

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW  
OF THE STATE OF MONTANA

IN THE MATTER OF: )CASE BER 2007-07-AQ  
SOUTHERN MONTANA ELECTRIC )  
GENERATION AND TRANSMISSION )  
COOPERATIVE - HIGHWOOD )  
GENERATING STATION )  
AIR QUALITY PERMIT NO. 3423-00)

TRANSCRIPT OF PROCEEDINGS - VOLUME III

Heard at Room 111 of the Metcalf Building  
1520 East Sixth Avenue  
Helena, Montana  
January 23, 2008  
8:00 a.m.

BEFORE CHAIRMAN JOSEPH RUSSELL;  
BOARD MEMBERS LARRY MIRES, HEIDI KAISER, GAYLE  
SKUNKCAP, BILL ROSSBACH, ROBIN SHROPSHIRE,  
and DON MARBLE

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## I N D E X

1		
2		
3	WITNESS	PAGE
4	ERIC MERCHANT	
5	Cross Examination by Ms. Dillen. . . . .	249
6	Redirect Examination by Mr. Rusoff . . . . .	278
7	Recross Examination by Mr. Reich . . . . .	293
8	Examination by Mr. Marble. . . . .	297
9	Examination by Chairman Russell. . . . .	300
10	Examination by Mr. Skunkcap. . . . .	301
11	Examination by Ms. Shropshire. . . . .	302
12	Examination by Chairman Russell. . . . .	321
13	Re-Examination by Ms. Shropshire . . . . .	321
14	RE-Examination by Chairman Russell . . . . .	323
15	Further Examination by Ms. Shropshire. . . . .	325
16	Examination by Mr. Rossbach. . . . .	326
17	Examination by Mr. Mires . . . . .	366
18	Examination by Mr. Marble. . . . .	368
19		
20		
21		
22		
23		
24		
25		

## 1 I N D E X (CONTINUED)

2	WITNESS:	Page:
3	GARY McCUTCHEM	
4	Direct Examination by Mr. Reich. . . . .	373
5	Cross Examination by Ms. Dillen. . . . .	429
6	Examination by Chairman Russell. . . . .	482
7	Examination by Mr. Mires . . . . .	490
8	Examination by Mr. Marble. . . . .	493
9	Examination by Ms. Shropshire. . . . .	499
10	Examination by Mr. Rossbach. . . . .	517
11	Re-Examination by Ms. Shropshire . . . . .	526

12

## 13 JOSEPH LIEROW

14	Examination by Ms. Shropshire. . . . .	529
15	Examination by Mr. Rossbach. . . . .	535

16

## 17 E X H I B I T S

18	Exhibit No.	Marked:	Admitted:
19	MEIC Exhibit B	249	256
20	MEIC Exhibit C	256	259
21	MEIC Exhibit D	259	
22	MEIC Exhibit E	262	262
23	MEIC Exhibit H	262	281
24	SME Exhibit No. 8	372	375
25	MEIC Exhibit I	429	449

1           Whereupon, the following proceedings were  
2           had and testimony taken, to-wit:

3                               \* \* \* \* \*

4                       CHAIRMAN RUSSELL: We are all in, and  
5           we'll get started. I think you need to take the  
6           stand again, Eric, and remember you've been sworn  
7           in and you're under oath.

8                               ERIC MERCHANT,  
9           called as a witness herein, having been previously  
10          sworn, was examined and testified as follows:

11

12                               CROSS-EXAMINATION

13          BY MS. DILLEN:

14               Q.    Good morning, Mr. Merchant.

15               A.    Good morning.

16                               (MEIC Exhibit B

17               was marked for identification)

18               Q.    (By Ms. Dillen) Mr. Merchant, I've  
19          handed you what's just been marked as MEIC Exhibit

20          B. Do you recognize this document?

21               A.    (Examines document) Yes.

22               Q.    This is an email that was in your files,  
23          was it not?

24               A.    Yes.

25               Q.    With an attachment from a person named

1 Mark Story; is that correct?

2 A. The email was from Mark Story. I  
3 believe the attachment was from Howard Gephardt.  
4 (Phonetic)

5 MR. REICH: Does the Board have a copy  
6 of this?

7 CHAIRMAN RUSSELL: No, we don't.

8 MS. DILLEN: (Provides document)

9 Q. (By Ms. Dillen) Mr. Merchant, this was  
10 a document that was sent to you on behalf of the  
11 National Forest, was it not?

12 A. Yes.

13 Q. And the National Forest Service is a  
14 federal land manager under the PSD program; is  
15 that correct?

16 A. That's correct.

17 Q. And by federal manager, I mean that  
18 under the PSD program, federal officials  
19 responsible for Class 1 areas such as wilderness  
20 areas or national parks are responsible for  
21 ensuring that no adverse impact occurs to a Class  
22 1 area as a result of a PSD permit; is that right?

23 A. That's correct. They review proposed  
24 sources, major new sources that may impact  
25 national parks, or wilderness areas, etc., yes.

1           Q.    So the National Forest Service in this  
2           case was sending you comments on the draft SME  
3           permit in their capacity as federal land managers  
4           under the PSD program?

5           A.    That's correct.

6           Q.    Would you turn to page -- these numbers,  
7           they're not numbered.  If you go to the  
8           attachment.  And this is from a Howard Gephardt.  
9           He was a consultant hired by the Forest Service  
10          and the National Park service; is that right?

11          A.    That's correct.

12          Q.    And on the second page of this  
13          attachment, if you go down to the third full  
14          paragraph, you'll see a discussion of the PM10  
15          BACT limit of .012; is that correct?

16          A.    Yes.

17          Q.    Could you read starting with, "A total  
18          PM10 limit," please.

19          A.    "A total PM10 limit (0.026 pounds per  
20          million Btu) has been set based on the combined  
21          filterable and condensable emissions, but does not  
22          appear to be linked to BACT.  Again, other plants  
23          have lower PM10 BACT limits, with the lowest  
24          listed in the RBLC at 0.010 pounds per million Btu  
25          (Reliant Energy Seward Power).  Also a recent CFB

1 permit for River Hill Project in Pennsylvania also  
2 permitted PM10 emissions at 0.010 pounds per  
3 million Btu. The HGS fact review does not even  
4 consider any PM10 emissions lower than 0.012  
5 pounds per million Btu, despite the appearance of  
6 such emissions in the RBLC.

7 "Since other CFB plants have been  
8 permitted at even lower filterable PM10 emission  
9 rates, while using essentially the same emissions  
10 control technology, these lower emission rates  
11 should also be considered as BACT."

12 Q. Thank you. Now turning to the very  
13 final page, where you'll see -- you can identify  
14 it by the signature at the end "Howard."

15 A. Okay.

16 Q. If you'll just begin reading the first  
17 two sentences, please.

18 A. "In addition, my review also suggests  
19 that lower BACT emission limits may be feasible.  
20 In particular, lower SO2 and PM10 emissions have  
21 been permitted elsewhere, and the justification  
22 providing for dismissing those lower BACT levels  
23 is inadequate."

24 Q. And you reviewed this letter in your  
25 review of the SME permit application and your

1 finalization of the permit?

2 A. I reviewed these as comments on the  
3 draft permit.

4 MS. DILLEN: I move that MEIC Exhibit B  
5 be admitted into evidence.

6 CHAIRMAN RUSSELL: Is there a motion?

7 MR. ROSSBACH: So moved.

8 MR. REICH: Objection. Just as to --

9 CHAIRMAN RUSSELL: Let's go ahead and  
10 get a second.

11 MR. MARBLE: Second.

12 MR. REICH: I object simply as to those  
13 portions of the memo that have nothing to do with  
14 PM10 or the issues in this case.

15 MR. RUSOFF: The Department has the same  
16 comment. I don't have any objection to the  
17 comments except they're irrelevant.

18 MS. SHROPSHIRE: What I understand, the  
19 condensible BACT portion, condensible PM portion  
20 was done by the Department using SO2 numbers?

21 THE WITNESS: No. The condensible  
22 portion -- It turned out that the control that was  
23 deemed BACT for SO2 was also BACT for the  
24 precursors for condensible. The control  
25 technology itself was also deemed BACT for

1 precursors to condensible PM10.

2 MS. SHROPSHIRE: Say that again.

3 THE WITNESS: I'll try to simplify that.

4 The same control technology that was deemed BACT,  
5 the control technology itself for SO2 was also in  
6 part deemed to be BACT for the precursors to  
7 condensible PM10. So the same controls are being  
8 used for SO2 as they are for condensible PM10  
9 precursors.

10 MS. DILLEN: We have no objection to  
11 limiting this evidence to the portions that I've  
12 identified.

13 CHAIRMAN RUSSELL: Bill, will you amend  
14 just to close --

15 MR. ROSSBACH: Sure.

16 CHAIRMAN RUSSELL: It's been amended to  
17 reflect only that that's been basically read into  
18 the record. Robin, do you concur?

19 MR. MARBLE: I don't concur. I don't  
20 think we've had time to look at this and make sure  
21 it's not relevant.

22 CHAIRMAN RUSSELL: That's why I just  
23 changed it to the information that was read into  
24 the record.

25 MR. ROSSBACH: Actually I'm not going to

1 amend my motion. I think the whole thing can go  
2 in for completeness. Otherwise you can't  
3 understand it.

4 MR. RUSOFF: I don't have any objection  
5 to the whole document being included. There is a  
6 section on cal puff (phonetic) modeling, and I  
7 guess my comment was simply to indicate that if  
8 that's not relevant to the issues before the  
9 Board, then that shouldn't be considered in the  
10 Board's decision.

11 CHAIRMAN RUSSELL: I hope the Board  
12 doesn't take that up in deliberations then.

13 MS. DILLEN: If I might address Mr.  
14 Marble's concern. If we won't have this document  
15 in the record for review later on, then the record  
16 would not be complete.

17 MR. MARBLE: I want the whole record in.  
18 That's my point. I'm just saying I don't want to  
19 go through -- we don't have enough time to review  
20 it, and cut this out, and cut that out. We'll  
21 ignore what is not relevant, I suppose.

22 CHAIRMAN RUSSELL: Okay?

23 MR. REICH: Yes.

24 CHAIRMAN RUSSELL: First motioned by  
25 Bill and seconded by Don. All those in favor,

1 signify by saying aye.

2 (Response)

3 CHAIRMAN RUSSELL: Opposed.

4 (No response)

5 (MEIC Exhibit B

6 was received into evidence)

7 (MEIC Exhibit C

8 was marked for identification)

9 Q. (By Ms. Dillen) Mr. Merchant, you now  
10 have in front of you what I've just had marked as  
11 MEIC Exhibit C.

12 A. Yes, I do.

13 Q. Do you recognize this document?

14 A. (Examines document) Yes.

15 Q. This document was an email from your  
16 files, was it not?

17 A. Yes.

18 Q. It has an attachment, does it not, a  
19 memo from the National Park Service?

20 A. Yes, it does.

21 Q. And was this email sent to you from  
22 Leanna Riley at the National Park Service?

23 A. Yes.

24 Q. Was she commenting to you in her  
25 capacity as a federal land manager under the PSD

1 program?

2 A. She was.

3 Q. Could you turn to Page 2 of the attached  
4 National Park Service memo, please.

5 A. (Complies)

6 Q. At the very bottom of the page, there is  
7 an italicized PM colon. Could you read starting  
8 there.

9 A. "MDEQ has proposed a baghouse at 0.012  
10 pounds filterable PM10 per million Btu, and 0.014  
11 pounds condensible PM10 per million Btu."

12 Q. Keep going.

13 A. "We acknowledge the MDEQ efforts to  
14 lower the filterable limit from the 0.015 pounds  
15 per million Btu rate proposed by SME, but even  
16 lower limits on filterable PM10 are listed in the  
17 attached table (Table 1). Table 1 contains two  
18 permitted CFB boilers (and one proposed) with  
19 lower limits on filterable PM10. MDEQ should show  
20 why the Highwood facility cannot meet a similar  
21 limit."

22 Q. Then turning to the next page, under the  
23 heading "Conclusions," there are two bullet  
24 points. The second bullet point begins with,  
25 "Commending you for your BACT analysis," but

1 moving on to the sentence, I believe it's the  
2 third sentence beginning "That said," could you  
3 read that, please.

4 A. The second bullet point?

5 Q. Yes.

6 A. "That said, lower BACT emission limits  
7 for PM10 may be feasible by improving the  
8 efficiency of the chosen control technology.  
9 Lower PM10 emissions have been permitted  
10 elsewhere, and the justification provided for  
11 dismissing the lower BACT level is inadequate."

12 Q. Thank you. And you had a chance to  
13 review these comments before finalizing the SME  
14 permit that's at issue in this case?

15 A. Yes.

16 MS. DILLEN: I would move these  
17 documents also be admitted into evidence.

18 CHAIRMAN RUSSELL: Is there a motion?

19 MR. ROSSBACH: So moved.

20 MS. SHROPSHIRE: Second.

21 CHAIRMAN RUSSELL: It's been moved by  
22 Bill and seconded by Robin.

23 MR. REICH: I have the same objection as  
24 to the irrelevancy of the portions that were not  
25 read into the record.

1           MR. RUSOFF: I have the same comment.  
2       There are a couple other issues that are discussed  
3       in the letter that aren't relevant.

4           CHAIRMAN RUSSELL: Are we sticking to  
5       putting the whole document in?

6           MR. ROSSBACH: Put the whole document  
7       in.

8           MR. MIRES: The first part that you had  
9       read, could you identify that again for me.

10          MS. DILLEN: Sure. It was Page 2 at the  
11       bottom of the page. It was the section relating  
12       to PM in italics.

13          CHAIRMAN RUSSELL: It's been moved and  
14       seconded. All those in favor, signify by saying  
15       aye.

16                   (Response)

17          CHAIRMAN RUSSELL: Opposed.

18                   (No response)

19                           (MEIC Exhibit C  
20       was received into evidence)

21                                   (MEIC Exhibit D  
22       was marked for identification)

23       Q. (By Ms. Dillen) Mr. Merchant, do you  
24       recognize the exhibit before you which I've just  
25       had marked as MEIC Exhibit D?

1           A.    Yes, I do.

2           Q.    Is this a letter from you to Mark Story  
3           at the Gallatin National Forest?

4           A.    Yes.

5           Q.    Is this a letter in response to the  
6           comments that they had just sent you that we just  
7           read?

8           A.    Yes.

9           Q.    Is it fair to say that your response to  
10          Mr. Story was that you did not need to look at the  
11          Lowest Achievable Emission Rate because -- excuse  
12          me -- that you didn't need to look at lower  
13          facilities because this was BACT, and not the  
14          Lowest Achievable Emission Rate standard that  
15          would apply in nonattainment areas?

16          A.    I think that I had a more comprehensive  
17          answer than that for him, but in general, that's  
18          my statement, yes.

19          Q.    Does this document provide any analysis  
20          of why the emission limits the National Forest  
21          Service and Park Service had identified to you  
22          were not achievable at the SME facility?

23          A.    It does not discuss that, no.

24          Q.    And is there anywhere in the permit  
25          analysis in the final permit that responds to the

1 concerns outlined by Forest Service and National  
2 Park Service?

3 A. No.

4 Q. In your responses to SME letting them  
5 know that their permit had been finalized, did you  
6 provide any analysis as to why you decided that  
7 the .012 limit was acceptable notwithstanding  
8 lower limits elsewhere?

9 A. I'm sorry. Could you ask that again one  
10 more time?

11 Q. Sure. Is there anywhere else in the  
12 record in your correspondence with SME or others  
13 where you outlined why it was your conclusion that  
14 the lower limits that had been identified by the  
15 Park Service and the National Forest Service could  
16 not be achieved at SME?

17 A. No.

18 MS. DILLEN: We would move this letter  
19 from Mr. Merchant be admitted to evidence.

20 CHAIRMAN RUSSELL: We need to change the  
21 exhibit number because you do have an Exhibit D.  
22 Let's change it to C-1.

23 MS. DILLEN: Sure.

24 CHAIRMAN RUSSELL: Do you have another  
25 blank space in there?

1 MS. DILLEN: I think "E" would probably  
2 work.

3 CHAIRMAN RUSSELL: How about we call it  
4 "E".

5 (MEIC Exhibit E  
6 was marked for identification)

7 CHAIRMAN RUSSELL: Do I have a motion to  
8 move MEIC Exhibit E into evidence?

9 MR. ROSSBACH: So moved.

10 MS. SHROPSHIRE: Second.

11 CHAIRMAN RUSSELL: It's been moved and  
12 seconded. Any further discussion?

13 (No response)

14 CHAIRMAN RUSSELL: Seeing none, all  
15 those in favor, signify by saying aye.

16 (Response)

17 CHAIRMAN RUSSELL: Opposed.

18 (No response)

19 (MEIC Exhibit E  
20 was received into evidence)

21 (MEIC Exhibit H  
22 was marked for identification)

23 Q. (By Ms. Dillen) Mr. Merchant, you have  
24 before you what I've just had marked as MEIC  
25 Exhibit H. Do you recognize this document?

1 A. Yes.

2 Q. Did you author it?

3 A. I did.

4 Q. And the date of this document is October  
5 3, 2005; is that correct?

6 A. Yes.

7 Q. And you were responding to the draft  
8 application that you had received from SME at that  
9 time?

10 A. That's correct.

11 Q. And you were identifying concerns that  
12 you had identified in the draft application; is  
13 that correct?

14 A. Yes.

15 Q. Could you turn to Page 2 of your memo at  
16 Point No. 5.

17 A. (Complies)

18 Q. This is entitled, "BACT for CFB Boiler  
19 Sulphuric Acid Mist and Hydrofluoric Acid  
20 Emissions;" is that right?

21 A. That's correct.

22 Q. Is it true that sulphuric acid mist and  
23 hydrofluoric acid emissions are part of the  
24 condensible PM10 emissions that you set a BACT  
25 limit for?

1 A. That's correct.

2 Q. Could you read the sentence immediately  
3 following the title beginning, "The Department,"  
4 and move through that entire bullet point five.

5 A. "The Department will require that a more  
6 thorough BACT analysis (see Item 2 above) be  
7 conducted for H<sub>2</sub>SO<sub>4</sub> and HF emissions from CFB  
8 boiler. There are at least seven facilities with  
9 better H<sub>2</sub>SO<sub>4</sub> emission limits than the 0.0054  
10 pounds per million Btu, and at least 13 facilities  
11 with better HF emission limits than 0.0022 pounds  
12 per million Btu. The differences may be due to  
13 differing reported averaging times in the RBLC,  
14 the counteraction of other pollutants (i.e.,  
15 relationship between H<sub>2</sub>SO<sub>4</sub> and SO<sub>2</sub>, etc.).  
16 However, this is not apparent in the draft  
17 application."

18 Q. Is it true that the emission limits of  
19 .0054 pounds per million Btu is still in place for  
20 H<sub>2</sub>SO<sub>4</sub>?

21 A. Yes.

22 Q. Is it true that the emission limits of  
23 0.0022 pounds per million Btu is still in place  
24 for your hydrofluoric acid emissions limit?

25 A. I believe so. I'm not certain without

1 looking at the permit.

2 Q. If you'd like to take a look, you  
3 certainly can. I believe that's in seven.

4 A. (Examines document) That's incorrect.  
5 The emission limit for hydrofluoric acid was set  
6 at 0.0017 rather than 0.0022.

7 Q. For hydrofluoric?

8 A. For hydrofluoric acid emissions, yes.

9 Q. And you were essentially asking for more  
10 data from SME in relation to these condensible  
11 emissions limits; is that correct?

12 A. That's correct.

13 Q. And is that further data evidenced  
14 anywhere in their final permit application?

15 A. I assume that its in their response to  
16 my comments or in their -- it probably is in their  
17 filed application rather, because these were  
18 comments on the draft application.

19 Q. Correct. But are you aware in the final  
20 application where I might find a justification for  
21 the permit limits that were eventually set for the  
22 sulphuric acid mist and hydrochloric acid  
23 emissions?

24 A. I believe those would be found in  
25 Section 5 of the application.

1 Q. Do you have those with you today?

2 A. Can you help me out with where the  
3 application is?

4 Q. The application is at four. We have  
5 excerpts. If you look at Page 40 -- excuse me --  
6 five -- If you look at acid gases, it's 548, the  
7 sulphuric acid mist.

8 A. 549.

9 Q. Would you like to point me to any  
10 sentence there which satisfied you as to why it  
11 was appropriate to set a limit that was far below  
12 the permitted limits for other facilities that you  
13 had identified?

14 A. I believe my justification was based on  
15 the information here that this is an achievable  
16 emission rate considering the controls that were  
17 deemed BACT for this boiler, firing this coal, for  
18 this project.

19 Q. But you can't point me to a particular  
20 sentence that goes beyond what SME had presented  
21 to you before on the draft application that  
22 satisfied you as to why it was all right to set a  
23 limit that was an average of permitted limits  
24 around the country, rather than closer to the top  
25 of the list?

1           A.    My only response to that would be that  
2           -- if we want to go through the BACT process again  
3           real quickly.  BACT isn't -- you don't start with  
4           a lowest limit that is out there and being  
5           achieved, which we discussed as LAER.  LAER does  
6           not apply to this facility, because they're  
7           proposing operations in an attainment area for all  
8           pollutants.  BACT is the process.

9                     Again, what we would do would be to  
10           evaluate the available controls for the different  
11           pollutants subject to BACT; eliminate the  
12           technically infeasible control options; rank those  
13           control options that are remaining -- which is  
14           what the application does -- and then we determine  
15           other -- we evaluate other factors, such as  
16           environmental, economic concerns; determine what  
17           is the control technology that constitutes BACT.

18                     In this case, the top control technology  
19           for acid gases was a co-benefit control provided  
20           by the controls already deemed BACT for SO<sub>2</sub> and  
21           filterable PM.  Therefore, we didn't go past --  
22           The top controls were chosen and already in place.  
23           We didn't go past and do the economic analysis  
24           associated with the other controls because the top  
25           control was already in place.

1           Q.    But it's fair to say that you yourself,  
2   when you reviewed the draft application, were  
3   concerned that this limit was not comparable to  
4   lower set emissions around the country?

5           A.    That is fair to say.  That is always a  
6   consideration, yes.

7           Q.    With respect to the condensible emission  
8   rates and best available technologies for those  
9   that you've just been discussing, perhaps we can  
10  turn in the permit analysis.  I believe the table  
11  ranking technologies is provided at Page 40 of the  
12  permit at Tab 7.

13          A.    Of the permit analysis, I believe.

14          Q.    Of the permit analysis.  Excuse me.

15                MR. REICH:  Counsel, could you repeat  
16  the page?

17                MS. DILLEN:  Sure.  Page 40.  And if the  
18  Board is not with me, this is the table that we  
19  had looked at yesterday, Page 40 of the permit  
20  analysis, rather than the permit, which begins at  
21  Tab 7.

22          Q.    (By Ms. Dillen)  In those rankings, is  
23  it correct that they're all either 90 percent, 80  
24  percent, 90 percent, 80 percent?

25          A.    That is correct.

1           Q.    And for filterables, isn't it the case  
2           that you were able to identify more exact  
3           efficiency rates of 99.85, for instance?

4           A.    Yes.

5           Q.    And here you had more sort of ballpark  
6           numbers; is that correct?

7           A.    That is correct.

8           Q.    Where is the information in this permit  
9           application that justifies these estimated control  
10          efficiencies? I don't believe it will be in  
11          what's been provided by the parties. If you could  
12          just point it to me, because we've never seen it.  
13          Could you just tell me if you've ever seen it, if  
14          it exists.

15          A.    The question was: Where is the  
16          justification for them?

17          Q.    Yes. Where are the numbers that show  
18          exactly how efficient each control technology is,  
19          how it ranks as opposed to other technologies?  
20          Did you ever see any of that? Did you ever see  
21          anything from a vendor in that regard?

22          A.    This table came out of the application  
23          that I have provided in my summary. And getting  
24          back into what I discussed a bit yesterday on  
25          direct, on some level, obviously we -- I rely on

1 the information that is in the application to be  
2 true and accurate as certified information. The  
3 applicant provides that information specific to  
4 the project that they're proposing. I rely on  
5 that application.

6 Q. As a general matter, just in your  
7 experience, in your nine years of experience as a  
8 permitter, is it often the case that a wet ESP is  
9 used to collect condensible particulates?

10 A. That is not my experience.

11 Q. Why is that?

12 A. Well, let me rephrase. A wet ESP is one  
13 possibility for collecting filterable and  
14 condensible PM10. This is only the second permit  
15 that I'm aware of that the State of Montana has  
16 issued that includes a condensible PM10 emission  
17 limit, so it is something that's relatively new to  
18 me. However, again, the information that was in  
19 the application is based on the project  
20 specifically being proposed, and I relied on that  
21 information provided in the application to conduct  
22 my analysis.

23 Q. Isn't it fair to say that wet ESP's are  
24 generally regarded as a very effective way to  
25 control condensible particulate?

1           A.    They are one of the top two controls for  
2   controlling particulate in general.

3           Q.    You testified yesterday that with  
4   respect to fabric filters, they're quite good at  
5   capturing filterable emissions to very low micron  
6   size; is that right?

7           A.    What are?

8           Q.    Fabric filters.

9           A.    Fabric filters, yes.

10          Q.    And fabric filters, though, you can have  
11   a problem where the gases that are condensibles do  
12   pass through them; is that right?

13          A.    That's correct.  However, I will also  
14   note that the fabric filter provides co-benefit  
15   control for SO<sub>2</sub>, and H<sub>2</sub>SO<sub>4</sub>, HCL, HF; whereas a wet  
16   ESP does not have that same capability.

17          Q.    And is that just a function of the fact  
18   that those emissions are staying in the baghouse  
19   long enough perhaps to attach to other particles,  
20   so that they become solid?

21          A.    It's a function of the filter cake  
22   build-up, yes.

23          Q.    So even with a fabric filter, you would  
24   have gaseous emissions that would escape and  
25   remain condensibles; is that correct?

1           A.    They would remain precursors to  
2   condensibles, correct.

3           Q.    And with respect to those condensibles  
4   that escape a fabric filter baghouse, an ESP would  
5   be one control that would be -- that you might  
6   consider for collecting those condensibles that  
7   had escaped through the fabric filter; is that  
8   right?

9           A.    I believe that we did consider an ESP as  
10   a potential condensible PM10 control.

11          Q.    A wet ESP following the fabric filter?

12          A.    No, that was never considered.

13          Q.    You testified yesterday that an ESP  
14   after a fabric filter would just be like a  
15   baghouse after a baghouse.  What I'm asking you  
16   is:  If a fabric filter allows some condensibles  
17   to pass through it, and you placed an ESP at that  
18   point to collect those condensibles, couldn't you  
19   do better that way than you would alone with  
20   simply a fabric filter?

21          A.    Let me explain my answer yesterday to  
22   that question, a fabric filter following a fabric  
23   filter.  The analysis that we conducted for PM2.5  
24   was based on a surrogate analysis of PM10.  The  
25   available information, the real information that

1 we have out there to analyze emissions, showed us  
2 that for controlling PM10, the top control  
3 technology is a fabric filter baghouse. At that  
4 point, anything that's getting through that  
5 baghouse is going to be much lower than the  
6 pre-baghouse control.

7 And therefore, a general statement I'll  
8 make at this point is that that would not be cost  
9 effective to require another redundant control  
10 after the fact.

11 Q. But you never considered it?

12 A. I did not consider that.

13 Q. And just to be clear, on this table that  
14 you've included from the permit application on  
15 Page 40 of your permit analysis, these were just  
16 numbers that SME had given you; is that correct?

17 A. That's correct.

18 Q. Going back for a moment, you've  
19 illuminated for us the difference between LAER and  
20 BACT, and I want to make sure everyone  
21 understands. LAER is the standard, the Lowest  
22 Achievable Emissions Rate standard that's  
23 applicable in areas of nonattainment with National  
24 Ambient Air Quality Standards; is that right?

25 A. For a specific pollutant, yes.

1 Q. Those areas are not Class 1 areas,  
2 correct, nonattainment areas?

3 A. I guess there could be a Class 1 area  
4 that would be a nonattainment, but that would be  
5 unlikely.

6 Q. So generally speaking, the Park Service  
7 and the Forest Service, as federal land managers  
8 under the PSD program, get involved when a Class 1  
9 area is implicated; is that right?

10 A. Yes.

11 Q. And so their purpose in commenting on  
12 this permit would be fully within the confines of  
13 the PSD program to which BACT is a part, correct?

14 A. That's correct.

15 Q. LAER emission rates have nothing to do  
16 with the PSD program; is that right?

17 A. That's correct.

18 Q. Is it fair to say that the Park Service  
19 and the National Forest Service probably didn't  
20 have LAER in mind when they were commenting on  
21 this PSD permit?

22 A. That's fair to say.

23 Q. Just for the record, Mr. Merchant, I  
24 want to confirm that the Department never  
25 considered membrane bags, and the additional

1 efficiency that they might add if they were used,  
2 in this permitting process?

3 A. No, they did not.

4 Q. Finally, is it your position that the  
5 Department has authority to prove alternate test  
6 methods?

7 MR. RUSOFF: Object to the extent that  
8 the question calls for a legal conclusion. I  
9 don't have any objection with reference to  
10 specific provisions of rules.

11 Q. (By Ms. Dillen) Have you taken the  
12 position that the rules would allow the Department  
13 to approve an alternative test method with respect  
14 to the SME plant?

15 A. Alternative test methods are -- Many of  
16 the alternative test methods are actually approved  
17 referenced methods. I don't know if you're  
18 referring to conditional test methods in this  
19 case, rather than alternative. There is a big  
20 difference between what you're saying. There are  
21 alternative methods.

22 Q. I'm just asking you if it's your  
23 position that you can approve an alternative test  
24 method? Just first that question.

25 A. Alternative to what?

1           Q.    Alternative to the test that is  
2           specified in your protocols.

3           A.    I'm not a compliance officer, so I don't  
4           look at these issues in great deal.  But I am  
5           aware that there are -- the protocol specifies the  
6           test method that is -- the referenced method,  
7           approved method, that is generally used for  
8           monitoring compliance with a given emission limit;  
9           and then the protocol also describes alternative  
10          methods that are available for monitoring  
11          compliance.  And so generally, yes, that's  
12          something that the Department can do.

13          Q.    So if there is a test that's not within  
14          -- that's not listed among your variety of  
15          protocols, is that a test that you would consider,  
16          could consider approving?

17          A.    In my experience, that's not something  
18          that we do.  Generally the Montana Source Test  
19          Protocol and Procedures Manual outlines how the  
20          Department will evaluate compliance with an  
21          applicable emission limit.  And I'm not aware of  
22          any circumstance where we've approved a  
23          conditional test method, but that may have been  
24          done in the past.  I'm not certain.

25          Q.    So it's not your position that it

1 wouldn't be prohibited or impossible?

2 A. That's not my position, no. It's  
3 possible.

4 Q. One final question. Mr. Merchant, was  
5 it your position in this permitting process that  
6 SME should follow the top down BACT procedures?

7 A. The top down procedure is a method that  
8 we generally think is a good method to use. It's  
9 not required. I don't know that I would state  
10 that they were required to or should have used it.  
11 They did use it.

12 Q. Your position is that they did use it?

13 A. For what pollutant are we talking about?  
14 Are we talking about in general?

15 Q. Yes.

16 A. Yes.

17 MS. DILLEN: No further questions.

18 CHAIRMAN RUSSELL: Redirect.

19 MR. REICH: Mr. Chair, if I might, I do  
20 have a couple of cross questions. If I could just  
21 wait to see if Mr. Rusoff covers those.

22 CHAIRMAN RUSSELL: That would be great.

23 MR. REICH: Otherwise I would be --  
24  
25

1 REDIRECT EXAMINATION

2 BY MR. RUSOFF:

3 Q. Mr. Merchant, Ms. Dillen asked you a  
4 series of questions regarding some comments that  
5 the Department received from the National Forest  
6 Service and the National Park Service regarding  
7 the draft permit for the Highwood Generating  
8 Station. Do you remember that series of  
9 questions?

10 A. I do.

11 Q. From your experience as an air permitter  
12 for approximately nine years, do you know whether  
13 either the Forest Service or the National Park  
14 Service is responsible for issuing air quality  
15 permits?

16 A. They are not.

17 Q. Do you know whether the Park Service or  
18 the National Park Service makes BACT  
19 determinations then?

20 A. Since the BACT determination is part of  
21 an air quality permit application, they do not.

22 Q. Ms. Dillen had you read a couple of  
23 provisions of the comments that the Department  
24 received from the Forest Service. Do you agree  
25 with the comment of the Forest Service that the

1 total PM10 limit of .026 does not appear to be  
2 linked to BACT?

3 A. I disagree with that.

4 Q. What's the basis for your disagreement  
5 with that comment?

6 A. My disagreement is because the  
7 application provided a BACT analysis for the  
8 condensible as well as the filterable PM10  
9 emissions; and I reviewed that BACT analysis and  
10 determination, and deemed that number 0.026 to be  
11 BACT through the BACT process.

12 Q. Do you agree with the statement that Ms.  
13 Dillen had you read that the HGS BACT review does  
14 not even consider any PM10 emissions lower than  
15 .012 pounds per million Btu?

16 A. I disagree with that.

17 Q. In the Department's permit analysis, is  
18 there acknowledgment of the existence of lower  
19 PM10 emission limits from a couple of facilities  
20 in the country?

21 A. Yes. The application, as well as my  
22 summary -- Well, my summary references the  
23 application, which includes lower limits for at  
24 least two facilities for PM10, and I think one  
25 facility for condensible. I should say total --

1 no, it is condensable in the summary.

2 Q. Ms. Dillen had you read some provisions  
3 from the letter received by the Department from  
4 the National Park Service, and turning to Page 3  
5 of that letter, if you would.

6 A. Could you reference the exhibit?

7 Q. MEIC-C.

8 CHAIRMAN RUSSELL: Before we go any  
9 further, we never moved to put this exhibit in.  
10 We never got a --

11 MR. REICH: No.

12 CHAIRMAN RUSSELL: The last one I've  
13 been putting --

14 MS. DILLEN: I'm sorry. I would move to  
15 have that admitted into evidence, please.

16 CHAIRMAN RUSSELL: Did you find one that  
17 was open?

18 MS. DILLEN: I believe that was "H" was  
19 open, right?

20 MR. MIRES: One is Exhibit H.

21 CHAIRMAN RUSSELL: Let's move it to be  
22 admitted as Exhibit H. Is there a --

23 MR. MARBLE: Second.

24 MR. LIVERS: It was moved.

25 MR. MIRES: It was.

1 MS. SHROPSHIRE: So moved.

2 CHAIRMAN RUSSELL: Did we vote on it?

3 MS. SHROPSHIRE: Just now.

4 MR. MARBLE: Second.

5 CHAIRMAN RUSSELL: It's been moved and  
6 seconded by Robin.

7 MR. REICH: Same objection as to the  
8 relevance of any of the portions of this memo that  
9 do not deal with PM10 or PM10 issues. I further  
10 have an objection as to relevance altogether,  
11 since this is a comment on draft application, not  
12 a comment on the final application.

13 CHAIRMAN RUSSELL: So noted.

14 MS. DILLEN: I think Mr. Merchant's  
15 concerns about the permit application, many  
16 provisions of which remain unchanged, are clearly  
17 relevant to these proceedings.

18 CHAIRMAN RUSSELL: It's been moved and  
19 seconded. All those in favor, signify by saying  
20 aye.

21 (Response)

22 CHAIRMAN RUSSELL: Opposed.

23 (No response)

24 (MEIC Exhibit H  
25 was received into evidence)

1           Q.    (By Mr. Rusoff)   Mr. Merchant, again,  
2           referring back to the comments from the National  
3           Park Service that Ms. Dillen had you read a couple  
4           provisions from, which has been admitted as MEIC  
5           Exhibit C, do you recall whether the Park Service  
6           made any comment concerning the emission control  
7           technologies that the Department proposed as BACT  
8           for particulate matter in the draft permit?  And I  
9           can point you to the specific provisions of that,  
10          if you need me to.

11          A.    They did not.

12          Q.    Would you take a look at Page 3 of that  
13          letter MEIC-C.  Do you see the caption "IGCC"?

14          A.    Yes.

15          Q.    Could you take a look at the paragraph  
16          immediately preceding that caption.  Does that  
17          refresh your recollection?

18          A.    Yes, it does.

19          Q.    I'll repeat the question.  Is there any  
20          statement in that paragraph concerning the  
21          emission control technologies proposed by the  
22          Department as BACT for particulate for the HGS?

23          A.    Yes.

24          Q.    What was the Park Service's comment?

25          A.    The Park Service -- "We agree that the

1 proposed emission control technologies are the  
2 best available."

3 Q. Turning to Page 4 of that same document  
4 in the conclusion section. One of the provisions  
5 that Ms. Dillen did not refer you to, at the  
6 second bullet, would you please read the first  
7 sentence of the second bullet under "Conclusions"  
8 that begins with the word "Overall."

9 A. "Overall, MDEQ's BACT analysis is among  
10 the best we have seen."

11 Q. Mr. Merchant, you were asked a question  
12 regarding whether you looked at lower limits in  
13 your BACT analysis; do you recall that?

14 A. Yes.

15 Q. And again to clarify, did you consider  
16 the lower limits that you were aware of when you  
17 reviewed SME's BACT analysis for particulate  
18 matter?

19 A. Yes, I did. In the context of the BACT  
20 process, I reviewed the lower limits that were  
21 there as appropriate through the process.

22 Q. And anywhere in your responses to the  
23 Forest Service and Park Service's comments did you  
24 say that you don't have to look at lower emission  
25 limits?

1 A. I don't believe that I did that, no.

2 Q. You had several questions from Ms.

3 Dillen regarding the limits for H<sub>2</sub>SO<sub>4</sub> and HF. How  
4 did you determine the ultimate BACT limits for  
5 those two constituents of condensible PM<sub>10</sub>?

6 A. Through the BACT process, those limits  
7 are based on the control technologies deemed BACT  
8 for those pollutants.

9 Q. And were those limits based upon your  
10 determination that the control technologies being  
11 required were the top control technologies?

12 A. Yes.

13 Q. And were those emission limits based  
14 upon the lowest emission limits that you  
15 determined were achievable based on those control  
16 technologies?

17 A. Yes, for this project.

18 Q. And were those control technologies  
19 already being required by the Department under its  
20 BACT analysis for sulphur dioxide and filterable  
21 particulate matter?

22 A. Yes. The top control technologies  
23 deemed BACT for SO<sub>2</sub> and filterable PM<sub>10</sub> were also  
24 the top technologies for acid gases, H<sub>2</sub>SO<sub>4</sub>.

25 Q. In your nine years of experience as an

1 air quality permitter, if a wet ESP wasn't chosen  
2 as BACT for sulphur dioxide, or filterable  
3 particulate matter, or some other pollutant being  
4 analyzed, would it ever be chosen as BACT as an  
5 additional control device after what has already  
6 been determined the top control?

7 A. BACT is pollutant specific, so it could  
8 be. However, we determined that -- Through the  
9 analysis, I determined that the top control  
10 technology was not a wet ESP, rather for acid  
11 gases, it was a combination of dry flue gases,  
12 desulphurization unit, followed by a fabric filter  
13 baghouse, which were already in place as BACT  
14 determinations for S2 and filterable PM10  
15 respectively.

16 Q. Ms. Dillen asked you several questions  
17 about the estimated control efficiencies in the  
18 permit analysis on Page 40 of the permit analysis  
19 for condensible PM10. Do you recall those  
20 questions?

21 A. Yes.

22 Q. Did you research control efficiencies  
23 for condensible particulate in your review of  
24 SME's application?

25 A. Yes.

1 Q. And generally what did you find in terms  
2 of the number of condensible emission limits being  
3 set around the country?

4 A. (No response)

5 Q. And I can rephrase that if it's too  
6 general.

7 A. I would like that.

8 Q. I apologize. I'll withdraw the  
9 question. Did you find limits characterized as  
10 condensible particulate limits in your research  
11 that you did for SME's application?

12 A. Yes.

13 Q. In your research, did you find any  
14 difficulties in determining how those limits had  
15 been set?

16 A. Yes.

17 Q. What were those difficulties?

18 A. In my research, I found that there is a  
19 lot of inconsistencies in what you see for permits  
20 around the country for condensible limits. I'm  
21 not certain. I was unable to tell in many cases  
22 whether or not that was actually a filterable  
23 limit only, when it was applied as a filterable  
24 plus condensible limit.

25 And my reasoning for that is because

1 some of them were very low, whereas it appeared to  
2 me that the filterable limit itself was the only  
3 limit that was being applied there, because  
4 essentially there would be -- after the filterable  
5 part, a limit of, for example, 0.015. It would be  
6 hard for me to imagine that that was filterable  
7 plus condensible, when the filterable limit itself  
8 is probably right around that range.

9 Q. And I believe you just testified that  
10 setting emission limits for condensible PM10 is a  
11 fairly new process for the Department; was that  
12 your testimony?

13 A. To the best of my knowledge, this is the  
14 second permit that includes a condensible PM10  
15 limit.

16 Q. Do you know from your research whether  
17 EPA has any policies concerning including  
18 condensible emission limits in permits at this  
19 time?

20 A. Yes. What EPA has stated -- I have been  
21 involved in a meeting where EPA stated that at  
22 this time, until technical problems associated  
23 with evaluating compliance with condensible limits  
24 are solved, that EPA is recommending that  
25 condensible permit limits not be included in

1 permits.

2 Q. How recent was that discussion?

3 A. That discussion was sometime after  
4 issuance, or during the process of -- after  
5 issuance of the draft permit, and potentially  
6 prior to the final permit. But I'm not certain.  
7 It may have been after the final permit was  
8 issued.

9 Q. When was the final permit issued?

10 A. The final permit was issued in May of  
11 last year.

12 MR. SKUNKCAP: Can you repeat that? EPA  
13 has recommended what?

14 THE WITNESS: EPA, in a meeting that I  
15 was involved in with EPA with the source testing  
16 expert for EPA, it was stated that until problems  
17 are resolved with methodology for monitoring  
18 compliance with condensible PM10 limits, or  
19 condensible PM limits, EPA is recommending that  
20 condensible limits not be included in the permits.

21 MR. SKUNKCAP: Thank you.

22 Q. (By Mr. Rusoff) So is it your  
23 understanding from that discussion that EPA would  
24 not approve the Department omitting a condensible  
25 limit altogether from HGS permit?

1           MS. DILLEN: I have to object. This  
2           seems to me that you're testifying to -- This is  
3           hearsay from an EPA official. We have no idea who  
4           he is. There is no evidence of this in record.

5           CHAIRMAN RUSSELL: We don't have a  
6           record of this document.

7           MR. REICH: Yes, it's Exhibit 6, and I  
8           can point you to the specific page.

9           CHAIRMAN RUSSELL: I think that would be  
10          appropriate.

11          MR. REICH: This is the Joint Exhibit 6,  
12          which is the Federal Register dated April 25th --

13          MS. DILLEN: My understanding is that  
14          Mr. Merchant is testifying as to a meeting.

15          MR. REICH: May I finish? April 25th,  
16          2007. It's Page 20652. The pages are at the top  
17          there. And it's the second column, second column  
18          about halfway down, second paragraph. I can read  
19          the relevant language, if you would like.

20          CHAIRMAN RUSSELL: Why don't you go  
21          ahead and do that.

22          MR. MIRES: Could you reference the page  
23          again.

24          MR. REICH: Yes. It's 20652 of that  
25          Federal Register. It's about three, four pages

1 into the document. The pages are at the top  
2 left-hand.

3 MR. MIRES: 206 --

4 MR. REICH: 20652. Have you located the  
5 page?

6 MR. MIRES: Yes.

7 MR. REICH: If you go to the second  
8 column, the second paragraph begins, "With respect  
9 to developing enforceable emission limits." If you  
10 go down about halfway into that paragraph, there  
11 is a sentence that begins "In response." I'll  
12 just read that into the record.

13 "In response, we have decided to provide  
14 a transition period for developing emission limits  
15 in regulations for condensable PM2.5. During this  
16 transition period, we will provide technical  
17 support to states as requested establishing  
18 effective PM2.5 emission limits and corresponding  
19 emission testing requirements." And there is  
20 another provision I need to --

21 CHAIRMAN RUSSELL: I hope there is  
22 another one, because this does not support what  
23 Eric just told us.

24 MS. DILLEN: What Mr. Merchant has been  
25 testifying about, as I understand, is a meeting

1 that I've never heard anything about. This is  
2 hearsay as to what EPA officials have said. The  
3 Federal Register document that Mr. Reich is citing  
4 has nothing to do with this.

5 MR. REICH: That's not true.

6 MS. DILLEN: I don't understand how this  
7 document goes to this meeting, and how it would  
8 help with a hearsay exception.

9 MR. REICH: Go to the third column.

10 MS. DILLEN: I object to Counsel  
11 testifying as to what's in exhibits that are  
12 before the Board, and not addressing this  
13 objection as to testimony regarding a meeting.

14 MR. REICH: Would the Board like me to  
15 point to the sentence that's relevant, or would  
16 you like the witness to -- have the witness read  
17 it?

18 MR. RUSOFF: Mr. Chair, members of the  
19 Board, we had a discussion of doing this  
20 yesterday, so I'm going to ask what your  
21 preference is. My understanding is that all of  
22 the Board members have that document. I can have  
23 the witness read the relevant provision, or we  
24 could just leave it where it is with the Board  
25 members looking at it.

1                   CHAIRMAN RUSSELL: I think we need to  
2 let the Board members look at the document,  
3 because I don't think it substantiates what Eric  
4 just said, although there is some language in  
5 Column 3 that is pertinent for the Board's  
6 deliberation. And if we don't let Abigail get up  
7 after you redirect, I think that would be a shame,  
8 so --

9                   MR. RUSOFF: I'm fine with leaving it  
10 right here. I don't need to ask the witness to  
11 read it.

12                   CHAIRMAN RUSSELL: You have objected.  
13 Do I have a motion to sustain?

14                   MR. MARBLE: To sustain the testimony  
15 he's given about --

16                   CHAIRMAN RUSSELL: The objection of the  
17 hearsay evidence that Eric has been giving.

18                   MR. MARBLE: I move we sustain the  
19 objection of MEIC.

20                   CHAIRMAN RUSSELL: Is there a second?

21                   MS. SHROPSHIRE: Second.

22                   CHAIRMAN RUSSELL: It's been seconded by  
23 Robin. All those in favor, signify by saying aye.

24                   (Response)

25                   CHAIRMAN RUSSELL: Opposed.

1 MR. ROSSBACH: Nay.

2 CHAIRMAN RUSSELL: Move on.

3 MR. RUSOFF: I'm done. I have no  
4 further questions on redirect. Thank you very  
5 much.

6 MR. REICH: I have just a couple  
7 questions.

8 CHAIRMAN RUSSELL: All right. That  
9 would be great.

10

11 RECROSS-EXAMINATION

12 BY MR. REICH:

13 Q. Good morning, Mr. Merchant. I just have  
14 a couple of questions. You testified that you  
15 hadn't considered membrane bags as part of your  
16 independent permit analysis of the application of  
17 SME; is that correct?

18 A. That's correct.

19 Q. And why was it that you didn't consider  
20 membrane bags in evaluating the technology?

21 A. Because I'm not -- it was not addressed  
22 in the application, and outside of the  
23 application, and my independent review, and  
24 experience with the Department, I'm not aware of  
25 that control technology ever being, in my

1 experience, ever being utilized for this purpose.

2 Q. Have you handled more than one permit  
3 application involving a power plant?

4 A. Yes.

5 Q. And in any of those applications that  
6 you have reviewed for power plants, have you ever  
7 seen a membrane filter bag technology proposed as  
8 a control?

9 A. No.

10 Q. Are you aware whether a membrane filter  
11 bag is available technology for controlling  
12 filterable or condensible PM?

13 A. Only based on testimony in this case.  
14 Other than that, I'm not aware of it.

15 Q. I'd direct you to the permit application  
16 that I believe is in Tab 4. You talked about this  
17 a little bit with Mr. Rusoff, so I won't -- I'm  
18 just going to direct you to a couple of sections.

19 If you go to Page 5-47 of that permit  
20 application, and it's Section 5.3.6.3 entitled,  
21 "Step 3, Rank Control Options by Control  
22 Efficiencies;" do you see that?

23 A. (Nods head)

24 Q. Could you start reading with the second  
25 sentence and to the end of that paragraph.

1 MS. SHROPSHIRE: I'm sorry. Where are  
2 we?

3 MR. REICH: This is Tab 4 of the book.

4 CHAIRMAN RUSSELL: What was the page?

5 MR. REICH: Page 5-47. And I was  
6 directing him to Step 3, which is numbered  
7 5.3.6.3.

8 A. The second sentence. Beginning with the  
9 second sentence, "Limited data is available on  
10 control efficiencies for sulphuric acid mist, acid  
11 gases, trace metals, and condensable PM10  
12 emissions, so the main boiler may not have the  
13 same control efficiencies as outlined in Table  
14 5.3-28, but the control options are assumed to be  
15 ranked the same."

16 Q. (By Mr. Reich) I'll direct you to the  
17 following page, Page 5-48, direct you to the  
18 second sentence, and then just read that to the  
19 end, beginning, "SME proposes."

20 A. "SME proposes as sulphuric acid mist  
21 BACT a CFB boiler combusting PRB coal with dry FGD  
22 followed by an FFB."

23 Q. And read it to the next sentence.

24 MR. MARBLE: Could you read that in  
25 plain English without all the acronyms.

1           THE WITNESS: I sure can. "SME,  
2           Southern Montana Electric, propose as sulphuric  
3           acid mist Best Available Control Technology a  
4           circulating fluidized bed boiler combusting Powder  
5           River Basin coal with dry flue gas  
6           desulphurization, followed by a fabric filter  
7           baghouse."

8           Going on, "Because this facility  
9           (circulating fluidized bed boiler combusting  
10          Powder River Basin coal with fly glue gas  
11          desulphurization, followed by a fabric filter  
12          baghouse) is 'a first of its kind,' the sulphuric  
13          acid mist emission rate is the lowest emission  
14          rate that could be guaranteed by a vendor  
15          utilizing Powder River Basin coal in a circulating  
16          fluidized bed with hydrated ash reinjection and a  
17          fabric filter baghouse."

18          Q.    (By Mr. Reich) That's fine. Could you  
19          just explain that comment.

20          A.    What that means is that the combination  
21          of technology, fuel, and -- boiler technology,  
22          fuel, and control technology is not something  
23          that's been done before; and therefore, there is  
24          going to be no information out there regarding its  
25          performance specific to this pollutant, and other

1 pollutants as well, utilizing that technology with  
2 this fuel source.

3 Q. Is it common practice for an applicant  
4 that is proposing a particular technology to  
5 obtain guarantees for that technology, in your  
6 experience?

7 A. I would say that's common practice, yes.

8 Q. A final question: You had a chance to  
9 look at Exhibit 6, the April 25, 2007  
10 Environmental Protection Agency Federal Register  
11 notice, have you not?

12 A. Yes.

13 Q. And isn't it true that that regulatory  
14 notice provides that states do not have to put  
15 condensible limits in their permits until year  
16 2011?

17 A. Yes, it does.

18 MR. REICH: I have no further questions.

19 CHAIRMAN RUSSELL: Thank you. We're  
20 going to ask Board questions and then take a  
21 break. Board, this is your chance to inquire.

22

23 EXAMINATION

24 BY MR. MARBLE:

25 Q. In looking at the first page of Exhibit

1 7, that's the final permit as it stands?

2 A. Yes.

3 Q. And it states in there that -- Paragraph  
4 1-A, it talks about a fabric filter baghouse,  
5 right?

6 A. That's correct.

7 Q. That's what you're requiring in the  
8 final permit?

9 A. Yes.

10 Q. Is there somewhere in here that -- Is  
11 there a distinction of what kind of bag? Is it  
12 fiberglass, teflon coated, or what are you  
13 requiring?

14 A. Mr. Marble, members of the Board, there  
15 is reference in here in the BACT analysis or  
16 summary of the analysis to a teflon coated fabric  
17 filter bag. I'm requiring a fabric filter bag,  
18 generally a fabric filter baghouse for this as  
19 BACT for the control of filterable PM10 and other  
20 pollutants as we've discussed.

21 I didn't specify the teflon coated bag  
22 in the permit requirement because that would  
23 therefore limit -- I'm aware of a teflon coated  
24 fabric filter baghouse that is capable of  
25 achieving the emission limit deemed BACT for

1 filterable PM10 and other pollutants. However, if  
2 I limit it, if I specifically wrote the condition  
3 to require a teflon coated bag, if there was  
4 another style of bag out there that could achieve  
5 a better limit than that in the future or as this  
6 project moves forward, that would preclude SME  
7 from installing that technology. They would have  
8 to come in and amend their permit.

9 Q. But you didn't require a teflon -- A  
10 teflon provides a better control?

11 A. Right.

12 Q. And so you allowed them to select a bag  
13 that provides less control?

14 A. Mr. Marble, members of the Board, the  
15 limit itself of 0.012 pounds per million Btu  
16 represents the control efficiency that that teflon  
17 bag was capable of. So that in order to meet that  
18 limit, they're going to need to install a bag with  
19 at least that capability.

20 However, just to clarify, if I had  
21 written a condition to indicate that they're  
22 required to install a teflon bag, if they could  
23 get a bag that's capable in the future of that, at  
24 least that control technology, they wouldn't be  
25 able to do that, if there was another style.

1           Q.    So the standard that you set at this  
2 point requires a teflon bag?

3           A.    The emission limit itself, based on the  
4 information that I reviewed, they would need to  
5 install at least that teflon bag fabric filter.

6           MR. MARBLE:   Thank you.

7

8                               EXAMINATION

9           BY CHAIRMAN RUSSELL:

10          Q.    Just to clarify that, by just stating a  
11 filter fabric, it could be -- you believe that  
12 they could line it with anything they want -- gold  
13 -- just so long as they can meet that emission  
14 standard that you set in the permit?

15          A.    Mr. Chairman, members of the Board, it  
16 would also have to be characterized as a fabric  
17 filter, like you said, yes.  But as long as they  
18 can meet that BACT determined emission limit, the  
19 fabric filter could have any coating on it that  
20 was appropriate.

21          Q.    In general, doesn't teflon help with  
22 organics in filters?

23          A.    I'm not able to speak to that  
24 definitively.

25          CHAIRMAN RUSSELL:   That was a long time

1 ago in my past. Bill, you asked me a question.  
2 Bill has got quite a few questions. But you were  
3 out of the room. We're going to take our lunch at  
4 11:30, so that's why I want to push through and  
5 take a break halfway through to 11:30, and then  
6 move.

7 MS. SHROPSHIRE: I need like a two  
8 minute break.

9 MR. ROSSBACH: I have some questions  
10 that may take awhile.

11 CHAIRMAN RUSSELL: Let's take ten.

12 (Recess taken)

13 CHAIRMAN RUSSELL: This will be the  
14 Board's opportunity. Don actually already got  
15 started. So let's go ahead, and I think we'll  
16 allow the Board an opportunity now to ask  
17 additional questions of the Department through  
18 Eric.

19

20 EXAMINATION

21 BY MR. SKUNKCAP:

22 Q. Could you explain the wet ESP and dry  
23 ESP, and teflon and membrane bag just briefly,  
24 please.

25 CHAIRMAN RUSSELL: Just the difference

1 between those technologies.

2 A. A dry ESP would be collecting the  
3 particles, the pollutants in a dry process;  
4 whereas a wet ESP would have a wet substrate on  
5 the collection plate, or the cleaning would be  
6 accomplished through a wet process.

7 The teflon bag in this case would be a  
8 coating on the fiberglass bag, and the fiberglass  
9 bag would be, in this context, just a standard  
10 fiberglass filter bag.

11 MR. SKUNKCAP: Thank you.

12

13 EXAMINATION

14 BY MS. SHROPSHIRE:

15 Q. So you said that you used a top down  
16 BACT approach for this permit?

17 A. The applicant used a five step process,  
18 which I would generally describe as a top down  
19 BACT process.

20 Q. So in a top down BACT process, is LAER a  
21 requirement?

22 A. LAER is not associated with BACT. BACT  
23 is a process, and LAER is a process. LAER is  
24 applicable to the analysis of a project proposing  
25 operations in an area deemed nonattainment for a

1 specific pollutant. BACT is a process that is  
2 conducted in an area -- a pollutant specific  
3 process that is conducted for a project in an area  
4 that is achieving or is unclassified for the  
5 National Ambient Air Quality standards.

6 Q. But within a top down BACT -- not  
7 regular BACT, but top down BACT -- is LAER the  
8 first step in that process?

9 A. No. The first step in the BACT process  
10 is to evaluate the available controls. Should I  
11 generally go through the process again?

12 CHAIRMAN RUSSELL: Generally.

13 A. In general, Step 1 in the five step  
14 process which we're characterizing as a top down  
15 process is analyze the available control  
16 technologies for that pollutant; Step 2 would be  
17 to eliminate technically --

18 Q. (By Ms. Shropshire) I'm just looking  
19 here at Exhibit 1, Page B-5.

20 MR. REICH: Mr. Russell, and members of  
21 the Board, if it would help, we do have a chart  
22 that was stipulated to and also in. Right after  
23 Tab 20 is the five step BACT process illustrated.  
24 For information, we could put up that chart.

25 CHAIRMAN RUSSELL: You folks put it up

1 on your chart.

2 MR. REICH: Would you like us to do that  
3 again?

4 CHAIRMAN RUSSELL: It might be helpful  
5 since this is the top down BACT process.

6 MR. MARBLE: Page B-6, Exhibit 1.

7 Q. (By Ms. Shropshire) B-6 is the next  
8 page, Step 1. It says, "List as comprehensive  
9 LAER included." Can you explain that.

10 A. Again, identifying all control  
11 technologies. LAER means the Lowest Achievable  
12 Emission Rate. That wouldn't be something -- You  
13 wouldn't list that as a control technology. That  
14 would be an emission rate -- that is analyzed  
15 through the process. We certainly look at the --  
16 As I've discussed in my testimony today and  
17 yesterday, that's part of the process, that we're  
18 going to, at some point in the process, look at  
19 what is the rate out there that's being achieved,  
20 the lowest rate out there that's being achieved.  
21 But that doesn't mean that that's BACT.

22 Q. Just in terms of this document, did you  
23 follow that? In terms of the lowest achievable --  
24 In listing the control technologies, did you  
25 include the best -- or sorry -- the lowest

1       achievable or include LAER?

2           A.    Ms. Shropshire, members of the Board, in  
3       listing all the available control technologies in  
4       Step 1, that is again project specific.  We're  
5       going to look at what control technologies for a  
6       specific pollutant can we look at for this  
7       project.  If you look, in parentheses, it does say  
8       LAER is included on Page B-6.

9           If you look at the discussion of what  
10       the first step is on a previous page, as you  
11       pointed me to, what you're looking at is you're  
12       looking at what are the available control  
13       technologies that are out there to achieve that  
14       maximum reduction.

15           In practice, it would seem to me that  
16       including in Step 1 the analysis of what is the  
17       best that's being achieved out there, that's not  
18       typically how it's practiced.  We look at the  
19       available control technologies for that project,  
20       and then we eliminate them, and then we rank them.

21           Q.    I'm sorry to interrupt.  I'm just going  
22       to read.  "Technologies required under Lowest  
23       Achievable Emission Rate (LAER) determinations are  
24       available for BACT purposes, and must also be  
25       included as control alternatives and usually

1 represent the top alternatives."

2 A. Okay. Yes. Those technologies that are  
3 associated with the LAER determination that would  
4 have been made for a project in a nonattainment  
5 area for that pollutant, those are certainly  
6 technologies that are evaluated. Again, the top  
7 technologies, all the top technologies are -- all  
8 technologies, including the top technologies, are  
9 included in that Step 1. And to the extent that a  
10 facility that's operating in a nonattainment area  
11 and is subject to LAER is incorporating that same  
12 technology, yes, that is certainly a technology  
13 that we're looking at.

14 Q. Do you know which plant has the lowest  
15 emission limit in the United States for PM10?

16 A. I believe that that was provided in the  
17 application, and I believe there is a River Hill  
18 facility, I think, that's permitted at 0.010  
19 pounds per million Btu, and I would need to refer  
20 to the list. There is another one. The River  
21 Hill facility was not included in the application.

22 Q. Do you know what control technology they  
23 used?

24 A. It is my understanding through my own  
25 research that they are incorporating a fabric

1 filter baghouse.

2 Q. And other control technologies?

3 A. That's not my understanding. Based on  
4 the available information that I've reviewed, I  
5 believe they're incorporating a fabric filter  
6 baghouse to comply with that limit.

7 Q. Do you know if they have a condensible  
8 limit?

9 A. Ms. Shropshire, members of the Board, I  
10 would need to review the information to determine  
11 whether or not they do, that facility  
12 specifically.

13 Q. Why did you focus on condensibles in the  
14 BACT?

15 A. Ms. Shropshire, members of the Board, I  
16 conducted an analysis -- Well, the applicant  
17 provided an analysis of condensible emissions from  
18 this project. In fact, they conducted a  
19 comprehensive study of what we would expect for  
20 condensibles based on the precursor emissions,  
21 precursors condensible PM10 emissions, what would  
22 be left over after control.

23 Q. When you say "precursor," can you  
24 explain. What do you mean by that?

25 A. Condensible emissions are -- Condensible

1 particulate emissions are emissions that are in  
2 gaseous or vapor form as they pass through the  
3 control technologies; and then when they enter the  
4 atmosphere, they would condense into a  
5 particulate. So the precursor pollutants are  
6 those pollutants that when they're in the process  
7 or in the flue gas, they are a gaseous or vapor  
8 form, and then later they will condense. So  
9 they're precursors to the condensible particulate.

10 Q. Sorry to interrupt. Why did you focus  
11 on condensibles in your BACT?

12 A. Because there was an analysis provided  
13 for condensible emissions, and we have, as an  
14 agency, begun looking at condensible PM emissions  
15 through the BACT process -- I believe this is the  
16 second permit that we've conducted that analysis  
17 for. And so based on information provided in the  
18 application specific to this project, we had an  
19 understanding of what those condensible emissions  
20 would be, and therefore, I reviewed the analysis  
21 for BACT purposes.

22 Q. I think it was yesterday you were  
23 talking about emission factors for PM2.5, and you  
24 said that you couldn't find emission factors for  
25 any CFB in the country; is that correct?

1           A.    Ms. Shropshire, members of the Board,  
2           I'm not aware of any direct PM2.5 emission factors  
3           for this project for this type of a process.  In  
4           fact, I'm generally not aware of PM2.5 emission  
5           factors for any process.

6           Q.    I guess one of my areas of confusion  
7           that I have is -- Let's just look on Exhibit 7,  
8           Page 40, where it's talking about control  
9           efficiencies.  The permit has an actual rate in  
10          the permit, correct?  Pounds.  But this  
11          information is efficiencies.  And where I'm having  
12          trouble is taking this 90 percent plus or minus --  
13          who knows -- 80 percent plus or minus -- who knows  
14          what.  It's confusing to me.  We've got this dry  
15          FGD, and FFB, or ESP, and then these ballpark  
16          numbers.

17                    And so in terms of the BACT process,  
18                    which as I understand it, you look at control  
19                    technologies, and then come up with a rate, is  
20                    that correct, in the end?

21          A.    Yes.

22          Q.    How that permit limit -- It just seems  
23          to me that it's backwards, and I'm confused by  
24          that.  How do you come up with a pounds rate when  
25          you've got these numbers that -- As a scientist,

1 when I look at this number -- 90 percent, 80  
2 percent -- that's plus or minus who knows what.  
3 Those aren't very accurate numbers.

4 So how do you come up with a number as  
5 precise as the one you have in the permit?

6 A. Ms. Shropshire, members of the Board,  
7 these are generalized control efficiencies here.  
8 As we read into the record as part of my  
9 testimony, there isn't that much concrete  
10 information out there regarding the control of  
11 these precursor emissions to condensible PM for  
12 any of these control options.

13 Therefore, the information that was  
14 provided in the application, that ultimately  
15 resulted in a pound per million Btu heat input to  
16 the boiler, is based on this specific boiler, and  
17 is the best information that's available when  
18 considering those types of emissions, those  
19 precursor emissions, leading to the overall  
20 condensible -- and those are based on that overall  
21 condensible PM10 efficiency of approximately 90  
22 percent.

23 Q. Is there some analysis that goes  
24 through, or is it some vendor's certificate that  
25 says, "This is how we come up with that emission

1 number"? It's just when you look at all of these  
2 plants across the country, they magically come up  
3 with the same number, and I just find that crazy.

4 A. Ms. Shropshire, members of the board, I  
5 don't think there is a magical process or number  
6 for this. What the vendor --

7 This is information coming from the  
8 vendor, as is stated in the application and in my  
9 summary, I believe. And so what is happening here  
10 is the vendor is analyzing what are the  
11 uncontrolled emissions from our boiler, using  
12 Powder River Basin coal, a dry FGD, followed by a  
13 fabric filter baghouse, and an ESP, what kind of  
14 reductions are we getting based on that  
15 uncontrolled number.

16 Q. So that final PM number, is that pounds?  
17 That rate, is that provided by the vendor, or is  
18 the efficiency number provided by the vendor?

19 A. The pounds per million Btu rate is  
20 provided by the vendor. We analyze that based on  
21 what we're seeing -- through the BACT process. If  
22 you look at Page 42 of that exhibit, that provides  
23 a summary of the precursor emissions or the  
24 constituents of the condensible PM10 emissions.

25 Q. And I guess that's the other part that's

1 confusing to me, because if you look at the  
2 condensibles -- which as I understand it are the  
3 part that are -- in terms of human health, the  
4 part where we're most concerned about. Ten years  
5 ago, EPA said, "Hey, guys. This stuff is bad for  
6 you. Let's focus on this." We need to pay  
7 attention to the 2.5, which seems to be synonymous  
8 with condensibles; is that correct?

9 A. As a person that lives and breathes the  
10 air out there, I am concerned with health effects.  
11 However, as a regulator, my basis for my decisions  
12 is on what the law requires.

13 Q. I appreciate that. In terms of why EPA  
14 started to focus on the 2.5 -- and I don't know.  
15 Is it fair to say that the 2.5 and condensibles  
16 are kind of the same thing? Is it fair to lump  
17 those together?

18 A. Ms. Shropshire, members of the Board,  
19 it's fair to say that my understanding, based on  
20 the information I've been able to verify, is that  
21 most of the condensible PM emissions are going to  
22 be in the size range of 2.5 microns or smaller.

23 Q. Then when we look at Exhibit 4, Page  
24 5-48, and 5-49, for HF -- which is one of the main  
25 condensibles -- we're ranked eleventh in the

1 country; and for the other one, we're at the  
2 eighth. And so a lot of these -- There is plants  
3 here that were permitted in 2000.

4 And so I'm having trouble understanding  
5 how we're looking at the best technologies and  
6 that we can't do better than someplace in Texas.

7 A. Ms. Shropshire, members of the Board,  
8 you are correct that they do rank -- according to  
9 this table, SME's plant, permitted limit for the  
10 plant isn't the top control technology, or isn't  
11 the top emission rate, best emission rate.

12 However, it's generally well understood  
13 that when analyzing these pollutants specifically,  
14 there is a lot of unknowns. Again, it's specific  
15 to the fuel. You're not to get much sulphuric  
16 acid mist out of utilizing one fuel as you will  
17 another fuel. So you're looking at this project  
18 on a case-by-case basis, what is happening with  
19 this boiler, using this coal, using these  
20 controls.

21 And so it may not be the best, but for  
22 the purposes of BACT, it's the best that this  
23 facility, using that coal, can achieve. That is  
24 what BACT is.

25 Q. I'm not sure that the best in the

1 country is even on here, so -- there may be more.  
2 But the other thing that I don't understand is --  
3 Just help me. When you looked at condensibles and  
4 BACT, or the BACT for condensibles, you looked at  
5 SO2 and filterables; is that correct?

6 A. Ms. Shropshire, members of the Board,  
7 what I looked at were the available control  
8 technologies for the precursor pollutants to  
9 condensible PM10; and as it turns out, those  
10 controls that are the best or top controls for the  
11 condensible precursors also are the same controls  
12 that were deemed BACT for SO2 and filterable PM10.  
13 So they're already employing those top controls  
14 for other pollutants, SO2 and filterable PM, and  
15 we're getting a co-benefit control, the top  
16 co-benefit control for these precursor emissions.

17 Q. And I'm not trying to disagree with you.  
18 But from the testimony that Mr. Taylor gave, and  
19 from my understanding, the baghouses aren't the  
20 most efficient way to reduce condensibles.

21 A. Ms. Shropshire, members of the Board,  
22 I'm not going to speak for Mr. Taylor. He speaks  
23 for himself.

24 My understanding of the controls that we  
25 looked at for this process is that the fabric

1 filter actually provides additional co-benefit  
2 control for H<sub>2</sub>SO<sub>4</sub> and acid gases, which are major  
3 constituents of the condensible PM<sub>10</sub>; whereas the  
4 wet ESP doesn't have that same capability.  
5 Therefore, I deemed, or I agreed with the analysis  
6 that said these are the top control technologies.  
7 You're going to get that co-benefit control.

8           And the information provided in the  
9 application and my own independent research  
10 resulted -- or led me to the determination, or  
11 agreement with the determination that the fabric  
12 filter baghouse, the dry flue gas desulphurization  
13 unit followed by a fabric filter baghouse is the  
14 top control.

15           Q. From what you know now, do you believe  
16 that the wet ESP is the best technology to reduce  
17 condensibles?

18           A. Ms. Shropshire, members of the Board,  
19 no, that's not my conclusion at this time from my  
20 knowledge, based on the information that I've  
21 seen. In fact, I would believe that our  
22 determination is backed up by the most recent EPA  
23 permit, which stated that fabric filter control is  
24 the top control.

25           Q. For condensibles?

1           A.    For filterable and condensible  
2    emissions.

3           Q.    But just condensibles alone?

4           A.    I would need to look back at the Deserit  
5    permit that is in evidence.  However, it's my  
6    understanding that they deemed the fabric filter  
7    to be the top control in that case as well, and  
8    dismissed the use of a fabric filter followed by a  
9    wet ESP.

10          Q.    So in your analysis, you never analyzed  
11    condensibles separately?  You combined the two?

12          A.    That's incorrect.  We analyzed  
13    separately filterable PM10; and then in addition  
14    to that analysis, we analyzed condensible PM based  
15    on the control of the precursors leading to  
16    condensible PM.

17                Condensible PM is a little bit  
18    different, in that it's not a direct emission --  
19    you're controlling the precursors to that  
20    pollutant -- versus the filterable is a  
21    filterable, solid, physically solid particle  
22    that's being collected by the fabric filter  
23    baghouse in this case.  The condensibles are being  
24    controlled as a precursor.  Does that make sense?

25          Q.    I'm not sure.

1           A.    When the precursors to condensible PM  
2    enter the atmosphere, they form a particulate.

3           Q.    Right, or a liquid, or a solid?

4           A.    A mist.  They form a particulate.  Once  
5    they enter the atmosphere and condense, they're  
6    considered a condensed particulate emission.

7           Q.    Not particulate anymore?

8           A.    To get control of that, so that that  
9    doesn't happen, so that those precursors don't  
10   enter the atmosphere, you control the precursor  
11   itself.

12          Q.    So sulphuric acid.  You look at how you  
13   would control sulphuric acid in that control  
14   technology?

15          A.    Yes.  Well, essentially in this case, a  
16   flue gas desulphurization unit, and that in  
17   combination with the fabric filter baghouse we  
18   deem is the top flue gas desulphurization; dry  
19   flue gas desulphurization unit, is the top control  
20   in SO<sub>2</sub>.  SO<sub>2</sub> in the flue gas stream is going to  
21   ultimately lead to SO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>.  You're going to  
22   get some of those emissions.  And those are  
23   precursors to condensible PM.  So we are employing  
24   the top control technology for the precursor  
25   itself.

1 Q. So maybe I'll ask it a different way.

2 If you had done it for, let's say, HF and  
3 sulphuric acid directly, would you have come up  
4 with a different result?

5 A. Ms. Shropshire, members of the Board, we  
6 did that analysis for H<sub>2</sub>SO<sub>4</sub>, acid gases, and acid  
7 gases including HCL and HF, which are the primary  
8 acid gases. We analyzed available control  
9 technologies for those pollutants which happened  
10 to be precursors to condensible PM, and the result  
11 was that after listing the available control  
12 technologies and ranking those control  
13 technologies for those pollutants, it so happens  
14 that those are already being employed as BACT for  
15 SO<sub>2</sub> and filterable PM.

16 Q. So the results for BACT for sulphur and  
17 acid gas would be identical to doing one for the  
18 precursors? I'm just making sure that I'm not  
19 confusing those two things.

20 A. Ms. Shropshire, would you ask that  
21 question again?

22 Q. I guess where I'm confused is you talk  
23 about the precursors, using the precursors instead  
24 of directly doing for condensibles, or are you  
25 saying that those are the same thing?

1           A.    Ms. Shropshire, members of the Board, it  
2           might be clearer if I state that you can't -- The  
3           condensable PM is not particulate matter when it's  
4           in the process, so I can't imagine a control  
5           technology that's going to get the condensed  
6           particulate matter because it's not going to be  
7           condensed particulate matter until it exits the  
8           stack.

9                        Therefore, what we're trying to do is  
10           we're trying to provide the best control of those  
11           pollutants that when prior to leaving the stack  
12           are -- we're trying to -- they're precursors.  
13           They're ultimately going to condense into  
14           particulate matter.  So we're controlling those  
15           precursors to avoid getting condensed particulate  
16           matter.

17           Q.    I guess that's why when I think of  
18           condensable, it's not condensed yet.  And so  
19           condensable is the same as a precursor; is that  
20           correct?

21           A.    Condensable --

22           Q.    Something that's not condensed yet.

23           A.    Yes.

24           Q.    And those precursors were SO<sub>2</sub> or -- what  
25           were the precursors exactly?

1           A.    The primary precursors, based on the  
2           information that I have available to me, the  
3           primary precursors for this process are H<sub>2</sub>SO<sub>4</sub> or  
4           sulphuric acid mist, hydrochloric acid gas  
5           emissions, hydrofluoric acid emissions, trace  
6           metals, I believe VOC's.  We can look at the  
7           table.

8           Q.    But you did your BACT for SO<sub>2</sub> and the  
9           filterable part for the condensibles?  That's the  
10          part that I'm confused about.

11          A.    Ms. Shropshire, members of the Board,  
12          I'll try to take a step back and provide an answer  
13          that is as clear -- This is as clear as I can  
14          state it, or I'll try.

15                We conducted a BACT analysis for the  
16          precursors of condensible PM.  So we went through  
17          Step 1.  We evaluated -- or I reviewed a BACT  
18          analysis.  In Step 1, we identified the available  
19          control technologies for these precursor  
20          emissions.  In Step 2, we eliminated any  
21          technically infeasible options.  In Step 3, we  
22          ranked the remaining control efficiencies for  
23          those precursors to condensible PM, and the top  
24          control technologies for those precursors were  
25          those controls that were already deemed BACT for

1 S2 and PM10. Therefore, those control  
2 technologies constitute BACT. There is no further  
3 analysis required.

4

5 EXAMINATION

6 BY CHAIRMAN RUSSELL:

7 Q. Eric, did you have an opportunity to  
8 review the Deserit application prior to making the  
9 Department's final decision?

10 A. No.

11 MS. SHROPSHIRE: I wanted to read one  
12 other thing that or comment or I have a question  
13 about.

14

15 RE-EXAMINATION

16 BY MS. SHROPSHIRE:

17 Q. So under Tab 6, Page 20652, I think the  
18 third one in, it says, "Notwithstanding the issues  
19 and uncertainties related to condensible PM, EPA  
20 encourages states to identify measures for  
21 reducing condensible PM emissions, particularly  
22 where these emissions are deemed significant  
23 contributions to the control strategy needed for  
24 expeditious attainment. We wish to clarify that  
25 in order to take credit in the SIP for reduction

1 of any such condensible PM emissions, there must  
2 be enforceable limitations that ensure that  
3 reduction in condensible PM emissions."

4 So these enforceable limits could take  
5 the form of a limitation on the condensible PM  
6 emissions, or total direct PM2.5 emissions. So I  
7 guess they're lumping condensible and PM2.5  
8 together.

9 A. I believe that's exactly what we did in  
10 this permit. We regulated filterable PM,  
11 including PM, PM10, and PM2.5, using PM10 as a  
12 surrogate, because we don't have available  
13 emission factors for direct PM2.5 emissions; and  
14 we limited condensible PM.

15 Again, let's distinguish between direct  
16 PM2.5 emissions, and as we've had this discussion  
17 most of -- we're assuming condensible mostly  
18 PM2.5.

19 So we conducted a BACT determination for  
20 filterable PM2.5 using PM10 as a surrogate, deemed  
21 the top control, and included a limit for PM10 in  
22 the permit.

23 In addition to that, and in accordance  
24 with what you just read, we analyzed and limited  
25 condensible PM through limiting the precursors to

1 condensible PM, because we can't control actual  
2 condensed PM because it's not been condensed.  
3 Otherwise it would be filterable.

4

5 RE-EXAMINATION

6 BY CHAIRMAN RUSSELL:

7 Q. In all cases?

8 A. If it was in particulate, physical  
9 particulate form, it would be a filterable  
10 pollutant that would be controlled by a fabric  
11 filter.

12 Q. It would be filterable, but based on the  
13 technology, it would be filtered or not?

14 A. Mr. Chairman --

15 Q. There are two categories of PM we're  
16 dealing with.

17 A. Yes.

18 Q. Those that are filtered, those are  
19 considered filtered and entering the waste stream;  
20 and those that are considered condensible. And  
21 then --

22 A. Yes.

23 Q. -- technically removed, because they're  
24 filtered, because they become a filterable  
25 particulate matter. But depending on the emission

1 control, that will depend on if it's filtered or  
2 not, right? If you use a sieve this big, it's not  
3 going to catch it, right? (Indicating)

4 A. Correct. Well, depending on -- if it  
5 was bigger than that, it would, the filterable.

6 Q. If it does condense, watch out, because  
7 it will hurt.

8 MR. ROSSBACH: It's an asteroid.

9 A. So Mr. Chairman, members of the Board,  
10 filterable particulate controls would control --  
11 and in this case we'll use a fabric filter for the  
12 example -- would control particulate matter that  
13 is a physical particle as it would be prior to  
14 entering that control device. And the fabric  
15 filter baghouse will control filterable PM,  
16 filterable PM10, and filterable PM2.5 with  
17 differing efficiencies.

18 CHAIRMAN RUSSELL: I agree with that  
19 statement.

20 MR. REICH: Mr. Russell, if I just might  
21 correct the record with respect to your question  
22 about Deserit. It's in the tab at eleven, and  
23 permit itself was issued August 30, 2007, after  
24 the date of this permit.

25 CHAIRMAN RUSSELL: Right. But I

1 questioned if he had reviewed the application.

2 MR. REICH: Thank you.

3 CHAIRMAN RUSSELL: Draft.

4

5 FURTHER EXAMINATION

6 BY MS. SHROPSHIRE:

7 Q. With regards to this -- So initially SME  
8 in their application -- if I'm understanding it --  
9 had suggested a rate of .015? I'm just reading  
10 from an email here I think under "F," from Mr.  
11 Lierow, where he says -- he's talking about three  
12 plants that have permit limits of .01, .011,  
13 .0135, and he says, "Do you have any information  
14 on these facilities that might help combat the  
15 state pushing for the .012 limit?" How did you  
16 come up with the .012 limit?

17 A. Ms. Shropshire, members of the Board,  
18 the .012 pounds per million Btu limit for  
19 filterable PM10 contained in the permit is based  
20 on the uncontrolled emission rate of 7.78 pounds  
21 per million Btu from this unit utilizing Powder  
22 River Basing coal. And a 99.85 percent reduction  
23 from that number results in 0.012 pounds per  
24 million Btu. That was the top control efficiency  
25 that was evaluated for this project.

1 Q. Why do you and SME come up with  
2 different numbers?

3 A. I can't speak for SME. And in  
4 particular, this email is not something that I had  
5 available to me in my review. I don't know why  
6 they chose to propose a limit of 0.015. Through  
7 the BACT process, I determined that 0.015 pounds  
8 per million Btu filterable particulate does not  
9 constitute BACT for this project.

10 Q. Is PM2.5 regulated?

11 A. Yes.

12 MS. SHROPSHIRE: I think I'll stop  
13 there.

14 CHAIRMAN RUSSELL: Next.

15

16 EXAMINATION

17 BY MR. ROSSBACH:

18 Q. Let me take a few minutes here, or maybe  
19 more than a few minutes, depending on how it goes.

20 MR. ROSSBACH: David, could you give Mr.  
21 Merchant the stipulated -- this is the joint  
22 prehearing memorandum.

23 Q. (By Mr. Rossbach) And I'd like to start  
24 with Page 4 of the Petitioners' factual  
25 contentions. But let me begin by saying first:

1 I've got a lot of questions, Eric, and I really  
2 appreciate your saying, "Members of the Board, but  
3 can we pass on that a little bit. I think it's  
4 very respectful, and the training you've had as a  
5 witness is excellent in that regard. But so we  
6 can kind of move along, because saying my name  
7 over and over again is going -- maybe that's to  
8 slow me down. I don't know. But let's just kind  
9 of go through the questions.

10 A. Certainly Mr. Rossbach, Mr. Chairman.

11 Q. Just have her take them all out of the  
12 record anyways. I'd like to -- Because I'm German  
13 and kind of methodical, I'd like to and want to  
14 try to understand this and kind of get it in  
15 context.

16 I'd like to go through the Petitioners'  
17 factual contentions. Yesterday Mr. Rusoff spent a  
18 lot of time telling us about you telling us,  
19 asking you questions, that let us know what your  
20 qualifications are, and the numbers of permits  
21 you've reviewed, and the number of training  
22 sessions you've been to, and your familiarity with  
23 the federal record and things like that. So  
24 hopefully we can kind of go through this and maybe  
25 we can move it.

1           Let's just start -- I'm going to start  
2           at the beginning, No. 1. "Reducing emissions of  
3           PM2.5 is a major public health concern." Do you  
4           agree with that?

5           A.    Yes.

6           Q.    And do you agree with the statement that  
7           is quoted there from the Federal Register, or do  
8           you have any reason to disagree with the EPA  
9           statement that, "Decreasing PM2.5 in the ambient  
10          air by only .5 micrograms per cubic meter can  
11          prevent as many as 25 to 50 premature deaths each  
12          year"? Any reason to disagree with that?

13          A.    I have no reason to disagree with that.

14          Q.    Then looking at two, "Microscopic  
15          particles in the PM2.5 range are small enough to  
16          lodge deep into the lungs. Even short term  
17          exposure to PM2.5 is known to cause serious  
18          respiratory illnesses, including asthma,  
19          cardiovascular illness, heart attack, premature  
20          death." Do you agree with that generally, as far  
21          as you know?

22          A.    I have no reason to disagree with that.

23          Q.    And do you also agree that, "Those  
24          particularly sensitive to PM2.5 exposure include  
25          children, older adults, and people with heart and

1 lung disease"?

2 A. I have no reason to disagree with that.

3 Q. Getting into a little more technical  
4 area on No. 3, it says, "PM2.5 is produced chiefly  
5 by combustion processes and by atmospheric  
6 reaction to various gaseous pollutants, and they  
7 can remain suspended in the atmosphere for days to  
8 weeks, and be transported many thousands of  
9 kilometers." Is that generally consistent with  
10 your understanding?

11 A. That makes sense to me, yes.

12 Q. Looking at No. 4, do you agree that,  
13 "The Highwood, HGS, Highwood Generating Station  
14 will be a major source of PM2.5 emissions, and  
15 that the CFB boiler alone is anticipated to emit  
16 299 tons of PM10 each year. Given that SME is  
17 anticipated to achieve over 99 percent control  
18 efficiency for filterable particulates in the  
19 larger PM10 size range, and 80 to 90 percent  
20 control efficiency for condensable particulate in  
21 the larger PM10 size range, the vast majority of  
22 the HGS uncontrolled PM emissions will be in the  
23 smaller PM2.5 size range"? Do you agree with that  
24 generally?

25 A. The term "major source" needs to be put

1 in context here. I have no way of knowing, based  
2 on the lack of emission factors, reliable source  
3 test methods, whether or not HGS is actually a  
4 major source of PM2.5. I analyzed PM10 as a  
5 surrogate for PM2.5.

6 Q. I understand what -- So let me ask you  
7 that. You had available to you the boiler  
8 manufacturer's data, did you not, as to what would  
9 be emitted from the normal boiler processes for  
10 the Alstom boiler that was going to be used at  
11 this plant?

12 A. In respect to PM10 emissions, I have  
13 what they determined would be the uncontrolled  
14 emission rate for PM10.

15 Q. They didn't provide you, or they were  
16 not able to provide you with a rate for 2.5?

17 A. The applicant did not provide me with  
18 that information, and I am unable to get that  
19 information on my own.

20 Q. Did you ask the applicant to request  
21 from Alstom what their 2.5 uncontrolled emission  
22 rate would be burning this particular coal in this  
23 particular application?

24 A. I'm not certain if that's in the record.  
25 My recollection is that I have had conversations

1 with their engineer regarding what would be  
2 anticipated for PM2.5 emissions. I don't know  
3 that, I don't know when that happened, in what  
4 context that question would have been asked, other  
5 than probably than through review of the  
6 application.

7 Q. You were never provided that information  
8 from the boiler manufacturer indirectly and then  
9 through SME about what their uncontrolled 2.5  
10 particulate would be?

11 A. That's correct. I was never provided  
12 that information.

13 Q. And you never followed through? If it  
14 was asked for, it was never followed through to  
15 ensure that you had it available to you; is that  
16 correct?

17 A. It was not provided to me, and I used a  
18 surrogate analysis.

19 Q. I understand that, but the question I'm  
20 asking you is: Did you ever follow through to try  
21 to find out what 2.5 emissions would be expected,  
22 uncontrolled emissions would be expected from the  
23 Alstom boiler that Bison Engineering was proposing  
24 for this project?

25 A. Mr. Rossbach, as I testified just

1 previously, it's my recollection that those  
2 questions were asked at some point during the  
3 process, but that we relied, in fall back because  
4 that information was not available -- at least  
5 that was what reported to me, that that  
6 information was not available -- I relied on the  
7 surrogate analysis. I have no way of -- If I  
8 don't have the information, I can't use it.

9 Q. But can't you say that, "The application  
10 is incomplete because I want that information"?  
11 You could have done that, couldn't you?

12 A. That could have been done. To be  
13 consistent -- Let me follow up. To be consistent  
14 with how these emissions are typically analyzed, I  
15 used guidance that's out there and available; and  
16 therefore, it was my determination it would be  
17 inappropriate to call the applicant deficient for  
18 that reason.

19 Q. But it was something that you could have  
20 done if you wanted to? You've asked for  
21 additional information here, and at one point you  
22 even asked them to do an -- conduct a particulate  
23 matter with an aerodynamic diameter less than 2.5  
24 microns ambient impact analysis. You asked them  
25 to do that, didn't you?

1 A. Yes, based on PM10 emissions.

2 Q. Right. But you asked them to do an  
3 additional analysis for 2.5, an ambient impact  
4 analysis, did you not?

5 A. Yes.

6 Q. So you could have asked them, "Look. We  
7 want to know what the 2.5 emissions, uncontrolled  
8 emissions from this boiler are, because NAAQS --  
9 we now have a NAAQS for 2.5. It's been in place  
10 for ten years. We're looking at -- The EPA is  
11 looking at it. We'd like to know what this would  
12 be"? You could have done that, couldn't you?

13 A. I could have done that.

14 Q. So let's go back to the rest of this  
15 question. "The CFB boiler is anticipated to emit  
16 299 tons of PM10 each year;" is that correct?

17 A. PM10 filterable plus condensible.

18 Q. 299 tons approximately; is that correct?

19 A. Yes.

20 Q. Would you then look at the next sentence  
21 here, and it says, "Given that SME is anticipated  
22 to achieve over 99 percent control efficiency for  
23 filterable particulate in the larger PM10 size  
24 range, and 80 to 90 percent control efficiency for  
25 condensible particulate in the larger PM size

1 range, the vast majority of the HGS uncontrolled  
2 PM emissions will be in the smaller PM2.5 size  
3 range;" do you agree with that?

4 A. I would agree with that statement.

5 Q. So now let's go to No. 5. No. 5 is  
6 basically a citation from the 70 Federal Reg. Do  
7 you have any reason to disagree with that  
8 statement that the obligation to implement PSD was  
9 triggered upon the effective date of the NAAQS for  
10 PM2.5?

11 A. I'm sorry, Mr. Rossbach. Could you  
12 point me to where you were again?

13 Q. I'm on No. 5. I'm just going down one  
14 by one. No. 5. And it's referring to the  
15 statement in the Federal Register. Do you have  
16 any reason to agree, disagree, with the statement  
17 made there by EPA that, "The obligation to  
18 implement PSD was triggered upon the effective  
19 date of the NAAQS for PM2.5"?

20 A. That would be when PM2.5 became a  
21 regulated -- a pollutant subject to regulation.

22 Q. Right. And the obligation to implement  
23 PSD was triggered upon that effective date?

24 A. That's correct.

25 Q. Then looking at No. 6, "The primary

1 health based PM2.5 NAAQS became effective over ten  
2 years ago, and the 24 hour NAAQS have since been  
3 revised to nearly twice as stringent in response  
4 to extensive data regarding the health impacts  
5 regarding PM2.5." Do you agree or disagree with  
6 that?

7 A. I agree with that.

8 Q. Now, No. 7. "While the NAAQS has been  
9 in effect for PM2.5 for over a decade, DEQ did not  
10 require SME to undertake a BACT for PM2.5 during  
11 the permitting process for HGS;" is that true?

12 A. That is not true.

13 Q. Well, I understand the surrogate, but  
14 did you do a specific 2.5 where you set up a  
15 matrix, and looked at the control technologies  
16 specific for 2.5? You did not do that, did you?

17 A. That analysis is not technically  
18 possible at this time.

19 Q. Well, we'll come to that in a minute.  
20 But you did not do that, is the answer to the  
21 question?

22 A. I did not directly require a PM2.5  
23 analysis without using a surrogate.

24 Q. Look at No. 8. "Technologies for  
25 control of PM2.5 emissions, both filterable and

1 condensible --" we'll take out the "readily  
2 available" -- "are available" -- and I'll take out  
3 "widespread" -- "use. Such technologies include  
4 membrane bags which can reliably capture  
5 filterable particulate down to .5 to .3 microns."

6           You heard the testimony of Mr. Taylor.  
7 Do you have any reason to disagree with the  
8 testimony of Mr. Taylor yesterday with regard to  
9 the availability of membrane bags and the  
10 filterable efficiency for those bags? Do you have  
11 any reason to disagree with him?

12           A. I'm not aware of the membrane bag  
13 technology through any BACT analysis that I've  
14 seen. And the fabric filter is also capable of --  
15 The fabric filter, as analyzed through our  
16 process, is also capable of controlling filterable  
17 particulate down to submicron size.

18           Q. Do you know what the relative efficiency  
19 of membrane bags versus teflon bags is at  
20 submicron size?

21           A. I do not know that information.

22           Q. Will you defer to Mr. Taylor with regard  
23 to those particular technical issues?

24           A. (No response)

25           Q. Would you defer to his expertise in

1 terms of those particular technical issues?

2 A. Would I defer to his --

3 Q. Would you concede he has expertise in  
4 these areas? Do you have any reason to disagree  
5 with his expertise?

6 A. No, I don't have any reason to disagree  
7 with that.

8 Q. And then on the second half of that  
9 paragraph, it talks about, "Wet electrostatic  
10 precipitators can achieve up to 99 percent control  
11 of particulate in the PM2.5 size range." Do you  
12 agree with that?

13 A. I'm very sorry. Where are we again?

14 Q. Turning on the next page, Page 6, and at  
15 the top, it's a continuation of the same Paragraph  
16 8, Paragraph 8 that we were just talking about.  
17 Do you see that? Do you agree with the clause,  
18 "Wet electrostatic precipitators (ESP) can achieve  
19 up to 99 percent control of particulate in the  
20 PM2.5 size range"? Do you agree with that, or any  
21 reason to disagree with that?

22 A. My reasoning for -- I can't say that  
23 that's a true statement, because I don't think  
24 that it's generally common knowledge to know what  
25 uncontrolled emissions of PM2.5, specifically

1 PM2.5 are for this boiler. If you don't know what  
2 uncontrolled emissions are, you cannot make that  
3 type of a determination.

4 Q. But the question -- I'm not asking the  
5 question in terms of this particular boiler. I'm  
6 asking the question generally. Do you agree that  
7 there is information available to you to say that  
8 there are wet electrostatic precipitators which  
9 can achieve up to 99 percent control of  
10 particulate in the PM2.5 size range?

11 A. I disagree with that.

12 Q. You don't agree that there is  
13 information or that -- Do you agree -- So you're  
14 disagreeing with Mr. Taylor about that technology?

15 A. I'm disagreeing that there is -- I've  
16 not seen that information. That's what I'm  
17 saying.

18 Q. That's fine. And No. 9 I assume is  
19 correct that you did not consider using membrane  
20 bags?

21 A. That's correct.

22 Q. And No. 10, I think we've had some  
23 discussion about. You did consider wet ESP as a  
24 part of a combination with wet FGD? You did  
25 consider wet ESP as a technology as a part in

1 combination for control of condensibles; is that  
2 correct?

3 A. That's correct, and also stand alone for  
4 filterable PM10.

5 Q. I didn't see that. Maybe I missed that.

6 A. I can point you to the permit location,  
7 if you'd like.

8 Q. That's fine. So where did you get the  
9 information about the efficiency of wet ESP?  
10 Where did that come from in that combination?

11 A. That would have been provided by the  
12 applicant.

13 Q. And did you know which particular vendor  
14 or which particular wet ESP manufacturer was being  
15 utilized to do that analysis?

16 A. No.

17 Q. That particular information was not  
18 provided as part of the permit application, where  
19 they got that information?

20 A. To the best of my recollection, they did  
21 not provide a vendor name for their specific  
22 technology proposed or analyzed.

23 Q. Let me step back one simplistic  
24 question. Exhibit 4 in this case is the  
25 application, I think. Do you get more than just

1 that application, or is that all you get? Do you  
2 get like sort of a background box of appendices  
3 where they got this information, or the source  
4 material for how they decided that they were going  
5 to get this level of efficiency? Do you get  
6 anything more than that, or do you just get the  
7 little application?

8 A. The application itself -- What's  
9 provided in Exhibit 4 is small pieces of the  
10 application. The application itself is somewhere  
11 around 500 pages long, including appendices,  
12 modeling analyses, coal specifications. There  
13 were also DVD's provided for a coal test burn that  
14 took place. There was lots of information.

15 Q. I assumed that. That's what I --  
16 because when you say, "They provided us with  
17 information about the efficiency of that  
18 particular combination technology," you had  
19 something more than just that little chart?

20 A. Yes.

21 Q. So combination technologies including  
22 wet ESP was something that was provided to you as  
23 an alternative by SME; is that correct? In their  
24 own BACT; is that right? The wet FGD followed by  
25 the wet ESP was one of the technologies, which was

1 a combination technology, which was provided to  
2 you as a part of the BACT that Bison or the people  
3 working for Bison did and submitted to you; is  
4 that correct?

5 A. For condensable PM, yes.

6 Q. And wet ESP standing alone was also  
7 considered as a part of the filterable?

8 A. That's correct.

9 Q. So Mr. Taylor yesterday proposed a  
10 baghouse plus wet ESP filterable bag technology  
11 followed by a wet ESP. That's another combination  
12 technology, not unlike the combination technology  
13 that was part of the BACT given to you by Bison;  
14 is that correct? It's another combination  
15 technology; is that correct?

16 A. That is correct.

17 Q. Let's skip No. 11 and No. 12 because  
18 there is a lot of information in the permit that  
19 talks about some of the same stuff; and then we'll  
20 skip No. 13, No. 14, No. 15. I think they've been  
21 talked about by Miss --

22 No. 17. This goes to the Seitz memo  
23 that was part of your testimony yesterday. I'll  
24 give you a chance to read through that, and I'm  
25 going to just ask one question.

1 MR. REICH: What number are we on?

2 MR. ROSSBACH: I'm on No. 17. I think  
3 we've dealt with those plenty, the Forest Service  
4 and all that other stuff.

5 Q. (By Mr. Rossbach) Do you see No, 17,  
6 Eric? Have you had a chance to read that?

7 A. Yes.

8 Q. That's the memo that Mr. Seitz sort of  
9 set out the concerns that they had in 1997 about  
10 doing a PM2.5 BACT, so they basically authorized  
11 the states as the delegated Clean Air Act agency  
12 to use the PM10 surrogate; is that correct?

13 A. That's correct.

14 Q. That's where that came from?

15 A. That's correct.

16 Q. And then No. 18. This so-called Seitz  
17 memo was never adopted through notice and comment  
18 federal rulemaking; is that correct?

19 A. That is correct.

20 Q. And do you agree that -- Look at No. 19,  
21 and read that through for me, if you would.

22 A. (Examines document) Out loud?

23 Q. No, just read through it. I don't want  
24 to ask you a question without giving you a chance  
25 to look at it.

1 A. (Examines document)

2 Q. So the memo does provide that -- the  
3 statements in that memo do not bind the state, and  
4 local governments, and public as a matter of law;  
5 is that correct?

6 A. That is correct.

7 Q. The Seitz memo doesn't bind you to using  
8 PM10 as a surrogate, does it?

9 A. It does not.

10 Q. It doesn't require you that -- the only  
11 way you can do a BACT for a power plant is by  
12 using PM10 as a surrogate; is that right? You  
13 could have come up with another method if you felt  
14 that you, as the delegated agency, wanted to do a  
15 different way of looking at it?

16 A. That's correct.

17 Q. So you had a choice then about whether  
18 to use PM10? You weren't required to use PM10 as  
19 a surrogate; is that right?

20 A. That's correct.

21 Q. Let's look at No. 20. "The Seitz memo's  
22 guidance to rely on BACT analysis for PM10 --" and  
23 I'll add as a surrogate -- "does not ensure  
24 maximum achievable reductions in emissions of  
25 PM2.5;" do you agree with that?

1 A. Yes.

2 Q. Then look at No. 21, if you would, and  
3 read through that for a minute briefly.

4 A. (Complies)

5 Q. We'll take it one part at a time. Do  
6 you agree that a control technology that is deemed  
7 to be BACT for PM10 may not be BACT for PM2.5?

8 A. I think we have to put this in context  
9 here. I think that that's --

10 Q. Let's start with answer the question,  
11 and then we'll put it in context.

12 MR. REICH: I object. I think he should  
13 be entitled to answer questions.

14 MR. ROSSBACH: He can answer my  
15 question, which is yes or no, and then he can --  
16 I'm not going cut him off from explaining, or you  
17 can -- Mr. Russell would have a chance --

18 Q. (By Mr. Rossbach) Eric, yes or no.

19 A. Yes.

20 Q. And then, "In general, control  
21 technologies that are highly effective at  
22 controlling PM10 will achieve lesser control  
23 efficiencies for PM2.5;" do you agree with that?

24 A. I cannot say whether or not that's true,  
25 no.

1           Q.    And then the last question is, "At the  
2           same time, some particulate matter control such as  
3           membrane bags and wet ESP are better than others  
4           -- are better than others at capturing smaller  
5           particles." I think we've already addressed that.  
6           Yes or no?

7           A.    I don't have that information.

8           Q.    So going back to Mr. Reich's concern, I  
9           want to give you a chance to put it in context.

10          A.    What I was saying there -- "A control  
11          technology that is deemed to be BACT for PM10 may  
12          not be BACT for PM2.5" -- and I generally answered  
13          yes.

14                        However, the BACT process requires  
15          certain things. I don't think that the BACT -- I  
16          think there are technical problems right now that  
17          still exist, some of which are highlighted in the  
18          Seitz memo, to conducting a PM2.5 BACT. So I  
19          don't know that you can make that statement. We  
20          have to know what uncontrolled PM2.5 emissions are  
21          in order to conduct a BACT analysis, direct PM2.5  
22          emissions. We don't have that ability right now.

23          Q.    Well, I heard Mr. Taylor say that you  
24          could have asked the boiler manufacturer what the  
25          uncontrolled emissions were for that particular

1 boiler, and that if they didn't know, in order to  
2 sell the boiler, they do a test burn, they do the  
3 lab work, they try to tell you what that number  
4 was so that you would buy that from them. So if  
5 you had gone to SME and demanded that you knew  
6 what the 2.5 was, SME would have gotten it for  
7 you; don't you think that's true?

8 A. No, I don't. In general, I think that  
9 one of the problems here that we're talking about  
10 is: There is no promulgated and approved direct  
11 PM2.5 emissions monitoring test, so I don't know  
12 how you would get that information. And in  
13 addition -- and I'll just put this for my purposes  
14 here, for answering your question -- without Mr.  
15 Taylor providing Alstom's spec sheet which shows a  
16 PM2.5 direct emission factor, I believe that  
17 that's hearsay.

18 Q. Well --

19 A. I can't rely on that. Maybe I used the  
20 wrong term.

21 Q. Calls for a legal conclusion.

22 A. Calls for a legal conclusion. I can't  
23 say that.

24 Q. I understand what your concern is. All  
25 I heard was Mr. Taylor yesterday say that as a

1 representative of a boiler manufacturer, if  
2 someone had come to him and said, "We want to buy  
3 your boiler, and we want to know what the  
4 uncontrolled emissions are," they would have found  
5 out. That's all I'm following up on, what he  
6 said. And so I'm just wondering if you had wanted  
7 and you had insisted that you find out what the  
8 2.5 was, they would have gotten you some  
9 information, wouldn't they? They would have told  
10 you, "Well, we're not certain about it, but we  
11 believe it's about this, because this is how we  
12 came about it." Don't you think they would have  
13 done that if you would have asked them?

14 A. I think your question has a lot of  
15 speculation in it. I don't know that that's true.

16 Q. Well, at least Mr. Taylor, when he was  
17 working for a boiler manufacturer, he would have  
18 tried to provide you that; isn't that what he said  
19 yesterday?

20 A. That's what he said.

21 Q. Do you agree with the first sentence of  
22 No. 22, "PM2.5 is significantly more toxic in  
23 smaller concentrations than PM10"?

24 A. I believe that's depending on what the  
25 PM10 is made of. I guess there could be some

1 toxic characteristic of a specific particle in the  
2 PM10 range. But given what I've read before and  
3 the EPA studies, and other studies, generally  
4 PM2.5 is more hazardous than PM10.

5 Q. Then look at No. 23. And as somebody  
6 who does BACT, maybe you can tell me whether you  
7 agree or disagree with No. 23. "Because PM2.5 is  
8 more dangerous than PM10, technologies that  
9 achieve higher control efficiencies for PM2.5 or  
10 its precursors may be considered cost effective in  
11 a BACT analysis for PM2.5, whereas in a BACT  
12 analysis for PM10, the same technologies would be  
13 considered unreasonably expensive." Do you agree  
14 with that?

15 A. Again, based on the information that I  
16 have available to me, I don't think that that  
17 analysis can be done at this point.

18 Q. Well --

19 A. At least in a defensible manner.

20 Q. I understand. Let's skip ahead to No.  
21 25. No. 26. This is made of record. It has to  
22 do with the Federal Register that was brought to  
23 us yesterday. "As EPA knowledge in 2005, no new  
24 regulations are required to conduct BACT analysis  
25 for PM2.5;" do you agree with that?

1           A.    Are you on No. 25 here?

2           Q.    26.  Let's go back to No. 25.  Let's  
3   start with No. 25.  Do you agree that in November  
4   2005, EPA announced that concerns raised in the  
5   Seitz memo had largely been resolved, and on this  
6   basis, the agency proposed new implementation  
7   rules with respect to 2.5;" do you agree with  
8   that?

9           A.    That's a statement, yes, out of that  
10   document, the Federal Register.

11           MR. REICH:  I'm just going to object,  
12   Mr. Rossbach.  We should have the right to read  
13   other pertinent provisions of that regulation,  
14   because that doesn't --

15           MR. ROSSBACH:  But the regulation is  
16   record.

17           MR. REICH:  You're taking pieces of it  
18   and cross-examining on those pieces, and it's not  
19   fair -- the entire context.  That's all.

20           CHAIRMAN RUSSELL:  I tend to agree,  
21   Bill, because I'm reading parts of that same  
22   document, both of the CFR's, and I can pull  
23   portions up that state -- and I don't want to act  
24   like an advocate for any party, but it talks about  
25   -- in the 2005 record, it talks about PSD coming

1 later.

2 MR. ROSSBACH: That's fine.

3 CHAIRMAN RUSSELL: Let's just be really  
4 careful. I'm sure you feel you are.

5 MR. ROSSBACH: I'm just going through  
6 trying to get straight what we agree or don't  
7 agree with. That's all. Because I'm not sure  
8 what we agree or don't agree with after hearing  
9 the testimony so far.

10 Q. (By Mr. Rossbach) Do you agree with the  
11 statement then that out of the -- Do you have any  
12 reason to disagree that the 1997 guidance stated  
13 that sources would be allowed to use  
14 implementation of PM10 as a surrogate for NSR  
15 requirements until certain difficulties were  
16 resolved, primarily the lack of tools to calculate  
17 emissions of PM2.5 and related precursors --" I  
18 think you've talked about that -- "the lack of  
19 adequate modeling techniques to project ambient  
20 impacts and the lack of 2.5 monitoring. As  
21 discussed in this preamble, those difficulties  
22 have been resolved in most respects, and where  
23 they have not been, the proposal contains  
24 appropriate provisions to account for it."

25 I'm finishing up on No. 25. This is a

1 quote from the Federal Reg. You were aware of  
2 that Federal Register statement guidance by EPA?

3 A. Yes.

4 Q. And then in No. 26, are you aware that,  
5 "The EPA acknowledged in 2005 that no new  
6 regulations were required to conduct a BACT  
7 analysis for PM2.5. The requirements applicable  
8 to New Source Reviews and SIP for the obligation  
9 to subject sources to NSR permitting for PM2.5,  
10 direct emissions are codified in the existing  
11 federal regulation, and can be implemented without  
12 specific regulatory changes." Do you agree with  
13 that as stated?

14 MR. REICH: Same objection.

15 Q. (By Mr. Rossbach) Any reason to  
16 disagree with that coming from the Federal  
17 Register?

18 A. That's what it says.

19 Q. Emission factors that -- Let's just get  
20 a clarification, go back. An emission factor is  
21 like a published statement that provides some  
22 guidance based upon lots and lots of testing of  
23 different comparable boilers to come up with an  
24 assumption about how much of a particular  
25 uncontrolled particulate will come out of a boiler

1 of a certain technology; is that how that works?

2 A. It's a tool used to estimate emissions,  
3 yes, based on --

4 Q. It's an estimate based upon lots of data  
5 gathered; is that correct?

6 A. That's correct.

7 Q. But as I understand it, you also depend  
8 upon the manufacturers to get specific technology  
9 information about the particular technologies that  
10 are proposed on a case-by-case basis; isn't that  
11 true?

12 A. Yes. I think that the ideal emission  
13 factor would be one that is based on the unit that  
14 you're analyzing, whereas a generally published  
15 emission factor might be just a best guess, best  
16 estimate.

17 Q. So obviously the best thing that you  
18 could do is get the specific data from the boiler,  
19 and the type of coal that they were going to burn;  
20 is that true?

21 A. That would be the best emission factor,  
22 yes.

23 Q. So when you said -- So what I was  
24 confused about yesterday, when you said there was  
25 no published emission factor for 2.5, it's just

1 that there hadn't been enough data gathered yet,  
2 or a consensus about what that would be; is that  
3 correct?

4 A. I'm not aware of a published emission  
5 factor for this type of unit, yes.

6 Q. I understand that. It just hasn't  
7 gotten there yet; is that correct? At some point,  
8 there will be a published emission factor?

9 A. That would be my hope and assumption,  
10 yes.

11 Q. But you don't need an emission factor,  
12 because you could -- at a specific site, if they  
13 had provided you with 2.5, you wouldn't have gone  
14 to an emission factor, you would have used what  
15 they gave you; isn't that true?

16 A. Had I had a reliable way of estimating  
17 PM2.5 emissions, I believe that I could have  
18 conducted a BACT analysis specific to PM2.5.

19 Q. Looking at No. 28, maybe we can take a  
20 minute because it's a long one there, and as  
21 somebody who is not as familiar with these test  
22 methods as maybe you are. Did you look at that  
23 for me? Have you had a chance?

24 A. For the record, I'm just going to state  
25 at the outset here: When talking about

1 conditional test methods and referenced methods,  
2 I'm aware of what they are, and what they're  
3 intended to be used for. I'm not a compliance  
4 officer. I don't have any stack testing  
5 experience. My experience would just be based on  
6 things that I've analyzed. So I can't speak to  
7 the test methods themselves.

8 Q. That's fine. Are you aware that the EPA  
9 has developed three different test methods for  
10 measuring condensible particulate emissions?

11 A. I'm aware that there are conditional  
12 test methods available.

13 Q. That's fine.

14 A. As well as Promulgated Test Method 202  
15 for condensibles, which has been shown to have  
16 some problems.

17 Q. Do you know the efficiency of the fabric  
18 filter for controlling 2.5? Is that something  
19 that a manufacturer of a fabric filter would be  
20 able to provide you with?

21 A. Again, I'll just state: Based on the  
22 information I've had available to me, you would  
23 need to know what the uncontrolled emissions going  
24 into that baghouse were prior to having any  
25 understanding of what the control efficiency would

1 be. And I don't have that information available.

2 Q. I'm not talking about a particular  
3 component of it. You can't tell by the nature of  
4 the materials and the function -- Doesn't a vendor  
5 tell you what they think the efficiency of their  
6 particular product is going to be for particular  
7 chemicals, particles, whatever?

8 A. They don't tell me what -- and to the  
9 best of my knowledge, they don't tell the  
10 consultant either, what the control efficiency is  
11 for PM2.5. Now, you're talking about the  
12 material. Let's also understand that with a  
13 fabric filter, you're getting particulate control  
14 through the filter cake build-up on the bag. So I  
15 don't know --

16 Q. But the overall functioning of that  
17 particular technology, isn't that something that  
18 the manufacturer is going to want to promote to be  
19 able to sell his product? "Ours is more efficient  
20 than our competitor's." Somewhere that  
21 information is available, isn't it?

22 A. Not to the best of my knowledge, no,  
23 it's not available.

24 Q. Well, that's fine. How does SME decide  
25 whether they're going to buy Company ABC's product

1 versus Company XYZ's product? How do they decide  
2 which one, other than cost? Is there some other  
3 efficiency that they look at? Somebody who comes  
4 to a plant, comes to their office, and says,  
5 "Here. Ours is better than XYZ's because we can  
6 control sulphuric acid better," or "We can  
7 control, because of the particular weave, or the  
8 particular fabric material, or the way that we put  
9 the teflon into the material"?

10 You said to us that the teflon is more  
11 efficient. Is it more efficient at 2.5, or only  
12 at ten, or can we find that out?

13 A. I wasn't part of SME's development plan  
14 for this permit. I reviewed the information  
15 pertinent to this project from a control and  
16 emission standpoint, based on the information  
17 available and what the law says.

18 Q. But that's information -- Have you ever  
19 tried to get that information? Have you ever  
20 asked them, "How do you know it's going to work?"  
21 Don't they have to depend upon a manufacturer  
22 telling them, "We're going to get this  
23 efficiency," for them to do their BACT? Don't  
24 they have to depend upon somebody telling them --

25 A. I think that I stated yesterday that

1 part of the issue here is that we rely on the  
2 application, because they have lots of time to  
3 evaluate this -- as you've just discussed -- and  
4 I've got a period of time which is significantly  
5 shorter than that to evaluate it.

6           So I need to take information that I  
7 have available to me through the application, and  
8 some of my own research, certainly my own research  
9 to verify the information and that kind of thing  
10 that's provided to me. But I don't know -- I  
11 can't -- I can tell you with a high level of  
12 confidence that if I called Alstom Boilers and  
13 asked for that emission factor, it would not be  
14 given to me, either because it's not available, or  
15 because it's not something that they want to  
16 share. I don't know. It's all speculation.

17           Q. I understand. But somebody someplace in  
18 the chain of things had to make a decision as to  
19 whether to use an XYZ bag or an ABC bag, and that  
20 has to be based upon specifications; don't you  
21 think that would be likely?

22           A. That's very likely. I don't know that  
23 that would be something that they had for PM2.5.  
24 I just don't know that. I don't know that.

25           Q. I understand. I'm not accusing you of

1 anything. I'm just trying to find out what you  
2 did know, and what you could have known if you  
3 would have asked them for it. Presumably  
4 someplace in this had this information for them to  
5 be making these decisions. I just heard what Mr.  
6 Taylor said he would have provided as a vendor,  
7 and I'm trying to find out what they told you.  
8 That's all.

9 A. They did not tell me that. They did not  
10 give me that information.

11 Q. So going back a little bit to the -- let  
12 me ask you one other thing. Mr. Rusoff asked you  
13 about the use of an emission standard for  
14 condensibles; is that correct? Do you remember  
15 that discussion about that that was something that  
16 EPA had suggested, that you didn't need to impose  
17 a condensible limit until 2011 or something like  
18 that? Do you remember that?

19 A. Yes.

20 Q. SME asked you to not have a condensible  
21 limit; isn't that true?

22 A. That's correct.

23 Q. But you guys decided that was something  
24 that you felt was appropriate to have at this  
25 time; is that correct?

1           A.    That's correct.

2           Q.    And you felt that there were the tools  
3    available at that time to impose those kind of  
4    limits and to be able to monitor their compliance  
5    with them prior to 2011; isn't that correct?

6           A.    That's correct.  Based on information  
7    included in the application, we felt like we had  
8    the information necessary to estimate and limit  
9    condensable PM emissions based on precursor  
10   pollutants.

11          Q.    So just let me understand it, and sort  
12   of break this down a little bit.  Essentially you  
13   had a choice?  You had a choice to either impose a  
14   condensable limit or not, and EPA told you that  
15   you have a choice?  They were recommending to you  
16   not to include it, and SME asked you not to  
17   include it, but in that instance you decided to go  
18   forward and include it; isn't that true?

19          A.    That is true.

20          Q.    It's a different situation with PM2.5.  
21   EPA didn't tell you you had to use the surrogate  
22   anymore.  In fact, the 2005 Federal Register  
23   suggested that most of the problems with 2.5 had  
24   been resolved.  But in that instance, you chose to  
25   do what SME wanted; is that correct?

1                   MR. REICH:  Objection to your  
2                   characterization of that question.  It doesn't say  
3                   that.

4                   A.    There is a difference between -- There  
5                   is a big difference there in your statement, and  
6                   that is:  I believed through the application that  
7                   I had enough information to analyze and limit  
8                   condensable particulate matter.  I do not have,  
9                   and do not believe, and it was not provided to me  
10                  any information regarding direct PM2.5 emissions.  
11                  Therefore, I don't have that component.  How can I  
12                  directly regulate PM2.5 in a defensible manner?  I  
13                  could make something up, I guess, but that would  
14                  not be defensible.

15                  Q.    (By Mr. Rossbach)  You could have asked  
16                  them for that information, too, couldn't you?  We  
17                  already had said that?

18                  A.    Again, to the best of my recollection,  
19                  that was part of a conversation at some point  
20                  during the process, but absent that information, I  
21                  relied on the defensible surrogate approach that  
22                  is suggested by EPA.

23                  Q.    Right.  But what we have here is:  You  
24                  asked for it; they didn't give it to you; and you  
25                  were satisfied with that for some reason.  And we

1 don't have a record of why they denied giving you  
2 that information. All we know is they didn't give  
3 you that information, and you let it go. And you  
4 had a choice to demand that information and you  
5 didn't. You had a choice to make them comply with  
6 a condensable limit, and you did, and I applaud  
7 you for that. I'm thrilled that you did that.

8           But I wonder why you didn't just go and  
9 say, "Okay. We've had ten years of NAAQS. We  
10 know that 2.5 is much more hazardous. We know  
11 that the PM10 surrogate doesn't get all -- doesn't  
12 really tell us how much 2.5 is getting out there,"  
13 and you didn't ask them and insist that they have  
14 -- that they provide you with that information.  
15 Why is that?

16           MR. REICH: Objection. The question  
17 assumes a fact not in existence, which is that SME  
18 denied or the boiler denied giving the  
19 information. He did not testify to that.

20           Q. (By Mr. Rossbach) You didn't get the  
21 information, and you didn't ask for it, you didn't  
22 insist on it?

23           A. Based on my experience in going back  
24 many years and analyzing many projects, it's my  
25 understanding that the EPA policy is that using a

1 surrogate is an acceptable and defensible process  
2 which is used by every state, by EPA, by everyone  
3 who is in this business. That is an acceptable  
4 methodology. Therefore, in the absence of that  
5 information being provided to me through the  
6 application process, I relied on a process which  
7 is defensible and appropriate by all standards.

8 Q. But it wasn't a required process?

9 A. It was not a required process.

10 Q. Just to kind of follow up. And I don't  
11 remember. With the October 3rd comment sheet that  
12 you wrote.

13 A. The draft.

14 MS. DILLEN: I believe it's Exhibit H.

15 Q. (By Mr. Rossbach) Do you have that,  
16 Eric?

17 A. I do.

18 Q. Let's look at Page 3. Do you see Page  
19 3?

20 A. Yes.

21 Q. I'm looking at No. 9. Do you see that?

22 A. Item 9 on Page 3, yes.

23 Q. Item 9, yes. So after you did the  
24 analysis of the permit application, one of the  
25 things that you were going to insist on is that

1 SME/HGS must provide manufacturer's specifications  
2 or other appropriate information indicating that  
3 any proposed baghouse and emission rates of 0.005  
4 grams per -- I don't know what TCH is.

5 A. Grains per dry standard cubic foot.

6 Q. And 0.01 Gr. per DSCF KCF achievable.

7 So at least in that instance, you felt you had the  
8 ability to insist that they provide manufacturer's  
9 specifications for emission rates, didn't you?

10 CHAIRMAN RUSSELL: Does anyone have a  
11 background in stoic geometry? Do you know what  
12 those equate to in the same units that we're  
13 dealing with?

14 MR. ROSSBACH: No.

15 CHAIRMAN RUSSELL: Do you know what they  
16 equate to?

17 MS. SHROPSHIRE: What is DSCF?

18 THE WITNESS: Dry standard cubic foot.  
19 So that's a relatively simple --

20 CHAIRMAN RUSSELL: So someone needs to  
21 calculate --

22 MS. SHROPSHIRE: Actually it's a number,  
23 grains, particle --

24 MR. ROSSBACH: It's not relevant to my  
25 question.

1 MS. SHROPSHIRE: Number per volume.

2 CHAIRMAN RUSSELL: It could be very  
3 relevant because of the efficiencies of a baghouse  
4 to control the dust coming off the conveyor belt.

5 MR. ROSSBACH: That's a very good point.

6 MS. SHROPSHIRE: So the concentration  
7 basically --

8 Q. (By Mr. Rossbach) I guess my question,  
9 Eric, is: At least in this instance, you felt  
10 that it was in your power and authority to insist  
11 that they provide you with manufacturing  
12 specifications for those emission rates; isn't  
13 that true?

14 A. Not for PM2.5.

15 Q. Well, you asked them for emission rates?

16 A. Yes.

17 Q. You felt it was within your authority to  
18 ask for emission rates?

19 A. Oh, absolutely.

20 MR. ROSSBACH: I don't have any other  
21 questions.

22 MR. REICH: Mr. Chair, just before we  
23 break, if Mr. Rossbach has no further questions, I  
24 would ask that either a Board member or one of  
25 Counsel be allowed to go through the State and

1 SME's contentions, so this is a fair proceeding,  
2 because Mr. Rossbach has spent the last hour  
3 cross-examining Mr. Merchant only on the unagreed  
4 contentions of Petitioners, and it's entirely  
5 unfair that you have a one-sided presentation of  
6 the Petitioners' case through Mr. Merchant without  
7 an opportunity both to cross-examine Mr. Merchant  
8 on our contentions, as well as perhaps Mr. Taylor  
9 up --

10 MR. ROSSBACH: Can I respond?

11 CHAIRMAN RUSSELL: I'm thinking that you  
12 could, but I wonder if --

13 MR. ROSSBACH: But he hasn't even  
14 started his case. He can do with his case  
15 whatever wants to.

16 CHAIRMAN RUSSELL: Maybe it would be  
17 more appropriate for you to go through DEQ and  
18 SME's with your witness, and I will designate  
19 someone on the Board to go through those.

20 MR. REICH: I'd happy to. I would also  
21 point out that MEIC had already finished its case,  
22 and now we're doing MEIC's case through Mr.  
23 Merchant. I just don't think it's a fair process.

24 CHAIRMAN RUSSELL: Duly noted. If you  
25 want to file anything on that, you certainly

1 could.

2 MR. REICH: I make my objection for  
3 record. I may file something. I'm making my  
4 objection for the record.

5 CHAIRMAN RUSSELL: Unless there is some  
6 other Board members that would like to ask the  
7 Department through Eric any further questions, or  
8 maybe it's just Eric, do so now, because we will  
9 be taking a lunch break here any moment.

10 MR. MIRES: I do have some just  
11 clarifications for my ignorance.

12

13

EXAMINATION

14

BY MR. MIRES:

15

Q. Can you define for me what the

16

definition is of a nonattainment area.

17

A. Yes. It's pollutant specific, and the

18

example I'll use is particulate matter less than

19

ten microns, for example. PM10, an area,

20

generally an area anywhere in the US, let's say

21

Helena, for example, or let's use -- in this case

22

we'll use Missoula is a PM10 nonattainment area.

23

That means the level, the ambient concentration of

24

particulate matter less than ten microns in the

25

ambient air that we breathe every day is higher

1 than the standard -- or has been documented to be  
2 higher than the National Ambient Air Quality  
3 Standard for that pollutant.

4 So at some point, it was monitored.  
5 There was a violation of the ambient air quality  
6 standard in that area. So it's not attaining the  
7 standards. Helena, for example, would be in  
8 attainment for that pollutant.

9 Q. Powder River coal, compared to other  
10 fuels, how does this fit into the picture here?

11 A. It's got many different characteristics.  
12 Coals have different characteristics.

13 Q. So what I understand then is if you  
14 change the fuel from Powder River, if they went to  
15 something else, then all of these scenarios that  
16 we're talking about are going to change; is that  
17 correct?

18 A. That's correct. Many aspects of these  
19 scenarios, yes.

20 Q. Lower limits of this. There has been  
21 referencing to a lot of lower limited permits in  
22 the testimony here of different companies or  
23 firms. Are these lower limited permitted firms,  
24 are any of them actually built and operating?

25 A. Are we talking about filterable PM10 or

1 condensible?

2 Q. Yes.

3 A. Yes. And I believe there was testimony  
4 yesterday related to that.

5 Q. Are they actually meeting the limits  
6 that are stated within the permits, better, or  
7 worse, or where are they at on those? Any idea?

8 A. My understanding is, based on the  
9 information that's available to me, that one of  
10 the facilities that was testified to yesterday,  
11 the JEA facility, is meeting a lower limit for  
12 filterable PM10. I believe that permit limit is  
13 .011 pounds per million Btu.

14 Q. So we verify that these are not just  
15 hypothetical concepts that out there in the permit  
16 that you hope to attain, but that they are doable?  
17 Thanks.

18 A. Mr. Mires, for the record, specific to  
19 that project, yes.

20

21 EXAMINATION

22 BY MR. MARBLE:

23 Q. Powder River coal, what's the Btu per  
24 pound?

25 A. Depending on the mine, I believe the

1 average is somewhere around 9500 to 9700 Btu per  
2 pound, with the lowest -- Of the coals analyzed  
3 for this project, the worst case scenario coal, I  
4 thought it was the Absaroka Mine, and it was at  
5 approximately 8,752 pounds per Btu.

6 Q. So I've been looking at the Deserit  
7 information. That seems to me say that the higher  
8 the Btu per pound, the higher -- the lower figure  
9 you can attain for these emission rates. Like  
10 they're using coal down there, they say it's 6,000  
11 Btu per pound, and they apply -- unless I'm  
12 reading it wrong -- but the higher the Btu's, the  
13 lower attainment figure that you can expect.

14 A. Mr. Marble, members of the Board, it's  
15 not as simple as that. There are many  
16 characteristics that lead to -- and we're talking  
17 about particulate matter here -- many coal  
18 characteristics that lead to what the uncontrolled  
19 load would be for particulate matter to the  
20 control device: Ash content; the Btu rating; the  
21 amount of coal that you would need to combust to  
22 get the same amount of energy. There are several  
23 factors that -- The amount of trace metals found  
24 in a given coal source. There is a huge array of  
25 coal characteristics, properties if you will, that

1 would lead to differing particulate load to the  
2 control device.

3 Q. I'm looking at Page 63 of Exhibit 12,  
4 and the second paragraph, the last sentence in the  
5 paragraph, where they're talking, as I see it,  
6 about the Btu content of the coal. They say  
7 Deserit is going to use some waste coal down  
8 there.

9 A. I'm sorry. Which --

10 Q. The last sentence in the second  
11 paragraph.

12 A. (Examines document)

13 MR. REICH: Mr. Marble, which exhibit is  
14 this?

15 MR. MARBLE: Page 63, Exhibit 12, second  
16 paragraph, last sentence.

17 A. "Therefore, these facilities can  
18 reasonably be expected to achieve a lower PM10  
19 emission rate in pounds per million Btu than  
20 Deserit's WCFU;" is that the sentence?

21 Q. (By Mr. Marble) That's what I was -- If  
22 you could tell me what that means.

23 A. Without getting the full context here,  
24 my assumption is that these other facilities would  
25 be utilizing coal that's different than what

1 Deserit proposed, and therefore, those coals would  
2 have a different load, would have different  
3 characteristics leading to lesser uncontrolled  
4 particulate emissions.

5 Q. But that seems to me to indicate that  
6 you just can't take the 0.0012 -- whatever it is  
7 -- figure from Deserit and say, "Well, that's all  
8 we should have to do up here," because maybe we're  
9 using better quality coal that should allow some  
10 different figures. Am I off base on that?

11 A. Mr. Marble, members of the Board, that's  
12 exactly what we did. We analyzed this specific  
13 project, proposed coal, proposed unit, proposed  
14 controls, to determine what the BACT emission  
15 limit would be specific to this unit. We didn't  
16 say -- this permit came out after ours, by the  
17 way.

18 What we did was we analyzed this project  
19 on a case-by-case basis, which is required for  
20 BACT, and determined that the top control  
21 technology for filterable PM10 was the fabric  
22 filter baghouse at 99.85 percent control in this  
23 specific case, and that resulted in -- based on  
24 the uncontrolled emission rate for PM10, applying  
25 that efficiency to it results in 0.012 pounds per

1 million Btu specific to this project.

2 Q. That's the same figure they ended up  
3 with down there, too, isn't it?

4 A. It is.

5 MR. MARBLE: That's all the questions I  
6 have.

7 CHAIRMAN RUSSELL: We will take a break.  
8 The witness is dismissed. Thank you, Eric. I  
9 appreciate your time and efforts. We'll take  
10 right at an hour, so we'll start again at 12:40.

11 (Witness excused)

12 (Lunch recess taken)

13 CHAIRMAN RUSSELL: We're commencing  
14 again. David's at the podium, so I'm guessing he  
15 wants to talk to us.

16 MR. RUSOFF: The Department rests its  
17 case.

18 CHAIRMAN RUSSELL: Thanks. It's SME's  
19 turn.

20 MR. REICH: Mr. Chairman, if I might,  
21 I'd like to mark this as Exhibit 8.

22 (SME Exhibit No. 8  
23 was marked for identification)

24 CHAIRMAN RUSSELL: Do you have the  
25 desire to mark it as --

1           MR. REICH: Joint exhibit SME/DEQ-8 --  
2 not joint exhibit. Our individual exhibit.

3                           (Witness sworn)

4                           GARY McCUTCHEN,  
5 called as a witness herein, having been first duly  
6 sworn, was examined and testified as follows:

7

8                           DIRECT EXAMINATION

9 BY MR. REICH:

10           Q.    Would you state your name and address  
11 for the record, please.

12           A.    My name is Gary McCutchen. My business  
13 address is 304-A West Millbrook Road, Raleigh,  
14 North Carolina.

15           Q.    Mr. McCutchen, I'm going to put in front  
16 of you what's been labeled as DEQ and SME Exhibit  
17 8. (Provides document) Mr. McCutchen, what is  
18 that document that's been labeled for  
19 identification as SME DEQ-8?

20           A.    That's basically my resume.

21           Q.    Does that resume contain a summary of  
22 your education, work experience, and also cases in  
23 which you've testified as an expert?

24           A.    It doesn't specifically mention the  
25 cases in which I've testified, but it does contain

1 my work experience.

2 Q. I believe if you look at the last three  
3 pages of this document that's been marked as  
4 Exhibit 8, you may see your record of testifying.

5 A. (Examines document) Yes.

6 Q. Do you see that? Okay. Is this a  
7 reasonably up to date CV of your experience,  
8 education, record of testifying, and articles  
9 written?

10 A. Yes, it is.

11 CHAIRMAN RUSSELL: I've just glanced  
12 through. It does look like a fairly comprehensive  
13 CV. I know it's been real short. Do you have any  
14 reason not to include this as Exhibit 8?

15 MS. DILLEN: It's fine to be an exhibit.

16 CHAIRMAN RUSSELL: Let's move to --

17 MR. ROSSBACH: So moved.

18 CHAIRMAN RUSSELL: It's been moved to  
19 move this into the case exhibits. Is there a  
20 second?

21 MS. KAISER: Second.

22 CHAIRMAN RUSSELL: It's been seconded by  
23 Heidi. Any further discussion?

24 (No response)

25 CHAIRMAN RUSSELL: All those in favor,

1 signify by saying aye.

2 (Response)

3 CHAIRMAN RUSSELL: Opposed.

4 (No response)

5 CHAIRMAN RUSSELL: So it is in as  
6 Exhibit 8.

7 (SME Exhibit No. 8  
8 was received into evidence)

9 Q. (By Mr. Reich) Mr. McCutchen, if you  
10 need to refer to your CV Exhibit 8 as you go  
11 along, please do so, but I'm going to ask you a  
12 series of questions about your background,  
13 occupation, education, and briefly experience in  
14 testifying. So we'll proceed. What is your  
15 current occupation?

16 A. My current occupation is I'm a principal  
17 with RTP Environmental, which makes me a  
18 consultant in air pollution matters.

19 Q. Are you a licensed engineer?

20 A. Yes, I am.

21 Q. How many states are you licensed in?

22 A. Four different states.

23 Q. Which are?

24 A. North Carolina, South Carolina, Florida,  
25 and Iowa.

1           Q.    Could you briefly -- since the Board has  
2    it in front of them -- just briefly go through  
3    your education after high school, and the degrees  
4    you've received.

5           A.    Yes.  I have a bachelor of science in  
6    chemical engineering from Virginia Tech; and a  
7    master of science in chemical engineering from the  
8    University of Kentucky.

9           Q.    Again briefly, because the Board has the  
10   document, could you relate your professional  
11   experiences back to the time that you graduated  
12   from college, being as brief as you can in  
13   summarizing those.

14          A.    Certainly.  When I finished college, I  
15   joined the US Public Health Service, and was  
16   assigned to the National Air Pollution Control  
17   Administration, which was the predecessor of EPA,  
18   and worked on stack sampling methods, and doing  
19   stack sampling in the development of standard and  
20   referenced test methods, and determining  
21   compliance with sources, until I went back for my  
22   masters degree in 1970.

23                    When I came back in 1971, I joined the  
24   New Source Performance Standards Section, and was  
25   responsible for dealing with the data and

1 information on the first five New Source  
2 Performance Standards that were promulgated back  
3 in the early 1970s; worked on various New Source  
4 Performance Standards and priority lists for  
5 setting these standards throughout the 1970s; and  
6 in 1980 accepted a detail to the state of  
7 Colorado, where I was Chief of the Engineering  
8 Section, which was responsible for issuing all of  
9 the air pollution permits for the state and other  
10 engineering matters for the state agency.

11 I stayed in that detail for four years  
12 and three more months, and was also responsible  
13 during that time for developing and helping to get  
14 promulgated the State New Source Review  
15 Regulations for prevention of significant  
16 deterioration.

17 When I returned to EPA in 1984, I joined  
18 the New Source Review Section. Two years later in  
19 1986, I became Chief of the New Source Review  
20 Section, which was responsible, of course, for the  
21 New Source Review Program nationwide. There were  
22 approximately 75 to 100 agencies that were  
23 implementing that program, and so we developed the  
24 regulations, the policies, and the materials to  
25 help these agencies implement the program, and to

1 provide guidance to our regional offices who were  
2 implementing the program directly.

3 Q. Mr. McCutchen, when you say New Source  
4 Review Program, does the New Source Review Program  
5 include a PSD permit such as the one that's in  
6 issue here?

7 A. Yes, it does.

8 Q. Continue.

9 A. Among the things that we did at that  
10 time were: I ended up being the editor of the New  
11 Source Review Workshop Manual, the 1990 draft,  
12 which is still the one that is referred to, and  
13 which includes the description of the Best  
14 Available Control Technology process.

15 I chaired the Task Force on BACT, Best  
16 Available Control Technology, for the  
17 Administrator, and our task force developed the  
18 approach called the top down BACT approach that  
19 has been referred to already in this hearing. We  
20 then were responsible for implementing that. I  
21 prepared the first draft of the policy and  
22 procedure that would be used in doing top down.  
23 And then we began implementing this, and of course  
24 there were challenges to it. That occupied a  
25 great deal of time during that process.

1           I retired from EPA in 1992, and went  
2   into consulting work, continued to work on the air  
3   pollution field. I've prepared over 65 articles  
4   for the Air Pollution Consultant during this time,  
5   and several other articles, so about 70 articles  
6   or so on air pollution matters; and continue to  
7   work in the air pollution field in enforcement  
8   matters, in helping obtain permits for sources,  
9   and in doing training for various agencies and  
10 private companies.

11           Q.    What does your training consist of?  
12   What are you trained in?

13           A.    The training that we do right now  
14   consists of a basic New Source Review course;  
15   intermediate permitting course, which includes New  
16   Source Review, which of course includes PSD; an  
17   Advanced New Source Review training course; and a  
18   separate BACT workshop that we developed at the  
19   request of the one of the state organizations, the  
20   organization of the midwestern states, CenSARA.

21           Q.    Have you ever taught at a state  
22   symposium in which representatives of the Montana  
23   DEQ were present?

24           A.    Yes.  Among the New Source Review  
25   courses we do provide are for WESTAR, which of

1 course is the fifteen western states organization.  
2 Montana is a member of that group. It is able to  
3 attend those workshops, and there had been Montana  
4 representatives at several of those workshops.

5 Q. Have you had any experience with test  
6 methods for PM, either in developing them, or  
7 testing them, or applying them?

8 A. Yes, I have.

9 Q. Can you explain that.

10 A. When I first joined the National Air  
11 Agency, there were no referenced test methods, and  
12 in fact it reminds me somewhat of the situation  
13 today, because there were five or six different  
14 possible methods that had been developed for  
15 testing for particulate matter, and none of those  
16 results could be compared to the results of any of  
17 the other test methods.

18 So EPA began developing a referenced  
19 test method that eventually became Method 5, which  
20 of course is still in use today for total  
21 particulate, and is the basis for both the PM10  
22 filterable and PM2.5 filterable portions of the  
23 those two pollutants.

24 Q. As part of your work, now that you're in  
25 the private side, have you used or reviewed any of

1 these test methods in connection with conducting  
2 BACT analyses?

3 A. Yes, I have.

4 Q. Have you ever, you or anyone under your  
5 supervision, performed a BACT analysis for any  
6 type of facility?

7 A. Yes.

8 Q. About how many of those have you or  
9 others under your supervision performed?

10 A. Probably somewhere over a dozen. I  
11 don't know the exact number.

12 Q. I'm not talking about power plants. I'm  
13 talking total.

14 A. That's probably in the teens. Sorry.  
15 In the twenty or thirty range.

16 Q. In EPA, did you ever have the occasion  
17 to review a BACT analysis?

18 A. Yes.

19 Q. What, just briefly, in what context  
20 would that have been?

21 A. In several contexts. One would be in --  
22 Actually probably the most important was when we  
23 would conduct audits of state agencies. I and  
24 other members of my section would go to the state  
25 agency, and pull out some PSD and minor source

1 permits at random, go through those, and evaluate  
2 the different New Source Review aspects of that  
3 permit, and whether we thought it was well done or  
4 not. We would then audit the results, and present  
5 those results to the state agency.

6 Q. Have you ever worked on a BACT analysis  
7 for a power plant?

8 A. Yes.

9 Q. About how many?

10 A. That's around ten or so.

11 Q. Have you ever testified as an expert in  
12 a case involving air permit regulation?

13 A. Yes, I have.

14 Q. About how many such cases have you --  
15 Well, withdraw that. About how many cases have  
16 you testified in in total?

17 A. Fifteen so far.

18 Q. Fifteen you've been involved in?

19 A. Yes.

20 Q. Did you actually testify in all fifteen?

21 A. No. Eight out of the fifteen involved  
22 actual testimony; and the rest involved an expert  
23 report, or affidavit, or other expert documents.

24 Q. And are those litigations set forth at  
25 the last few pages of Exhibit D?

1 A. Yes, they are.

2 Q. And have you ever testified on issues  
3 involving the application of BACT?

4 A. Yes. Two out of the times that I've  
5 provided testimony were on BACT, and one of the  
6 expert reports that did not involve testimony  
7 involved BACT issues.

8 Q. And in what fields were you qualified as  
9 an expert in the cases that you've just listed?

10 A. I may not remember all of these, but as  
11 an NSR expert.

12 Q. That's New Source Review?

13 A. New Source Review expert; permitting  
14 expert on the permit policies and regulations;  
15 BACT process.

16 Q. Have you ever testified in Montana?

17 A. Yes, I have.

18 Q. Was that in front of this BER?

19 A. No. It was in front of Ms. Orr, the  
20 Board attorney.

21 Q. But you testified in a contested  
22 proceeding before Ms. Orr?

23 A. Yes.

24 Q. What was the name of that proceeding?

25 A. That was the one on Thompson River

1 Cogeneration.

2 Q. As far as you know, was that a  
3 proceeding pending in front of the Board of  
4 Environmental Review?

5 A. I believe that it was.

6 Q. Were you qualified as an expert in that  
7 case?

8 A. Yes, I was.

9 Q. Do you recall how you were qualified in  
10 that case?

11 A. I believe as an NSR New Source Review  
12 expert, and I don't recall what else.

13 Q. Were you qualified as an expert in BACT?

14 A. Yes, I believe so.

15 Q. What about in PSD permitting?

16 A. Yes.

17 Q. As part of the BACT analyses that you've  
18 worked on or reviewed, was it necessary to  
19 evaluate applicable technology, including for  
20 particulate matter?

21 A. Yes.

22 Q. And as part of that analysis, was it  
23 necessary to evaluate various test methods for  
24 demonstrating compliance with PM standards?

25 A. The methods used for compliance have to

1 go hand in glove with the emission limits that are  
2 set.

3 MR. REICH: At this point, I move to  
4 have Mr. McCutchen qualified as an expert in the  
5 areas of BACT analysis; EPA policies with respect  
6 to BACT analysis; EPA policies with respect to New  
7 Source Review Program, including the PM2.5 program  
8 test methods; and generally areas of NSR  
9 permitting and implementation.

10 MS. DILLEN: I object just insofar as I  
11 don't understand the last category of expertise  
12 Mr. Reich has identified.

13 MR. REICH: NSR permitting and  
14 implementation. Those are two categories.

15 MS. DILLEN: I heard you to say  
16 something last which seemed to incorporate what  
17 you had said before, so I'm wondering what you  
18 meant by it.

19 MR. REICH: Why don't I just repeat it.

20 CHAIRMAN RUSSELL: The last one, because  
21 I had a question on that.

22 MR. REICH: I had talked about NSR  
23 permitting and NSR program implementation. I'm  
24 referring to his -- primarily based on his  
25 experience at EPA, and also based on the fact that

1 he keeps up on those issues.

2 MR. ROSSBACH: Well, I would move the  
3 admission of accepting him as an expert in the  
4 general topics described, with the caveat that  
5 there is a pending motion, a motion in limine with  
6 regard to testimony on calling for a legal  
7 conclusion; and with the understanding that I'm  
8 not accepting him necessarily to testify about  
9 matters that would otherwise require a legal  
10 conclusion.

11 MR. REICH: For the record, we don't  
12 intend to offer him to testify as to legal  
13 conclusions. We will offer him to testify about  
14 how he's evaluated policies, EPA policies, and so  
15 forth, both at EPA and in the context of doing  
16 BACT analysis.

17 MR. ROSSBACH: I understand, and that's  
18 my caveat. At a certain point, EPA policies start  
19 sounding like legal conclusions. I have no  
20 problem generally with his expertise. I'm  
21 impressed with his resume. I'm interested in some  
22 of the cases he's testified to. I do want to be  
23 sure that we're careful about that.

24 MR. REICH: I'll try to be careful, and  
25 I'm sure my fellow Counsel will object at the

1 appropriate time if I'm not.

2 MR. MARBLE: Second.

3 CHAIRMAN RUSSELL: It's been seconded by  
4 Don. Any further discussion?

5 (No response)

6 CHAIRMAN RUSSELL: Hearing none, all  
7 those in favor, signify by saying aye.

8 (Response)

9 CHAIRMAN RUSSELL: We consider you an  
10 expert in the matters that were pointed out to us.

11 Q. (By Mr. Reich) Mr. McCutchen, I'm going  
12 to ask you a series of questions, some of which  
13 has been covered, aspects of which have been  
14 covered in this proceeding. And you've been  
15 sitting in the proceeding; am I correct?

16 A. Yes.

17 Q. Mr. McCutchen, first of all, are you  
18 familiar with the EPA surrogate policy for PM2.5  
19 that we've been discussing in the last several  
20 days?

21 A. Yes, I am.

22 Q. What is your understanding of why EPA  
23 recommended a surrogate analysis as opposed to  
24 having sources do a direct PM2.5 analysis?

25 A. EPA felt that they did not have the

1 tools available to do direct PM2.5 analyses at the  
2 time, and so allowed -- and so developed the  
3 policy of using PM10 as a surrogate.

4 Q. Is that policy in effect today?

5 A. Yes, it is.

6 Q. What are the tools that EPA was  
7 concerned had not been developed, and are still  
8 not developed, in order to do a PM2.5 specific  
9 analysis, BACT analysis?

10 A. Well, the absolute core and basic tool  
11 is test methods that are reliable and repeatable.  
12 Without the test methods, then you also don't have  
13 emission factors, you don't have emissions  
14 inventories that would allow an air agency to do  
15 air quality management, and ensure attainment and  
16 maintenance of standards. A lot of this all boils  
17 down to: Do we have information on the emissions?  
18 And without the proper test method, you don't have  
19 that information.

20 Q. We'll get to emission factors in a  
21 second. There was some discussion of that  
22 earlier. Are there other aspects of the PSD  
23 program, perhaps not specifically related to BACT,  
24 that also are not fully developed, according to  
25 EPA?

1           A.    Yes.  EPA has continued to move forward  
2           in trying to get the program shifted from PM10  
3           over to PM2.5, and has recently proposed not only  
4           the significance levels that were proposed back in  
5           2005 for PM2.5, but also proposed significant  
6           impact levels, and PSD increments, and a number of  
7           the other values that are needed for doing the  
8           ambient impact analyses.

9           Q.    Why is an ambient analysis important in  
10          the PSD context?

11          A.    The ambient impact analysis is the  
12          second of the two core parts of the PSD program.  
13          The first is ensuring that good control technology  
14          is put on, in fact, the Best Available Control  
15          Technology is put on; and then the second part of  
16          the analysis, and the key to ensuring that public  
17          health is still protected -- both public health  
18          and welfare -- is the series of impact analyses  
19          for whether the National Ambient Air Quality  
20          Standards could be exceeded; whether the  
21          increments would be exceeded; whether there are  
22          impacts on soils, vegetation, or visibility; and  
23          whether there are adverse impacts on Class 1  
24          areas, our national parks and recreation areas.

25          Q.    Are any of those tools currently in

1 final form today?

2 A. For PM2.5, they are not.

3 Q. And you said PSD increment. What's a  
4 PSD increment?

5 A. A PSD increment is a measure of the  
6 amount of deterioration that has occurred in an  
7 area from some baseline, and you again have to  
8 know what the baseline is in terms of the  
9 emissions.

10 Q. Are there PSD increments in place for  
11 NOx?

12 A. Yes.

13 Q. SO2?

14 A. Yes.

15 Q. Ozone?

16 A. No.

17 Q. VOC?

18 A. No.

19 Q. Is fair to say that there are PSD  
20 increments in effect for all the criteria  
21 pollutants other than PM2.5?

22 A. There are PM10 increments in place only  
23 for PM10, and NOx, and SO2.

24 Q. Mr. McCutchen, you've testified that  
25 you've reviewed and had performed under your

1 supervision a number of BACT analyses. In doing a  
2 BACT analysis, is it important to have an emission  
3 inventory, or let's call it emission factors for  
4 uncontrolled emissions from the source, potential  
5 uncontrolled emissions from the source?

6 A. I don't usually term it emission  
7 factors, although I realize that's a term that's  
8 been used, I think as a matter of choice, during  
9 the hearing here. But you need the emissions  
10 rates that are anticipated from that unit.

11 Q. Why is that important in doing a BACT  
12 analysis?

13 A. Well, you need it in several ways. You  
14 need an emission rate without controls, so you  
15 know what the uncontrolled emissions are; and you  
16 need some idea of what the emission rate is going  
17 to be after the controls, so that you can get an  
18 idea of the control efficiency of the control  
19 devices. You need the control efficiency to be  
20 able to rank the control devices under the top  
21 down BACT approach, from the most stringent, the  
22 one that controls the best, down to the lesser  
23 controlled levels.

24 Q. But by reference to the top down BACT  
25 analysis -- and there is a chart behind you if you

1 need to point it out -- which of the steps that's  
2 important to have the emission inventory for  
3 before you can start the BACT analysis? You can  
4 point to the chart, or you can just refer to the  
5 steps.

6 A. You need it at least by Step 3, which is  
7 the ranking of the control options that remain.

8 Q. So from Steps 3 on at least, you need  
9 the emission inventory to do a proper BACT  
10 analysis?

11 A. Yes.

12 Q. Are you aware of any emission  
13 inventories for PM2.5 for coal fired plants, that  
14 is, emissions inventories other than emissions  
15 inventories developed through the surrogate  
16 analysis?

17 A. I'm not aware of any specifically for  
18 PM2.5 emission rates.

19 Q. Are you aware of any states that have  
20 set limits for PM2.5 specifically in a power plant  
21 permit?

22 A. No, I'm not aware of any.

23 Q. You heard Mr. Taylor testified earlier  
24 that if he just called up a vendor of a boiler, he  
25 thought he could get emissions factors for PM2.5.

1 Does that match with your experience?

2 A. No, it does not.

3 Q. Could you explain.

4 A. Yes. I will try to keep this short.

5 There are several problems built into that in  
6 forming the basis for my disagreement. The first  
7 is that since we don't have referenced test  
8 methods, we'd have to find out how exactly the  
9 manufacturer or vendor of the equipment managed to  
10 do the testing, in other words, what test methods  
11 did they use to determine whether this was PM2.5.  
12 Very often what you find out is that they're using  
13 some sort of general factor to convert over, or  
14 there are some other problems.

15 And the difficulty then in comparing  
16 this is: Without a referenced method, different  
17 manufacturers may have used different test  
18 methods, and you can't directly compare those. So  
19 your information is useless in terms of trying to  
20 compare these control devices.

21 And if you're talking about control  
22 devices, control device vendors, there are  
23 additional problems. If you're talking about the  
24 equipment manufacturers, like the boiler, I've  
25 covered the main problems.

1           Q.    In your opinion, are there reliable  
2           emissions inventories for PM2.5 for power plants  
3           today?

4           A.    No, there are not.

5           Q.    Is that for the reasons you just  
6           mentioned?

7           A.    Yes.

8           Q.    If you were able to obtain reliable  
9           inventory information for PM2.5, is there anything  
10          else you would need in the hypothetical case that  
11          you're representing a client that's doing a BACT  
12          analysis for a power plant?  If you had the  
13          emissions inventories for PM2.5 that you've  
14          indicated are lacking, would there be other things  
15          that you would need from the vendor in order to  
16          rely on those emissions inventories in doing a  
17          BACT analysis and setting an emission limit?

18          A.    I assume that you mean a controlled  
19          equipment vendor?

20          Q.    Or a boiler manufacturer, control  
21          equipment vendor, yes.

22          A.    If it's a vendor, you would certainly  
23          want a guarantee of the levels of emissions that  
24          they feel like they could collect, or that would  
25          be emitted on the other side of the control

1 device; and you'd have to make sure that it's  
2 worded very carefully, because sometimes the  
3 guarantees don't have any significant financial  
4 penalty associated with them, so the vendor simply  
5 isn't that worried about having to meet the limit  
6 that they feel like can be met.

7           Then there are other pitfalls in trying  
8 to rely straight forward on vendor information.  
9 The main problem with the vendors of the actual  
10 emissions units is, again, that you have to make  
11 sure that the test methodology is correct and  
12 comparable. And the whole test methodology for  
13 PM2.5 and for condensibles, both in PM10 and in  
14 PM2.5, is just in disarray right now.

15           Q. Not Deserit, not like the permit?  
16 Disarray?

17           A. No. Disarray.

18           Q. Without the emissions inventories, and  
19 without a guarantee from a vendor of control  
20 equipment, if you were doing a BACT analysis for a  
21 power plant, would you be able to carry forward  
22 with that BACT analysis for PM2.5?

23           A. Could you repeat that question?

24           Q. That was a tough question. If you  
25 didn't have the emission factors for PM2.5, which

1 you said don't exist, and if you didn't have a  
2 guarantee from a vendor that it could meet certain  
3 permit limits, would you be able to do a BACT  
4 analysis for PM2.5 for a power plant?

5 A. No.

6 Q. Can you give an example of where someone  
7 has been able to obtain emissions inventory  
8 information from a vendor, but there was no  
9 guarantee attached, and whether that made a  
10 difference?

11 A. I have been in situations like that,  
12 both on the regulatory side and as a consultant,  
13 assisting and in getting permits; and in both  
14 cases, there is some concern about non-guaranteed  
15 values. When I was with EPA in Colorado, the  
16 concern was that if the vendor isn't obligated to  
17 actually meet the level that they say they're  
18 going to meet, we can end up with an ongoing  
19 enforcement problem, and a real public relations  
20 problem, if the limit that we've approved has to  
21 be relaxed.

22 In the role as consultant for a proposed  
23 source, the situation is even more bleak, because  
24 they are, at least for a certain period of time,  
25 in violation of a limit that's been given them, if

1       it turns out that the level that the vendors said  
2       they could meet is not meetable.

3           Q.    Did you have an experience with a  
4       situation where a vendor gave out emissions  
5       information?

6           A.    Yes, I did.

7           Q.    Could you explain that.

8           A.    This was an occasion when we were  
9       working for the source.  It was a cement plant up  
10       in New York that was being proposed.  One of the  
11       groups that was opposing the permit had called  
12       several vendors, and it had gotten quotes from the  
13       vendors for the level of control that could be met  
14       for the pollutant that we were looking at.

15                    When we went back to those vendors with  
16       the detailed information about the characteristics  
17       of the gas stream, none of the vendors would  
18       provide a guarantee of that level.  In fact, two  
19       of them refused to even submit a bid on -- they  
20       were non-responsive on it.

21                    The problem that we all face here with  
22       vendors providing information is that unless they  
23       think they're going to be able to sell a device,  
24       they really aren't going to spend a whole lot of  
25       time on the level of detail that it takes to

1 understand what the gas stream looks like, and  
2 what kind of problems that that creates for that  
3 specific source. So the information I get is very  
4 offhand information.

5 Q. Mr. McCutchen, turning to another  
6 subject, you've heard some testimony in this  
7 proceeding about test methods for PM2.5. Are  
8 there any referenced test methods to test PM2.5  
9 emissions that could be used to develop this  
10 inventory emission data that you spoke about?

11 A. No. There is a proposed method for the  
12 filterable portion of PM2.5 that is based, like  
13 the PM10 filterable is, on the Method 5 sampling  
14 train for the condensible portion --

15 Q. Just sticking with filterable, is that  
16 Method 39?

17 A. I'm trying to remember if it's Method 39  
18 or --

19 Q. You can consult the book. I'll get you  
20 the exhibit number.

21 A. Okay.

22 MS. DILLEN: Exhibit No. 39 is -- I  
23 believe it's "Q," I think.

24 A. (Examines document) Yes, Conditional  
25 Method 39.

1 Q. (By Mr. Reich) That's a conditional  
2 test method for filterables?

3 A. Yes.

4 Q. Is it a referenced method?

5 A. Not yet.

6 Q. Is there a referenced method for  
7 condensible PM2.5?

8 A. There is. Method 202 collects the  
9 condensibles, and that method is the same for PM10  
10 and for PM2.5, the way EPA so far has defined  
11 PM2.5. The problem is that EPA has acknowledged  
12 that Method 202 has problems with it, and it's not  
13 as replicable and repeatable as they once thought  
14 it was. They're getting results that they think  
15 is from SO<sub>2</sub>, but they aren't certain.

16 So they have a task force, and a group  
17 of people headed up at EPA by Ron Myers, who are  
18 trying to resolve the problems with this, with the  
19 help of industry and outside testers, to come up  
20 with a condensible method that is workable. So  
21 all of the results of Method 202 for condensibles  
22 are now in doubt because of these anomalies that  
23 they've acknowledged.

24 Q. That's a referenced method?

25 A. Yes, it is a referenced method.

1 Q. Is there a conditional method for  
2 condensibles that EPA is considering?

3 A. Yes. The EPA is considering two  
4 approaches. One is the Conditional Test Method  
5 40, which is an approach that would look at -- I  
6 believe it's Test Method 40. Would that be "R"?

7 MS. DILLEN: Yes.

8 A. (Examines document) And I believe  
9 that's the dilution approach, which would get all  
10 of the PM2.5, both filterable and condensible,  
11 which is an interesting sounding approach. I find  
12 that very intriguing, because what it's supposed  
13 to do is to basically take the stack gas to  
14 ambient temperatures, so you see what condenses  
15 out. And so you get the condensible material and  
16 the filterable material all in the same filter,  
17 and you don't have all of the concerns about the  
18 anomalies collected in the impingers during the  
19 normal condensible Method 202 approach. So it has  
20 some promise on that.

21 The other approach is to continue with  
22 Method 202 for condensibles alone, and do what EPA  
23 calls a nitrogen purge to try and get out the  
24 anomalies that have occurred in there through what  
25 they suspect again is SO2 forming sulphates.

1           Q.    How would you describe the state of the  
2 testing methods for PM2.5 at this point?

3           A.    Those are still being tested and  
4 evaluated by EPA and other people working with  
5 EPA.

6           Q.    So there is no final referenced method  
7 other than method 202 that you described as having  
8 problems?  No other final method?

9           A.    That is correct.

10          Q.    Have the availability of these  
11 conditional methods that you just discussed led to  
12 the development of reliable emissions inventories  
13 for PM2.5?

14          A.    No, they have not yet.  And part of  
15 problem seems to be that EPA is getting some data  
16 developed by volunteer groups and by other means,  
17 but only a very limited number of types and  
18 sources, and there simply isn't enough information  
19 yet to develop reliable estimates on a source  
20 that's being proposed.  I don't doubt that this is  
21 going to eventually come about, but part of the  
22 problem is that no one knows where to sink their  
23 money in.  All these tests cost a considerable  
24 amount of money, and most industrial sources are  
25 not particularly keen on going out and just

1 spending money on a test that may never become a  
2 referenced method, so the data are useless to  
3 them.

4 Q. And that's why the community is not  
5 getting reliable emissions inventories, because  
6 the sources are reluctant to test, because the  
7 test method may end up not being one that's being  
8 produced --

9 MS. DILLEN: Objection, leading.

10 MR. REICH: I'm sorry. It is leading.  
11 I'll withdraw the question.

12 Q. (By Mr. Reich) What is the concern that  
13 sources have in not using these conditional test  
14 methods?

15 A. I am reading between the lines on this,  
16 but I think it is because the sources simply don't  
17 want to put the money into these test methods  
18 until they know the data will be useful.

19 Q. You testified earlier that while at EPA,  
20 you were involved with or familiar with another  
21 test method situation involving PM. How long did  
22 it take before EPA sorted that out, and got an  
23 effective referenced test method for PM?

24 A. The leading force behind developing  
25 Referenced Test Method 5 -- which is still the

1 kind of gold standard for just straight  
2 particulate -- was Walt Smith, and he worked on  
3 developing a test method out of kind of an  
4 aggregate of the four or five or six methods that  
5 were out there already for approximately eight to  
6 ten years before that finally became a Referenced  
7 Test Method that EPA began insisting using on, and  
8 began developing data on. And from there, things  
9 flowed pretty well.

10 Q. Was that test method situation more  
11 complex or less complex than the PM2.5 test method  
12 situation?

13 A. It had the potential to be more complex  
14 because we were collecting condensibles even then  
15 in that test method before it became a referenced  
16 method.

17 But based in part on the data I analyzed  
18 for the first NSPS for power plants, EPA ended up  
19 dropping the condensible portion of the Method 5  
20 sampling train from the NSPS standards until they  
21 could better understand it, and that then became  
22 just a straight, "Pull in the gas, run it through  
23 a filter, and whatever collects on the filter," so  
24 that became much simpler than what we have now.

25 Q. And that took eight to ten years to

1 develop?

2 A. Yes.

3 Q. Just for the record, what is NSPS?

4 A. New Source Performance Standards. Those  
5 are nationwide standards that every new source or  
6 modified source has to meet once they're  
7 established.

8 Q. Let me turn to another subject. You  
9 heard Mr. Taylor testify, and you heard some  
10 questions to Mr. Merchant about a so-called  
11 membrane filter; do you recall that?

12 A. Yes, I did.

13 MS. DILLEN: Objection. I don't believe  
14 that Mr. McCutchen has been qualified as an expert  
15 in control technology, and certainly has not  
16 submitted any materials on control technology in  
17 his expert report.

18 MR. REICH: I wasn't trying to qualify  
19 him as an expert on control technologies. I  
20 qualified him as an expert on BACT; and as an  
21 expert on BACT he would have to evaluate control  
22 technologies, just as Mr. Merchant did in  
23 evaluating the BACT analysis of SME. That's the  
24 only purpose I'm going down this line of  
25 questions.

1           MR. ROSSBACH: Move to overrule the  
2 objection.

3           CHAIRMAN RUSSELL: Is there a second?

4           MS. KAISER: Second.

5           CHAIRMAN RUSSELL: It's been moved and  
6 seconded. All those in favor, signify by saying  
7 aye.

8           (Response)

9           CHAIRMAN RUSSELL: Objection is  
10 overruled.

11          Q. (By Mr. Reich) So I asked if you're  
12 familiar with a membrane filter. You heard the  
13 testimony about the membrane filter, yes?

14          A. I did hear that.

15          Q. Have you had any occasion to do any  
16 investigation about a membrane filter?

17          A. I have, to a limited extent.

18          Q. Have you read any reports about membrane  
19 filters?

20          A. Yes, I have.

21          Q. Are such membrane filters currently in  
22 use at any utility power plant as a primary  
23 control device for PM2.5?

24          A. Not that I'm aware of.

25          Q. Have you ever evaluated membrane filters

1 as part of a BACT analysis for a power plant?

2 A. No, I have not.

3 Q. Just to clarify, when you do a BACT  
4 analysis, the first step is to identify all top  
5 level technologies; is that correct?

6 A. Yes.

7 Q. What is the result of your limited  
8 investigation of membrane filters, if you could  
9 just summarize that?

10 A. Membrane filters sound like a promising  
11 lead to explore. There however had been some  
12 reports of some of the early efforts to do at  
13 least pilot plant sized studies of membrane  
14 filters, and they have reported some problems,  
15 particularly with pressure drop across the  
16 membrane, so severe that the facility that tried  
17 it out, with money in part from the Department of  
18 Energy, took out all of the membrane filter bags,  
19 and replaced those with pulse jet fabric filter  
20 bags.

21 Q. What facility was that?

22 A. That was the Ottertail facility.

23 Q. Where is that located?

24 A. I don't recall offhand.

25 Q. One of the Dakotas?

1 A. Oh, yes, it's --

2 Q. It doesn't matter.

3 A. I believe it's owned in part by both a  
4 Montana utility and a North Dakota utility. I  
5 believe it's in the west here.

6 Q. Mr. McCutchen, when you do a BACT  
7 analysis, a typical BACT analysis, what are the  
8 types of control technologies that you consider in  
9 Step 1 of the BACT analysis?

10 A. In Step 1, where you're pulling in all  
11 of the different possible control technologies,  
12 you look at everything out there that's available,  
13 including technologies that have been used to meet  
14 LAER limits. You're not limited to the United  
15 States. You start with, as I think other people  
16 have testified, with the RACT/BACT/LAER  
17 Clearinghouse, and you proceed from there with all  
18 of the other technologies that you're aware of,  
19 and you just start listing them, like fabric  
20 filters, electrostatic precipitators, and so on.

21 Q. And what does EPA consider to be  
22 available, in your understanding of doing a BACT  
23 analysis?

24 A. "Available" means that it's both  
25 commercially available -- in other words, a source

1 can go out and purchase the control device -- and  
2 that it has been proven out on a full scale  
3 operation at the scale or level that the source  
4 needs to use it at. In other words, just because  
5 something at the bench scale or pilot plant level  
6 works, doesn't mean it's going to work on a full  
7 scale. That was one thing hammered into us when I  
8 was in college studying chemical engineering. You  
9 never expect to scale up without problems.

10 Q. If you were doing a BACT analysis at the  
11 time the SME did the BACT analysis for the  
12 Highwood Generating Station facility, would you  
13 have considered a membrane filter to be an  
14 available technology for purposes of Step 1 of the  
15 BACT?

16 A. No.

17 Q. Why is that?

18 A. I would have classified it as a  
19 developing technology, kind of somewhere between  
20 the R&D and pilot plant stage. That Ottertail  
21 study moved up fairly high in terms of the size of  
22 the facility, and had it been successful, that  
23 would have been a very good indicator that full  
24 scale capability -- that it would have had full  
25 size or scale capabilities. But it did not,

1 according to the report.

2 Q. And you indicated that the report  
3 indicated that there was a pressure drop. What's  
4 the effect of the pressure drop on the potential  
5 efficiency of the plant, the coal fired plant?

6 A. Pressure drop basically means that you  
7 need more fan power to pull the air through the  
8 membrane filter. They didn't have problems with  
9 that at first, but then it began building up  
10 inexplicably. That was using Powder River coal,  
11 also burning some soybeans and corn. They thought  
12 that might have been the problem to begin with.

13 They explored other things, including  
14 reducing the load into the membrane. But with  
15 that pressure drop, much higher than normal across  
16 a baghouse, the facility indicated that it was  
17 going to have an energy penalty of as much as the  
18 equivalent of 55 megawatts of the power produced  
19 just to run the baghouse.

20 Q. And that's why you would consider the  
21 membrane bag not to be available?

22 A. Yes.

23 Q. Switching to another technology that Mr.  
24 Taylor described, did you hear his testimony about  
25 his technology of first choice, that is, a

1 membrane filter followed by wet ESP?

2 A. I believe that I did hear that mentioned  
3 as a first choice. I wasn't clear whether there  
4 was any control for particulate in front of that,  
5 but I did hear those two items as part of the  
6 control train.

7 Q. Membrane filter then wet ESP?

8 A. Yes.

9 Q. Have you ever seen this combination used  
10 in a power plant?

11 A. No.

12 Q. Have you ever recommended this  
13 combination in any BACT analysis you've performed  
14 for PM control at a power plant?

15 A. I've never recommended a membrane filter  
16 obviously, based on what I just mentioned as we  
17 just covered that. Wet ESP has been a part of  
18 some combinations or as the stand alone. We've  
19 never, to my remembrance, added on a wet ESP after  
20 the normal combinations -- I shouldn't say normal  
21 -- but the usual or typical combinations of  
22 particulate control devices.

23 Q. Since you don't consider the membrane  
24 filter to be an available technology, have you  
25 ever seen a combination of a fabric filter and a

1 wet ESP in use at a power plant?

2 A. Not that I'm aware of.

3 MS. SHROPSHIRE: Could you repeat that  
4 last question, please.

5 Q. (By Mr. Reich) Have you ever seen the  
6 use of a combination of a fabric filter and a wet  
7 ESP for PM control at a power plant?

8 A. The answer was no.

9 Q. Have you ever recommended to a client  
10 that it put that combination together, that is, a  
11 fabric filter followed by a wet ESP for PM  
12 control?

13 A. No.

14 Q. Why is that? Why haven't you made that  
15 kind of recommendation?

16 A. Well, there is a fairly well known  
17 phenomenon in dealing with BACT, that as you put  
18 on a control device -- which what you do is  
19 assuming it's a good control device -- you  
20 tremendously decrease the tons of emissions that  
21 are coming, that pass through that control device.

22 So when you get to a second control  
23 device, or even a third one, or as many as you  
24 want to try, what happens is these control  
25 devices, since they're generally trying to treat

1 the same volume of air as the first control device  
2 but a lower concentration of the pollutant, you  
3 end up with exponentially higher cost  
4 effectiveness numbers. Cost effectiveness is the  
5 annualized dollar cost for the control device  
6 divided by the tons per year of pollutant that you  
7 collect.

8 And so if you have less pollutant in the  
9 gas stream that you're treating, and it costs as  
10 much as the -- almost as much as the first control  
11 device, the amount of pollutant you can collect  
12 and use in your denominator is much smaller, and  
13 so your dollar per ton value goes way up.

14 An example is the Deserit permit that's  
15 been referenced before, where they did look --  
16 even though I haven't -- at a wet ESP following a  
17 fabric filter, and it's almost intuitive, and the  
18 reason we don't really tend to do these series of  
19 analyses in BACT, the cost effectiveness of a wet  
20 ESP following a fabric filter was from a low of  
21 \$25,000 per ton to a high of \$175,000 per ton.  
22 And most of the thresholds that we see --

23 CHAIRMAN RUSSELL: Per ton of what?

24 THE WITNESS: Per ton of particulate  
25 matter. PM10 in this case. Deserit used PM10.

1           Q.    (By Mr. Reich) Just to clarify for the  
2           Chairman, do you mean ton of particulate matter  
3           removed?

4           A.    Yes, per ton removed by that control  
5           device. And most of the cost effectiveness  
6           thresholds that we see across the contamination  
7           range between \$2,000 and \$5,000 a ton as being  
8           above that being not cost effective for most  
9           agencies.

10          Q.    Is cost effectiveness one of the  
11          considerations in a BACT analysis?

12          A.    Yes, it is.

13          Q.    What step is that?

14          A.    That's in Step 4, evaluating the energy,  
15          environmental, and economic impacts. And of  
16          course, I don't think it's any secret that  
17          applicants find the economic impact the most  
18          interest to them, and the most important in trying  
19          to make a case to the agency that the top level  
20          should be rejected, so that they can then go down  
21          to the next level of control.

22                The way top down works, as I think  
23          you've heard before, is that by making the source  
24          begin with the top ranked level of control --  
25          which was EPA's idea behind the top down approach

1 in the first place -- what we're doing is forcing  
2 the source to provide all of the information that  
3 the agency reviewer -- in this case Mr. Merchant  
4 -- needs to know whether he or she agrees or  
5 disagrees with rejecting that level of control.

6 And in this particular case, Mr.  
7 Merchant, with the information made available to  
8 him, obviously did not agree with rejecting the  
9 top level of control on the fabric filters, so --

10 Q. If you had been the consultant on this  
11 particular project, and you were presented with  
12 the option of pairing a fabric filter with a wet  
13 ESP, would you have considered that as part of  
14 your BACT analysis?

15 A. (No response)

16 Q. Would you have considered it as a final  
17 control in your BACT analysis?

18 A. A wet ESP, no, I don't think so. Not  
19 after a fabric filter.

20 Q. Why is that?

21 A. Because that would then be basically  
22 controlling for particulate in series, and you  
23 just set yourself up for the high cost  
24 effectiveness numbers.

25 Q. So it would fall out of cost

1 effectiveness?

2 A. Yes. If a state asked us to do that  
3 analysis, we would do it, but I can pretty much  
4 tell you what the numbers would show.

5 MR. SKUNKCAP: Can you state that  
6 question again and explain that again.

7 MR. REICH: Maybe we can have that read  
8 back because I'm not sure.

9 COURT REPORTER: "If you had been the  
10 consultant on this particular project, and you  
11 were presented with the option of pairing a fabric  
12 filter with a wet ESP, would you have considered  
13 that as part of your BACT analysis?"

14 THE WITNESS: No, I wouldn't have, in  
15 part because we don't normally just add on control  
16 devices for the same pollutant one after another,  
17 because we generally know how that's going to turn  
18 out. As I mentioned, we would have done so had  
19 the State asked us to do so, but that's --

20 As EPA determined in the Deserit  
21 analysis that they did, those cost effectiveness  
22 numbers for a second control device following a  
23 first one for the same pollutant are generally not  
24 cost effective. So we would generally not take  
25 that step, and it essentially is wasted work

1 because it ends up being rejected in Step 4, and  
2 that's just more for the agency to review.

3 MR. SKUNKCAP: Thank you.

4 MR. REICH: Does that answer your  
5 question?

6 MR. SKUNKCAP: Yes.

7 Q. (By Mr. Reich) Mr. McCutchen, you heard  
8 Mr. Taylor testify hypothetically that if the  
9 limit of .012 was dropped to .01, that you might  
10 get a particular control leading to about eleven  
11 tons of additional removal; do you remember that?

12 A. This was the pound per million Btu  
13 number dropping from .012 to .011 --

14 Q. Yes.

15 A. -- which was another one of the values  
16 that were on the list of other sources.

17 Q. Right.

18 A. And that converts over to about eleven  
19 tons per year.

20 Q. So that's just a mathematical  
21 calculation?

22 A. Yes.

23 Q. And do you know how much uncontrolled  
24 PM10 including condensibles would have been  
25 emitted at the Highwood Generating Station if they

1 didn't have any controls?

2 A. Yes. Somewhere on the order of 75,000  
3 to 90,000 tons per year.

4 Q. And do you know how much total PM  
5 including condensibles will be emitted from the  
6 Highwood Station with controls?

7 A. Approximately, if I'm remembering right  
8 from the permit, approximately 140 tons per year  
9 of filterable PM10, and about 160 tons per year of  
10 condensible PM10 would be emitted after the  
11 control device was selected.

12 Q. Could you repeat those numbers.

13 A. About 140 tons per year of filterable  
14 PM10, and about 160 tons per year of condensible  
15 PM10.

16 Q. You heard a question earlier from  
17 Commissioner Rossbach, in which he repeated the  
18 statement in the pretrial memo to the effect that  
19 the condensibles emitted from the Highwood station  
20 would be the vast majority of the particulate  
21 matter emitted; do you remember that question?

22 MS. DILLEN: Objection. I believe  
23 that's misstating the statement that was read.

24 MR. ROSSBACH: I think it was the PM2.5,  
25 not necessarily condensibles. Page 5, No. 4.

1 MR. REICH: Withdraw the question.

2 Q. (By Mr. Reich) Is about half,  
3 approximately half of the PM that would be emitted  
4 by the Highwood Station condensible PM?

5 A. A little more than half.

6 Q. Given your testimony that the  
7 uncontrolled amount of PM from Highwood is about  
8 75,000 to 900,000 tons, and the facility is  
9 getting down to about 300 tons of PM from the  
10 75,000 and 90,000 tons, are you able to calculate,  
11 from what you know from the application and  
12 submittals, are you able to calculate a cost per  
13 ton removed for those eleven tons that Mr. Taylor  
14 referred to?

15 A. Not offhand, no. I imagine that you  
16 could by looking at the difference between the  
17 costs of the control device.

18 Q. Was there a similar analysis in the  
19 Deserit permit?

20 A. Not for a membrane fabric filter. There  
21 was for a wet ESP following a fabric filter.

22 Q. And what was that cost again?

23 A. The cost of controlling the additional  
24 pollutant there, which was about 100 additional  
25 tons from the Deserit, was from \$25,000 per ton to

1       \$175,000 per ton. They used a low, medium, and  
2       high estimate, so that they could bracket the  
3       range of values.

4           Q.     Using that hypothetical that Mr. Taylor  
5       responded to with respect to the eleven tons, if  
6       you went down .001 I believe in terms of a limit,  
7       would that lead to an incremental increased cost  
8       to get to that eleven ton reduction?

9           A.     Going down --

10           MS. DILLEN:  Objection.  I think this is  
11       calling for speculation.

12           MR. REICH:  I don't think any more  
13       speculation than what Mr. Taylor was doing.

14           MS. DILLEN:  I'm unclear then what the  
15       hypothetical is.

16           MR. REICH:  Mr. Taylor testified that if  
17       you go down .001 in terms of pounds per million  
18       Btu just doing a straight calculation, you get  
19       about eleven tons of removal.

20           MS. DILLEN:  Yes, but I understand  
21       you're asking how much that could cost, and I  
22       don't know that we have any -- there is no data of  
23       costs before anyone here.

24           MR. REICH:  Well, there is cost  
25       information in the application, but I'm not asking

1 for a specific cost. I'm asking if there would be  
2 an incremental cost to get that kind of --

3 MS. DILLEN: Asked and answered.

4 MR. REICH: Just two questions. That's  
5 all.

6 CHAIRMAN RUSSELL: I tend to agree with  
7 Abigail. What increment are we going to be using?  
8 If you can define that in the record, then it will  
9 be allowable. Other than that, I don't think it  
10 really has that much to do with that.

11 MR. REICH: All right. At a break, we  
12 can try that.

13 Q. (By Mr. Reich) Mr. McCutchen, just a  
14 few more questions. You've heard testimony, Mr.  
15 McCutchen, about a couple of facilities that had  
16 permitted numbers slightly lower than the .012  
17 pounds per million Btu number that's in the  
18 Highwood permit; do you recall that?

19 A. Yes, I do.

20 Q. And have you looked at the list that's  
21 in the permit application of those facilities?

22 A. Yes.

23 Q. Why don't you look at Tab 4. I think it  
24 shows up in two places. But if you'd look at the  
25 last page of Tab 4, Appendix B-6.

1 A. (Complies)

2 MR. MARBLE: What page, please?

3 MR. REICH: It's the very last page of  
4 that exhibit right before Tab 5. There should be  
5 a chart.

6 A. A chart labeled, "PM10 RBLC Summary."

7 Q. (By Mr. Reich) What is an RBLC summary?

8 A. RACT/BACT/LAER Clearinghouse, or RBLC.

9 Q. Just to go back for a second, when you  
10 do a BACT analysis, do you always choose the  
11 lowest limit that's out there, as shown on the  
12 RACT/BACT/LAER Clearinghouse?

13 A. Do you mean do I choose that as BACT for  
14 the specific source?

15 Q. Yes.

16 A. I go through the BACT process, and  
17 whatever comes out of that BACT process is -- if  
18 the agency agrees with me -- BACT. And that's  
19 done by starting with the top most level, and  
20 either accepting that, or using the economic,  
21 energy, and environmental impacts, rejecting it.  
22 If you're able to reject it, then you probably are  
23 not going to end up with the lowest number that is  
24 out there for other sources.

25 Q. Why is that?

1           A.    Because you're starting usually with the  
2   lowest -- with the most stringent, or best  
3   controls, or greatest control efficiency number,  
4   which is probably what the lowest number out there  
5   represents.

6           Q.    And is BACT a site specific analysis?

7           A.    It's case-by-case, which includes site  
8   specific factors, yes.

9           Q.    What types of site specific factors  
10   would be included in a BACT analysis, say, for  
11   Highwood Generation?

12          A.    You have to adhere to the three criteria  
13   if you're going to follow the top down process,  
14   which are the energy, environmental, and economic  
15   impacts.  But the amount of those impacts varies  
16   from site to site, source to source, and the fuel  
17   used, the raw materials used, the water  
18   availability.  A lot of other factors affect those  
19   three criteria.  And those then are used as a  
20   basis for rejecting that top level by the  
21   applicant.

22                   And then the applicant, as mentioned,  
23   submits that analysis to the state agency; and  
24   they review this and determine whether they agree  
25   or disagree with the BACT level of control

1 selected by the applicant.

2 Q. Is a BACT analysis the same as a LAER  
3 analysis?

4 A. No.

5 Q. Does a LAER analysis consider cost  
6 effectiveness?

7 A. No, it does not, except to the point --  
8 Again, this is just EPA policy. But EPA policy  
9 has long standing been that if a level of control  
10 is so costly that no new source could be built by  
11 that industry to be able to meet that limit, then  
12 that's considered not to be LAER. In other words,  
13 if it just simply precludes industry from building  
14 again, period, that's as far as the cost analysis  
15 goes.

16 Q. But otherwise under LAER as compared to  
17 BACT, do you choose the lowest permitted number  
18 that's out there as your number?

19 A. You choose the lowest number achieved in  
20 practice, or the lowest number in any SIP, State  
21 Implementation Plan.

22 Q. And we said that's not the same as what  
23 you do in a BACT analysis?

24 A. No, it is not.

25 Q. Taking a look at this last page on

1 Exhibit 4, there is two facilities listed that are  
2 below .012; am I correct?

3 A. Yes, Reliance and JEA Northside, at the  
4 top.

5 Q. Where are those facilities located?

6 A. If you look at the left hand column, you  
7 have the abbreviation for the state. Reliant,  
8 that facility is in Pennsylvania; the JEA  
9 Northside is in Florida.

10 Q. And do you know whether they use eastern  
11 coal or western coal?

12 A. I don't know for certain, but since they  
13 are in the east area, I would assume that they are  
14 using eastern coal.

15 Q. What is the difference between eastern  
16 coal and western coal, such as the PRB coal in  
17 this case?

18 A. A lot of the eastern coal is bituminous,  
19 and I believe the PRB coal is subbituminous, which  
20 means by subbituminous, it has fewer Btu's per  
21 pound of coal. Good stuff, though.

22 Q. How does that relate to heat value?

23 A. I believe that the Powder River Basin  
24 coal, a lot of it is around a 9,000 Btu per pound  
25 range. Most of the bituminous coals are anywhere

1 from 10,000 to 15,000 Btu's per pound.

2 Q. What is the impact and the difference in  
3 heat levels that you just described between  
4 eastern coal and western coal? That is, what's  
5 the impact of higher heat values on emission  
6 rates?

7 A. If you're expressing emission rates in  
8 pounds per million Btu, and burning a pound of  
9 coal creates the same amount of particulate,  
10 whether it's bituminous or subbituminous, that may  
11 be a big if, depending on the kind of coal you're  
12 dealing with. But if you assume that for  
13 simplicity sake, then the fact that you get 9,000  
14 Btu's out of a pound of the subbituminous versus,  
15 say, 15,000 Btu's out of a pound of bituminous,  
16 means if the pounds of pollutant are the same,  
17 that you have a lower pounds per million Btu  
18 emission rate from bituminous coal.

19 In other words, the higher the heat  
20 value of the fuel, the lower the pounds per  
21 million Btu rate would be, all things else being  
22 equal, just because of the pounds per million Btu  
23 limit or expression of emission rate.

24 Q. In your opinion, if the top two  
25 facilities listed on that chart showing slightly

1 lower emission rates than the emission rate in the  
2 Highwood permit used eastern coal, could that be  
3 an explanation of why the emission rates are  
4 lower?

5 A. It could be an explanation. There could  
6 be a number of different explanations for the  
7 lower limits. We don't know for sure. I think  
8 I've had some information on a different table  
9 which I don't have up here with me, but that some  
10 of these limits are filterable only, some are a  
11 combination of the two.

12 Again, going back to the Deserit permit,  
13 EPA expressed concern about Pennsylvania's  
14 calculation of the pounds per million Btu rate for  
15 the River Hill facility, which was listed as being  
16 .010 filterable pounds per million Btu, and they  
17 did the calculation, and decided that Pennsylvania  
18 had erred in their calculation, and that the rate  
19 was actually based on the control efficiency being  
20 specified, .012, which is the same as the Highwood  
21 facility.

22 Q. So if you take the Deserit permit  
23 analysis, then that would leave only one permit on  
24 that list that's got a lower rate than the SME  
25 permit?

1           A.    That was for River Hill.  I'm not sure.  
2    This is a Reliant Energy Seward, but it does make  
3    you wonder if Pennsylvania is doing a consistent  
4    error in calculating pounds per million Btu rates.

5           Q.    Are you aware whether Southern Montana  
6    did any modeling to compare the projected PM10  
7    emissions under the surrogate analysis to the  
8    PM2.5 National Ambient Air Quality Standards?

9           A.    Yes, it's my understanding that they did  
10   do so.  They used the total PM10 emissions, and  
11   modeled those, and compared those to the PM2.5  
12   National Ambient Air Quality Standards.

13          Q.    Is that what the surrogate analysis, or  
14   surrogate guidance from EPA requires?

15          A.    My understanding is that the surrogate  
16   guidance for the NAAQS analysis only requires you  
17   to use PM10 emissions and compare those to the  
18   PM10 NAAQS.

19                MS. DILLEN:  Objection.  I'm not sure  
20   why this is the relevant.  The modeling is not at  
21   issue in this case.

22                MR. REICH:  It's not a question of  
23   modeling, it's a question of whether they use the  
24   surrogate analysis straight up, or whether they  
25   went beyond it.

1 MS. DILLEN: I don't understand how  
2 non-BACT related activities during the permitting  
3 process are relevant.

4 MR. REICH: The question has been asked  
5 and answered, so --

6 CHAIRMAN RUSSELL: Let's move on then.

7 MS. DILLEN: I thought you were moving  
8 on to the next question.

9 MR. REICH: I am moving on to the next  
10 question.

11 MR. ROSSBACH: "I'm objecting to  
12 myself;" is that what you're doing?

13 MR. REICH: No.

14 Q. (By Mr. Reich) Mr. McCutchen, do you  
15 have an opinion whether there are currently  
16 available tools, as that term is used in the Seitz  
17 guidance and the Page guidance, to conduct a PM2.5  
18 specific BACT analysis in a power plant like  
19 Highwood Generation station?

20 A. I do have an opinion on that, and that  
21 is that those tools are not available yet,  
22 according to the EPA, and I agree with EPA's  
23 statement.

24 Q. So you disagree with Mr. Taylor in that  
25 respect?

1           A.    I guess that I do.

2           Q.    Do you have an opinion whether the BACT  
3 analysis performed by SME and approved by the  
4 State in this case was proper and appropriate  
5 under the BACT analysis guidance as you understand  
6 it?

7           A.    Yes.

8           MR. REICH:  No further questions on  
9 direct.

10          MS. DILLEN:  Can we take a short break?

11          CHAIRMAN RUSSELL:  You bet.  Why don't  
12 we take ten minutes.

13          MS. DILLEN:  That's fine.

14                               (Recess taken)

15          CHAIRMAN RUSSELL:  Let's go ahead and  
16 get started again.

17          MS. DILLEN:  I'm just looking for our  
18 next open exhibit.  It's "I," I believe.

19                               (MEIC Exhibit I  
20 was marked for identification)

21

22                               CROSS-EXAMINATION

23          BY MS. DILLEN:

24           Q.    Mr. McCutchen, you have before you what  
25 I've just had labeled as Exhibit I.  Can you

1 identify what this is.

2 A. Yes. This is the report from the  
3 National Energy Technology Laboratory on the  
4 demonstration project at Ottertail, I believe.

5 Q. So this is a report that was prepared by  
6 the government agency, the Department of Energy?

7 A. Yes.

8 Q. And is it a report that you've had an  
9 opportunity to review before?

10 A. Yes.

11 Q. Is it the report that you were referring  
12 to in your earlier testimony when you were  
13 discussing whether membrane bags are an available  
14 technology or not?

15 A. Yes.

16 Q. Mr. McCutchen, you testified that the  
17 reason -- Let me take a step back. Are you aware  
18 that this was a pilot project testing out a new  
19 kind of control technology called an advanced  
20 hybrid -- something so new that even I don't know  
21 its name, since we just found about this.

22 MR. REICH: Particulate collector  
23 technology.

24 Q. (By Ms. Dillen) -- advanced hybrid  
25 particulate collector; is that correct?

1           A.    Yes.

2           Q.    And so this isn't a conventional  
3           baghouse like the one that would be installed at  
4           the SME facility; is that correct?

5           A.    It's not conventional in the sense that  
6           it's a retrofit of an electrostatic precipitator.  
7           They put bags into the shell of the electrostatic  
8           precipitators.

9           Q.    Isn't this a case that the DOE was  
10          testing out a new combination where an ESP would  
11          first collect some of the particulate matter, and  
12          then put it into a baghouse that would have fewer  
13          bags than usual?

14          A.    The sense I got in reading it was that  
15          the hope was that for sources that had  
16          electrostatic precipitators that would need to be  
17          overhauled on a major basis, because they weren't  
18          collecting very efficiently any longer, might  
19          instead be able to use these membrane bags by  
20          installing them into the shell of the  
21          electrostatic precipitator, in other words,  
22          pulling out of innards of the precipitator except  
23          for the first field, which they left intact in  
24          this particular case, and used a membrane  
25          technology, which would be a lot cheaper than

1 refitting the entire -- rebuilding the entire  
2 precipitator up to current standards.

3 Q. Correct. You would agree, though, that  
4 this is not the configuration that's being  
5 considered at the SME Highwood facility?

6 A. No, because they haven't been built yet.  
7 So you wouldn't build a precipitator, and then rip  
8 the guts out, and put the bags in. But it's  
9 membrane bags.

10 Q. Correct. I'm asking the question which  
11 is: Are these membrane bags being put into a  
12 conventional baghouse? Yes or no.

13 A. No.

14 Q. Are you aware whether membrane bags are  
15 currently in use on a commercial scale for other  
16 applications other than power plants?

17 A. You mean on other types of sources?

18 Q. Yes.

19 A. I don't know if they're being used full  
20 scale, but I know they are being tried out on  
21 other sources.

22 Q. Are you aware that membrane bags have  
23 been around for at least ten years?

24 A. I don't know the exact time, but I know  
25 that W. L. Gore Company had news at the Air

1 Pollution Association meetings, and some of their  
2 exhibits have been the membrane bags. I don't  
3 know how many years they've been doing that.

4 Q. You were here for Mr. Hal Taylor's  
5 testimony; that's right, isn't it?

6 A. Yes.

7 Q. Did you hear him testify about the Fort  
8 James facility, which was a fluidized bed boiler  
9 for burning petroleum coke, and it had a dry FGD?

10 A. Yes.

11 Q. And were you aware that he mentioned he  
12 had overseen the installation of membrane bags at  
13 that facility?

14 A. I did not recall that, but I will take  
15 that as a given.

16 Q. And is there anything -- There is no  
17 reason why membrane bags working at a CFB boiler  
18 burning petroleum coke wouldn't work at a CFB  
19 boiler burning CFB coal, is there?

20 MR. REICH: Objection. I don't think  
21 you've laid the foundation for what type of  
22 technology was in use Fort James.

23 MS. DILLEN: I believe I did, fluidized  
24 bed boiler, it's burning petroleum coke, and it's  
25 using also a dry FGD.

1                   THE WITNESS:  Could you repeat the  
2 question?

3           Q.    (By Ms. Dillen)  Did any of your recent  
4 research on membrane bags lead you to believe that  
5 there would be any difference between installing  
6 membrane bags at a CFB boiler at the HGS power  
7 plant versus installing membrane bags at a CFB  
8 boiler mentioned by Mr. Taylor?

9           A.    I don't know all of the details about  
10 the facility.  I believe that's one that has  
11 boilers ranging from around 10 to 45 megawatts,  
12 which are much smaller in scale, and it is a  
13 different fuel.  So I don't know what that means  
14 in terms of switching over to a coal fired basis  
15 on a much larger scale.

16          Q.    Is it fair to say, though, that your  
17 testimony today, your conclusion that membrane  
18 filters were not an available technology, was  
19 based solely on this DOE report?

20          A.    I've looked at a couple of other  
21 reports, but --

22          Q.    In your testimony today, you mentioned  
23 solely --

24          A.    Testimony today?

25          Q.    -- the Ottertail report, did you not?

1           A.    The Ottertail report is the only one  
2    that I mentioned today.

3           Q.    Do you know what an air-to-cloth ratio  
4    means?

5           A.    Yes.

6           Q.    Could you explain that.

7           A.    Sure.  That represents the cubic feet of  
8    air per square foot of cloth, and it basically is  
9    a measure of the number of bags that you'd need  
10   once you convert the bags over into the square  
11   footage of cloth area that they represent for each  
12   bag.  Then you just take the number of bags you  
13   have times that area, and you can get the -- Of  
14   course, the cubic feet of air, the volume of the  
15   air flow you'd expect through there, and that  
16   ratio is pretty critical for most of the bag  
17   filtration.

18          Q.    And you said that that air-to-cloth  
19   ratio is pretty critical to making sure the air  
20   filtration works; is that correct?

21          A.    Yes.

22          Q.    Do you know what a normal air-to-cloth  
23   ratio for a boiler baghouse would be?

24          A.    I don't recall offhand.

25          Q.    Do you know what the normal air-to-cloth

1 ratio for a membrane bag would be?

2 A. Not offhand, no.

3 Q. Would it surprise you to learn that this  
4 project, which was designed to try to reduce  
5 air-to-cloth ratios and costs accordingly, had  
6 tried to stretch these bags beyond their rated  
7 air-to-cloth ratios?

8 A. Are you referring to the Ottertail  
9 project?

10 Q. Yes, I am.

11 A. I do not recall that from the report.

12 Q. I will point you to that reference in a  
13 moment, Mr. McCutchen. In the meantime, were you  
14 aware that these bags had been subjected to  
15 temperatures for which they were not rated in this  
16 pilot project?

17 A. Again, you're referring to the Ottertail  
18 project?

19 Q. Yes, I am.

20 A. (Examines document)

21 Q. If you'd like, I can refer you to Page  
22 25.

23 A. Okay. (Examines document)

24 Q. If you would like to look at the third  
25 paragraph down, I believe the fourth sentence

1 beginning, "The failures." If you'd just read  
2 that sentence.

3 A. Page 25?

4 Q. Yes. There is a bullet point paragraph,  
5 then there is a one liner paragraph, followed by a  
6 full paragraph.

7 A. Okay.

8 Q. And there is a final sentence. If you  
9 would read that, please.

10 A. "The failures were attributed to the  
11 fibers being weakened by high temperatures and  
12 high energy pulsing."

13 Q. And continue on to the next.

14 A. "Plant data confirms the bags were  
15 exposed to temperatures above their rated values."

16 Q. And would you agree that part of the  
17 critical part of this configuration that was being  
18 tested at this pilot project was the ESP and how  
19 the ESP was working?

20 A. You mean in terms of causing the high  
21 temperatures?

22 Q. I mean your contention has been that  
23 this project didn't really work, that some of the  
24 membrane bags that were tested failed; is that  
25 right? Is that an accurate characterization of

1 your testimony?

2 A. Actually I stated that it was a high  
3 pressure drop on the bags that caused the main  
4 problem.

5 Q. Well, I guess I'm trying to get to the  
6 bottom of what the problems were, and whether they  
7 were caused by the bags, or whether they were  
8 caused by this new configuration that the DOE was  
9 trying out that's quite different from a  
10 conventional baghouse.

11 What I'm asking you is: Are you aware  
12 that that first ESP level was part of the control  
13 system that was being tested?

14 A. The first -- You're talking about the  
15 first field in the ESP?

16 Q. Yes.

17 A. That was turned on in an effort to  
18 reduce the initial loading to the bags when the  
19 high pressure drop began. That was my reading of  
20 the report.

21 Q. Maybe it would be useful just to refer  
22 to the description of the technology that is being  
23 tested.

24 A. Certainly.

25 Q. If you'd turn to Page 12.

1 A. Page 12. Which part of the paragraph?

2 Q. Starting with the sentence beginning --

3 It's the second full paragraph beginning, "The

4 advanced hybrid."

5 A. Okay. Do you want me to read that?

6 Q. Sure.

7 A. "The advanced hybrid uses a combination

8 of electrostatic precipitation and fabric

9 filtration to achieve high collection efficiency.

10 The ESP component of the advance hybrid removes

11 the bulk of the particulate matter before the flue

12 gas reaches the bags. Extremely high efficiency

13 is achieved by using membrane filter bags.

14 Removing most of the particulate ESP component

15 allows membrane bags to operate at high AC ratios,

16 thus reducing the number of the relatively

17 expensive membrane bags."

18 Q. So I read that to mean that the ESP is

19 the first stop in controlling the PM emissions,

20 and it's sort of setting the stage for further

21 controls by the membrane filter bags.

22 A. Yes, that's the way I read that

23 paragraph as well.

24 Q. So wouldn't you agree that whether the

25 ESP, that first stage, is working well would be an

1 important factor in whether this pilot project was  
2 going to work out?

3 A. It does appear that to have the membrane  
4 bags feasible at all, you're going to have to  
5 collect -- put another collector in front of them.

6 Q. Correct. And so to have the membrane  
7 bags work at all, to be feasible, you'd have to  
8 have that ESP working correctly, wouldn't you?

9 A. If you were saying that you have to have  
10 both an ESP and a membrane filter along with a  
11 membrane filter bag for the system to work right,  
12 I'm not sure that that's the case in all  
13 situations, but it would certainly add to the  
14 expense.

15 Q. I don't think that's what I'm saying.  
16 Perhaps I can rephrase my question. You said that  
17 the ESP is necessary to make the bags be able to  
18 capture the particulate in this particular  
19 configuration; is that right?

20 A. No, I didn't say that. My understanding  
21 of this experiment was that in an effort to reduce  
22 the high pressure drop across the bags, among the  
23 things that they tried -- which was a good idea --  
24 was to try and collect the bulk of the particulate  
25 matter before the flue gas reaches the bag, so

1       that the membrane bags can do what they evidently  
2       do best, which is to be able to collect fairly --  
3       the fine particles in fairly small -- relatively  
4       small concentration, compared to having to treat  
5       the full brunt of uncontrolled particulate  
6       emissions.

7                 That way the filter cake doesn't build  
8       up as quickly, and you don't get as high a  
9       pressure drop as quickly. So the ESP helps keep  
10      the pressure drop down, and helps the membrane  
11      filters do a good job of collecting small  
12      particles.

13                I don't know for sure whether that's  
14      absolutely essential in every situation, but if it  
15      is, that adds to the cost of using membrane bags.

16                Q.    Mr. McCutchen, are you aware that during  
17      this pilot test, every bag that was used and  
18      tested failed, including bags that were not  
19      membrane bags?

20                A.    Do you mean all of the bags that were  
21      made for the project? Because they tried a lot of  
22      different types of bags.

23                Q.    Correct.

24                A.    I guess I didn't pick up on whether they  
25      actually used just regular fiberglass bags. Did

1 they?

2 Q. I believe they did. Is it fair to say  
3 that you're not terribly familiar with this  
4 report, Mr. McCutchen?

5 A. I have read it once.

6 Q. On the basis of reading this report  
7 once, you testified today that based on a pilot  
8 project that was testing membrane bags in an  
9 unconventional baghouse, that membrane bags are an  
10 unavailable technology? Is that your testimony  
11 today?

12 A. My testimony is that the DOE -- which is  
13 trying to find ways to economically collect  
14 particulate matter, including small particles --  
15 did a full scale retrofit demonstration, and they  
16 ended up with high pressure drop, and bag  
17 failures, and some other problems, which I didn't  
18 go into. I just went into high pressure drop.  
19 They weren't able to solve the problems, according  
20 to the report. And so therefore, the facility  
21 basically just went with regular bags, pulser jet  
22 bags.

23 Q. That's not quite correct. They went  
24 with a -- Isn't it true, Mr. McCutchen, that they  
25 went back to a conventional baghouse, not

1 conventional bags? It was the advanced hybrid  
2 reactor, was it not, that was rejected in this  
3 report?

4 A. They did go to, I believe, a  
5 conventional baghouse overall. The advanced  
6 hybrid reactor was considered a failure, but that  
7 was because of the high pressure build-up on the  
8 bags, plus, as you noted, the failure of the bags.  
9 I'm not quite sure what that has to do with the  
10 fact that the bags were in a shell that was at one  
11 time a precipitator, versus bags in a shell that  
12 is in a fabric filter baghouse.

13 Q. Mr. McCutchen, is it true that the point  
14 of this project was to try to come up with a  
15 configuration that would allow bags to be placed  
16 with a lower air-to-cloth ratio to save money on  
17 membrane bags?

18 A. Well, the paragraph that I just read was  
19 that the precipitator would take care of the bulk  
20 of the particulates, so that they would have to  
21 use fewer of the expensive membrane bags, which  
22 would, of course, create a higher air-to-cloth  
23 ratio the fewer bags you use.

24 Q. Mr. McCutchen, I would refer you to Page  
25 12 of the report.

1           A.    (Complies)

2           Q.    Again, I think we've covered this  
3 ground. I'm just going to read this sentence to  
4 you again. "Extremely high efficiency is achieved  
5 by using membrane filter bags. Removing most of  
6 the particulates with the ESP component allows the  
7 membrane bags to operate at high AC ratios, thus  
8 reducing the number of the relatively expensive  
9 membrane bags."

10                   Now, at the top of the page, this is  
11 Page 12. Actually I'm going to start with the  
12 last sentence on Page 11. Page 11 states,  
13 beginning with the sentence beginning with the  
14 word, "Baghouses operate." Are you with me?

15           A.    Yes.

16           Q.    "Face velocities in the range 1.5 to  
17 five FPM, with 1.5 to 2.5 FPM being the most  
18 common for the reverse gas baghouse, and three to  
19 five FPM being typical for the pulse jet  
20 baghouses;" is that correct?

21           A.    Yes.

22           Q.    "Studies have shown that the FF  
23 collection efficiency is likely to deteriorate  
24 significantly when the face velocity is increased.  
25 The high collection efficiency of the pores in the

1 filter medium must be effectively bridged. With  
2 conventional fabric as low AC ratios, the residual  
3 dust serves as part of the collection media, but  
4 with high AC ratios, only a very light residual  
5 dust cake is acceptable, so the cake cannot be  
6 relied on to achieve high collection efficiency."

7 Now, that's a lot of technical jargon.  
8 This report is a lot to absorb today when it's  
9 been mentioned for the first time, and I'm happy  
10 to have Mr. Taylor come up and address this if the  
11 Board is still confused.

12 But the way I read this, Mr. McCutchen,  
13 is that this pilot test was all about creating a  
14 way to use fewer membrane bags than you would use  
15 in a conventional baghouse; do you disagree with  
16 that assessment?

17 A. Yes, I do disagree.

18 Q. Would you disagree that this pilot test  
19 is not evidence of how membranes -- Excuse me.  
20 Is it not true that this pilot test -- Let me  
21 start over.

22 Is it not the case that this pilot test  
23 addresses the effectiveness of membrane bags in  
24 the new technology, the advanced hybrid  
25 particulate collector? That's a yes or no

1 question.

2 A. Yes, it is. "Advanced hybrid" is an  
3 interesting term. I know it's trademarked. But  
4 it's basically this idea of reusing a  
5 precipitator. And admittedly this is different  
6 from a regular baghouse stand alone, but it is one  
7 of the few studies we have of performance at  
8 relatively high, relatively large scale of  
9 membrane filters.

10 Q. Mr. McCutchen, have you ever had any  
11 experience looking at how membrane bags are used  
12 in the metallurgical industry?

13 A. Metallurgical, no.

14 Q. Have you ever encountered, for instance,  
15 the James Creek, the Fort James facility that Mr.  
16 Taylor had mentioned in his testimony?

17 A. No. That was on boilers at the  
18 facility, right?

19 Q. This that was at a CFB boiler.

20 A. Right. So that's not a metallurgical  
21 facility.

22 Q. I'm just asking you. Had you ever heard  
23 the Fort James application before you heard Mr.  
24 Taylor's testimony?

25 A. No.

1           Q.    Had you ever heard about membrane bags  
2   before in the way that he was discussing them with  
3   respect to other applications?

4           MR. REICH:  Objection.  I think you have  
5   to be a little more precise, Counsel, as to "other  
6   applications."  That's too vague.

7           Q.    (By Ms. Dillen)  You heard Mr. Taylor's  
8   testimony when he testified that he had overseen  
9   the installation of membrane bags at several  
10  projects.  Have you ever had occasion to work on  
11  those sorts of projects, or investigate those  
12  projects that Mr. Taylor had mentioned?

13          A.    Other than trying to follow through and  
14  see what information I could find on the projects  
15  that were mentioned in his expert report or in his  
16  testimony, no.

17          Q.    So is it fair to say that you did some  
18  research for purposes of this litigation on  
19  membrane bags?

20          A.    Some additional research, yes.  I was  
21  aware to just kind of a general extent about  
22  membrane bags and their possibilities.

23          Q.    But you testified --

24          A.    Just pretty general literature, but --

25          Q.    But you testified today that you've

1 never looked at them at a BACT analysis, you've  
2 never overseen the installation of membrane bags;  
3 is that correct?

4 A. Right. That is correct.

5 Q. Is it fair to say that Mr. Taylor  
6 probably has more experience with membrane bags  
7 than you do?

8 A. If he has any experience directly  
9 dealing with membrane bags, he has more experience  
10 than I do.

11 MS. DILLEN: I would like to move that  
12 this report be admitted into evidence in its  
13 entirety. I think it's not an exhibit that  
14 Counsel had discussed prior to the proceedings,  
15 but having reviewed it in detail myself, I think  
16 it would be excellent for the Board to take a look  
17 at it, and get a real sense of that report in its  
18 entirety. And I would certainly offer Mr. Taylor  
19 on rebuttal to discuss his conclusions regarding  
20 the report, if the Board feels that that would be  
21 useful.

22 MR. REICH: It's up to you to make  
23 motions.

24 CHAIRMAN RUSSELL: Do I have a motion to  
25 accept this MEIC-I into evidence or as an exhibit?

1 MR. ROSSBACH: So moved.

2 CHAIRMAN RUSSELL: It's been moved. Is  
3 there a second?

4 MR. MARBLE: Second.

5 CHAIRMAN RUSSELL: Don seconded. Do you  
6 want to lodge an objection?

7 MR. REICH: No objection, since I  
8 personally hand delivered it to Ms. Dillen last  
9 night. I can't object it.

10 CHAIRMAN RUSSELL: Seeing that, all  
11 those in favor, signify by saying aye.

12 (Response)

13 CHAIRMAN RUSSELL: Opposed.

14 (No response)

15 (MEIC Exhibit I  
16 was received into evidence)

17 CHAIRMAN RUSSELL: Are you going to ask  
18 any more questions regarding this, or are we done?

19 MS. DILLEN: I may come back to it, but  
20 for now.

21 CHAIRMAN RUSSELL: What does "derate"  
22 mean? Page 34, Table 6, the last paragraph.  
23 "Table 7 shows the derate history of the project  
24 as discussed above. Derates were a major --" I  
25 have no clue what "derates" means.

1 MS. DILLEN: I now have a clue, but  
2 would much prefer my expert to explain this to  
3 you.

4 MR. REICH: Mr. McCutchen can.

5 CHAIRMAN RUSSELL: Can you do that?

6 THE WITNESS: I think so.

7 CHAIRMAN RUSSELL: Please. Are you okay  
8 with that?

9 MS. DILLEN: Yes.

10 THE WITNESS: The concept of derate is  
11 in the electric utility industry the idea that  
12 even though you may have a certain capacity for,  
13 say, a particular utility boiler to generate  
14 electricity to go on the grid, there are various  
15 reasons why the theoretical capacity of that unit  
16 may be derated or lowered.

17 CHAIRMAN RUSSELL: Derated as in lower  
18 rate?

19 THE WITNESS: It's like lowering your  
20 credit rating, in a sense.

21 CHAIRMAN RUSSELL: I get it then. I was  
22 thinking that was a whole different word.

23 Q. (By Ms. Dillen) Mr. McCutchen, isn't  
24 it true that when I deposed you, you said that you  
25 had never done a BACT analysis?

1           A.    That is correct.  I wrote the procedure  
2   for how to do a BACT analysis.

3           Q.    Correct.  But I think your adverb was,  
4   "Ironically I've never performed one myself;" is  
5   that right?

6           A.    That is correct.  I, however, have  
7   supervised the performance of a BACT analysis.

8           Q.    Is it fair to say that you're not doing  
9   a lot of the leg work, you're reviewing analyses?

10          A.    That is correct.

11          Q.    And you've testified that it would be  
12   very difficult to find emission factors for a  
13   particular source, for instance, the SME boiler.

14                Isn't it true that a boiler manufacturer  
15   could do a test, and then use electric microscopy  
16   to identify the components of their particulate  
17   matter?

18          A.    They could do that to get the size  
19   distribution of the particles collected.

20          Q.    Correct.  So they would have some sense  
21   of what size particles were in the PM2.5 size  
22   range, versus what size particles were in the PM10  
23   size range; is that right?

24          A.    Yes.  You could actually count the  
25   number of particles using a reticular lens --

1 that's the terminology for it -- that shows you  
2 how long a micron is or two microns are, and you  
3 just go down and count the particles. I actually  
4 did that one time. And it doesn't really give you  
5 the weight.

6           But the main problem is that even though  
7 a lot of research work is done on size  
8 distribution versus the amount collected in the  
9 percent by weight that you have, without a  
10 referenced test method, you don't know what, for  
11 example, Conditional Test Method 40 is going to  
12 give you as the value for the amount of PM2.5  
13 filterable, for example, coming out, and you  
14 certainly can't use that for the condensible  
15 portion of PM2.5. You cannot use a particle  
16 count, because what you end up with is materials  
17 in the impingers that condense out.

18           Q. You were here yesterday for Mr. Lierow's  
19 testimony, I assume?

20           A. Yes.

21           Q. And you heard him testify that Alstom  
22 was able to provide him estimates of their  
23 condensible emissions, and he found that those  
24 numbers seemed to work out, and he was able to use  
25 them to perform a BACT analysis?

1           A.    Yes.  I assume that it was probably 202,  
2           which of course now has been recognized as having  
3           its own problems with artifacts.

4           Q.    But of course, if a test has some  
5           problems, that doesn't preclude its use in a BACT  
6           analysis?

7           A.    We really had no choice for  
8           condensibles, because PM10 condensibles are  
9           exactly the same as PM2.5 condensibles.  So  
10          whether you use PM10 as a surrogate or not, you're  
11          still doing a BACT analysis for condensibles.

12          Q.    So even if we would all love to have a  
13          perfect test, sometimes we have to use an  
14          imperfect test, and we do use imperfect tests in  
15          BACT analyses quite often, don't we?

16          A.    That's correct.  But for filterable in  
17          terms of the BACT analysis with EPA policy, you  
18          have a choice of going with either PM10 or PM2.5  
19          filterable, and it's the PM2.5 filterable data  
20          that we lack.

21          Q.    With respect to that PM2.5 filterable  
22          data, you testified today to the existence of a  
23          Conditional Test Method 39; is that correct?

24          A.    I believe I got the two mixed up.  I  
25          believe the 39 is the dilution method, which gives

1 you a total; 40 is the filterable.

2 Q. I was going to ask you about that. So  
3 now that we have that confusion cleared up, let's  
4 just make sure we do. Conditional Test Method 39  
5 is a dilution method that would be used for  
6 condensibles; is that correct?

7 A. For condensible and filterables  
8 together.

9 Q. Then the Conditional Test Method 40  
10 would be a test method for filterables that would  
11 eliminate some of the problems that you've talked  
12 about with respect to Method 202?

13 A. No. Hopefully it will end up being the  
14 referenced method for PM2.5 filterable, with the  
15 cyclone in front of the filter, just like there is  
16 now a cyclone in the front of the filter for PM10,  
17 just a different cyclone.

18 Q. Just so we're all on the same page.  
19 There is a conditional test method out there that  
20 EPA has looked at for filterable PM2.5, and that's  
21 Conditional Test Method 40?

22 A. Yes.

23 Q. And then there is a test that EPA has  
24 looked at for filterable and condensible together,  
25 a dilution test, and that's Conditional Test

1 Method 39?

2 A. Yes.

3 Q. States have the authority to use those  
4 Conditional Test Methods right now, do they not?

5 A. States can use those methods, but for  
6 them to use them for the EPA mandated programs,  
7 they need to get EPA approval, or they have to go  
8 through a rulemaking process to get an approved  
9 SIP, the State Implementation Plan.

10 Q. Isn't it true that a state can use a  
11 Conditional Test Method just so long as EPA has  
12 the power to veto that decision?

13 A. Yes.

14 Q. So it's not the case that you'd have to  
15 go through rulemaking in order to approve the use  
16 of a Conditional Test Method in a BACT permitting  
17 process; is that right?

18 A. That's correct. I was giving you an  
19 answer for all of the air management aspects of a  
20 Conditional Test Method.

21 Q. But when it comes to doing a BACT  
22 analysis, if for instance the DEQ wanted to say to  
23 SME, "For purposes of their operating permit,  
24 we'll use Conditional Test Method 39," they could  
25 do that; is that right?

1           A.    Yes.  I'm sure in fact EPA would love to  
2    have the states developing the information that  
3    they need to proceed forward with a test method.

4           Q.    And you agree that Control Test Method  
5    39, which covers both filterables and  
6    condensibles, is a reliable test method?

7           A.    Do I think it's a reliable test method?

8           Q.    Yes.

9           A.    I don't know.  It's out there for  
10   evaluation.

11          Q.    Do you recall our deposition here in  
12   Montana of you in October of last year?

13          A.    Yes.

14          Q.    Do you remember what your testimony was  
15   at that time with respect to the dilution method?

16          A.    Yes.  I believe that I indicated that I  
17   thought the dilution method was a method that had  
18   a great deal of promise to it, and that I hope it  
19   ended up being a method that worked out.

20          Q.    Perhaps I can direct you.  Do you have  
21   your deposition in front of you?

22          A.    No, I don't.

23                MR. REICH:  (Provides document)

24          Q.    (By Ms. Dillen)  Page 142, I'm starting  
25   from Line 1, question:  "I want to clarify a few

1 points in your previous answer. One is --" This  
2 is -- I'm reading.

3 A. Page --

4 Q. Page 142, starting at the top of the  
5 page.

6 A. Okay. I see it.

7 Q. Question by me: "I want to clarify a  
8 few points in your previous answer. One is I took  
9 you to say that the conditional test method that's  
10 currently under consideration for PM2.5 is a great  
11 method, in your opinion?" Answer: "I'm assuming  
12 that this is referring to the dilution method, and  
13 if so, the dilution method, that I do think is a  
14 much better method than the condensible method."

15 Question: "So you believe there is a  
16 dilution method out there that is a reliable way  
17 of testing for PM2.5 emissions?" Answer: "From  
18 what I've heard about that, it is, yes."

19 Mr. McCutchen, you've talked a lot about  
20 the difficulties why it would be impossible to  
21 undertake a PM2.5 BACT analysis, and what I've  
22 understood from you to be the reasons are that you  
23 feel they're not reliable emission factors and  
24 inventories, and that there is not a reliable test  
25 method; is that right?

1           A.    Yes.

2           Q.    So doesn't that boil down to the problem  
3           that you think PM2.5 can't be measured  
4           appropriately, and therefore, it's impossible to  
5           do a BACT analysis?

6           A.    I think it could be measured, but the  
7           problem is the measurement.  The number you come  
8           up with is tied to the test method; and without a  
9           referenced test method and information resulting  
10          from using that test method, we just don't have  
11          the data available to evaluate BACT for a source  
12          that hasn't been built yet.

13                 You need not only a valid method -- and  
14          I'm referring to these as referenced test methods  
15          -- but because the particular boiler we're  
16          referring to here hasn't been built yet, you have  
17          to get data using that test method on a similar  
18          type boiler to get an idea of what the emissions  
19          would be of PM2.5.

20          Q.    So my question stands.  Your concern is  
21          the lack of a referenced test method that gives  
22          reliable emission rates, i.e., measurements of  
23          PM2.5?

24          A.    Yes.

25          Q.    And you edited the draft New Source

1 Review Manual that is Exhibit 1 in this  
2 proceeding; is that right?

3 A. I did edit the manual. Let me see if it  
4 is Exhibit 1. (Examines document) Yes.

5 Q. Turning to Page 2, the second paragraph  
6 reads, "In addition, if the reviewing authority  
7 determines that there is no economically  
8 reasonable or technologically feasible way to  
9 accurately measure the emissions, and hence to  
10 impose an enforceable emission standard, it may  
11 require the source to use design, alternative  
12 equipment, work practices, or operational  
13 standards to reduce emissions of the pollutant to  
14 the maximum extent;" is that what it that says?

15 A. Yes.

16 Q. Is it fair to say that in your opinion,  
17 BACT does not require necessarily an emissions  
18 limit in terms of measurable emissions using a  
19 testing method?

20 A. This was intended for situations like  
21 fugitive emissions and other situations where you  
22 could actually do designs and alternative  
23 equipment. It might be possible in this case to  
24 work out enough specifics in work practices and  
25 the exact designs and everything else of a piece

1 of control equipment to avoid having to use an  
2 emission limitation; but to know which piece of  
3 equipment actually represented BACT, you'd still  
4 need to know some emissions, and you'd need to  
5 know the uncontrolled and the controlled level of  
6 emissions, so that you could figure out the  
7 control efficiency of the unit, and --

8 Q. Is it true in this case --

9 MR. REICH: Objection. Let him finish  
10 his answer.

11 A. One way of looking at that paragraph is  
12 that EPA might have had -- probably did have two  
13 different choices of which way to go. One is that  
14 without a way of technically feasibly determining  
15 PM2.5 filterable emissions, and for that matter  
16 condensible emissions, because of problems with  
17 Method 202, they could have gone either with a  
18 surrogate -- which they evidently did with PM10 --  
19 or they could have tried this other approach of a  
20 design, alternative equipment, work practice, or  
21 operational standard.

22 I think that would have been a  
23 nightmare, because they would have not only had to  
24 look at specifically the Highwood facility, but  
25 all other source types that are covered in New

1 Source Review, which is hundreds of different  
2 types of sources, burning dozens of different  
3 fuels, and using hundreds of different raw  
4 materials; and to try and come up with design,  
5 alternative equipment, work practice, or  
6 operational standards for all of those, and be  
7 able to compare their effectiveness, I think would  
8 be a monumental task.

9 Q. (By Ms. Dillen) Mr. McCutchen, is it  
10 true that BACT requirements apply to regulated  
11 criteria pollutants?

12 A. They actually apply to anything that is  
13 considered a regulated NSR pollutant, including  
14 criteria pollutants.

15 Q. Isn't it true that BACT requirements  
16 apply to NAAQS requirements? Yes or no. Isn't it  
17 true that NAAQS pollutants such as PM2.5 are  
18 subject to BACT requirements?

19 A. Yes.

20 Q. Yes or no question. Is it true that  
21 BACT requirements demand -- Is it true that --  
22 withdraw that question.

23 I'd like to direct you to Page B-1,  
24 which quotes the Clean Air Act itself, of Exhibit  
25 1, the New Source Manual. I know we're familiar

1 with this language, but I feel that it's  
2 appropriate to highlight this, because we haven't  
3 focused on it before.

4 "If the Administrator determines that a  
5 technical or economic limitation on the  
6 application of measurement methodology to  
7 particular emissions unit would make the  
8 imposition of an emissions standard infeasible, a  
9 design, equipment, work practice, operational  
10 standard, or combination thereof may be prescribed  
11 instead to satisfy the requirement for the  
12 application of Best Available Control Technology.  
13 Such standard shall, to the degree possible, set  
14 forth the emissions reduction achievable by  
15 implementation of such design, equipment, work  
16 practice, or operation, and shall provide the  
17 compliance by means which achieve equivalent  
18 results."

19 Is that a correct read of the Clean Air  
20 Act, plain language?

21 A. Yes. We actually suggested Congress put  
22 that in.

23 Q. I'm glad you did. Is it fair to say  
24 that in the BACT process, even if you don't have  
25 the perfect information, you do the best you can?

1           A.    Yes.  To do the best you can in this  
2    case would be using PM10 as a surrogate.

3           Q.    Mr. McCutchen, you testified with  
4    respect to two of the facilities that Mr. Reich  
5    had pointed you to, a Texas coal plant and a  
6    Florida coal plant, earlier; do you recall that  
7    testimony?

8                   MR. REICH:  Objection.  It's a  
9    Pennsylvania plant and a Florida plant.

10          Q.    (By Ms. Dillen)  Excuse me.  A  
11    Pennsylvania plant and a Florida plant.

12          A.    Yes.

13          Q.    And you testified that your impression  
14    was that they were burning eastern bituminous  
15    coal; is that right?

16          A.    Since they were in the east, I said that  
17    would be my presumption.

18          Q.    Do you know whether those plants --

19          A.    Do I know whether they actually are or  
20    not?

21          Q.    Yes.

22          A.    No.  I just said it was my presumption.

23          Q.    Are you aware that PRB coal is shipped  
24    back east, and there are eastern plants that burn  
25    PRB coal?

1 A. Yes.

2 Q. Are you aware that in Pennsylvania, for  
3 instance, plants also burn waste coal?

4 A. Yes.

5 Q. So it's fair to say that it's not  
6 necessarily the case that those plants are burning  
7 bituminous coal?

8 A. No.

9 Q. You testified that companies are loathe  
10 to invest in expensive test methods; is that  
11 right?

12 A. Expensive testing.

13 Q. Expensive testing. Correct. Would you  
14 expect that to change if plants were actually  
15 subject to PM2.5 requirements?

16 A. They would still probably be loathe to.

17 Q. That's true.

18 A. But if they were subject to requirements  
19 to do a certain test using a certain test method,  
20 they would undoubtedly do so.

21 Q. You stated today that if you were to do  
22 a BACT analysis -- although you've never  
23 undertaken one yourself. I know that you've  
24 supervised them, but you've never performed one  
25 yourself.

1           A.    You could stipulate to that.  If I were  
2   to supervise a BACT analysis.

3           Q.    You've stated you would never consider a  
4   configuration where you had a fabric filter  
5   baghouse plus a wet ESP; is that right?

6           A.    We have not done so, and it would not  
7   have occurred to me to do so.

8           Q.    But you're aware that EPA did consider  
9   that precise option in the Deserit permit?

10          A.    Yes, I am now.

11          Q.    And you stated today that you could  
12   conveniently knock out that configuration, that  
13   fabric filter plus the wet ESP, as an option based  
14   on cost?  Just today.  Just today, right?

15          A.    I'm not sure if "conveniently" is the  
16   right word, but my presumption would be based on  
17   past BACT analyses, that a control device for a  
18   pollutant right after another control device for  
19   that same pollutant is generally not cost  
20   effective.

21          Q.    Let's examine that answer.  If you were  
22   to be controlling PM2.5, it would not necessarily  
23   be the same pollutant; isn't that correct?

24          A.    (No response)

25          Q.    In the current permit, we have a fabric

1 filter baghouse that's controlling PM10, and the  
2 Petitioners are asserting in this case that the  
3 addition of a wet ESP would help you catch  
4 additional PM2.5.

5 A. Well, by "same pollutant," I meant that  
6 in the sense that PM10 includes all of the PM2.5  
7 except the precursors. It includes the filterable  
8 and condensible. So in effect it's a control  
9 device for the same pollutant: Particulate  
10 matter.

11 Q. Nevertheless, this is an option that EPA  
12 has considered in its own permitting analysis and  
13 in some detail; is that correct?

14 A. In the Deserit permit?

15 Q. Yes.

16 A. They used PM10 as a surrogate. Oh, you  
17 mean the wet ESP following?

18 Q. Yes.

19 A. That was Option E. They did include  
20 that as one of the configurations.

21 Q. So while it's not something that you  
22 might consider, EPA did?

23 A. That's correct. And the EPA analyses  
24 are at times an indicator of new or shifting EPA  
25 policy. So that essentially says that at some

1 point, we may be -- through regional office  
2 reviews of PSD permits in the near future --  
3 having to look at that as one of the combination  
4 options.

5 Q. I believe that you gave Mr. Reich your  
6 opinion in this matter that you would not, as you  
7 stand here today, choose a wet ESP as a control  
8 technology as BACT in this case; is that right?

9 A. Do you mean stand alone?

10 Q. No, I mean in that --

11 A. Following the fabric filter?

12 Q. Yes.

13 A. It's not so much a matter of my choosing  
14 it or not. It's that I believe it would not be  
15 considered cost effective, and would be dropped  
16 out if you did include that in the mix of options.

17 Q. So it's your position that you can  
18 answer without going through the step by step  
19 analysis?

20 A. That's more of a presumption based on  
21 past experience in reviewing what happens with  
22 these, including the Deserit permit; and the fact  
23 that again, if you follow a Control Device A with  
24 Control Device B, it has a lot less pollutant that  
25 could possibly even theoretically collect, and if

1 it's as costly as Control Device A, then you're  
2 going to have a much higher cost effectiveness  
3 number, which as the Deserit analysis showed, is  
4 far higher than the usual threshold.

5 Q. You would agree that at Step 1, when you  
6 identify control technologies, cost does not come  
7 into that consideration, correct?

8 A. That's correct.

9 Q. And then at Step 2, when you're looking  
10 at their control efficiencies, you would not  
11 consider cost in that analysis, correct?

12 A. In Step 2? That's correct.

13 Q. So when you were first considering the  
14 various controls at Steps 1 and 2, cost would not  
15 come into it at that point?

16 A. That's correct.

17 Q. And then when you went on to Step 3, you  
18 would be considering cost effectiveness on a  
19 case-by-case basis; isn't that right?

20 A. In Step 4.

21 Q. Okay. I'm sorry. We're ranking first  
22 and then --

23 A. But I knew what you meant. Step 4 is  
24 where you consider the cost.

25 Q. So in Step 3, you're still not

1 considering cost; is that right?

2 A. That's correct.

3 Q. So it's not until you get to the very  
4 end, when you've assessed how good all the  
5 technologies are in terms of emissions reductions,  
6 that you start thinking about the money?

7 A. That's correct.

8 Q. And until you do that analysis, can you  
9 come up with a conclusion at Step 1, or Step 2, or  
10 Step 3?

11 A. A conclusion --

12 Q. -- as to whether a technology could or  
13 could not be designated as BACT?

14 A. Not in those first three steps, no.

15 Q. Do you recall at your deposition when I  
16 was asking you about whether some technologies  
17 could be chosen as BACT or not?

18 A. You will have to refresh my memory.

19 Q. Sure. I'm turning to Page 152, and  
20 there I was asking you if it was likely that you  
21 would choose a wet ESP as a control technology of  
22 choice in a PM10 BACT analysis. Do you recall  
23 what your answer was then?

24 A. I will as soon as I read it. I said, "I  
25 would not know that without actually going through

1 the analysis."

2 Q. And I asked you then: "Are there other  
3 control technologies for PM10 that are more cost  
4 effective, but equally effective at pollution  
5 control than wet ESP is with regards to PM10?"  
6 You said, "Well, again, BACT is case-by-case. I'm  
7 not trying to avoid an answer, but there are so  
8 many variables in the question you just asked. I  
9 don't really know."

10 A. That's correct. And I believe that I  
11 was under the impression you were talking a wet  
12 ESP versus a fabric filter.

13 Q. So there would be no variables in this  
14 instance that would preclude you from giving an  
15 answer to the Board today without having done the  
16 step by step analysis that you authored?

17 A. I didn't say that. I would probably  
18 have to go back and look at this in context. But  
19 if on Page 152 we were talking about whether I  
20 would choose a wet ESP over, say, a fabric filter  
21 in BACT, that's up in the air. You would have to  
22 go through the analysis to know that.

23 But we have been discussing whether to  
24 add a wet ESP on after already putting a control  
25 device on for particulate matter, such as putting

1 a fabric filter on and following that by wet ESP.  
2 That's where my presumption about control devices  
3 in series comes in.

4 Q. Mr. McCutchen, is a BACT analysis  
5 case-by-case or not?

6 A. Oh, absolutely case-by-case.

7 Q. If you were looking at -- If you were  
8 conducting a BACT analysis for PM2.5 rather than  
9 PM10, do you think the cost effectiveness analysis  
10 might change, given the health threat that PM2.5  
11 poses?

12 A. I think the cost effectiveness analysis  
13 might change, but not because of health.

14 Q. Isn't it true --

15 MR. REICH: Objection. Let him finish  
16 his --

17 A. I was trying to create a short answer  
18 here. Health is not taken into account in  
19 determining -- Possible health effects are not  
20 taken into account in determining BACT. It's the  
21 best technology you could put on. Then once you  
22 get there, and establish the emission limit, you  
23 use that emission limit to determine whether there  
24 would be health impacts, and if there would be,  
25 the agency simply does not issue the permit unless

1 the source is willing to go lower, or there is  
2 other factors that change.

3 So health is not ignored, and certainly  
4 adverse effects on health are not ignored in the  
5 PSD process. They just are not -- That protection  
6 doesn't take place in the BACT analysis, it takes  
7 place in the impact analysis.

8 Q. Mr. McCutchen, is it your contention  
9 that an agency might not set a higher cost per ton  
10 threshold for a pollutant that is more dangerous  
11 in smaller concentrations than it would for a  
12 pollutant that's less dangerous?

13 A. Oh, an agency certainly has the option  
14 of selecting or having a cost effectiveness  
15 threshold for each pollutant.

16 Q. And say with respect to -- We've talked  
17 about precursors to PM10, condensed PM10. One of  
18 those is NOx, correct?

19 A. Yes.

20 Q. And NOx is already regulated as a  
21 criteria pollutant, correct?

22 A. Yes, the NO2 portion.

23 Q. If you were looking at Nox just for NOx,  
24 you might come up with one limit, right?

25 A. That's correct.

1           Q.    And then if you were considering NOx as  
2   a precursor for PM2.5, would that ever affect the  
3   amount of money that you were willing to spend to  
4   control NOx?

5           A.    It could.

6           Q.    And how would that change manifest  
7   itself?

8           A.    The agency would have either a formal or  
9   informal idea of what they consider the cost  
10  effectiveness threshold, which is basically the  
11  dollar per ton number below which they consider  
12  that technology cost effective, and above which  
13  they consider it not to be cost effective.

14          Q.    So is it fair to say if you were  
15  considering PM2.5 specifically, the variables that  
16  you were considering in your cost effectiveness  
17  analysis might change?

18          A.    Do you mean the threshold for cost  
19  effectiveness?  That would be for the agency to  
20  decide.  They could certainly do so if they wished  
21  to do so.

22                    They would also need to take into  
23  account the fact that if you switched over to  
24  PM2.5 only rather than PM10 -- in other words, the  
25  amount of PM10 collected by the control device,

1 since that includes all of the PM2.5 collected, is  
2 going to be higher in terms of tons per year than  
3 the amount of PM2.5 alone collected.

4           So if a control device costs the same,  
5 dollars are the same, the tons collected -- if  
6 you're dealing with only PM 2.5 -- is smaller, so  
7 the dollar per ton cost for that same piece of  
8 control equipment goes up. So if we switch over  
9 to a PM2.5 in the future, one thing that's going  
10 to happen is that the cost effectiveness numbers  
11 are going to increase over the cost effectiveness  
12 numbers for PM10. It's just one of many things  
13 that the agency is going to need to consider.

14           Q. Let me just make sure I heard you  
15 correctly. The cost effective numbers for PM2.5  
16 are going to increase as compared to the cost  
17 effectiveness numbers for PM10?

18           A. Right.

19           Q. Mr. McCutchen, I'd just like to cover  
20 one last piece that may be of interest to us all  
21 hopefully. At Exhibit No. 6, there has been some  
22 discussion about where we are in the process of  
23 validating conditional test methods.

24           A. Okay.

25           Q. If I could refer you to Page 2653.

1 A. Okay.

2 Q. In the second column that's entitled  
3 Conditional Test Methods 39 and 40 -- are you with  
4 me?

5 A. Yes.

6 Q. Their comments are they're worried about  
7 whether these are good tests. Could you just read  
8 EPA's response beginning with, "We agree."

9 A. The entire response?

10 Q. No. I'll stop you.

11 A. "We agree with the comments that neither  
12 method has been subjected to adequate public  
13 notice and comment rulemaking. Taking that step  
14 will facilitate application of the appropriate  
15 methods for implementing the SIPs. On the other  
16 hand, there are a number of levels of validation  
17 already achieved for one or more of these methods  
18 that will determine what, if any, additional  
19 validation work will be necessary."

20 Q. Thank you. And then it goes on to  
21 discuss methods, Control Methods 39, 40, and I  
22 believe the 40 Test Method's application in  
23 conjunction with Method 202; is that correct?

24 A. Yes.

25 Q. So is it fair to say that while EPA

1 hasn't formally promulgated conditional test  
2 methods, that it does have a fair degree of  
3 validation of those test methods?

4 A. As of 2007. I think the application was  
5 being prepared about two years earlier for the  
6 Highwood Station. The Additional Test Methods, as  
7 EPA said, still need to go through adequate notice  
8 and comment rulemaking, and then we need to get  
9 some data using them.

10 Q. But you have testified that these test  
11 methods could be used now?

12 A. There is a lot of difference between  
13 "could" and "should."

14 Q. It would not be illegal to use them now;  
15 is that correct?

16 A. No, it would not be illegal.

17 Q. And in your experience with BACT  
18 analyses, supervising them and to some degree  
19 doing them yourself, have you ever considered test  
20 methods at Step 1 of the BACT analysis?

21 A. Considered --

22 Q. Have you ever considered the  
23 availability of test methods at Step 1 of a BACT  
24 analysis?

25 A. No.

1 Q. At Step 2?

2 MR. REICH: Objection. You're not  
3 letting the witness finish his answer.

4 MS. DILLEN: I'll let him explain his  
5 answer later, but I would just like to know at any  
6 step of the BACT analysis.

7 MR. REICH: I object. Let him finish  
8 the answer to Step 1. He was halfway through.

9 MS. DILLEN: Frankly, he has been  
10 stopping and waiting for me to ask another  
11 question, and you have been objecting. So I think  
12 Mr. McCutchen has had ample opportunity to explain  
13 his views here.

14 Q. (By Ms. Dillen) Mr. McCutchen, I'll be  
15 happy to let you explain your answer, but I just  
16 want to be clear about this.

17 In your experience at BACT Step 1 -- yes  
18 or no -- do you consider the availability of test  
19 methods?

20 A. Generally no.

21 Q. With respect to Step 2?

22 A. Step 2, the availability of test methods  
23 may play a part in knowing whether it's  
24 technically feasible; but usually where the test  
25 methods tend to come in -- if I could jump ahead

1 -- is Step 3.

2 Q. At what point do you consider test  
3 methods and their availability at Step 3?

4 A. In Step 3, you need a reliable test  
5 method to be able to develop the data to be able  
6 to do Step 3.

7 Q. So this goes to your earlier testimony  
8 that you think it's hard to do Step 3 if you don't  
9 have a test method; but it's not part of a BACT  
10 analysis, is it?

11 A. Step 3?

12 Q. No, considering test methods in Step 3.

13 A. But you can't do Step 3 without a test  
14 method --

15 Q. Let me make myself more clear.

16 A. -- and the data.

17 Q. Would you be considering a compliance  
18 test method -- What test method would be specified  
19 as a compliance test at Step 3?

20 A. You need the test method to know how to  
21 rank the control equipment. You don't just look  
22 at it and say, "Well, that equipment is 99 percent  
23 efficient and the other equipment is 99.9  
24 percent." Those numbers, those percentages,  
25 control efficiency numbers, are derived from data,

1 and the data are derived using test methods.

2 Q. Yet in this permit, there are control  
3 efficiencies stated for condensibles; is that  
4 correct?

5 A. Yes.

6 Q. And you have stated here that you do not  
7 believe that there are referenced test methods for  
8 condensibles; is that correct?

9 A. No, not quite. I said there is a  
10 referenced test method, Referenced 202 for  
11 condensibles. But EPA is in an extremely unusual  
12 position -- I can't recall of a single other  
13 instance like this offhand -- where they're having  
14 to rethink whether that is a reliable referenced  
15 test method, due to the problems that they're  
16 seeing and the anomalies in the results.

17 Q. But it's correct that PM and PM10 test  
18 emission limits have been set using this test for  
19 years, correct?

20 A. They have, and that's one of the  
21 problems.

22 Q. Notwithstanding these problems, it has  
23 not precluded BACT analysis for PM or PM10; is  
24 that correct?

25 A. That's true, although I think that

1 that's part of EPA's reason for telling states  
2 they don't have to establish condensible PM10 or  
3 PM2.5 emission limits right now.

4 Q. It's generally the case, is it not, that  
5 a test method or test methods are selected when a  
6 facility is receiving its operating permit; is  
7 that correct?

8 A. A good permit is going to specify the  
9 limit, and then they're going to specify how  
10 compliance with that limit is to be determined,  
11 and that's usually by either a referenced test  
12 method or by a continuous monitor, which is  
13 calibrated using the referenced test method.

14 Q. Just to clarify with respect to the  
15 dates as to when these test methods that you agree  
16 can legally be used -- that in fact EPA would  
17 encourage people to use, I believe was your  
18 testimony -- I would like to refer you to one last  
19 document. That is Federal Register document,  
20 2005, Tab L. Go to Page 66043.

21 A. Okay.

22 Q. Would you agree on that page that EPA  
23 had concluded as of that time that the concerns  
24 evidenced in the Seitz memo had largely been  
25 resolved?

1           A.    Could you --

2           Q.    That's on the third column under the  
3 heading "Background." I'm referring to the  
4 language that begins "Also" mid paragraph.  
5 Section 164(a)(4) requires BACT for each pollutant  
6 subject to EPA regulation. If you would like to  
7 continue reading the next two sentences beginning,  
8 "The 1997 guidance."

9           A.    "The 1997 guidance stated that sources  
10 would be allowed to use implementation of a PM10  
11 program as a surrogate for meeting PM2.5 NSR  
12 requirements until certain difficulties were  
13 resolved, primarily the lack of necessary tools to  
14 calculate the emissions of PM2.5 and related  
15 precursors, the lack of adequate modeling  
16 techniques to project ambient impacts, and a lack  
17 of PM2.5 monitoring sites. As discussed in this  
18 preamble, these difficulties have been resolved in  
19 most respects, and where they have not been, the  
20 proposal contains adequate provisions to account  
21 for it. These issues will be finally resolved by  
22 the agency upon promulgation of these proposed  
23 revisions."

24           Q.    Thank you. At that time, EPA believed  
25 that it had enough information to propose

1 implementation of rules; is that correct?

2 MR. REICH: Object.

3 MS. DILLEN: I'll withdraw the question.

4 I have no further questions.

5 CHAIRMAN RUSSELL: Redirect.

6 MR. REICH: None for me.

7 CHAIRMAN RUSSELL: David.

8 MR. RUSOFF: The Department doesn't have  
9 any questions.

10 CHAIRMAN RUSSELL: I guess it's time for  
11 the Board.

12

13 EXAMINATION

14 BY CHAIRMAN RUSSELL:

15 Q. This whole concept of -- when you  
16 mentioned -- I think you mentioned you had  
17 conducted six or seven BACT analyses. Was that in  
18 your regulatory capacity, and is that really a  
19 BACT analysis review?

20 A. The ones that I've supervised and  
21 basically been involved in have been as a  
22 consultant. There are two kinds of permit  
23 applications that we help applicants with. One is  
24 for states where they have to have a professional  
25 engineering seal or license, and obviously I've

1 supervised under that.

2 Q. So you were actually overseeing a true  
3 BACT analysis?

4 A. Yes.

5 Q. Did you ever review when you were a  
6 regulator? Did you ever review a BACT analysis?

7 A. Oh, yes.

8 Q. I'm sure I know the answer to this  
9 question. Do you advocate the use of top down  
10 BACT?

11 A. Yes.

12 Q. In all situations?

13 A. I think that would depend on what  
14 alternative approach was being suggested.

15 Q. No, I'm talking about the process.

16 A. The process itself?

17 Q. Yes.

18 A. What I meant was if there was an  
19 alternative process that might be better -- I  
20 can't envision one of course. But the reason EPA  
21 went -- we as EPA, when I was there, went to the  
22 top down approach was that it provided much more  
23 information to the regulator about the best  
24 control technologies. When we were doing what was  
25 called the bottom up approach, many times the

1 applicant never got up to the best technologies,  
2 so the regulator was stuck with either accepting  
3 where the applicant had stopped, or having to  
4 gather all the information themselves, which was a  
5 terrible resource burden.

6 Q. Apparently the state of Utah doesn't  
7 have a primacy when it comes to issuing permits?

8 A. Not in some cases.

9 Q. That's enough. So do you believe the  
10 EPA conducted a complete top down BACT on the  
11 Deserit permit?

12 A. Again, I more skimmed that to see what  
13 was going on in there than actually studied it in  
14 detail, but it looked like it was a pretty good  
15 analysis to me.

16 Q. Does "pretty good" equate to "complete"?

17 A. Yes. When I say pretty good, I mean it  
18 looks like it's complete, and it looks like they  
19 covered a lot of the bases, or all the bases.

20 Q. Do you think the 2005 CFR that we've  
21 cited quite a bit, was that specific for source  
22 testing?

23 A. The November 1, 2005?

24 Q. Yes.

25 A. It was a proposal, and they said upon

1 promulgation that they'll have all their issues  
2 resolved, but that's never been promulgated yet.  
3 We're still waiting, for example, for the ten ton  
4 per year significance level for PM2.5 to be  
5 promulgated as an actual significance level. So  
6 there is a lot still to be done.

7 Q. This issue with wet ESP's and when you  
8 do a BACT on it -- I think you mentioned this, but  
9 just for clarification -- things like dewatering  
10 of wet sludge would be considered in a BACT  
11 analysis as an economic impact?

12 A. It could be an economic impact; it could  
13 also be an environmental impact if there are  
14 disposal problems, or if you're basically  
15 transferring some problems from air to water.

16 Q. I think this question was asked, maybe  
17 just in a different way. If you don't do a BACT  
18 on condensibles, would your PM emissions be  
19 higher?

20 A. You mean the total PM emissions? For a  
21 power plant, I guess you're -- coal fired power  
22 plant is what you're asking.

23 Q. I'm asking for a power plant.

24 A. It's hard to answer as a yes or no,  
25 because there is issues of double counting,

1 because SO2 and NOx are not only precursors for  
2 the PM2.5, but they're considered contributing to  
3 condensibles as well. And also whenever you do a  
4 sulphuric acid mist analysis separately, which is  
5 a separate regulated pollutant, you're looking at  
6 another one of the condensible components.

7           So do you have it pretty fully covered  
8 without looking to condensibles separately? I  
9 think to a pretty great extent. But I'd really  
10 have to think about it before I'd know for sure if  
11 you really have already done the equivalent of  
12 that in your other BACT analyses for condensibles.

13           Q. In first step of BACT -- I'm going to  
14 ask the question. Do you know if Montana does a  
15 complete BACT analysis?

16           A. The one that I reviewed for this  
17 particular permit, again, looked very good to me.  
18 When I teach the course, and I teach effective  
19 permit writing and New Source Review, I do get the  
20 opportunity to see various states permit  
21 write-ups, and BACT analyses, and permit  
22 conditions; and there are a lot of them that have  
23 very severe problems. Montana is one of the best  
24 states.

25           Q. And I love working with them, too. The

1 Deserit permit actually was issued after the  
2 Highwood permit?

3 A. I believe that it was, although  
4 ironically they mentioned the Highwood permit when  
5 they were analyzing for condensibles levels, so  
6 evidently the draft proposals crossed each other.

7 Q. But Deserit actually did a BACT analysis  
8 on the control technology using wet ESP?

9 A. Not wet ESP separately, I don't think,  
10 but added onto after a fabric filter.

11 Q. That was considered part of their BACT  
12 analysis after the Department's?

13 A. Yes. Evidently they have gone a step  
14 further now on doing that.

15 Q. So is the issue completeness still?

16 A. No. Well, at least I don't think so,  
17 because there is a lot of flux in even Step 1, the  
18 listing of these. For example, you could do  
19 control after control, you could have three fabric  
20 filters in series, and it's technically feasible,  
21 but --

22 Q. It's probably not economically --

23 A. Right. It's kind of a waste of  
24 resources to do that, because it will be  
25 eliminated in the economics, so you don't see

1 that. Have they listed still all available  
2 technologies? Well, not if that's what you  
3 consider another available technology, but --

4 Q. As a regulator, is it appropriate, when  
5 a consultant working for an industry would submit  
6 a BACT analysis that is deemed top down BACT, to  
7 send it back because there is not enough control  
8 options? Some of the control options may be cited  
9 in another document, which were readily available,  
10 weren't used, and should be applied to that fuel  
11 source. Is it appropriate for one to be put back?

12 A. Yes, what an agency can do is one of  
13 several things: They can send a letter saying  
14 that the application is incomplete; they can not  
15 go that far, but just say, "We need additional  
16 information before we can proceed any further,"  
17 which is a polite way of saying, "It's  
18 incomplete;" or that "We just want more  
19 information because we're not really sure we trust  
20 you on this particular point." There are varying  
21 degrees.

22 Q. And the Department did that in this case  
23 for some instances?

24 A. Ask for more information? Yes, sir.

25 Q. On that DOE report, if there is a high

1 failure rate of a membrane filter, would you  
2 consider that in just the cost effectiveness  
3 analysis then, because you'd be replacing the  
4 filter bags all of the time?

5 A. If it survived the technically and  
6 feasible decision in Step 2, a membrane filter,  
7 yes, you would consider that.

8 Q. You mentioned a test method, I think it  
9 was in your deposition, that you termed "the  
10 dilution method" -- Is that 39?

11 A. Yes.

12 Q. -- was reliable. Is that synonymous  
13 with "generally accepted" or "regulatorily  
14 adopted"?

15 A. I don't think so. I think I'm using the  
16 term "reliable" in the sense that you aren't going  
17 to get anomalies when you do that, and you can  
18 compare it through different sources, at least of  
19 the same source category, like coal fired  
20 facilities.

21 Q. Is top down BACT required?

22 A. No. It's highly encouraged by EPA and  
23 the Environmental Appeals Board, which will --  
24 even for SIP approved states like Montana, EPA has  
25 the ability to evaluate the operating permit,

1 Title 5 operating permit, and revisit the NSR  
2 issues. So they can get to your state decision  
3 any way they wish to, and they say, "You're not  
4 required to use top down," but in determining  
5 whether you did an adequate analysis, BACT  
6 analysis, they will be comparing what you did to  
7 the top down approach.

8 Q. Has there ever been an instance where  
9 EPA has come in and challenged a Title 5 permit  
10 based on the fact that the top down BACT wasn't  
11 employed?

12 A. Yes. Well, the top down BACT was not  
13 used? Not on that basis, but on the basis that  
14 the BACT analysis was inadequate, yes.

15 CHAIRMAN RUSSELL: I'm done. Anyone  
16 else?

17

18 EXAMINATION

19 BY MR. MIRES:

20 Q. By chance, are you familiar with SME and  
21 DEQ's factual contention sheet that was handed out  
22 yesterday? Have you seen that?

23 A. I did not see that, no, sir.

24 Q. There is a No. 26. Really it's under  
25 the SME's area, and it reads something like this:

1 "Because not all PM10 emissions from a power plant  
2 are PM2.5, counting all PM10 as PM2.5 in a  
3 modeling analysis for compliance with the NAAQS  
4 over-estimates PM2.5 emissions." That's left me a  
5 little bit somewhat confused. I'm trying to  
6 figure out how that is a possibility.

7 CHAIRMAN RUSSELL: Did you want to  
8 actually read it or --

9 THE WITNESS: I think I've got the gist  
10 of that.

11 MR. REICH: (Provides document) I'd  
12 like you to read it.

13 Q. (By Mr. Mires) I'm hoping you can kind  
14 of explain that to me, please. No. 26.

15 A. Okay. I had developed a diagram for  
16 other purposes that I think would explain this  
17 very clearly, but that's not been introduced into  
18 the exhibits.

19 Basically what that's saying is that in  
20 terms of direct emissions, direct PM2.5 emissions,  
21 that is split up by EPA into two parts:  
22 Filterable and condensible. When you compare that  
23 to PM10, the condensible is exactly the same. If  
24 you had a bar chart, and this was condensibles,  
25 exactly the same amount of material under the

1 PM2.5 condensibles and PM10 condensibles.

2 The filterable portion, if this was the  
3 filterable portion, so that the two together made  
4 up the total PM2.5 direct, and we're looking at  
5 the filterable portion, and let's say the PM2.5  
6 direct is this much -- (indicating) -- the PM2.5  
7 filterable, and let's just say that PM10  
8 filterable is this much.

9 So what you have basically is that if  
10 you look at PM10 filterable plus condensible  
11 total, that's always going to be at least equal to  
12 PM2.5. If all of the particles are PM2.5 or less,  
13 then PM10 and PM2.5 direct emissions are equal.  
14 If there are larger particles than 2.5 microns,  
15 then the PM10 filterable is going to be larger  
16 than PM2.5 filterable, condensible exactly the  
17 same; but the total will be higher, the PM10 total  
18 will be higher than the PM2.5.

19 So if you put more emissions into a  
20 model, more grams per second emissions, then  
21 you're going to get higher concentrations, which  
22 is conservative, because you're doing PM10  
23 emissions instead of just the PM2.5 portion.

24 Q. I think I understand.

25 A. This is confusing stuff.

1                   MR. REICH: Mr. Chair, I do have his  
2 demonstrative exhibit, which we didn't put in. If  
3 you'd like to have it to distribute it to the  
4 Board, we can do that.

5                   MS. DILLEN: I would like renew my  
6 objection. What we're contesting here is the BACT  
7 analysis, not the demonstration of compliance with  
8 the NAAQS and the modeling, which is what that  
9 goes to.

10                  CHAIRMAN RUSSELL: All right. With that  
11 let's just -- Larry, anything else?

12                  MR. MIRES: No.

13

14                                   EXAMINATION

15 BY MR. MARBLE:

16                  Q. Well, we've had heard testimony that the  
17 PM2.5 particles are mainly what passes through  
18 from particles of PM10, and how devastating they  
19 are health wise in EPA stuff. And even cutting  
20 out small percentages of them by weight will  
21 reduce health issues, deaths, and so on, and that  
22 EPA stuff.

23                                   And so it kind of bothers me that we're  
24 still relying on a surrogate method established by  
25 EPA ten years ago, and we're just not looking at

1 at least trying and doing some PM2.5 BACTs. And I  
2 thought EPA kind of had language encouraging  
3 states to go ahead and try and develop something,  
4 but we're just saying, "We're not going to do  
5 anything except surrogate, because that's all we  
6 want to do, and that's all we have to do."

7 And would it be wrong for the Department  
8 to go ahead and do a 2.5 BACT, not on the  
9 surrogate method, but looking at filterables?  
10 Wouldn't that be good policy if we're trying to  
11 really save the health of the people that are  
12 going in the area of this plant?

13 A. I guess this is kind of a three part  
14 answer, and I'll try to keep it very brief, sir,  
15 for you.

16 I mentioned early that the health  
17 aspects of this are covered by the impact  
18 analyses; and we are admittedly relying on EPA's  
19 data and the National Ambient Air Quality Standard  
20 that they established as a level below which human  
21 health is not impacted adversely. So you are  
22 protecting public health as long as the National  
23 Ambient Air Quality Standard is not being  
24 exceeded, which I think the agency has made sure  
25 will not happen.

1           The second part about whether you could  
2 go ahead -- wouldn't be it a good idea to go ahead  
3 and do a PM2.5 analysis, since that is the way  
4 EPA's heading, and that's their focus for fine  
5 particulate, I would agree that as soon as the  
6 tools become available, that that would be very a  
7 good step to take, that you wouldn't necessarily  
8 have to wait for EPA to say, "Okay. Now we're  
9 going to force you to do so."

10           But EPA has said in some of these  
11 Federal Register notices that by 2011, they expect  
12 all of the states to begin or to have begun to  
13 establish limits, emissions inventories,  
14 attainment plans, maintenance plans, and all of  
15 their air management based on PM2.5, and complying  
16 with and maintaining compliance with the National  
17 Ambient Air Quality Standards. So in about three  
18 years that's all going to happen anyway, unless  
19 somehow EPA delays everything further. That's  
20 what I read in the Federal Register, is that's  
21 their mandate to do that.

22           If we had the tools available, we could  
23 jump ahead on that, but I think I've probably made  
24 the point so many times you're probably sick of  
25 hearing me say it, but I just don't think the

1 tools are available yet.

2 EPA is a big organization, with people  
3 devoted specifically to test methods, to  
4 developing the emission factors, to developing the  
5 policies on all of this, and you're biting off a  
6 very large chunk if you start down the road on  
7 PM2.5 for New Source Review before all the pieces  
8 are in place.

9 They've only proposed the significance  
10 levels, the increments, and everything else, and  
11 that makes it very difficult to switch over to it.  
12 I've seen states push ahead of EPA before, and get  
13 caught having used a lot of resources that have  
14 suddenly become worthless, because EPA then later  
15 came out with a policy that just negated their  
16 efforts, and now they have to switch over to the  
17 route EPA has decided they're going to have to  
18 take.

19 So if you believe that the public health  
20 is being protected through the NAAQS -- we have to  
21 give EPA credit. They did develop and focus us on  
22 the PM2.5 NAAQS, and there is no problem with  
23 monitoring for PM2.5 NAAQS. Then if I were back  
24 trying to run a program, back in the state of  
25 Colorado trying to run it, I would definitely want

1 to wait for the tools to become available, given  
2 that EPA is allowing me to use PM10 as a surrogate  
3 and our PM10 emission factors.

4 Q. This plant is going to be built, and the  
5 new standards aren't going to provide the help to  
6 make sure it's built properly, the very best that  
7 can be done.

8 A. That is correct. Now, if we're talking  
9 just filterable, all that 140 or so tons coming  
10 out after all of the controls that are mandated to  
11 be put on this particular facility, ought to be  
12 very fine particles. So if there is any more  
13 efficient control technologies on, what they will  
14 be controlling will be essentially all PM2.5.

15 So you don't necessarily have to switch  
16 over to PM2.5 to get more controls of fine  
17 particles. All you have to do is improve the  
18 efficiency, or find higher efficiency control  
19 technologies that pass the top down BACT test,  
20 including the cost effectiveness. So there could  
21 be a focus on, or a more intensified focus through  
22 the Board on looking to make sure that the highest  
23 level, most recent technologies have been  
24 evaluated.

25 For example, you could say that -- I

1 never liked doing things retroactively when I was  
2 with the agency, but you could say, "From 'X' date  
3 forward, we want every BACT analysis to include  
4 for filterable PM2.5," and look at membrane  
5 filters. As soon as they are proven out to the  
6 satisfaction of the people involved, yourselves  
7 and the agency, those would start being considered  
8 in the BACT analysis. There are things you can do  
9 now to -- I'm sorry. I got way off base.

10 Q. Keep going.

11 A. But there are things you could do now.  
12 I would just urge you not to do them  
13 retroactively, based on my difficulties trying to  
14 do anything retroactively while I was at EPA, and  
15 the consequences of that.

16 MR. MARBLE: That's all the questions I  
17 have.

18 CHAIRMAN RUSSELL: Heidi.

19 MS. KAISER: I don't have any.

20 MR. REICH: Mr. Chair, can I just ask.  
21 Gary, do you need a break?

22 CHAIRMAN RUSSELL: Can I just get an  
23 idea of -- do you have many questions?

24 MS. SHROPSHIRE: I have a couple.

25

1 EXAMINATION

2 BY MS. SHROPSHIRE:

3 Q. You mentioned that the emission rates  
4 were needed, and that without those you can't  
5 ensure attainment in the management standards; did  
6 I understand that correctly?

7 A. Well, yes. You need the emissions for  
8 practically all your air management purposes, but  
9 I guess the one we're focused on here is the  
10 emission limits. You have to tie emissions limit  
11 into a compliance test method, and unless -- as we  
12 discussed earlier in my cross-examination -- you  
13 had a design standard, or some other standard that  
14 didn't require an actual emission testing, you  
15 just have to have that part of the compliance  
16 methodology.

17 And one of the first problems that we  
18 all hit with PM10 was that a lot of emission  
19 limits were set with PM10 filterable only, and  
20 then when the compliance came around, the  
21 requirement was, "Compliance shall be determined  
22 by not only capturing the filterable with Method  
23 201," but you would also add on the condensibles  
24 in Method 202, but the condensibles weren't  
25 included in the totals in determining what was a

1 reasonable emission limit. So people were  
2 exceeding the emission limit based on the  
3 compliance test, which --

4 So they have to be linked together, and  
5 it would be very nice to have a method we know  
6 we're going to use, and we're getting closer to  
7 that.

8 Q. How do you ensure the public health if  
9 we don't know how to measure it?

10 A. It's my understanding that the monitors  
11 which measure the concentration of PM2.5 and  
12 ambient air are pretty solid monitoring  
13 technology, because whatever has been formed in  
14 the way of fine particulate in the air is caught  
15 by that filter, and it shows up on the filter, and  
16 so you know what the concentrations are in the air  
17 you're breathing at every monitoring station.

18 Q. After it hits the ground?

19 A. After it's submitted to the ambient air.  
20 You know what it is with the background coming  
21 from other states; you know what it is -- that  
22 monitor picks up the background plus any other  
23 nearby sources.

24 Q. Is it coming out of the stack? If there  
25 is an exceedence, we can't measure that? It's

1       only -- we can't prevent it, it's only after the  
2       fact that we know that we've exceeded it; is that  
3       correct?

4           A.     That's what the modeling is for in --

5           Q.     But in terms of actual measuring, not  
6       the modeling, but the actual measurement.

7           A.     The modeling is usually conservative and  
8       it measures --

9           Q.     But I don't want to talk about the  
10       modeling. In terms of actually measuring it.

11          A.     The emissions out the stack or --

12          Q.     (Nods head)

13          A.     The amount of particulate coming out of  
14       that is going to be -- that you can measure as  
15       actual particulate matter is just the filterable  
16       portion. You don't know for sure that the  
17       condensibles are going to immediately become  
18       particulate, and you know for sure that the  
19       precursors -- the SO<sub>2</sub>, NO<sub>x</sub>, VOC, and ammonia --  
20       are not immediately going to become precursors.  
21       They're going to react in the atmosphere, and  
22       eventually they will form, to some extent,  
23       particulate, and add to the overall load in the  
24       region.

25          Q.     So if there was an event where there was

1       exceedence, you wouldn't know about it?

2           A.    An exceedence at ambient concentrations?

3           Q.    Out of the stack.

4           A.    Oh.  The concentration out of the stack  
5    is pretty concentrated, so that's probably higher  
6    than the National Ambient Air Quality Standard,  
7    but stacks allow dilution before it hits ground  
8    level.  So that's why you do the modeling.  You  
9    estimate what the monitor would see without the  
10   source, and then you would estimate what the  
11   source adds to that monitor, and see whether the  
12   total exceeds the ambient air standard.

13                   MR. REICH:  Excuse me, if I might.  Ms.  
14   Shropshire, were you referring to the exceedences  
15   of the limits, or exceedence of the National  
16   Ambient Air Quality Standards?

17           Q.    (By Ms. Shropshire)  Well, what I'm  
18   trying to get at is:  How do you ensure the public  
19   health if you can't measure it?

20           A.    You can't measure the amount of PM10  
21   without a referenced test method -- I'm sorry --  
22   amount of PM2.5 filterable coming out of the stack  
23   without a referenced test method.

24                   But what you can do is make assumptions  
25   that are conservative.  For example, you can

1 measure the amount of PM10 filterable, which is  
2 greater than the amount of PM2.5, and use that in  
3 your modeling, which the State did. So if that  
4 amount of emissions plus background won't cause  
5 ground level concentrations that are above the  
6 National Air Ambient Air Quality Standard, then  
7 it's doubtful that the PM2.5 will, because that's  
8 a fraction -- the filterable PM2.5 is a fraction  
9 of the filterable PM10. So the ground level  
10 concentration will be lower than the model shows.  
11 I feel like I'm not answering your question.

12 Q. I guess to finish up, what you're saying  
13 is -- Let me go back. What would you typically  
14 measure at the stack?

15 A. At the stack? With a referenced test  
16 methods -- let's say that's a given -- you would  
17 be able to measure all of the PM2.5 components.  
18 You'd be able to measure the filterable, the  
19 condensible, the SO2. There is good methods for  
20 SO2, good reference methods. That's one of the  
21 precursors. NOx, that's one of the precursors; no  
22 problem measuring that. VOC is another one of the  
23 precursors; no problem measuring that. Ammonia,  
24 another precursor; not much of a problem measuring  
25 that.

1 Q. What about sulphuric?

2 A. Sulphuric acid mist? There is  
3 referenced test methods for that as well.

4 Q. So for each of the individual  
5 condensibles, there are referenced test methods  
6 that are acceptable?

7 A. I'm trying to think if there are for all  
8 of them. I think there are --

9 Q. At least for the regulated pollutants  
10 that we've been talking about, you just mentioned  
11 that there are?

12 A. For almost all of the regulated  
13 pollutants except possibly PM2.5, there are  
14 referenced test methods available. The problem,  
15 of course, is that the condensible methodology  
16 seems to be picking up these artifacts, which may  
17 or may not actually be what EPA intended to  
18 comprise condensible emissions. It might be  
19 overstating the amount of actual condensible  
20 emissions in some cases.

21 Q. Is it reasonable to look at the  
22 individual constituents, like sulphuric, HF, and  
23 HCL's, and VOC's?

24 A. That was the approach that it looked  
25 like the Montana DEQ did try to take to estimate

1 the condensibles, and I think it's a reasonable  
2 approach to try to estimate the condensibles.

3 Q. And maybe that's where I was confused,  
4 because I am still trying to get my head around  
5 measuring those individual condensibles versus SO2  
6 and the other small filterable portion. And so  
7 was the BACT done for SO2 and filterables for  
8 PM2.5 or the condensibles, or was it done for the  
9 individual regulated pollutants?

10 A. Maybe that's a better question to Eric.

11 Q. If you can answer that. Do you know?

12 A. I know there was a BACT analysis for  
13 SO2, so that --

14 Q. Is there a BACT analysis for sulphuric?

15 A. Sulphuric acid mist --

16 MR. RUSOFF: I'd be glad to put Eric  
17 back on to answer a question. He would be the  
18 best person to answer that question.

19 Q. (By Ms. Shropshire) Let me rephrase the  
20 question. If a BACT -- prior to Step 1 in the --  
21 whatever that shape is -- applies to each new  
22 emission unit for each pollutant subject to PSD  
23 review -- let's just use sulphuric acid -- one of  
24 pollutants that's subject to BACT review? I guess  
25 should there have been a BACT for sulphuric?

1 A. Sulphuric acid mist?

2 Q. Yes.

3 A. If it was emitted in significant  
4 quantities. I just don't recall if it was.

5 Q. Would one, if it were emitted in  
6 sufficient quantities, do an individual BACT for  
7 HF, and an individual BACT for HCL, and an  
8 individual BACT for VOC's?

9 A. Let's see. For fluorides, that's one of  
10 the regulated NSR pollutants, so yes, there would  
11 be a BACT analysis for that. HCL, I don't believe  
12 that's a separate regulated NSR pollutant, so I'm  
13 not --

14 Q. I think it is.

15 A. It doesn't come to mind. I don't recall  
16 on that.

17 Q. I'll move on from there. We were  
18 talking about the Btu value for different coal  
19 types, and you speculated that the reason that the  
20 plants in Pennsylvania and Florida had lower  
21 emission rates --

22 A. Parts per million Btu.

23 Q. -- was potentially because they were  
24 higher Btu value coals?

25 A. That would be one possible explanation

1 for that. And in fact EPA, again in Deserit,  
2 looked at that. They were particularly sensitive  
3 to it because Deserit was going to burn what was  
4 called waste coal, 50 percent ash, and that's  
5 horrible stuff. 6,000 Btu's per pound. That's  
6 next to dirt. It's not quite that bad.

7 Q. It may be inappropriately quoting you,  
8 but you were referring to western coal as good  
9 stuff. Is that because it's low sulphur?

10 A. The Powder River Basin, yes, that's nice  
11 low sulphur coal.

12 Q. So if it has lower sulphur, is it true  
13 that it would have lower sulphur emissions?

14 A. Yes.

15 Q. Would it make sense then that it would  
16 produce less SO<sub>2</sub> and less sulphuric acid mist?

17 A. Yes, than a higher sulphur coal would.

18 Q. So for a plant like this plant that's  
19 burning a low sulphur coal, why would it have  
20 higher -- In terms of the sulphuric acid mist that  
21 is allowed for this permit, it's higher than a lot  
22 of the plants that are burning high sulphur coal.  
23 Can you explain that?

24 A. Not without more information, I can't.

25 Q. Would it make sense that you would

1 produce less sulphuric acid potentially with low  
2 sulphur coal?

3 A. If we're talking uncontrolled emissions,  
4 yes. But I think all of these are after controls.

5 Q. So if we looked at the controls being I  
6 think -- I can't remember if it was 80 percent or  
7 90 percent efficiency, the overall pounds would  
8 still be less if we're looking at efficiencies?

9 A. There still are some variables in here  
10 that are hard to -- I guess it's not an easy  
11 answer without taking a hard look at what the  
12 differences are. That is one of the things that  
13 an agency certainly has the ability to do and very  
14 often does, is to look at other emission limits  
15 that have been proposed, and to ask the applicant  
16 why they can't reach that same lower level.

17 And it may be one of many reasons. It  
18 may be that the facility hasn't been built yet, so  
19 you don't know if they're going to meet that; or  
20 it might have something to do with the control  
21 combination selected.

22 Ironically sometimes a lower  
23 concentration of a pollutant in the gas stream  
24 means that what you're going to end up emitting is  
25 going to be higher because you're going to reject

1 some level of control that would have been cost  
2 effective on a higher concentration, but is not  
3 cost effective on the lower end of concentration.  
4 That's one of the strange things about doing these  
5 analyses.

6 Q. In your review of BACTs, would you  
7 provide -- or I should say -- would you expect to  
8 have a commercial guarantee in order to use that  
9 in a BACT analysis for an emission rate or an  
10 efficiency? Would you expect that to be  
11 guaranteed in order to use that in a BACT  
12 analysis?

13 A. The need for or comfort with a guarantee  
14 depends on whether you're the applicant or the  
15 agency. They both probably would like to have the  
16 guarantee.

17 What happens in a vendor guarantee is  
18 that there are several factors in there. One is  
19 that generally a guarantee means that there is a  
20 margin of safety in there, which of course a  
21 source needs to be able to comply, not only  
22 immediately after the equipment is installed, but  
23 for the lifetime of the source, forty or fifty  
24 years. The vendor guarantee is usually just for  
25 immediately after the equipment begins operating.

1 You do the test. If it meets that limit, then  
2 that's the end of the guarantee. And so there is  
3 a slight problem there.

4 And then there is guarantees that could  
5 be so qualified that they don't really constitute  
6 a guarantee at all. For example, I saw one  
7 guarantee that said, "This guarantee becomes  
8 invalid if there is ever a plant malfunction."  
9 That doesn't help you a lot.

10 Q. But if there weren't a guarantee at all,  
11 would you use that in a BACT analysis?

12 A. You could with supporting data. If the  
13 vendor just wasn't comfortable with it, but you  
14 have test data showing some other facility with  
15 that equipment and similar gas stream  
16 characteristics has met that, that's a good sign.

17 Q. There was discussion about whether or  
18 not there aren't guaranteed emission rates, or if  
19 there aren't known emission rates, that you would  
20 go with a higher level of technology, and with  
21 regards --

22 I'm referring to that Exhibit 1, the  
23 BACT process. You said that, "Well, that's not  
24 for this. That's for fugitive emissions;" do you  
25 recall that?

1           A.    The design, the idea of using design,  
2           equipment, work practice, operational standards,  
3           or combinations of those.

4                        We began realizing that the New Source  
5           Performance Standards, which of course are  
6           nationwide, found a lot of these types of  
7           approaches very useful, for example, the design of  
8           a degreaser.  You can design them so that very  
9           little of these fumes get out, and require things  
10          like they be covered when you're not putting stuff  
11          in or taking it out.

12                      Well, there are some circumstances where  
13          you can do the same sort of thing for stationary  
14          sources for BACT, but if I'm remembering  
15          correctly, the original concept of BACT wasn't  
16          very specific about us being able to use design  
17          standards in other approaches like that.

18          Q.    But it's not specifically for fugitive  
19          emissions; is that correct?

20          A.    Right.  It's just whenever there might  
21          be a real problem.

22          Q.    What's one example.

23          A.    With measuring.  For example, for  
24          particulate matter, there are some particulate  
25          monitors that coming along, and becoming

1 available; but for a long time, there was only  
2 this very cumbersome and time consuming stack test  
3 that is available to determine compliance. So  
4 very often, what people would do would be not only  
5 have an emission limit, but they would say,  
6 "Compliance with this limit shall be determined  
7 by," and then they would have things like pressure  
8 drop, or inspection and maintenance procedures to  
9 ensure that the equipment was operated properly  
10 and maintained properly.

11 So the same thing with VOC emissions.  
12 If it's difficult to test for the VOC's after an  
13 incinerator, you can require a certain residence  
14 time, which would be part of the design of the  
15 unit, and that they maintain a certain minimum  
16 temperature in there, so that you can combust the  
17 VOC's. So this makes all those approaches  
18 available, as well as an emission limit.

19 (Recess taken)

20 CHAIRMAN RUSSELL: We'll resume. I'll  
21 remind you that you're still under oath.

22 Q. (By Ms. Shropshire) I guess just a  
23 clarification, because I heard you say a couple of  
24 times that -- and I'm not sure if I misunderstood  
25 -- but you would discount technologies because

1 they wouldn't pass the economic test. It seemed  
2 that you were discounting them before you got to  
3 Step 4.

4 A. This was kind of a special case of  
5 technologies for the same pollutant in a series.  
6 EPA generally doesn't ask for or evaluate a whole  
7 series, like two or three baghouses in a row for  
8 particulate. And I did not mean to imply that I  
9 would just look at, say, a wet electrostatic  
10 precipitator and dismiss it if that was proposed  
11 as the first or only control device for a specific  
12 pollutant.

13 What I was trying to say was that if you  
14 start proposing a series of control devices for  
15 the same pollutant after the first one, it's  
16 extremely likely that the second one is not going  
17 to be cost effective, and it's almost a certainty  
18 that the third one is not going to be cost  
19 effective. So why go through an almost endless  
20 series of different combinations for the same  
21 pollutant?

22 Q. This isn't in the record, but recently  
23 I'm aware of -- you're from North Carolina.  
24 You're probably aware of Duke Power -- but them  
25 actually suggesting of having three technologies

1 linked together, and it seems to me that it's  
2 common nowadays, in order for us to protect human  
3 health, and to meet the regulations, that we would  
4 have linked technologies. So if two things in  
5 tandem is the best method, I don't understand how  
6 you would throw that out as an economic  
7 infeasibility before you get there.

8       A. I think there is kind of a double answer  
9 for this, and two parts to an answer. One is that  
10 a lot of the combinations I'm seeing are  
11 combinations put together to address more than one  
12 pollutant, so it complicates the analysis, because  
13 you're looking at the capabilities of this  
14 combination for more than one pollutant, for  
15 example, a dry flue gas scrubber, a flue gas  
16 desulphurization unit, where you're injecting  
17 something like limestone, lime, but then you have  
18 actually added particulates, so you have to get  
19 that out, and so you have a choice of fabric  
20 filter or other device to do that.

21               The two together as a combination have a  
22 dual hit on two different pollutants at least,  
23 SO<sub>2</sub>, and particulate matter. So you've got two  
24 devices, yes, but one is in there primarily to  
25 reduce SO<sub>2</sub>, and the other serves a dual role of

1 not only controlling particulate, but getting that  
2 now captured or absorbed SO<sub>2</sub> out of the flue gas.

3 Q. Is there a regulation that says that a  
4 tandem scenario where you might have a baghouse  
5 and then a wet ESP are two different technologies,  
6 or could those be considered one technology? Do  
7 you understand my question? Could you consider  
8 the two things in tandem as one technology? Is  
9 there any guidance that says how to address that?

10 A. The only guidance that you'd have would  
11 be to take -- No, there really isn't much on that.  
12 If I understand what you're getting at, the second  
13 part of my response would be that the one area  
14 where EPA does have some policy on a series of  
15 controls in any classic example that they use is  
16 not particulate matter, but it's VOC, volatile  
17 organic compounds control. But it's applied in  
18 different ways.

19 For example, they will say that if you  
20 have a surface coating operation, that you should,  
21 as an agency and as an applicant, look at not only  
22 the individual components that I'm going to  
23 mention, but a combination of those.

24 For example, an example that they give  
25 is: Look to see if you can prevent some of the

1 VOC emissions to begin with by using a lower VOC  
2 solid coating.

3 Q. I don't mean to cut you off, but I think  
4 you've answered my question. The last question  
5 is: If we can't measure the emission rates, are  
6 there examples of analysis ever being done by an  
7 impact? Because if you can measure the ambient  
8 deposition, could you use that as a surrogate for  
9 existing plants?

10 A. You mean use an ambient air monitor?

11 Q. For existing plants as an estimate of  
12 condensible emissions.

13 A. The problem is figuring out what portion  
14 of what that monitor captures is from the plants  
15 nearby, and what part has been brought in as  
16 background on the wind from other sources.

17 Q. I guess the same argument can be made  
18 after the fact.

19 A. Yes. There is a difference. There is a  
20 difference, though, that the primary  
21 responsibility for making sure that the ambient  
22 concentrations are not made unhealthful by, say,  
23 an exceedence of the National Ambient Air Quality  
24 Standards, is the agencies. They're not to issue  
25 permits that allow that to happen, based on the

1 modeling. If it does happen, they are to develop  
2 an attainment plan to get that area back to  
3 healthy levels.

4 And they then do all of this by focusing  
5 on the sources that are causing the problem, but  
6 it's very seldom that a single source is very  
7 obviously the only contributor to a particular  
8 ambient problem. There are a few cases where it's  
9 almost all from one source, but not many.

10 MS. SHROPSHIRE: Thank you.

11

12 EXAMINATION

13 BY MR. ROSSBACH:

14 Q. I just have only one real area that -- I  
15 think everything has been fairly well covered.  
16 The area that I want to have a little bit of a  
17 follow up on is this series of -- or linked  
18 technologies, and the policies behind them,  
19 economic analysis.

20 Why don't you go to Exhibit 7, and this  
21 helps me maybe by putting it in context. Exhibit  
22 7 Page 40 is the little matrix, technical  
23 feasibility analysis for condensable PM10.

24 A. Is this back in the analysis?

25 Q. In the analysis section.

1           A.    Okay.  At the bottom of Page 40?

2           Q.    Yes.  And I'm only using this as an  
3           example, and I know you're somewhat familiar with  
4           it, but you may not be totally familiar with this.

5                    But I read this, then, as the various  
6           technologies listed for controlling condensible  
7           PM10.  Aren't each one of these essentially linked  
8           technologies?  Isn't that the same kind of thing  
9           we're talking about here, a linked technology,  
10          linked control technologies?

11          A.    There is for the condensibles?  Yes.

12          Q.    We started with a dry FGD, and then we  
13          go to an FFB in one, and other one -- this is --  
14          Essentially we're laying out, we're doing Step 1  
15          of looking at technologies, and here we're using a  
16          set of linked technologies, isn't that true, in  
17          order to get a condensible PM10 control; isn't  
18          that true?

19          A.    Yes.  The dry FGD by itself isn't going  
20          to get the condensibles out of the gas stream.

21          Q.    Just adding to it.  But if you look at  
22          -- okay.  But when you look at this, you have to  
23          add both of those components of the process  
24          together to get a cost of the process, don't you?

25          A.    Right.  But in these cases, it's

1 essential.

2 Q. Right. This is where I come from a  
3 fundamental, philosophical point of view. It  
4 seems to me that if we're trying to get to a  
5 result, which is eliminating "X" percentage of  
6 PM2.5, that from a philosophical point of view,  
7 and a policy point of view, why would you, or has  
8 -- maybe you can answer this. Has EPA ever even  
9 talked about this as saying, "If we have to do a  
10 linked technology, why don't we consider the cost  
11 of both of them as one?," because that's  
12 essentially what we're doing here.

13 I understand that in this case, it's not  
14 the same, because one, you're really not  
15 eliminating the sulphur by the FGD part of it.  
16 The ESP or the FFB is essential as a second  
17 element of that. But it stills seems to me that  
18 -- why isn't it the same thing, that if you have  
19 -- if you want to get to, say, condensible PM10  
20 control efficiency of 95 percent, for example, or  
21 98 percent, and there was somebody who had  
22 developed a linked bag, a membrane bag, wet ESP,  
23 sort of integrated the two together, why couldn't  
24 that be argued as a linked technology, essentially  
25 a linked technology that should be costed as one?

1 In other words, whereas the second half of it --

2 Because you're never going to get a  
3 linked technology that ever passes BACT. It's  
4 inherently impossible to do, as you said, because  
5 the second one is getting such a small  
6 differential that it will never be by itself cost  
7 effective.

8 But what I'm trying to say is from a  
9 philosophical point of view, why don't we try to  
10 do them together, and cost them both, and say,  
11 "Okay. We've got these linked technologies, and  
12 we're getting 95 percent instead of 80 percent, or  
13 85 percent, or some of these. Why can't we cost  
14 them together rather than costing them  
15 separately?"

16 A. Well, if we --

17 Q. This isn't a good example. I understand  
18 that. You heard Mr. Taylor talk about linking the  
19 two. If somebody -- This is what I'm saying. If  
20 some manufacturer came and said, "Well, I've got a  
21 membrane bag, or I've got a membrane bag, and if I  
22 just tie it together with a wet ESP on the back  
23 end," why can't I sell that a single technology  
24 that would then have to be costed as one to get 95  
25 percent -- you know, higher level of efficiency?

1           Because otherwise nobody -- There is  
2 going to be no incentive to try to design a better  
3 system. No one will ever want to do a linked  
4 system. Do you see what I'm saying?

5           A. Yes, although I guess I should note two  
6 things: One is that in the only permit analysis  
7 that EPA has ever done, on about 20,000 permits  
8 issued in 1985, they found that 85 percent of the  
9 limits that went beyond BACT went there because  
10 the source had to go lower to fit in and not  
11 violate an increment or the National Ambient Air  
12 Quality Standards.

13           So psychologically you shift the  
14 responsibility for meeting a tighter limit and  
15 finding a better control to the source. When that  
16 happens, they want it to work. They will work  
17 horribly to -- horrible hours to try and make this  
18 thing work, and then when they and if they do  
19 solve all of the problems, that technology is  
20 sitting there for you to pluck for your next BACT  
21 analysis.

22           So the BACT spreads nationwide very  
23 rapidly once it's proven, and so that to me has  
24 always been -- as EPA, and during my years as a  
25 consultant -- where the real break throughs tend

1 to occur is when the source really needs it, and  
2 wants it, and pushes for it, and then it's  
3 responsible for it.

4 Q. But that's in order to meet an emission  
5 standard, back-in standard, rather than a control  
6 standard?

7 A. It's to have an acceptable impact, so it  
8 will get a permit. Otherwise they won't get a  
9 permit.

10 Q. Right. But it just seems to me that if  
11 you would increase -- You're not EPA. If you were  
12 EPA, this is what I'd be asking you: Why didn't  
13 you consider letting an agency -- because Eric  
14 here would never be able to propose as a  
15 technology a linked system, because under the way  
16 the economics is done now, the second half of the  
17 link will never be cost effective.

18 But what I'm saying is that if Eric was  
19 allowed to say to SME, "Well, I consider the  
20 technology that you use, quote, the technology is  
21 a linked system, and that I'm going to do the  
22 analysis on how much I'm going to get out totally,  
23 and lump the two together." And if you lump the  
24 two technologies together, and you get their  
25 efficiency to the level that maybe you do, it

1       could be cost effective, if you're allowed to link  
2       it. That's all I'm saying.

3                 It seems to me that it takes away some  
4       of the tools of the agency not to be able to do a  
5       BACT, if you wanted to, because the company will  
6       always come back and say, "Well, the second one is  
7       never cost effective, because it can't be if you  
8       can't link the two together."

9                 A.    And I think EPA has thought of this  
10       concept. I remember thinking about this while I  
11       was at EPA. But the problem with that -- In terms  
12       of terminology, I'd like to say that these, that  
13       you were using as an example, are dependent on  
14       each other, but if we talk about --

15                Q.    I have no confusion about that.

16                A.    So if we can talk about, say, a fabric  
17       filter followed by an ESP -- And obviously you're  
18       already into the concept that if you analyze ESP  
19       separately, it's probably not going to be cost  
20       effective, so why don't we lump them together.

21                    I think EPA doesn't want that done  
22       because what it does is it does lower the cost  
23       effectiveness number for ESP, but unfortunately,  
24       it has the opposite effect on the total cost  
25       effectiveness for the two systems together, and

1 might push it over a threshold, so that nothing is  
2 put on.

3 Q. I understand. But then the next one  
4 down from the top would be just a baghouse by  
5 itself, and that would presumably pass cost  
6 effectiveness. The other side of the equation,  
7 though, is looking at the benefits, and I don't  
8 know how you -- I don't do the economic side of  
9 this obviously.

10 But it seems to me that if you made the  
11 cost or the benefit of reducing it from 90  
12 percent, or increasing the efficiency from 90  
13 percent to 95 percent, if you valued highly that  
14 extra 5 percent increase, particularly with PM2.5,  
15 where small weight volumes mean lots and lots of  
16 particles, then it would seem like you're just  
17 changing the numbers.

18 I just don't like the way the number  
19 crunchers are dealing with this, and it seems to  
20 be affecting the ability of an agency to really  
21 maximize the benefit to the community by saying to  
22 them, "I'm sorry. You can't link them," because  
23 the first one is going to be -- the second one is  
24 going to be so cost ineffective, you'll never be  
25 able to add the second one on, even though you

1 might get a 5 percent improvement.

2 That 5 percent improvement might be 50  
3 tons of PM2.5, which in my view, a ton of -- this  
4 stuff, we're talking about a ton a day of PM2.5  
5 coming out of the stack.

6 I want to hear what -- That's all I'm  
7 saying. It's just a comment, really not a  
8 question. After hearing all of this stuff, this  
9 is where I come out on this.

10 A. Congress made it clear that the states  
11 have the ability to weigh those three factors --  
12 the energy, environmental, and economic factors --  
13 any way they wish to, as long it isn't unlawful,  
14 or arbitrary, or capricious, I would assume under  
15 the state laws or federal laws.

16 The EPA in more recent years, in the  
17 last twenty years or so, has come back and kind of  
18 tried to push states toward a more nationwide  
19 approach. But we contend in the BACT course that  
20 we teach, and I personally believe, that this cuts  
21 both ways, but that states have the ability to put  
22 extra emphasis on concerns of public health, or on  
23 the beauty of the area, or anything they wish to  
24 like that, and use higher cost effectiveness  
25 numbers in an area of the state.

1           They also have the ability to say, "We  
2    want economic development in this area," or "We  
3    want citizens to have this," and to go with a  
4    lower threshold. I think it's the other way  
5    around.

6           But in other words, they can adjust the  
7    weight of this. They don't even have to do it  
8    consistently across the state, as long as they're  
9    consistent and rational in the way that they apply  
10   it. So one area of the state could have cost  
11   effectiveness numbers of \$50 a ton, another could  
12   have \$500,000 a ton. It's up to them to make that  
13   decision, and that's part of what an agency with  
14   its reviewing board, and legislative mandate, and  
15   so on can decide to do.

16           MR. ROSSBACH: Thank you. I appreciate  
17   that very much.

18

19                           RE-EXAMINATION

20           BY MS. SHROPSHIRE:

21           Q.    So in light of -- We do an individual  
22   BACT for sulphuric, and we do an individual BACT  
23   for VOC's, etc., and we come up with an individual  
24   technology for each one of those constituents. If  
25   we were to do a BACT for PM2.5, which would

1 encompass all those things --

2 A. PM2.5 condensibles, I assume? Okay.

3 Q. -- one could argue that if you did a  
4 BACT for PM2.5 using each of those individual  
5 components, in order to capture all of them, you  
6 would have to have a linked technology, and so  
7 doing individual ones may not be the same as doing  
8 a BACT for PM2.5 consolidated. You might have to  
9 have a linked technology if you included each of  
10 those constituents as a PM2.5 BACT; is that true?

11 A. I'd have to think this through to be  
12 sure. But it seems like if you aggregate all  
13 these together into just all condensibles, if a  
14 single control device or a combination can collect  
15 all of those different individual components, then  
16 the cost of that control device stays the same,  
17 but the total tons you collect is greater than any  
18 individual component. So the tons are higher.  
19 You're dividing those into the same cost. So the  
20 cost effectiveness number decreases.

21 Q. But let's say, for example, within  
22 PM2.5, we've got filterables and condensibles.

23 A. Okay.

24 Q. And a baghouse works better for  
25 filterable, and another technology, for example,

1 doesn't, and the best technology was a linked  
2 system.

3 A. For filterables only?

4 Q. For total PM2.5. It would make sense to  
5 have a linked system as the best technology for  
6 all of the constituents?

7 A. Well, usually it's two different control  
8 devices, of course, for collecting gases, what are  
9 essentially gases in the exhaust stream, versus  
10 particles in the gas stream.

11 Q. That's exactly what I'm saying.

12 A. So you're saying: Could you combine  
13 those two together, those two control devices  
14 together, and just divide that by the total tons  
15 of PM2.5 direct that's collected?

16 Q. What I'm saying is that if you've got  
17 multiple things -- if you are required to regulate  
18 PM2.5, and therefore do a BACT on PM2.5, you may  
19 have to look at a linked system in order to  
20 accomplish that?

21 A. Well, you probably are going to have to  
22 look at at least two different control devices,  
23 because one will collect the gaseous and one will  
24 collect the filterable material. Whether you'd be  
25 better off combining the two together, and taking

1 the total tons collected, I'm not sure how that  
2 would work out.

3 MS. SHROPSHIRE: Thank you.

4 CHAIRMAN RUSSELL: All right. The  
5 witness is excused. Thank you very much.

6 (Witness excused)

7 MS. SHROPSHIRE: One quick question.

8 JOSEPH LIEROW,

9 called as a witness herein, having been previously  
10 sworn, was examined and testified as follows:

11

12 CHAIRMAN RUSSELL: You're still under  
13 oath.

14

15 RE-EXAMINATION

16 BY MS. SHROPSHIRE:

17 Q. So the question is: Were you provided  
18 with a commercial guarantee from a qualified  
19 supplier for the control technologies that you  
20 used in the BACT?

21 A. We were supplied with values that in  
22 this case Alstom would be willing to guarantee,  
23 and the actual guarantees come later down the road  
24 when you actually sign a contract to purchase  
25 their equipment. Does that answer your question?

1           Q.    I think so.  How do you certify --  
2           Because Mr. Merchant said that what you give them  
3           is certified.  And how do you certify something  
4           without having that guarantee?  That's what I  
5           don't understand.

6           A.    In every air quality application, big or  
7           small, major or minor, there is a form in the back  
8           of the application that the facility operator, or  
9           whoever is in charge, vice president, president  
10          type of a person, signs a truth and accuracy  
11          statement that all of the data provided is to the  
12          best of their knowledge true and accurate.

13                   And to go on a step further than that,  
14          the information that's provided by vendors in  
15          general, or in this case by the manufacturer of  
16          the boiler, they will tell you what they're  
17          willing to guarantee, and you'll have a pretty  
18          good idea of that up front in the whole process  
19          when it starts.

20          Q.    Do you recall what that rate was that  
21          they were willing to guarantee?

22          A.    You need -- To what pollutant?

23          Q.    In terms of the PM, the .015 or I guess  
24          is the filterable.

25          A.    The PM filterable.  Yes.  The original

1       indication that they would guarantee was .015, and  
2       you have to look at -- I'm not saying you have to  
3       -- but when we go through this process, the person  
4       who is trying to build a facility wants to make  
5       sure that when they are up and operating, they're  
6       going to meet these emission limits; and when you  
7       don't meet these emission limits, you will get  
8       fines, and there'll be a lot of bad publicity, as  
9       we are well aware of over the last year or two  
10      when other power plants have come on line.

11                So as the builder of the plant, you want  
12      to make sure that you can meet these limits, not  
13      just one time, but all of the time. So you have  
14      to build some safety into that. A lot of times  
15      the emission rates are built on some testing and  
16      there is some --

17                Q.    I'm sorry. I just want to -- Are they  
18      willing to guarantee .012?

19                A.    Yes. Well, if I step through the  
20      process a little bit, I'll get to that. So when  
21      they decide that they're going to guarantee a  
22      number, there is typically some analysis that goes  
23      into it.

24                Sometimes it can be where they have some  
25      stack test data -- I don't know what went into

1 their guarantee, but this can happen, typically  
2 can happen -- is you'll have a set of data, and  
3 you take a statistical analysis, and say what's  
4 the 99 percent confidence level that will meet  
5 this, typical statistics; and then that's that  
6 number they would feel comfortable, a typical  
7 vendor may feel comfortable guaranteeing. And so  
8 in this case, they felt comfortable at .015.

9           And when you first receive these numbers  
10 -- because you have to receive them up front in  
11 the project. They don't come at the end of the  
12 project. You need to have these numbers at the  
13 beginning to start building emission inventories,  
14 to start looking at what programs are applicable  
15 to your facility.

16           So it's not a number that shows up at  
17 the end of the ball game. You have an idea. And  
18 as a person who is working in this field, you have  
19 an idea -- Does it pass lath test to begin with,  
20 and at .015, it passes that test, because there is  
21 lots of facilities, and recent facilities in  
22 Montana that just were permitted at .015. So we  
23 haven't ran through the BACT process yet to see if  
24 that number is going to fall out or not, or if  
25 they need to -- That's a whole process that will

1 take place as you move through the whole  
2 permitting process that in this case takes years  
3 to go through.

4           And then when we submitted it -- we went  
5 through the process, the top down BACT process,  
6 and for justification, as a vendor guarantee that  
7 they felt very comfortable with, that .015 was  
8 considered BACT.

9           And you have to think of the historical  
10 perspective of all that, because at that time,  
11 Montana DEQ was starting to permit these other  
12 facilities at .012, so there was a transitional  
13 time when BACT was starting to shift. Even though  
14 it's a case-by-case, you still have an idea of  
15 where numbers are going to fall out when you start  
16 the whole process. And in the end, the  
17 case-by-case analysis, that's where you fall out,  
18 in the very end.

19           So when the State came back and said,  
20 "We don't feel your justification at .015 is good  
21 enough," or whatever they told us at the time, and  
22 said, "You need more justification," and so we  
23 would go back, and you talk to the vendors, and  
24 they ultimately were willing to guarantee .012.  
25 But it takes away a margin of safety, and you have

1 to weigh that against future compliance.

2 So it's kind of a Catch-22 at times  
3 where you can ratchet yourself down so far, but  
4 then you're at extreme risk of operational  
5 violations. So that's part of BACT, is being able  
6 to achieve that number throughout the lifetime of  
7 that facility. Does that help answer some of the  
8 questions?

9 Q. Did they guarantee a condensible limit  
10 rate?

11 A. They guaranteed the total PM10 limit or  
12 -- I don't know if they guaranteed -- I don't know  
13 the contract because I'm not part of the  
14 contracting of the project. But as far as a  
15 permitting analysis goes, they're willing to  
16 guarantee the .026 total PM10 value.

17 Q. But not for specifically condensibles?

18 A. Well, the test itself is a combination  
19 of filterable and condensible. So when you  
20 actually do the test, you'll report the value as  
21 of one value.

22 MS. SHROPSHIRE: Thank you.

23

24

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1 EXAMINATION

2 BY MR. ROSSBACH:

3 Q. This memorandum, this email thing -- I  
4 don't remember what the number is -- an email from  
5 Joe Lierow to Mark Payne, and back and forth.

6 MS. DILLEN: I think it's Exhibit A.

7 MR. McCARTER: Is that the material for  
8 the question?

9 MR. ROSSBACH: Yes. I just want to --  
10 since he's here, I would like to -- This is  
11 Exhibit A?

12 MR. REICH: MEIC Exhibit A.

13 Q. (By Mr. Rossbach) Mr. Lierow, could you  
14 look at this. Do you have a copy of it in front  
15 of you?

16 A. Yes, I do.

17 Q. And the way it looks like it started was  
18 with an email from you to Mr. Payne; is that  
19 correct?

20 A. Yes, it is.

21 Q. The first question is: "During our  
22 meeting yesterday with MDEQ," who did you meet  
23 with, just for the record?

24 A. Off the top of my mind, definitely Eric  
25 was there; probably Dave Klemp; John Coefield;

1 Diane Lorentzen. I remember they were there. The  
2 typical crew.

3 Q. Were you there? Was there anybody with  
4 you on behalf of Bison or SME?

5 A. Mr. Jeff Chaffee was also in attendance.

6 Q. It says, "They requested we provide a  
7 PM2.5 modeling analysis with the remodel, although  
8 they are not requiring it, but only recommending  
9 it." Then you go on, and as I understand it, make  
10 a request to Mr. Payne that he talk to the  
11 baghouse manufacturers about providing PM2.5  
12 emission rates; is that correct? Is that your --

13 A. Yes. I'm requesting that he look at  
14 PM2.5 emission rates for the material handling  
15 baghouses, yes.

16 Q. But you said, "not the main boiler  
17 baghouses"? In other words --

18 A. Yes.

19 Q. At least at that point; is that right?

20 A. Right.

21 Q. And so am I correct in understanding  
22 that you could have also asked then or at some  
23 later point for PM2.5 emission rates for the main  
24 boiler baghouse, too, for the manufacturers?

25 A. Yes.

1           Q.    So that's the kind of information that  
2           the baghouse manufacturers would be able to  
3           provide to you; is that correct?

4           A.    Not necessarily.  And I could explain a  
5           little bit behind this request, if you don't mind.

6           Q.    I'm just interested in what the  
7           manufacturers can do or cannot do.  That's all I'm  
8           interested in.

9           A.    At this point, this is far along in the  
10          process when we've already settled on emission  
11          rates, and we're just going in to shift the plant  
12          for remodel, and DEQ said, "Take a look at PM2.5  
13          modeling."  So I'm going in with the thought that  
14          I want to show some kind of analysis that shows  
15          that we're protecting human health and environment  
16          by meeting the National Ambient Air Quality  
17          Standards, because the new standard had just been  
18          implemented, and went from 60 micrograms to 35.

19                 So the main boiler, I'm not really  
20          concerned with that at this point.  I'm not  
21          sure --

22          Q.    That's not the question.  My question  
23          is:  You asked Mr. Payne -- Mr. Payne was the  
24          person that had contact with the baghouse  
25          manufacturer?

1           A.    Yes.

2           Q.    So the only question I have for you,  
3           since Mr. Payne isn't here, is:  Is it your  
4           understanding then that somebody who is a baghouse  
5           manufacturer has statistics or data on the  
6           emission rates for their products, in other words,  
7           a set of specifications as to how much PM2.5, how  
8           it's going to work, how efficient it is; is that  
9           correct?  That's information that a manufacturer  
10          can provide or may be able to provide?

11          A.    May be able to provide.  That's the main  
12          question.  Yes, they may have been able to provide  
13          that.  We had a good indication of PM2.5 emissions  
14          with the condensibles portion, so that's why I'm  
15          not asking for that.

16          Q.    I understand that.  But it's something  
17          that is available to you as sort of the agent for  
18          SME to dealing with the manufacturers.  The  
19          manufacturers have specifications for this type of  
20          stuff; is that correct?

21          A.    You have to remember that PM2.5, there  
22          is not a lot of information, as we've said  
23          numerous times.  So they may or may not have had  
24          that at that time.  I don't know if I specifically  
25          asked.  I didn't specifically.  They may have, but

1 I don't know.

2 Q. But as part of the market, since 2.5 is  
3 becoming the standard, it certainly makes sense  
4 that a manufacturer who is trying to sell these  
5 products is going to be testing them to be able to  
6 represent to people like you and SME about what  
7 they can produce, what kind of efficiency they can  
8 produce; isn't that correct?

9 A. That's correct logic, and I'm sure the  
10 awareness level, especially with hearings like  
11 this, that goes up, and up, and up, as time goes  
12 on. At this point in time, it's not as -- I  
13 shouldn't say concern -- but that information just  
14 isn't typically available.

15 Q. Do you know whether Mr. Payne ever got  
16 you the information you requested?

17 A. No. He basically, in an email later on,  
18 said that -- he did respond back to me on the  
19 material handling baghouses, and said that  
20 basically they didn't have a lot of data -- I  
21 don't have that in front of me -- but just used  
22 the emission rate that was given without any real  
23 support for a different number.

24 Q. The emission rate that was given by  
25 whom?

1           A.    The material handling baghouses for coal  
2 handling have an emission rate of .005 grains per  
3 dry center cubic feet, and my recollection was  
4 that Mark Payne in another email a few days later  
5 said that -- my understanding was without a lot of  
6 additional information, they weren't able to  
7 provide us a different value that would be lower  
8 than the .005.

9           Q.    Who gave you that .005? Who gave you  
10 that? Was that the manufacturer?

11          A.    Yes, that was a number from a baghouse  
12 manufacturer of material handling baghouses.

13          Q.    So they did give you that information?

14          A.    Yes, for PM10 value.

15          Q.    That's a PM10?

16          A.    That's a PM10 value, and they said,  
17 "Short of any -- since we don't really have  
18 anything --" I'm surmising this -- "then just go  
19 ahead and use that number." So in essence, use  
20 PM10 as a surrogate.

21               MR. ROSSBACH: Thank you.

22               MS. DILLEN: Mr. Rossbach, we do have  
23 the follow up email, and I don't think it's quite  
24 as Mr. Lierow has represented. I don't know if  
25 you're interested in seeing it or not.

1 MR. REICH: Is this a --

2 MR. ROSSBACH: I saw one that had these  
3 values in it; is that --

4 MS. DILLEN: It's one that was contested  
5 on relevance grounds, and so it hadn't been  
6 included in your --

7 MR. REICH: I'm going to object because  
8 you've rested.

9 CHAIRMAN RUSSELL: I think the  
10 witness --

11 THE WITNESS: That's my interpretation  
12 of the email. I'm not repeating it verbatim, but  
13 that was my interpretation of reading the email at  
14 the time.

15 CHAIRMAN RUSSELL: Thank you. The  
16 witness is excused.

17 (Witness excused)

18 CHAIRMAN RUSSELL: We'll take a break  
19 and get ready for closing arguments, or  
20 statements, or whatever you call it.

21 (Recess taken)

22 CHAIRMAN RUSSELL: Let's go ahead and  
23 wrap this up. It was suggested to me and  
24 confirmed by another Board member, and then I  
25 asked, that closing arguments will be submitted in

1 writing. We will have no oral argument. I asked  
2 Laurie about it. Next week would be the earliest  
3 of getting a transcript, but you do have the  
4 record. You do have the record, and you have  
5 everything that's been admitted. So hopefully we  
6 can go with that. It might be pushing it to do  
7 it. We could double back and ask Laurie through  
8 Katherine when the transcript will be available.

9 MS. DILLEN: I don't think we can do it  
10 without the transcript. That's really the key to  
11 what evidence has been produced.

12 CHAIRMAN RUSSELL: So as soon as we can  
13 get those, I think we're going to have to wait to  
14 schedule --

15 MS. DILLEN: My point is only that aside  
16 from the exhibits that you have, a lot of the  
17 testimony that we rely on has come in orally, so  
18 we would need to reference it in that brief.

19 MR. ROSSBACH: Well, I guess my only  
20 point is that if we were doing closings verbally,  
21 they wouldn't have to have the transcript now  
22 anyway. I know it's a convenience to have it, and  
23 that's fine, but I don't think we should delay,  
24 because I know we want to move forward on getting  
25 it. I don't want to delay a long time for filing

1 these papers. That's all.

2 CHAIRMAN RUSSELL: But if a draft is  
3 available, we can still, working through  
4 Katherine, that we could set a conference. You  
5 could get your arguments done, and get those  
6 submitted, and then hopefully within the next -- I  
7 think, Abigail, you leave in two weeks, right?

8 MS. DILLEN: I leave on the 12th, yes.  
9 I agree with Mr. Rossbach that we could do it  
10 right now. I just don't want to have arguments  
11 with Counsel as to our contentions as to what --  
12 if I say, "Mr. McCutchen agreed that X,Y,Z," and  
13 then there is a fight about it, and they have  
14 briefing about it. I don't want that to happen.

15 CHAIRMAN RUSSELL: I think that even if  
16 we have do have a draft in the record, we should  
17 be able to put a closing together that states your  
18 case.

19 MS. DILLEN: I'm happy to rely on the  
20 draft.

21 MR. MARBLE: So we will have a telephone  
22 meeting?

23 CHAIRMAN RUSSELL: We will have a  
24 telephone meeting, and we will deliberate at that  
25 point.

1           MR. MARBLE: There will be no statements  
2 or closing statements? We'll deliberate?

3           CHAIRMAN RUSSELL: We will have a  
4 written closing statement available before  
5 deliberation. We'll deliberate, and hopefully  
6 give Katherine an opportunity. And don't lose  
7 this document that was filed yesterday, because it  
8 has the potential of a lot of work that Katherine  
9 is going to need for findings when we make our  
10 decision. So keep this document. It's important.

11          MR. MIRES: What is your projection on  
12 when you're anticipating the telephone conference?

13          CHAIRMAN RUSSELL: Prior to the 12th.  
14 Probably that week.

15          MR. MIRES: Just a point of interest.  
16 I'm in D.C. the whole week of the 4th through the  
17 8th.

18          CHAIRMAN RUSSELL: So prior to the 12th  
19 and after the 8th.

20          MR. MIRES: The 8th being a Friday, and  
21 Monday the 11th.

22          MS. DILLEN: If the parties were able to  
23 keep their closing shorter, should we just wrap  
24 this up sooner?

25          CHAIRMAN RUSSELL: I'd just as soon as

1 not now.

2 MR. ROSSBACH: It will be a better  
3 quality for us.

4 CHAIRMAN RUSSELL: I think it will, too.

5 MR. REICH: So do you know when? We're  
6 talking about two weeks max? Do you have some  
7 idea of when you want the written submissions?

8 MR. LIVERS: Mr. Chairman, next week is  
9 the week of January 28th through February 1st.  
10 The following is February 4th through the 8th.

11 CHAIRMAN RUSSELL: Then Monday is 11th.

12 MR. LIVERS: Yes.

13 CHAIRMAN RUSSELL: How does the 11th  
14 look?

15 MR. LIVERS: I'll be out of town. I'm  
16 not pivotal.

17 CHAIRMAN RUSSELL: So let's plan on the  
18 11th. Go back and check. Let's just plan on our  
19 telephone conference on the 11th. Let's plan on a  
20 morning meeting. I think it's going to take us at  
21 least two hours.

22 MS. DILLEN: I am so sorry. I'm  
23 concerned that I may have to consult my schedule.  
24 I'm arriving in India I think on the 12th, which  
25 I'm realizing probably means with a time change,

1 that I'm leaving on the 11th. And I wasn't  
2 expecting this, and I don't have my calendar here.  
3 But I could certainly get back to you within hours  
4 over email.

5 CHAIRMAN RUSSELL: Larry, you said you  
6 were going to be gone the 4th through 8th?

7 MR. MIRES: Yes. I'm in the air most of  
8 the 8th, and the 4th, and I have almost back to  
9 back meetings in D.C. from --

10 CHAIRMAN RUSSELL: So your flight leaves  
11 early the 8th?

12 MR. MIRES: Yes.

13 MR. LIVERS: Is late next week out of  
14 the question?

15 CHAIRMAN RUSSELL: Whatever happens out  
16 there, the closing doesn't matter now, because we  
17 still have to have a telephone conference. So  
18 that's off the table. It's the telephone  
19 conference.

20 MR. MIRES: Is like next Friday the  
21 first, is that too early for everybody? The 31st,  
22 first?

23 MR. SKUNKCAP: Friday is not good for  
24 me. I'll be at the same meeting as Larry.

25 MR. MIRES: That's pushing it.

1           CHAIRMAN RUSSELL: All of your time in  
2 D.C., there is probably not a time when we could  
3 have a telephone conference?

4           MR. MIRES: If you get something set up  
5 -- if you set it up for maybe Tuesday the 5th, it  
6 will be ugly, but early in the morning.

7           MR. LIVERS: If I may, are your evenings  
8 booked as well? Given the time change, that's  
9 another option. If there happens to be an evening  
10 that you might be available. I'm not trying to  
11 put the pressure on you. But 6:00 for you would  
12 be 4:00 here, for example.

13           MR. MIRES: Right now it's --  
14 (indicating) I would say the best date is going  
15 to be Tuesday the 5th sometime before noon.

16           CHAIRMAN RUSSELL: Noon our time?

17           MR. MIRES: Yes. Let's go sometime  
18 before 10:00, so if we did it, it would be your  
19 time 8:00 to 10:00; 10:00 to 12:00 in D.C.

20           MS. SHROPSHIRE: After 10:15 I can. I  
21 can't do it from 9:00 to 10:00.

22           MR. LIVERS: Mr. Chairman, could I put  
23 on the table for discussion. How critical is it  
24 that the attorneys for the parties are available  
25 during Board deliberations?



1 in the audience that would like to speak to the  
2 Board on any Board-related matters that aren't  
3 associated with what we did today?

4 (No response)

5 CHAIRMAN RUSSELL: Seeing none, I'll  
6 entertain a motion to adjourn.

7 MR. REICH: Just one matter. You  
8 haven't told us when you wanted our briefs.

9 CHAIRMAN RUSSELL: As soon as possible,  
10 but two days before the 8th. That morning.

11 MS. ORR: Can I add something? It would  
12 really be beneficial for you to refer to the  
13 record. If you wish to -- If you're picking  
14 something up from the record, if you can give a  
15 reference page.

16 MR. REICH: By record, you're talking  
17 about the exhibits?

18 MS. ORR: The transcript. When is the  
19 due date?

20 CHAIRMAN RUSSELL: It would be the close  
21 of business on the 5th. Because of transmittal  
22 and everything else, I think the close of business  
23 on the 5th would be the best.

24 MR. REICH: Would you like those  
25 electronic, hard copy, both?

1 MR. ROSSBACH: PDF.

2 CHAIRMAN RUSSELL: Electronic and PDF.

3 MS. BREWER: Electric, and if you are  
4 willing to send me a Word version, that is the  
5 best. I can PDF them. It makes for a smaller  
6 file.

7 CHAIRMAN RUSSELL: Before we do close,  
8 thank you very much. All of the parties have done  
9 a good job addressing the Board, keeping the  
10 matter at hand at hand, and I appreciate that. We  
11 didn't drift a lot, and I think it made for a  
12 productive hearing. So I appreciate everything  
13 you did for us. And hopefully we'll get it closed  
14 out, and we'll be able to make a decision.

15 So with that, do I have a motion to  
16 adjourn?

17 MR. ROSSBACH: So moved.

18 CHAIRMAN RUSSELL: Second.

19 MR. SKUNKCAP: Second.

20 CHAIRMAN RUSSELL: All those in favor,  
21 signify by saying aye.

22 (Response)

23 CHAIRMAN RUSSELL: Opposed.

24 (No response)

25 CHAIRMAN RUSSELL: Thank you.

1 (The proceedings were concluded

2 at 6:30 p.m.)

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## 1 C E R T I F I C A T E

2 STATE OF MONTANA )

3 : SS.

4 COUNTY OF LEWIS &amp; CLARK )

5 I, LAURIE CRUTCHER, RPR, Court Reporter,  
6 Notary Public in and for the County of Lewis &  
7 Clark, State of Montana, do hereby certify:

8 That the proceedings were taken before me at  
9 the time and place herein named; that the  
10 proceedings were reported by me in shorthand and  
11 transcribed using computer-aided transcription,  
12 an that the foregoing pages -245- to -551- contain  
13 a true record of the Volume III of the proceedings  
14 to the best of my ability.

15 IN WITNESS WHEREOF, I have hereunto set my  
16 hand and affixed my notarial seal  
17 this                      day of                      , 2008.

18

19 LAURIE CRUTCHER, RPR  
20 Court Reporter - Notary Public  
21 My commission expires  
22 March 9, 2008.

23

24

25