are a number  
22 more that have not been, you know, I just mention  
23 about the natural gas. I think there is --

24 HEARING OFFICER FAY: Dr. Wong, we are  
25 running --

1 DR. WONG: Okay.

2 HEARING OFFICER FAY: -- out of time, so  
3 you're going to have to focus on questions.

4 DR. WONG: Okay. How often would the  
5 natural gas leakage be tested?

6 MR. LOWE: I don't know.

7 DR. WONG: I'm asking -- okay. How  
8 often would the natural gas quality be tested?  
9 You don't know, do you?

10 MR. LOWE: No, I don't know the answer  
11 to that.

12 DR. WONG: Okay. Has a complete list of  
13 all the actual or potential air releases and all  
14 the emission levels been disclosed for evaluation  
15 of public health impacts and violations of  
16 standards?

17 MR. RUBENSTEIN: Yes, we believe it has.

18 DR. WONG: You believe it has, okay.  
19 Has all the adverse public health impacts been  
20 disclosed for evaluation of potential for  
21 significance?

22 MR. LOWE: Yes, we believe it has.

23 DR. WONG: Okay, you believe it has.  
24 Okay. Now, in the -- are you familiar with the  
25 acute risk assessment, Mr. Lowe?

1 MR. LOWE: Yes, I am.

2 DR. WONG: Okay, and this is the one  
3 that referencing, this one, the determination of  
4 acute reference exposure levels for airborne  
5 toxicants.

6 MR. LOWE: Yes, I'm familiar with it.

7 DR. WONG: You are familiar with it.  
8 Are you familiar with the limitations that was  
9 described in that document that the methodology is  
10 limited in certain sense in outside air is not  
11 adequate?

12 MR. LOWE: You would have to point me to  
13 the particular page in that document you are  
14 speaking about.

15 DR. WONG: Okay. For example, the -- in  
16 my testimony, I don't know whether you have read  
17 through that or not, it mentions about in that  
18 document, page 9, it says it is important to  
19 consider the interaction of effects of the  
20 toxicants. Do you agree with that?

21 This is one of the statement that is in  
22 that guideline there. Is on page 9.

23 MR. LOWE: I'm sorry, first of all I  
24 don't have page 9 in front of me. And second,  
25 could you repeat that question?

1 DR. WONG: On page 9 there is a  
2 statement that it says it is important to consider  
3 the interaction of effect of the toxicants. Page  
4 5 of my testimony, but then is on page 9 of this  
5 guideline that I have.

6 HEARING OFFICER FAY: And what is the  
7 guideline?

8 DR. WONG: The guideline's title is the  
9 determination of acute reference exposure levels  
10 for airborne toxicants.

11 HEARING OFFICER FAY: Do you have that  
12 in front of you, Mr. Lowe?

13 MR. LOWE: It's coming.

14 DR. WONG: Yeah, it is here. It's the  
15 second line on the bottom, I think it's on the  
16 second line of that paragraph.

17 It says, it is important to consider the  
18 interaction of the effects of the toxicants.

19 MR. LOWE: Could I have a moment to look  
20 at this?

21 HEARING OFFICER FAY: Sure.

22 MR. LOWE: Thank you.

23 Okay, I've looked at this, could you  
24 repeat your question, please?

25 DR. WONG: I'm saying are you aware of

1 the limitations described in this guideline.  
2 There are many pages in this guideline which talks  
3 about the limitations of the methods.

4 MR. LOWE: Yes, I'm aware of them.

5 DR. WONG: Okay, and this statement, it  
6 is important to consider the interaction of  
7 effects of the toxicants is one of the limitations  
8 that was mentioned in the guideline.

9 So, I assumed you are aware of it.

10 MR. LOWE: Yes.

11 DR. WONG: Are there any synergistic  
12 effects that you have included in your public  
13 health risk assessment?

14 MR. LOWE: I'm not aware that there were  
15 synergistic effects associated with the acute  
16 effects for the pollutants emitted from the  
17 facility --

18 DR. WONG: Okay, so in your analysis  
19 there is no synergistic effect included.

20 MR. LOWE: I'm sorry, could you repeat  
21 that question, please?

22 DR. WONG: I'm asking in your public  
23 health risk assessment have you included any  
24 synergistic effect in that assessment?

25 MR. LOWE: We didn't identify any

1 circumstances of synergistic effects for the acute  
2 pollutants with acute effects.

3 DR. WONG: Okay.

4 MR. LOWE: The answer is no, then.

5 DR. WONG: Okay. You mentioned about  
6 the most sensitive individuals, protection of the  
7 most sensitive individual. On what basis are you  
8 making that statement that it is protective for  
9 the most sensitive individual?

10 MR. LOWE: That is consistent with the  
11 development process for developing reference  
12 exposure levels.

13 DR. WONG: Okay. So it is from the  
14 guideline. And are you aware that in the  
15 guideline there are many statements that says that  
16 it may not be that protective?

17 MR. LOWE: There are some statements  
18 like that, yes.

19 DR. WONG: Okay. Now you mentioned  
20 about the 70-year exposure levels for cancer risk  
21 assessment and, you know, possibly for others,  
22 too.

23 Is that assessment for the chronic or  
24 the cancer risk assessments, are they at a  
25 constant level, assuming across the 70 years it is

1 at a constant level?

2 MR. LOWE: I'm not sure I understand  
3 your question.

4 DR. WONG: That means you kind of  
5 assumed that there is a level of exposure that is  
6 constant throughout the 70 years.

7 MR. LOWE: That is correct, it's  
8 averaged over 70 years.

9 DR. WONG: It's average over 70 years.  
10 And so do you agree that if there is any  
11 accumulation of the pollutants, then that dosage  
12 will increase with time?

13 If there are accumulation of dose, you  
14 know, whatever comes out will go down, so the  
15 pollutants that are emitted will be deposited on  
16 soils specifically, so maybe the first year you  
17 have one gram, you know, I'm just giving you an  
18 example that is one gram; so the second year  
19 another gram will be deposited in the soil. And  
20 then the third year there will be another gram.  
21 So throughout the years that dosage is going to  
22 increase. Is that accounted for in your  
23 assessment?

24 MR. LOWE: Yes.

25 HEARING OFFICER FAY: Dr. Wong, since

1 your group is over time I'm going to have to limit  
2 you to five more minutes. I'm going to hold you  
3 to that. Choose your best questions.

4 DR. WONG: Okay. On page 42, 44 and  
5 page 33, these are the final tables that you have  
6 for the criteria pollutants.

7 The guideline mentions that these  
8 California air quality standards are used as the  
9 REL, acute RELs. And so if you add up those  
10 numbers there, for both the chronic risk  
11 assessment as well as for the acute risk  
12 assessment, I have already had those numbers added  
13 up. And they go about the cutoff one, so I do not  
14 understand why you say the risk assessment is  
15 within the cutoff of 1.

16 HEARING OFFICER FAY: Is that a  
17 question?

18 DR. WONG: Do you agree with it?

19 MR. LOWE: I'm sorry, could you repeat  
20 that question, please?

21 INTERVENOR: -- five minutes.

22 DR. WONG: Well, yeah, it's not me who's  
23 taking the time, you know.

24 Page 44, and page 42, are you on that  
25 page?

1 MR. LOWE: Yes.

2 DR. WONG: Okay. On the margin of it  
3 you have the percent of standard, so it is your  
4 exposure level divided by the standard, am I  
5 correct on that? And in the guideline it says the  
6 standards can be taken as the acute REL. And so  
7 if you add those numbers together do you get a  
8 number that's bigger than 1?

9 MR. RUBENSTEIN: Let me start by  
10 pointing out first of all that those percentages  
11 reflect the combination of the project's impacts  
12 and the impacts from existing background  
13 concentrations.

14 DR. WONG: Okay, but even if you use the  
15 one that doesn't include the background, just use  
16 the incremental one, have you added that up as to  
17 whether it's bigger than 1 or not?

18 MR. LOWE: That analysis was done as  
19 part of the air quality section.

20 DR. WONG: Okay. So, I can add them up  
21 and see if they go, I think they are already  
22 exceeding the cutoff of 1 just by adding those  
23 criteria pollutants in there.

24 Can I have some more time just because  
25 the --

1 HEARING OFFICER FAY: No, I'm sorry.

2 I'm sorry, your over time as it is. I --

3 DR. WONG: Well, I didn't -- I'm not  
4 over time. But I'm just not allowed to ask my  
5 question. I still have a lot of questions.

6 HEARING OFFICER FAY: Well, you have two  
7 more minutes, why don't you ask the ones you want.

8 INTERVENOR: -- never answered the last.

9 DR. WONG: Well, maybe I'll pass to  
10 another person first, so that I can choose what my  
11 best answer is -- best question is.

12 HEARING OFFICER FAY: Are there any  
13 other questions?

14 MS. CORD: Why don't we go on to another  
15 intervenor while she --

16 DR. WONG: I have plenty of questions.  
17 But I don't know which one is best.

18 MS. CORD: It --

19 DR. WONG: -- the time that I have, I  
20 can't locate which one is the best question.

21 MS. CORD: She's going to be limited.  
22 Can she have a minute to choose which one she  
23 wants? Maybe we can go on to another intervenor  
24 and come back to her.

25 DR. WONG: I'll pass it to another

1 person first, and then I'll come and ask --

2 HEARING OFFICER FAY: Well, your group  
3 has two more -- well, now, one more minute --

4 MS. CORD: Is that a yes or a no?

5 HEARING OFFICER FAY: Within your group,  
6 yes, you can ask some questions. But we won't be  
7 coming back to the Santa Teresa Group to cross-  
8 examine the applicant's panel.

9 DR. WONG: Okay, I have this book on the  
10 health risk assessment program. Are you familiar  
11 with this, Mr. Lowe?

12 MR. LOWE: Yes.

13 DR. WONG: Okay. On page 47 of that  
14 document, do you have that document?

15 MR. LOWE: I don't --

16 DR. WONG: I can show you --

17 MR. LOWE: -- have a copy.

18 DR. WONG: Okay. It's the table that  
19 lists about the input values for the one you  
20 mention about you've taken into account all  
21 exposure loads, you know, from inhalation, from  
22 ingestion, from eye exposure, from dermal contact.

23 And it is a program that allows you to  
24 put in a lot of these concentration, deposit  
25 velocity, fraction of residents that own gardens,

1 fraction of homegrown products -- and stuff like  
2 that.

3 I can show you this.

4 MR. LOWE: Is there a question?

5 DR. WONG: Yeah, I'm just leading you to  
6 that so that you know what I'm describing. Okay.  
7 This is the program that I believe does not  
8 account for the exposure to individuals.

9 Do you agree with that? So, for  
10 example, if I am a owner, if I have my vegetable  
11 garden, you might have put down .2 for the  
12 proportion of the percentage of vegetables that I  
13 eat from my garden. But yet if I'm a good  
14 gardener I have a lot of production from my  
15 vegetable garden, I would have eaten much more  
16 than that.

17 And so your model would not reflect the  
18 effect on me as a gardener.

19 HEARING OFFICER FAY: And what is the  
20 question?

21 DR. WONG: My question is is that  
22 correct. It does not estimate appropriately the  
23 individual exposure.

24 MR. LOWE: We used the model in  
25 accordance with the standard default assumptions

1 that the regulatory agencies provide.

2 MR. RUBENSTEIN: All of the assumptions  
3 that we used are included in the model outputs  
4 that are in appendix 8.1D, the screen health risk  
5 assessment.

6 DR. WONG: Right.

7 MR. RUBENSTEIN: That's an appendix to  
8 supplement C.

9 DR. WONG: Right. So they are therefore  
10 kind of like --

11 HEARING OFFICER FAY: I'm sorry,  
12 that's --

13 DR. WONG: -- an average --

14 HEARING OFFICER FAY: Time is up.  
15 That's it.

16 DR. WONG: Okay, so your model didn't  
17 appropriately account for the individual --

18 HEARING OFFICER FAY: And now it's Mr.  
19 Ajlouny's turn to cross-examine.

20 MR. AJLOUNY: It's pronounced A-J-louny.  
21 No, it's pronounced Ajlouny.

22 HEARING OFFICER FAY: Ajlouny?

23 (Laughter.)

24 MR. AJLOUNY: It's getting late. Some  
25 of the people that know me call me A-J-louny, but

1           anyway, mine are pretty basic questions and I  
2           don't think I'll take too long unless I get onto  
3           something here, but --

4                       HEARING OFFICER FAY:   Okay, let's take a  
5           five-minute break --

6                       MR. AJLOUNY:   Yeah, they probably need  
7           some --

8                       HEARING OFFICER FAY:   -- so the  
9           witnesses can --

10                      MR. AJLOUNY:   -- before I, yeah, --

11                      HEARING OFFICER FAY:   -- can have a  
12           little --

13                      MR. AJLOUNY:   We're in sync, man, they  
14           got to get ready for me.

15                      (Brief recess.)

16                      HEARING OFFICER FAY:   Mr. Ajlouny, it is  
17           your turn to do your cross-examination of the  
18           applicant's panel.

19                      MR. AJLOUNY:   Okay, you're getting  
20           close. It's Ajlouny. Three syllables, Ajlouny.  
21           And you can call me Issa, I have no problem with  
22           that.

23                                       CROSS-EXAMINATION

24           BY MR. AJLOUNY:

25                      Q    I first want to go in the area of it's

1       apparent today that, at least to me and reading  
2       some testimony, that this Metcalf Energy site,  
3       proposed site is unique in as far as the mountains  
4       and, you know, I don't know, I'm not --  
5       professional word, but how the valley is. Is that  
6       true? I mean, isn't it somewhat unique than let's  
7       say a flat piece of land with no mountains near  
8       it?

9                   I mean there's big differences there,  
10       correct?

11                   MR. RUBENSTEIN: Actually, in my  
12       professional experience, no, it's not unique. In  
13       terms of the difficulty of interaction between a  
14       power plant source and the terrain, the two more  
15       severe projects that I've worked on in the recent  
16       past are a power plant that was on the side of a  
17       volcano in Hawaii; and the Crockett Cogeneration  
18       project located in the Carquinez Straits.

19                   I think both of those are actually more  
20       severe circumstances than this one. So, no, I  
21       don't think this is unique.

22                   MR. AJLOUNY: Okay, maybe I didn't -- as  
23       usual I didn't state it correctly. This is  
24       somewhat different, just like the two you  
25       mentioned maybe with this one, they're somewhat

1 similar but yet somewhat different than being on  
2 a, let's just say hypothetical, the six alternate  
3 sites that are flat and not near hills.

4 MR. RUBENSTEIN: From an air quality  
5 perspective there's no question evaluating the  
6 project at this site is more challenging than  
7 evaluating on a flat open plain, I agree.

8 MR. AJLOUNY: Okay. And what do you  
9 know today of how air credits go and your  
10 emissions and everything like that, if you picked  
11 this site up and you moved it to let's say  
12 hypothetically to one of those six alternate  
13 sites, nothing would really change as long as the  
14 configuration was pretty much the same and the  
15 building, is that true?

16 MR. RUBENSTEIN: Well, from an air  
17 quality perspective, --

18 MR. AJLOUNY: Yeah, just the air  
19 quality, I'm just talking air quality.

20 MR. RUBENSTEIN: -- from just air  
21 quality, no. I wouldn't expect anything to be any  
22 different, and I would expect the concentrations  
23 would still be below all the air quality standards  
24 at those other sites.

25 MR. AJLOUNY: And you just mentioned,

1 just before this, that it was a little bit more  
2 challenging because of the mountains and hills  
3 near this one. Do you feel like it would be less  
4 challenging from the other alternate sites, from  
5 what you know of those alternate sites?

6 MR. RUBENSTEIN: Well, I don't want to  
7 get specific to the alternatives in this project,  
8 because I'm not familiar with them, but if we're  
9 talking generically, yes, a flat site, a site that  
10 doesn't have terrain nearby would be less  
11 challenging.

12 MR. AJLOUNY: Okay, so from your expert  
13 experience and how you get involved with these  
14 power plants, if tomorrow hypothetically Calpine  
15 chose to take this plant up and put it in another  
16 place, would it take very long, or the analysis,  
17 or would it be a quick week or two or three to  
18 just say, well, we're going to put this plant  
19 there. We already have our credits. All those  
20 other things that have to happen for a power  
21 plant, is it a very complex thing to do?

22 MR. RUBENSTEIN: We're getting fast,  
23 Issa, but not that fast.

24 MR. AJLOUNY: But you already have  
25 analysis and everything, and it's kind of hard

1 where it is today, and if I'm saying if you put it  
2 on a flat piece of land, would you think, with  
3 your expertise and what you know of the credits  
4 that you're buying already, and everything like  
5 that, since it's a regional thing.

6 MR. RUBENSTEIN: In terms of the site  
7 plan, estimating the emissions from the project,  
8 all of those things, it would be exactly the same.

9 In terms of doing the dispersion  
10 modeling analysis, the health risk assessment, all  
11 of that we start from scratch.

12 MR. AJLOUNY: But would that take very  
13 long?

14 MR. RUBENSTEIN: Typically, at this  
15 point in time, for us, it's taking about two to  
16 three months to completely redo an application.

17 MR. AJLOUNY: Okay. Okay, getting off  
18 that point, with the emissions from this power  
19 plant, and knowing that it's against the hill, and  
20 knowing what basics I know about how wind blows  
21 across the hill, and we talked a lot about the  
22 plume and, you know, different heights and things,  
23 would it be reasonable for me to think living on  
24 the other side of that hill, knowing that that  
25 part where the power plant is, the hill's high in

1 one point, but it's lower where the power plant  
2 is, as the wind blows is it reasonable to believe  
3 those emissions would be taken by the wind, and as  
4 it goes across that hill and comes on, you know,  
5 on the other side of the hill, and how we have  
6 homes on the other side of the hill or on the  
7 hill, would it be reasonable to believe that a lot  
8 of that pollution would be dumped right on those  
9 homes?

10 MR. RUBENSTEIN: No. What you're  
11 thinking of is something light downwash --

12 MR. AJLOUNY: Downwash.

13 MR. RUBENSTEIN: Right. And, you know,  
14 when we looked at the aspects of that hill, it is  
15 not the kind of shape and height relative to the  
16 power plant plume where it's going to cause a  
17 downwash, in fact, on the northern side.

18 MR. AJLOUNY: But will some of that  
19 emissions come on the other side of that hill?

20 MR. RUBENSTEIN: When the wind is  
21 blowing in that direction, yes, some of the  
22 pollution --

23 MR. AJLOUNY: Okay.

24 MR. RUBENSTEIN: -- will go over there  
25 and it will mix in with the rest of the plume.

1                   MR. AJLOUNY: Okay. And then earlier  
2 there was testimony or discussion regarding the  
3 word acrolein.

4                   MR. RUBENSTEIN: Acrolein.

5                   MR. AJLOUNY: Acrolein, and  
6 formaldehyde, I think.

7                   MR. RUBENSTEIN: Um-hum.

8                   MR. AJLOUNY: Not so much formaldehyde,  
9 but -- and there was a school, a reference of a  
10 school of 1.4 miles?

11                   MR. RUBENSTEIN: Um-hum.

12                   MR. AJLOUNY: Okay. Do you realize it's  
13 only a half a mile away, elementary and a junior  
14 high school, along with senior housing citizens,  
15 low income housing right there on the other side  
16 of that hill?

17                   MR. RUBENSTEIN: I believe we looked at  
18 those impacts on both sides of the hill in terms  
19 of sensitive receptors.

20                   MR. AJLOUNY: Okay, so would it be  
21 reasonable to believe with the question was talked  
22 about these chemicals and the 1.4 miles away from  
23 that school, we have the same conditions on the  
24 other side of the hill that's only half a mile  
25 away, is that reasonable?

1 MR. RUBENSTEIN: Well, --

2 MR. AJLOUNY: I guess I'm trying to make  
3 the point of we talked 1.4 miles, but we didn't  
4 talk about the other side that's a half a mile.

5 MR. RUBENSTEIN: And the answer is is  
6 that we took a look in all directions. The worst  
7 case impacts for acrolein are on top of Tulare  
8 Hill. And, again, they're associated with those  
9 cross-valley winds.

10 And when we did take a look at the worst  
11 case impacts, either in the Santa Teresa  
12 neighborhood to the north, or down to the south,  
13 we found the risks much much lower than the worst  
14 case that we evaluated.

15 MR. AJLOUNY: Okay, and because I don't  
16 have the expertise as my buddy over here from  
17 CVRP, I guess the point I want to make is whatever  
18 he was going with that school at 1.4 miles, we  
19 have the same conditions going the other way at  
20 half a mile.

21 And that's the only point. Because I  
22 don't want to get into technical because I can't  
23 even go there. So we pretty much have the same  
24 condition if the wind's going the other way. I  
25 think it's a 60/40, the wind direction in that

1 area?

2 MR. RUBENSTEIN: That sounds about  
3 right.

4 MR. AJLOUNY: So, the schools that are  
5 half a mile away, the junior high and the  
6 elementary, still are closer than the 1.4 miles.

7 MR. RUBENSTEIN: I think they may be  
8 further than half a mile, but I don't --

9 MR. AJLOUNY: Okay.

10 MR. RUBENSTEIN: -- I don't want to --

11 MR. AJLOUNY: Maybe a little further,  
12 but --

13 MR. RUBENSTEIN: But in any event the  
14 impacts at the schools in the Santa Teresa --

15 MR. AJLOUNY: Okay.

16 MR. RUBENSTEIN: -- community are much  
17 lower than the worst case impacts we evaluated.

18 MR. AJLOUNY: Okay, just for the record  
19 I just wanted to bring out that those two schools  
20 are there.

21 In the technology known as SCONOx, I  
22 know it hasn't been talked about today, but just  
23 as far as SCONOx, and maybe what you know about  
24 it, do you know about SCONOx?

25 MR. RUBENSTEIN: Yes, I do.

1                   MR. AJLOUNY: Okay. Would there be any  
2 acrolein emissions using SCONOx?

3                   MR. RUBENSTEIN: Yes.

4                   MR. AJLOUNY: Very much? A lot less  
5 than what your technology you're using today? The  
6 SCR without the catalytic converter or whatever  
7 that thing is called?

8                   MR. RUBENSTEIN: The acrolein comes from  
9 burning natural gas in the turbine. And that's  
10 going to be the same whether it uses SCR or  
11 SCONOx.

12                   SCONOx does include an oxidizing  
13 catalyst, and so the acrolein emissions would be  
14 expected to be lower, but there's very little data  
15 to support that.

16                   MR. AJLOUNY: Well, okay.

17                   MR. RUBENSTEIN: Well, there are very  
18 few installations, and so there can't be --

19                   MR. AJLOUNY: I understand that. Are  
20 you familiar with the one down in L.A. that's --

21                   MR. RUBENSTEIN: Yes, I am.

22                   MR. AJLOUNY: -- 30 megawatts? Are you  
23 familiar with what kind of emissions, the PPMs and  
24 the emissions of acrolein, formaldehyde and  
25 ammonia?

1                   MR. RUBENSTEIN: Not specifically. I'm  
2 aware that they have measured some toxic air  
3 pollutant emissions at that plant, yes.

4                   MR. AJLOUNY: Okay. I've done some  
5 study on it, so maybe -- I'm just trying to get  
6 you to say it for the record.

7                   Isn't it true that the SCR that you're  
8 proposing as Calpine is going to have a much  
9 greater percent of acrolein than if SCONOx was  
10 used?

11                  MR. RUBENSTEIN: I'm not sure that  
12 that's the case. I know why people believe that,  
13 and that's because oxidizing catalysts are  
14 designed to oxidize compounds.

15                  But the concentrations of acrolein or  
16 formaldehyde or acetaldehyde are so low already  
17 that you can't assume that you're going to get a  
18 90 percent destruction efficiency.

19                  And so qualitatively I would agree with  
20 you, if you used SCONOx or an oxidizing catalyst  
21 the numbers would be lower, but I don't want to  
22 quantify that by saying a whole lot lower, or a  
23 little bit lower.

24                  MR. AJLOUNY: So you're saying if you  
25 put a catalyst on here it would be much lower or

1 you don't know how much lower?

2 MR. RUBENSTEIN: It would be lower, but  
3 I don't know how much lower. If it helps to  
4 clarify, in other projects where we have proposed  
5 the use of oxidizing catalysts for different  
6 reasons, we have assumed exactly the same acrolein  
7 emission rate as the default factor, and it  
8 doesn't make any difference whether there's a  
9 catalyst on. We make the same assumption.

10 MR. AJLOUNY: Are you familiar where  
11 that catalyst is being used today in California?

12 MR. RUBENSTEIN: What, oxidizing  
13 catalyst?

14 MR. AJLOUNY: Yes, oxidizing catalyst.

15 MR. RUBENSTEIN: There is, in terms of  
16 plants that are on line, the Crockett Cogeneration  
17 project I've seen -- yeah, the Crockett  
18 Cogeneration project is using one. And they're  
19 proposed for many but not all projects that are  
20 coming through the Energy Commission now.

21 MR. AJLOUNY: Is there any reason why  
22 it's not being used at this one, especially with  
23 all the controversy and concentration of children  
24 and people living in the area?

25 MR. RUBENSTEIN: Yes. There's two

1 reasons. First of all, there are enough advances  
2 in the combustion technology for these turbines  
3 that it's my professional opinion that the carbon  
4 monoxide levels coming out of this plant are going  
5 to be comparable to or lower than the permit  
6 limits for other plants using oxidation catalysts  
7 even when we don't use one. And so that's the  
8 first reason.

9 The second reason is that it is my  
10 opinion that oxidizing catalyst will increase to a  
11 certain extent the particulate emissions from a  
12 plant by enhancing the oxidation of sulfur dioxide  
13 to particular sulfex. And personally I am much  
14 more concerned about increases in the PM10  
15 emissions from these plants than I am about the  
16 advantages of lower CO emissions.

17 And so that's why it's been my  
18 recommendation consistently for this project that  
19 we not use an oxidizing catalyst.

20 MR. AJLOUNY: And I imagine the  
21 oxidation catalyst costs some large amount of  
22 money?

23 MR. RUBENSTEIN: Yeah, but that wasn't  
24 the reason I gave you.

25 MR. AJLOUNY: I understand that. But I

1 just wanted to know if it cost a large amount of  
2 money, a few million, whatever.

3 MR. RUBENSTEIN: It costs, I don't know,  
4 somewhere between \$1 and \$2 million per turbine, I  
5 think, yes.

6 MR. AJLOUNY: Okay. And you just  
7 testified that some plants that are being proposed  
8 right now or are being built are having the  
9 oxidation catalyts and Crockett uses it, also?

10 MR. RUBENSTEIN: Yes, and some are not.

11 MR. AJLOUNY: And you were part of that,  
12 you were hired through Calpine for part of those  
13 AFCs?

14 MR. RUBENSTEIN: I am working on  
15 projects in California that use oxidation  
16 catalyts, or are proposing to. And I'm working  
17 on projects that are not.

18 My recommendation depends very much on  
19 the individual circumstances of the project.

20 MR. AJLOUNY: Okay. I guess what I'm  
21 getting at is your recommendation is not to use  
22 it, but yet there's many power plants being used  
23 today that you're involved with?

24 MR. RUBENSTEIN: That's correct.

25 MR. AJLOUNY: Just a minute. I'm having

1 a hard time understanding --

2 MR. RUBENSTEIN: Why I recommended  
3 sometimes and not others?

4 MR. AJLOUNY: Yes, help me with that.

5 MR. RUBENSTEIN: There are two different  
6 types of cases where I recommended the use of an  
7 oxidation catalyst. The first type of case is  
8 that there are a couple of air pollution control  
9 districts in California that require emission  
10 offsets for carbon monoxide

11 To my mind that is a very outdated  
12 concept. It's one that lost its utility over 20  
13 years ago, but nonetheless that's the rules in  
14 some air districts.

15 And if you do an economic analysis of  
16 the benefits of getting lower carbon monoxide  
17 emissions as contrasted with the cost of  
18 purchasing offsets, you come to the conclusion  
19 that it's cheaper to use an oxidizing catalyst.

20 And so that's one group of projects is  
21 in that category.

22 For the second group of projects, these  
23 are projects that are of a relatively new design  
24 where applications are first being filed with the  
25 Energy Commission where the projects use duct

1 burners. Do you remember what those are? Those  
2 are to add supplemental heat to the waste heat  
3 boilers to boost the output of the plant.

4 Those plants use duct burners that are  
5 much much larger than anything we've seen in  
6 California before. Those duct burners are subject  
7 to the same kind of advanced combustion controls  
8 as the turbines are. They're very good, but  
9 they're not as good.

10 And as a result on those projects I'm  
11 recommending oxidation catalysts to control the  
12 emissions from the duct burners, not from the  
13 turbine, itself.

14 And so those are the two types of cases  
15 where I've recommended the use of oxidation  
16 catalysts. And in the case of this particular  
17 project I believe that overall we get a better  
18 environmental effect if we don't use an oxidation  
19 catalyst.

20 And just to follow up, in those projects  
21 where I am recommending oxidation catalysts, we're  
22 licensing those projects with particulate emission  
23 rates that are 1.5 to 2 pounds per hour higher  
24 than we're proposing here.

25 So there's a tradeoff, and that's why in

1 my opinion you have to make that tradeoff at each  
2 site on a case-by-case basis.

3 MR. AJLOUNY: Okay. The PM10 is pretty  
4 high in this area, correct? It's over the limit  
5 of the state level?

6 MR. RUBENSTEIN: Well, you know it's  
7 hard to look at it that way because we're over the  
8 state PM10 standard virtually everywhere in  
9 California. In the San Francisco Bay Area the  
10 PM10 levels are generally pretty good, but the  
11 worst levels are here in San Jose.

12 MR. AJLOUNY: Okay. Well, do you think  
13 that it's any worse in South San Jose, or, you  
14 know, this Coyote Valley area, in your knowledge  
15 of how air travels and how it all works, would you  
16 say that it's even a little bit more worse being  
17 in Coyote Valley?

18 MR. RUBENSTEIN: You know, I'm not sure  
19 that you could measure the difference.  
20 Qualitatively I would expect PM10 levels to get  
21 worse the further south you go, and then gradually  
22 as you get to Gilroy starting to get better again.  
23 But I'm not sure that if you put out monitors you  
24 could actually show that.

25 MR. AJLOUNY: Yeah, but I'm glad to see

1       that the research I have done sounds like we  
2       pretty much agree on that.

3               So, if we would put this power plant a  
4       little bit more north it might help the overall  
5       PM10 to kind of equal instead of -- here's where  
6       I'm going with this, the way I understand credits,  
7       and I'm not trying to give testimony but the way I  
8       understand credits, it's been said a couple times,  
9       is we have a bad PM10 in the area. Coyote Valley  
10      is probably the worst, just the way it all works  
11      in the valley.

12              And we're pulling credits from the  
13      north, but credits are not to correct a local  
14      area, it's to correct a regional area. But that  
15      doesn't help me and my family.

16              So I'm having a hard time with that.  
17      So, help me feel comfortable if I have the worst  
18      PM10 in this area, and I'm going to have a steady  
19      source of PM10, but we're going to make northern  
20      San Jose and I think you said Mountain View  
21      cleaner, even though those credits are gone  
22      anyways, they're not in the air today.

23              Help me feel -- you know, I can go back  
24      home and tell my family not to worry.

25              MR. RUBENSTEIN: The worst PM10 levels

1 that we have in the San Jose area, I'm going to  
2 use the I word and hopefully I don't pick a fight  
3 with anybody, are associated with severe  
4 wintertime inversions.

5 And those inversions trap pollutants  
6 from ground level sources, principally the cars we  
7 drive, fireplaces, restaurants, home cooking,  
8 those kinds of sources. That's why we have the  
9 don't light tonight days, spare the air days.  
10 That for PM10 are really focused on those types of  
11 emitting sources.

12 Those are the sources that contribute to  
13 the high PM10 levels we have in the wintertime in  
14 San Jose. Doesn't matter where you put the  
15 Metcalf plant, that won't have any effect on that  
16 at all.

17 For other parts of the year when we  
18 don't have those severe inversions, our PM10  
19 levels are principally associated with secondary  
20 pollutants, more aerosols. These are nitrates,  
21 sulfides, sulfates that are formed in the  
22 atmosphere in photochemical reactions.

23 Those reactions take time to occur. And  
24 actually if you were to have a plant 15 miles or  
25 20 miles north of here, then that plant is going

1 to have more of an impact on PM10 levels down here  
2 because of those aerosols than if you have a plant  
3 right here. Because of the time it takes for  
4 those reactions to occur.

5 MR. AJLOUNY: So keeping that in mind,  
6 knowing that Gilroy's 20 miles away and knowing  
7 that maybe some testimony might be true about the  
8 inversion layer, Gilroy's going to be pretty much  
9 in trouble if Metcalf is built here?

10 MR. RUBENSTEIN: Well, when I say that  
11 the levels are going to be worse no matter where  
12 you put a plant like this, you're not going to be  
13 able to measure the concentrations. They are that  
14 small.

15 And so qualitatively, yes, Gilroy will  
16 be more impacted with the plant at this site, if  
17 you were to move the Metcalf project 20 miles  
18 north, then south San Jose would be more affected.  
19 But no matter where you put it, the changes are  
20 going to be so small that you can never measure  
21 it, and it will always be safe.

22 MR. AJLOUNY: Yeah, I'm still having a  
23 tough time with the fact that we're over the  
24 limit, and just because it's small it's not  
25 significant. And I'm having a hard time with that

1 theory.

2 MR. RUBENSTEIN: There's a difference  
3 between whether it's significant or not, which is  
4 kind of a legal term; and whether it's safe or  
5 not. I'm trying to talk about whether the plant  
6 is going to be safe.

7 There is a dispute between me and the  
8 Commission Staff about whether the impact is  
9 significant, that's why they asked us to provide  
10 additional mitigation for PM10 and we agreed to do  
11 that.

12 MR. AJLOUNY: Again, that does not help  
13 me and my family in this local area.

14 MR. RUBENSTEIN: It does not help local  
15 impact. It's just attempting to address the  
16 regional impact.

17 MR. AJLOUNY: Okay, I think I drove that  
18 point home.

19 HEARING OFFICER FAY: Issa, you said 15  
20 minutes, and it's over that now by several  
21 minutes.

22 MR. AJLOUNY: Really? I amaze myself  
23 sometimes.

24 HEARING OFFICER FAY: Yeah, --

25 MR. AJLOUNY: Okay, I got three more

1 questions, quick ones, too, hopefully. Be yes and  
2 no --

3 HEARING OFFICER FAY: I think I'm going  
4 to have to limit you to one, because you are about  
5 three minutes over --

6 MR. AJLOUNY: Well, you didn't give me a  
7 two-minute warning or nothing.

8 (Laughter.)

9 MR. AJLOUNY: Come on, buddy, I'll do it  
10 real quick.

11 HEARING OFFICER FAY: Pick a good one.

12 MR. AJLOUNY: Give me two minutes.

13 HEARING OFFICER FAY: You got some  
14 confreres that want to ask a few questions, too.

15 MR. AJLOUNY: You know what, for future,  
16 can you please give me a warning because I don't  
17 think that's fair. I didn't know, it went by so  
18 fast, --

19 HEARING OFFICER FAY: I will.

20 MR. AJLOUNY: -- and I have a number of  
21 questions. And it's like now I'm getting  
22 surprised that I can't get some other points.  
23 That bothers me.

24 INTERVENOR: We've been here for seven  
25 and a half hours, --

1 MR. AJLOUNY: Give me three minutes,  
2 please.

3 HEARING OFFICER FAY: Let's just --

4 MR. AJLOUNY: Three minutes?

5 HEARING OFFICER FAY: Go ahead and ask.

6 MR. AJLOUNY: Okay. Point about SCONox,  
7 wouldn't that give zero emissions of ammonia if  
8 SCONox was used versus SCR?

9 MR. RUBENSTEIN: Yes.

10 MR. AJLOUNY: Wouldn't it be zero  
11 formaldehyde if SCONox was used versus SCR?

12 MR. RUBENSTEIN: No.

13 MR. AJLOUNY: Okay. Isn't it true you  
14 mentioned earlier the cleanest technology  
15 available, and you used those words, I wrote them  
16 down as you said them earlier today, are you  
17 familiar with the EPA's statement on SCONox and  
18 how they have blessed it and tested it?

19 MR. RUBENSTEIN: They have not tested  
20 it. And they have not blessed it, but I am  
21 familiar with their statement.

22 MR. AJLOUNY: Region one and region nine  
23 has not put out a letter stating that SCONox is  
24 considered one of the best available control  
25 technologies and it's acceptable because of the

1 testing and -- these are my words, but --

2 MR. RUBENSTEIN: Yes, you're actually  
3 one of the few people who is characterizing those  
4 letters correctly. That is exactly what they say.  
5 It is one of the best control technologies  
6 available and it is acceptable. That's right.

7 MR. AJLOUNY: Okay, and it's been  
8 tested, true, right? EPA wouldn't approve it if  
9 it wasn't tested?

10 MR. RUBENSTEIN: Well, the EPA didn't  
11 test it, but it has been tested, yes.

12 MR. AJLOUNY: But they blessed the  
13 testing by the company in Tennessee or what,  
14 Alston, the company --

15 MR. RUBENSTEIN: The testing was done by  
16 the company that owns the technology.

17 MR. AJLOUNY: Okay, and EPA blessed it?

18 MR. RUBENSTEIN: EPA said that they have  
19 looked at the results and that the technology  
20 meets their definition of BACT.

21 MR. AJLOUNY: Okay.

22 HEARING OFFICER FAY: Issa, --

23 MR. AJLOUNY: Two more -- two more --

24 HEARING OFFICER FAY: No, you've asked  
25 three questions plus two followups. I'm sorry.

1 We have to move --

2 MR. AJLOUNY: That's cold --

3 HEARING OFFICER FAY: -- on to the next  
4 party. Mr. Wade.

5 MR. WADE: Okay, thank you. A lot of  
6 good questions have been asked so I've only got a  
7 few that I'd like to follow up with.

8 CROSS-EXAMINATION

9 BY MR. WADE:

10 Q For Mr. Rubenstein, there's been a lot  
11 of conversation about the notion of conservatism.  
12 I'd like to just explore that a little bit.

13 You hesitantly used the I word earlier,  
14 saying that the worst PM10 would occur in the  
15 wintertime under the situations of inversions.

16 I think we've also established, which I  
17 won't belabor, that the ISC model doesn't deal  
18 with the geographical containment of pollutants.

19 What I'm curious about is your statement  
20 that somehow it's conservative to allow the  
21 pollutants to move out of the valley in spite of  
22 the fact that the worst pollution occurs under  
23 conditions of inversions, which is a form of  
24 containment.

25 So, could you please reconcile the

1       notion that your modeling is conservative in spite  
2       of the fact that the ISC model allows the  
3       pollution to move out of the valley.

4               MR. RUBENSTEIN: I did not indicate that  
5       the worst case impacts from this project are  
6       associated with severe inversions. The worst case  
7       impacts for this project are associated with  
8       nighttime drainage conditions, cross-valley wind  
9       flows, and downwash conditions which result in  
10      plume impaction on the hillside.

11              That's got nothing to do with  
12      inversions. The comment I made about inversions  
13      has to do with the effect that those inversions  
14      have on emissions from all other sources in the  
15      region. And most recently we were talking about  
16      PM10 during the wintertime.

17              And so there is no inconsistency there.  
18      And I still believe that our analysis is extremely  
19      conservative, with the worst case impacts, as I  
20      said, being conservatively represented by these  
21      downwash conditions.

22              MR. WADE: Okay, that doesn't quite do  
23      it for me. See if I can characterize what it is  
24      that I'm not satisfied with.

25              I think I heard you say that the

1 pollution caused by inversions is due to a lot of  
2 sources separate from MEC, and that inversions  
3 don't cause maximum pollution in the Coyote  
4 Valley. Is that part of what you said?

5 MR. RUBENSTEIN: No. I said the severe  
6 inversions aren't responsible for the maximum  
7 pollution impacts from a source like MEC, which  
8 has a tall stack.

9 MR. WADE: I see. So, this gets back  
10 then to your earlier testimony that if there are  
11 low inversions MEC will somehow break through, I  
12 think the term that you used, burst through the  
13 inversion?

14 MR. RUBENSTEIN: The lower the inversion  
15 the greater the likelihood that the plume from the  
16 Metcalf Energy Center will break through.

17 MR. WADE: Okay. Have you done any  
18 analysis of the inversion height at which point  
19 that will occur, this breaking through? Is there  
20 some kind of analysis that you've done to verify  
21 that?

22 I mean intuitively I understand what  
23 you're saying. I'm just wondering if you've done  
24 some work to show that.

25 MR. RUBENSTEIN: No, I haven't. But if

1       you were to look at the Commission Staff's  
2       supplemental testimony, and you might want to ask  
3       these questions of Dr. Glen Long of the Bay Area  
4       District, Dr. Long took a look at the impacts  
5       using a range of mixing heights, and that range  
6       went from, I believe, as low as -- bear with me  
7       here, Jeff -- from as low as 30 meters to as high  
8       as 1000 meters.

9                     And --

10                    MR. WADE: Excuse me for interrupting.  
11       Is that the ISC SD3 model?

12                    MR. RUBENSTEIN: It is, but it's  
13       answering your question of how frequently does  
14       this occur. And he included a table, table 1 at  
15       the back of his testimony. And you can get some  
16       idea of this by taking a look at the changes in  
17       the annual average concentrations.

18                    The worst case hour doesn't change for  
19       all of his runs, because, as I said, the worst  
20       case hour is due to a meteorological condition  
21       where the inversion height doesn't matter. It's  
22       the downwash condition.

23                    But if you take a look, for example, at  
24       his either 24-hour PM10 or his annual PM10  
25       numbers, as an indicator, you can get some sense

1 of the frequency with which that break-through  
2 occurs.

3 For example, the annual average PM10 he  
4 got exactly the same results modeling inversion  
5 heights of 100 meters, 600 meters and 1000 meters.  
6 Indicating that you don't get that break-through  
7 until some level below a 100 meter inversion  
8 height.

9 MR. WADE: I don't understand how that  
10 conclusion can be drawn. Doesn't the ISC model  
11 actually treat the inversion as a fixed boundary?  
12 It's my understanding that ISC doesn't simulate a  
13 breaking through of the inversion level.

14 MR. RUBENSTEIN: Well, the --

15 MR. WADE: So the lack of sensitivity to  
16 various mixing heights doesn't seem to imply that  
17 some broach of the inversion layer has taken  
18 place. I'm just not following that.

19 MR. RUBENSTEIN: If you take a look at  
20 these results, and I really don't want to present  
21 Dr. Long's testimony on that. I think this line  
22 of questioning would better be put to him, because  
23 he's done the work.

24 But, for example, with a 100-meter  
25 inversion height he showed annual average PM10

1 concentrations of 1.1 mcg/cubic meter. He showed  
2 that also at 600 meters, and at 1000 meters.  
3 That's the insensitivity that you were referring  
4 to.

5           However, that concentration dropped to  
6 0.84 when he dropped the inversion height down to  
7 30 meters, or about 100 feet.

8           And the difference between the 1.1 and  
9 the .84 gives you some idea of the frequency with  
10 which the plume penetrated that inversion base.

11           Is that making sense?

12           MR. WADE: I'm sorry, maybe it's my  
13 ignorance about the model, itself.

14           MR. RUBENSTEIN: Maybe it's the lateness  
15 of the hour for both of us.

16           MR. WADE: Why does it show us something  
17 about the frequency of penetration? Again,  
18 doesn't ISC not allow penetration of the inversion  
19 layer?

20           MR. RUBENSTEIN: No, my understanding is  
21 that it does, and that the reason why the District  
22 specified 600 meters as a default is that if the  
23 model calculates that the plume will penetrate the  
24 inversion base, it presumes that those pollutants  
25 do not mix back down to the ground --

1 MR. WADE: Oh, I see.

2 MR. RUBENSTEIN: -- for the entire hour.

3 MR. WADE: Okay, thank you, I think that  
4 clears it up.

5 MR. RUBENSTEIN: Okay, so it would  
6 calculate zero, and that's why the average would  
7 drop down.

8 MR. WADE: Okay, so if I understand you  
9 correctly you're saying that Dr. Long's testimony  
10 shows that by dropping the inversion layer down  
11 below 100 feet or so, the calculated plume height  
12 is beyond the inversion layer?

13 MR. RUBENSTEIN: That's right.

14 MR. WADE: Okay, I understand that.

15 MR. RUBENSTEIN: Okay.

16 MR. WADE: I misspoke, meters. Okay,  
17 the other subject I wanted to understand a little  
18 better is the, based on some testimony that you  
19 gave earlier about our inability to detect MEC.  
20 In fact, this has gotten a lot of attention  
21 various places.

22 I believe you said that the existing  
23 monitors will not detect MEC, and I believe you  
24 said if there were a monitor located nearby,  
25 anywhere on the MEC property, you would not be

1 able to measure the effect of MEC.

2 If there were no other background  
3 sources, in other words it was a pure clean  
4 environment, would you then be able to detect MEC  
5 at both of those locations?

6 MR. RUBENSTEIN: If it was an absolutely  
7 pure environment and I got to select a monitoring  
8 location on Tulare Hill, based on our modeling  
9 analysis, and I get to use the best quality  
10 instruments I could find, then, yeah, there may be  
11 some circumstances where I might be able to detect  
12 the emissions there.

13 MR. WADE: Okay, so is it correct to say  
14 that the problem with detecting MEC with  
15 monitoring stations at any ideal spot, Tulare Hill  
16 or downtown San Jose, whatever you like, is due in  
17 large part to the fact that there's a lot of other  
18 sources of pollution which creates a background  
19 noise from which you can't detect the signal that  
20 is MEC?

21 MR. RUBENSTEIN: That conclusion is only  
22 true with respect to Tulare Hill. If you had an  
23 absolutely pure environment and we were to stick a  
24 monitor at the Encinal School, if we were to stick  
25 one at the CVRP location, if we were to stick a

1 monitor anywhere you like in the Santa Teresa  
2 community, then even if you had absolutely pure  
3 air, I am convinced you would not be able to  
4 detect the contribution from MEC.

5 The only place where there's this  
6 interference with the background that we were  
7 talking about is on Tulare Hill, which is where we  
8 have the highest impacts for short periods of  
9 time.

10 MR. WADE: Yet your modeling shows that  
11 there's a predictable impact at these other sites.  
12 Again, we're talking about maybe theory here, but  
13 I'm still -- I'm not understanding how you're  
14 making the transition to these, you know, not  
15 being able to detect anything.

16 Zero to me means hard zero. There's --  
17 and yet your models are predicting the finite  
18 amount of impact at these distant sources.

19 MR. RUBENSTEIN: They are, that's  
20 where -- and we may disagree, but that's where  
21 we're talking about what I believe to be the  
22 conservatism in the models.

23 I believe, in fact, you could not detect  
24 any impacts from MEC in the Santa Teresa community  
25 or in the Coyote Valley even if you had pure air.

1 The only place where you might be able to detect  
2 the impacts of this plant would be on Tulare Hill.

3 MR. WADE: Okay. So, perhaps you're  
4 making a judgment about what is a threshold of not  
5 detecting. Let me see if I can ask that question  
6 as a question.

7 It sounds to me like you're making a  
8 judgment that because of the model conservatism  
9 the values that you predict to occur in the  
10 neighborhoods and various distances, other than  
11 Tulare Hill, can be neglected.

12 MR. RUBENSTEIN: I'm sorry, I lost you.

13 MR. WADE: Okay. I think I'll just say  
14 it again and --

15 MR. RUBENSTEIN: Okay.

16 MR. WADE: -- because I understand that  
17 you are judging that the impacts that you predict  
18 at other sources than Tulare Hill are negligible  
19 in the context of the conservatism of your model.

20 MR. RUBENSTEIN: Judging that the  
21 sources -- let me try and explain it one more  
22 time, and hopefully I'll answer your question.

23 What I'm saying is that when you take a  
24 look at this type of a source, and the types of  
25 meteorological conditions that would carry the

1 plume from this source north over Tulare Hill,  
2 into the Santa Teresa community, or south into the  
3 Coyote Valley, under those types of weather  
4 conditions if you had absolutely pure background  
5 air and you put monitors down on the ground, I  
6 don't believe you would be able to measure the  
7 impact of this plant anywhere.

8           And if I have that opinion with  
9 completely pure air, you can understand why, given  
10 the soup that we all breathe every day, you  
11 certainly wouldn't be able to measure it, in my  
12 opinion.

13           And the only exception to that, I said,  
14 is if we had this perfect world and it was  
15 absolutely pure air, and I could put a monitor  
16 someplace on Tulare Hill, then I think, yes, under  
17 some circumstances you might be able to detect the  
18 impacts of the plant on there.

19           MR. WADE: And maybe I'm just going -- I  
20 don't want to just keep going around in circles.  
21 I heard what you said --

22           MR. RUBENSTEIN: Okay.

23           MR. WADE: -- and it sounds like you're  
24 somehow making a decision that the model  
25 predictions at these other places, besides Tulare

1 Hill, are zero, when, in fact, they're not. Your  
2 model shows that there's a finite --

3 MR. RUBENSTEIN: I'm sorry, now I  
4 understand what you're saying. No, I'm not  
5 assuming they're zero. I'm just assuming that --  
6 not assuming, but believe that they are so low as  
7 to be below the limits of detection of any  
8 instruments that I'm aware of.

9 MR. WADE: Okay, I do understand that.

10 MR. RUBENSTEIN: Okay.

11 MR. WADE: That there are limits and  
12 measurement capabilities.

13 MR. RUBENSTEIN: If I came across saying  
14 they were zero, I didn't mean to do that. That's  
15 certainly not the case.

16 MR. WADE: Thank you for clearing that  
17 up. Give me just one second to glance at my  
18 notes, and then I'll move on.

19 Have you run any other models for this  
20 site other than Screen3 and ISC SD3 and ISC Prime?

21 MR. RUBENSTEIN: Yes, in the updated  
22 health risk assessment that was attached to that  
23 November 17th letter, we also used a model called  
24 CTSscreen, looking at impacts on Tulare Hill.

25 But those are all of the models that we

1 have used.

2 MR. WADE: And --

3 MR. RUBENSTEIN: You did include Screen3  
4 in that, right?

5 MR. WADE: I did.

6 MR. RUBENSTEIN: Okay.

7 MR. WADE: And what I was really getting  
8 at is this question. Did you not run any other  
9 models which would model the meteorological and  
10 geological complexity -- geographical complexities  
11 in more detail?

12 MR. RUBENSTEIN: No. We believed the  
13 screening models we did were adequate. We didn't  
14 go any further.

15 MR. WADE: Okay. I think that's all the  
16 questions I have, thank you.

17 MR. RUBENSTEIN: Okay, thanks, Jeff.

18 HEARING OFFICER FAY: Thank you, Mr.  
19 Wade. Mr. Scholz, did you have some?

20 PRESIDING MEMBER LAURIE: Mr. Harris,  
21 are you sending these witnesses home tonight or  
22 are they going to be here tomorrow?

23 MR. HARRIS: They'll be here.

24 PRESIDING MEMBER LAURIE: Okay, we're  
25 going to wrap this up at 10:00 tonight whether

1 cross-examination is done tonight or not.

2 HEARING OFFICER FAY: Mr. Scholz.

3 MR. SCHOLZ: One question.

4 CROSS-EXAMINATION

5 BY MR. SCHOLZ:

6 Q This plant has been characterized  
7 throughout the state as essential, extremely  
8 essential. Can you explain to the community why  
9 you have a greater than the average number of  
10 startups and shutdowns if you're so essential to  
11 the integrity of the grid?

12 MR. RUBENSTEIN: I guess, Scott, first  
13 of all I don't think we have a greater than  
14 average number of startups and shutdowns. I  
15 included a table summarizing the frequency of  
16 startups and shutdowns. I believe it was in our  
17 rebuttal -- no, excuse me, it was in our direct  
18 testimony. Let me find that, just a second.

19 It's on page 9 of our testimony, table  
20 2. And this plant has, as a worst case, 416 hours  
21 per year of startups and shutdowns. Projects that  
22 have already been approved by this Commission that  
23 either have about the same or more include the  
24 Sutter Power Project at 700 hours; the Delta  
25 Energy Center at 416 hours; the Moss Landing Power

1 Plant Project at 400 hours; the Elk Hills Power  
2 Project at 424 hours.

3 And then there are another couple of  
4 projects that are a little bit lower, Pastoria at  
5 371 hours. So they're all about 400 hours plus or  
6 minus.

7 There are a couple of exceptions. The  
8 LaPaloma Project had projected 60 hours. From my  
9 perspective that's a less conservative and less  
10 health protective assumption.

11 If you really believe that the plant is  
12 going to be operating at that high a level for the  
13 next 30 years, then that's an appropriate  
14 assumption.

15 But a project that forecasts a greater  
16 number of hours has to provide more emissions  
17 offsets. You will project higher air quality  
18 impacts. It's overall a more conservative  
19 analysis.

20 The fact of the matter is I expect that  
21 this project, during the first couple of years  
22 that it's operating, is going to be a lot closer  
23 to 60 to 80 hours per year of shutdown than it is  
24 to 400. But we have to do an analysis that's  
25 conservative for the next 20 to 30 years.

1                   Frankly it wouldn't surprise me if the  
2                   developer from the LaPaloma Project had to come  
3                   back before the Energy Commission in four or five  
4                   years and ask for their permit conditions to be  
5                   changed.

6                   We're trying to avoid that by doing a  
7                   more conservative projection up front.    But, in  
8                   terms of your question, if it's so essential is it  
9                   going to have that many hours of startups and  
10                  shutdowns, absolutely not.

11                  MR. SCHOLZ:   Thank you.

12                  HEARING OFFICER FAY:   Thank you, Mr  
13                  Scholz.   Ms. Dent, does the City of San Jose have  
14                  any cross.

15                  MS. DENT:   Yes.

16                                    CROSS-EXAMINATION

17                  BY MS. DENT:

18                  Q    My first question is on the  
19                       meteorological and the air quality information and  
20                       data that you used.   And if I understand  
21                       correctly, Calpine did not go out and collect any  
22                       data on the Metcalf Energy Center site.   You used  
23                       meteorological data from the IBM site, which is  
24                       located three miles to the northeast, and that was  
25                       one year's worth of data, is that correct?

1 MR. RUBENSTEIN: That's correct.

2 MS. DENT: And on the ambient air  
3 quality data you used data from sites that were --  
4 the closest site was about eight miles away.

5 MR. RUBENSTEIN: I don't remember, I'll  
6 take your word for that. But it was the San Jose  
7 Fourth Street for most of the pollutants; Tully  
8 Road for some; and I think we also took a look at  
9 San Martin. And for one pollutant it was San  
10 Francisco.

11 MS. DENT: Now, are you aware that early  
12 on, in fact in the City's comments on the  
13 application, on the initial application, the City  
14 asked for air quality data to be collected on  
15 site?

16 MR. RUBENSTEIN: I'm not recalling that,  
17 but that can certainly be true.

18 MS. DENT: And now in terms of the other  
19 applications that you've worked on, you indicated  
20 you'd worked on 25 of them. Maybe some of those  
21 are current.

22 Have you, in those other applications,  
23 collected meteorological and air quality, ambient  
24 air quality data on site as part of the licensing  
25 process?

1                   MR. RUBENSTEIN:  If you give me a minute  
2                   to go through the list very quickly.

3                   MR. AJLOUNY:  I hope there's time --

4                   MR. RUBENSTEIN:  It won't take that  
5                   long, Issa.

6                   For all of those projects that I've  
7                   worked on there were no cases where meteorological  
8                   data were collected on site.  In all of those  
9                   cases meteorological data were collected from the  
10                  nearest reliable data site.

11                  With respect to ambient air quality  
12                  data, my memory is pretty good back about 15  
13                  years; it gets a little fuzzy beyond that.  But  
14                  the one that I can remember, the only one that I  
15                  can remember was the Crockett Cogeneration project  
16                  which because the Bay Area Air District in that  
17                  case concluded there were no representative  
18                  meteorological data available, we had to use an  
19                  extremely conservative screening analysis.  That,  
20                  in turn, triggered a preconstruction monitoring  
21                  requirement and six months of ambient PM10 data  
22                  were collected on a hillside near Crockett.

23                  MS. DENT:  And now I understand in this  
24                  particular case that the Bay Area Air Quality  
25                  Management District did not require

1       preconstruction monitoring, is that correct?

2               MR. RUBENSTEIN: That's correct.

3       Because in this case we were below that trigger  
4       level. In the case of the Crockett project we  
5       were above that trigger level.

6               MS. DENT: But there was no prohibition  
7       on Calpine collecting such data, was there?

8               MR. RUBENSTEIN: No.

9               MS. DENT: And again, the AFC has been  
10       on file for a couple of years?

11              MR. RUBENSTEIN: I guess April or June  
12       of '99, yes.

13              MS. DENT: And so no data collected over  
14       the past two years on site.

15              MR. RUBENSTEIN: That's correct.

16              MS. DENT: Now, we heard testimony  
17       earlier, I think, from you that you expected  
18       ambient concentrations of pollutants to be higher,  
19       although you couldn't calculate how much higher in  
20       Coyote Valley than they would be at more northerly  
21       locations due to the narrowing of the valley.

22              MR. RUBENSTEIN: No, actually I was more  
23       focusing on the continuing photochemical  
24       reactions. But qualitatively, yes, I would expect  
25       them to be a little bit higher.

1 MS. DENT: So, your ambient background  
2 concentrations being from sources that are all --  
3 except for San Martin, most of the sources are  
4 northerly.

5 Would you expect the background  
6 concentrations then in Coyote Valley to be higher  
7 than the sources that you used?

8 MR. RUBENSTEIN: As I said when I  
9 answered the question earlier, qualitative I would  
10 expect them to be a little bit higher. But if I  
11 were to plant a monitor on the ground I don't  
12 think I could see the difference.

13 MS. DENT: I want to go to that for a  
14 minute, the detectable issue.

15 MR. RUBENSTEIN: Sure.

16 MS. DENT: Were you aware that the City  
17 has a standard for air quality in the Coyote  
18 Valley master development plan for no detectable  
19 air emissions at the property line? Did you look  
20 at that in terms of LORS compliance?

21 MR. RUBENSTEIN: Yes.

22 MS. DENT: And you looked at that from  
23 the standpoint of criteria pollutants, I assume?

24 MR. RUBENSTEIN: Yes.

25 MS. DENT: And did you, Mr. Lowe, look

1 at that from the standpoint of noncriteria  
2 pollutants? Did you look at that LORS issue?

3 MR. RUBENSTEIN: I think we looked at it  
4 in terms of noncriteria pollutants, as well.

5 MS. DENT: So, I didn't see that  
6 addressed in your testimony. I didn't see the  
7 City standard addressed at all in terms of whether  
8 or not there would be air emissions detectable at  
9 the property line.

10 And we've talked a little bit about  
11 whether or not people in the Santa Teresa  
12 neighborhood would notice. And we talked about  
13 whether or not people at Encinal School would  
14 notice.

15 But let's go right to the property line  
16 now. Let's talk about whether or not people on  
17 the trail, say, the Fisher Creek Trail right next  
18 to Metcalf Energy Center, right up against Tulare  
19 Hill, would have any perception of the air  
20 emissions from the project. Do you think they  
21 would have any perception of the air emissions  
22 from the project?

23 MR. RUBENSTEIN: No, none at all.

24 MS. DENT: Now we heard testimony in the  
25 biological resources section that at least the

1 plants perceive the air emissions from the project  
2 because they are fertilized by the nitrogen  
3 emissions from the project.

4 And, in fact, so that's a perception  
5 that the plants have of air quality impacts of the  
6 project. Am I correct about that?

7 MR. RUBENSTEIN: I'm not an expert in  
8 that field.

9 MS. DENT: Well, --

10 MR. RUBENSTEIN: I certainly can't speak  
11 to the perception of plants about air quality.

12 MS. DENT: Well, let's ask --

13 (Laughter.)

14 MS. DENT: -- this. Was your air  
15 quality information provided to the witnesses on  
16 biological resources?

17 MR. RUBENSTEIN: Yes.

18 MS. DENT: And so are you aware that  
19 your air quality information was used by the  
20 witnesses on biological resources to conclude that  
21 there would be fertilization of grasses and such  
22 that natural plant material for Checkerspot  
23 butterfly would be supplanted?

24 MR. RUBENSTEIN: From what I recall of  
25 that testimony I think a better characterization

1 would be that based on the extremely conservative  
2 modeling analyses that we assumed, which was that  
3 100 percent of the nitrogen emissions from the  
4 plant would be in a form that could be deposited  
5 as soon as the nitrogen left the stack, which is  
6 not physically possible, under those extremely  
7 conservative conditions, you could forecast some  
8 increase in nitrate deposition which could have  
9 the fertilization effect you're referring to.

10 MS. DENT: Well, now if you were a  
11 gardener then and had a garden on one of the  
12 residences near Metcalf Energy Center would that  
13 same theory hold true that you might notice the  
14 impact on your garden from those nitrogen  
15 emissions?

16 MR. RUBENSTEIN: I am not qualified to  
17 answer that.

18 MS. DENT: Well, the area of emissions  
19 that you -- from Metcalf Energy Center, the area  
20 of maximum exposure I think is the way that it's  
21 stated in the Bay Area Air Quality Management  
22 documents, was very localized, is that true?

23 MR. RUBENSTEIN: Are we talking about  
24 nitrogen deposition or are we talking about  
25 criteria pollutants now? Have we shifted?

1 MS. DENT: Well, I think -- let's look  
2 at the Bay Area Air Quality Management District  
3 document. I think that all of the pollutants, the  
4 maximum impact, if you want to put it that way,  
5 was considered to be fairly local.

6 MR. RUBENSTEIN: Are you referring to  
7 the final determination of compliance now?

8 MS. DENT: Yes.

9 MR. RUBENSTEIN: Okay, do you have a  
10 specific page you're looking at?

11 MS. DENT: Well, there's a map, that's  
12 page E5. That's the location of project maximum  
13 impacts.

14 MR. RUBENSTEIN: Yes, I see that now.

15 MS. DENT: And most all of those seem to  
16 me to be very close to the plant.

17 MR. RUBENSTEIN: As I said earlier, the  
18 maximum impacts from the project are associated  
19 either on Tulare Hill to the west, or on Coyote  
20 Ridge to the northeast, except for those impacts  
21 that are related to the diesel fire pump, and  
22 those are located right at the property line. And  
23 that's exactly what this map shows.

24 MS. DENT: And so then are you saying  
25 that the impacts that were identified on

1 biological resources on Tulare Hill would not  
2 apply to gardens located in the backyards of the  
3 residences just south of the plant?

4 MR. RUBENSTEIN: I think you're asking  
5 me again whether nitrogen deposition would have a  
6 noticeable effect on gardens in the valley floor,  
7 and I'm not qualified to answer that question.

8 MS. DENT: Okay, what about, we heard  
9 some testimony earlier about the eye irritation.  
10 And I guess that I would understand that to be  
11 somewhat debatable at this point, whether or not  
12 someone's eyes might be irritated.

13 And I think the question was asked about  
14 the CVRP property. But what about much closer to  
15 the plant? What about, again, just south of the  
16 plant at the property line? Again, would there be  
17 any detectable irritant?

18 MR. RUBENSTEIN: In our November 17,  
19 2000 letter to the Bay Area Air District that we  
20 talked about earlier today, there is a table,  
21 unfortunately there's no table number. The table  
22 is entitled calculation of noncriteria pollutant  
23 emissions and acute health hazard index, sensitive  
24 receptors.

25 And in that we specifically looked at

1 the acute inhalation hazard index which is the  
2 jargon for what you were talking about with  
3 acrolein, and we specifically looked at that at  
4 the nearest residence, which is the Passantino  
5 residence.

6 And the acute inhalation hazard index  
7 was 0.12, well below the value of 1.

8 MS. DENT: Again, that's subject to all  
9 of the questions that we had earlier about the  
10 test results.

11 MR. RUBENSTEIN: Well, actually if you  
12 were to simply take that number and multiply it by  
13 the factor of 4 that is currently the dispute  
14 between us and CVRP, the number would still be  
15 well below 1. So it would not make any  
16 difference.

17 MS. DENT: So there would be, according  
18 to your testing, then, no possibility of eye  
19 irritation in people at the property line?

20 MR. RUBENSTEIN: Well, I can testify  
21 that the hazard index would be less than 1.  
22 Mr. Lowe would have to answer the question about  
23 irritation.

24 MS. DENT: I understood that you were a  
25 panel, and so I'm not directing --

1 MR. RUBENSTEIN: Okay.

2 MS. DENT: -- my question to any one  
3 individual.

4 MR. LOWE: If you could repeat your  
5 question again.

6 MS. DENT: Well, my question is whether  
7 or not there would be any possibility of people  
8 detecting air emissions at the property line for  
9 the project in the form of eye irritation.

10 MR. LOWE: The answer would be no. At  
11 all of those locations with the discussion we're  
12 having about the factor of 4, the answer would be  
13 no, the hazard indices is well below 1.

14 MS. DENT: Well, now the hazard indices,  
15 as I understood them, were for cancer risks. I  
16 mean maybe I'm misunderstanding. Are you talking  
17 about this REL?

18 MR. LOWE: Yes, the hazard indices are  
19 in comparison of the concentration in air to the  
20 REL.

21 MS. DENT: Then I have one other area of  
22 question about detecting air emissions from the  
23 project at the property line. And that has to do  
24 with the PM10 emissions, with the particulate  
25 emissions.

1 MR. RUBENSTEIN: Yes.

2 MS. DENT: And, again, that would be  
3 outdoors in someone's backyard. Over time would  
4 you notice any buildup of particulate matter if  
5 you had patio table or a picnic table outside?  
6 Would you notice any buildup of that over time?

7 MR. RUBENSTEIN: Not due to this plant.  
8 I mean I see buildup of particulates on the patio  
9 furniture in my backyard all the time, but that's  
10 attributable to the overall burden that we have.

11 I would not expect anything from this  
12 plant to be detectable.

13 MS. DENT: So, --

14 MR. RUBENSTEIN: Without instruments.

15 MS. DENT: So the only area of potential  
16 detection then, I guess, as I understand it, is  
17 whatever it was came in in the biology testimony  
18 on Tulare Hill?

19 MR. RUBENSTEIN: I guess I'm not  
20 remembering that testimony. But there's certainly  
21 nothing in this area. I can't speak to that.

22 MS. DENT: All right. And the next area  
23 I want to ask about is the mitigation. The  
24 emission reduction credits and the interpollutant  
25 emission offsets.

1                   Again, looking at the figure --

2                   MR. RUBENSTEIN: Which figures are you  
3 referring to?

4                   MS. DENT: E-5, the map that shows where  
5 the maximum -- location of project maximum  
6 impacts.

7                   MR. RUBENSTEIN: Um-hum, I have that.

8                   MS. DENT: And I realize it's probably  
9 not the best drawing in the world, but it helps to  
10 illustrate, at least to me, that the location of  
11 the project maximum impacts are pretty local to  
12 the project area.

13                   And my question is again, were you aware  
14 of the City's request that Calpine, the project  
15 applicant, look at mitigating local project  
16 impacts with local mitigation as opposed to  
17 mitigation located 15 or 20 miles to the north?

18                   MR. RUBENSTEIN: I think I'm aware of  
19 that qualitatively. I don't remember the specific  
20 letter in which that request may have been made,  
21 though.

22                   MS. DENT: So, the emission reduction  
23 credits that you're going to get from other  
24 sources will not directly offset emissions from  
25 Metcalf Energy Center, will they?

1                   MR. RUBENSTEIN: They will directly  
2                   offset them. I think what your question was, will  
3                   they specifically mitigate these impacts at these  
4                   locations. And as I said earlier, no, they will  
5                   not. They're not intended to.

6                   MS. DENT: Now, and in fact you're not  
7                   using emission reduction credits to directly  
8                   offset the pollutants that are being produced by  
9                   Metcalf Energy Center 100 percent, are you?

10                  There's some trading. There's some  
11                  direct -- there's some emission reduction credits  
12                  that are related directly to the emissions from  
13                  Metcalf Energy Center and there's some  
14                  interpollutant trading?

15                  MR. RUBENSTEIN: That is correct.

16                  MS. DENT: Now, are you aware that EPA  
17                  and some other air quality districts discourage  
18                  interpollutant trading to achieve mitigation?

19                  MR. RUBENSTEIN: No, I'm not.

20                  MS. DENT: So you're not -- how about  
21                  the Sacramento Air District, do they have any  
22                  special requirements for interpollutant trading  
23                  that you're aware of?

24                  MR. RUBENSTEIN: All air districts have  
25                  requirements for interpollutant trading that the

1 trades have to be approved by the agencies, and  
2 the trades have to be approved by EPA.

3 And I have personally been involved in  
4 projects in the Sacramento Air District that have  
5 used interpollutant trades that have been accepted  
6 by both agencies. It's fairly common, in my  
7 experience.

8 MS. DENT: Were the interpollutant  
9 trades in this particular case approved by EPA?

10 MR. RUBENSTEIN: Yes.

11 MS. DENT: And is there some evidence of  
12 that in the record?

13 MR. RUBENSTEIN: No. It's very hard to  
14 get letters out of EPA.

15 MS. DENT: So there's no evidence that  
16 it's been -- no written evidence that it's been  
17 approved by EPA?

18 MR. RUBENSTEIN: The only evidence that  
19 we have is that they received the final  
20 determination of compliance which addressed their  
21 comments on the interpollutant trades, and they  
22 have not objected to that since.

23 MS. DENT: And was any modeling  
24 performed to evaluate the impact of the offsets  
25 and the interpollutant trading on the local

1 impacts from Metcalf Energy Center?

2 MR. RUBENSTEIN: No. As I said earlier,  
3 the offsets were not intended to mitigate those  
4 localized impacts specifically, and so no one else  
5 has done that.

6 MS. DENT: Just give me a moment to look  
7 at my notes. I think I may be finished.

8 HEARING OFFICER FAY: We have about five  
9 more minutes left.

10 SPEAKER: -- is there time for an  
11 audience question or two? At the end of the City?

12 HEARING OFFICER FAY: We'll allow a  
13 little time at the end for public comment. But,  
14 you can't ask questions of the witnesses.

15 SPEAKER: I can't question?

16 HEARING OFFICER FAY: You cannot ask  
17 questions of the witnesses. You can make a public  
18 comment for the record. The cross-examination is  
19 limited to the parties in the case who have  
20 intervened in the case.

21 SPEAKER: Maybe I'll speak after the  
22 meeting. Thank you.

23 HEARING OFFICER FAY: Okay. You're  
24 welcome to make a comment before we adjourn,  
25 though.

1                   SPEAKER: Well, no, I have a specific  
2 question.

3                   HEARING OFFICER FAY: All right.

4                   SPEAKER: Thank you.

5                   HEARING OFFICER FAY: Sure. Ms. Dent,  
6 anything?

7                   MS. DENT: Yeah, I have just one other  
8 area of inquiry. Just to help me understand the  
9 testimony.

10                   And this relates to the partial load and  
11 startup conditions. And the worst case scenario  
12 in terms of emissions from the plant. And I just,  
13 I think that I understood the testimony and the  
14 modeling to model the startup at 70 percent of  
15 load. Was I accurate in that, or was some other  
16 condition modeled as startup?

17                   MR. RUBENSTEIN: The startup, the  
18 dispersion modeling that was performed for the  
19 startup conditions for criteria pollutants, which  
20 I think is what you're talking about, was done  
21 based on turbine stack parameters, meaning the  
22 temperature, the velocity, things like that, from  
23 the 70 percent load.

24                   That's the best approximation we have of  
25 what those conditions would be for dispersion.

1                   And then with emission rates that we had  
2                   estimated based on what we think the actual  
3                   emission rates of criteria pollutants will be  
4                   during the startup.

5                   MS. DENT:    At a 70 percent load?

6                   MR. RUBENSTEIN:  No, no, no, during the  
7                   startup.  So that, for example, the emissions of  
8                   carbon monoxide and oxides of nitrogen we would  
9                   expect to be much higher during a startup.  We  
10                  modeled those higher emission rates.

11                  But with stack velocity and temperature  
12                  equivalent to those at 70 percent load.

13                  MS. DENT:  Now, what about for the  
14                  noncriteria pollutants?

15                  MR. RUBENSTEIN:  For the toxic air  
16                  contaminants we had only emissions data, emission  
17                  factors based on 70 percent load.

18                  And so we used those emission factors in  
19                  conjunction with the, again, the stack parameters,  
20                  the flow rates and velocity, based on 70 percent  
21                  load.  And that was the basis of the analysis.

22                  MS. DENT:  Thank you.

23                  HEARING OFFICER FAY:  Anything further?

24                  MS. DENT:  No further questions, thanks.

25                  HEARING OFFICER FAY:  Okay.  There's

1       only four minutes left so I'd like to ask if  
2       there's any public comment.

3               Any members of the public who would like  
4       to comment?

5               Nice try, Issa.

6               (Laughter.)

7               MR. AJLOUNY: He's got a question.

8               SPEAKER: Are all the witnesses going to  
9       be available tomorrow that are available today?

10              HEARING OFFICER FAY: I understand yes.  
11       Right, Mr. Harris? Your two witnesses will be  
12       available tomorrow?

13              MR. HARRIS: Yes, they will.

14              HEARING OFFICER FAY: Yes, they will be.

15              MR. GARBETT: Will the intervenors be  
16       allow to continue tomorrow?

17              HEARING OFFICER FAY: Yes. Yes, we'll  
18       finish up cross-examination tomorrow. And then go  
19       to the staff's direct case.

20              So, thank you very much.

21              MR. AJLOUNY: Will we be going into  
22       Friday evening?

23              HEARING OFFICER FAY: I believe we will  
24       be going to Friday. Yes. Based on the numbers  
25       that you've all given me.

1                   All right, thank you, good night. We're  
2 adjourned.

3                   (Whereupon at 10:06 p.m., the hearing  
4 was adjourned, to reconvene at 2:00  
5 p.m., Thursday, March 1, 2001, at this  
6 same location.)

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CERTIFICATE OF REPORTER

I, JAMES A. RAMOS, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Hearing; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 4th day of March, 2001.

JAMES A. RAMOS

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