

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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17 E X H I B I T S

18	Exhibit No.	Marked:	Admitted:
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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 condensable 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 H₂SO₄ and HF emissions from CFB
8 boiler. There are at least seven facilities with
9 better H₂SO₄ 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 H₂SO₄ and SO₂, 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 H₂SO₄?

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 SO₂ 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 SO₂, and H₂SO₄, 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 H₂SO₄ and HF. How
4 did you determine the ultimate BACT limits for
5 those two constituents of condensible PM₁₀?

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 SO₂ and filterable PM₁₀ were also
24 the top technologies for acid gases, H₂SO₄.

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 H₂SO₄ and acid gases, which are major
3 constituents of the condensible PM₁₀; 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 SO₂. SO₂ in the flue gas stream is going to
21 ultimately lead to SO₃, H₂SO₄. 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 H₂SO₄, 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 SO₂ 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 SO₂ 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 H₂SO₄ 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 SO₂ 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 condensible 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 condensible 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 SO₂, 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 SO₂, NO_x, 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 SO₂ 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 SO₂, and particulate matter. So you've got two
24 devices, yes, but one is in there primarily to
25 reduce SO₂, and the other serves a dual role of

1 not only controlling particulate, but getting that
2 now captured or absorbed SO₂ 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

25

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.

(The proceedings were concluded

at 6:30 p.m.)

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C E R T I F I C A T E

STATE OF MONTANA)

: SS.

COUNTY OF LEWIS & CLARK)

I, LAURIE CRUTCHER, RPR, Court Reporter,
Notary Public in and for the County of Lewis &
Clark, State of Montana, do hereby certify:

That the proceedings were taken before me at
the time and place herein named; that the
proceedings were reported by me in shorthand and
transcribed using computer-aided transcription,
and that the foregoing pages -245- to -551- contain
a true record of the Volume III of the proceedings
to the best of my ability.

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my notarial seal
this day of , 2008.

LAURIE CRUTCHER, RPR
Court Reporter - Notary Public
My commission expires
March 9, 2008.