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Hearing

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

HEARING

IN THE MATTER OF	Docket Nos.
NUCLEAR INNOVATION NORTH	52012-COL
AMERICA, LLC (NINA)	52013-COL
(South Texas Project	ASLBP No.
Units 3 and 4)	09-88508-COL-BD01

Thursday, August 18, 2011

Room 201

Building E

Texas Commission on

Environmental Quality

12100 Park 35 Circle

Austin, Texas

9:30 a.m.

BEFORE:

MICHAEL M. GIBSON, Chairman

GARY S. ARNOLD, Administrative Judge

RANDALL J. CHARBENEAU, Administrative Judge

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P R O C E E D I N G S

JUDGE GIBSON: Good morning. We are here today on Atomic Safety and Licensing Board Panel Docket Numbers 52-12-COL and 52-13-COL. These concern the United States Nuclear Regulatory Commission's proposed issuance of combined operating licenses to Nuclear Innovation North America, LLC, for the construction of two nuclear power plants in Matagorda County and, as we learned yesterday, for the operation by STPNOC of those reactors.

First let me introduce the board that will be conducting this evidentiary hearing. To my right, Judge Gary Arnold, who holds a PhD in nuclear engineering and is a full-time judge with the Atomic Safety and Licensing Board Panel.

To my left, Judge Randy Charbeneau, who holds a PhD in civil engineering and is both a part-time judge with the Atomic Safety and Licensing Board Panel and a full-time professor at the University of Texas.

I am Michael Gibson, a full-time judge with the Atomic Safety and Licensing Board Panel. I'm also a lawyer, and I am the chairman of this board.

And now I would like to have announcements of counsel, beginning with the Applicant.

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1 MR. FRANTZ: This is Steve Frantz,
2 representing Nuclear Innovation North America. To my
3 right is Stephen Burdick, and to his right is Chip
4 Moldenhauer.

5 JUDGE GIBSON: Thank you.

6 Staff?

7 MR. SPENCER: Your Honor, I'm Michael
8 Spencer. I'm representing the NRC staff. To my
9 right is Andrea Silvia, and to my left is Anita Ghosh.

10 JUDGE GIBSON: Thank you.

11 Intervenor.

12 MR. EYE: May it please the panel. The
13 Intervenor are here by counsel, Robert Eye and Brett
14 Jarmer.

15 JUDGE GIBSON: Thank you.

16 Next I would like to introduce the board's
17 administrative staff who will be working to assist us
18 with this evidentiary hearing.

19 First, on the far right here, is a lawyer,
20 Jon Esser. He is starting his second and final year
21 as one of our law clerks.

22 Next is Karen Valloch, at the back of the
23 room there. Karen is our administrative assistant,
24 and she's been handling all the arrangements here, and
25 we're very appreciative for what she's done.

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1 Our IT coordinator, sitting directly below
2 me, is Andrew Welkie. We also have our court reporter
3 here, Penny Bynum, and we also have our -- Victor
4 Dricks, who's with the Office of Public Affairs and is
5 handling any press or citizen inquiries, so if you
6 have anything -- hold your hand up, Vic, in case
7 anyone needs to consult with him.

8 Finally, I would be remiss if I did not
9 acknowledge the incredible hospitality that we've
10 received from the Texas Commission on Environmental
11 Quality, which has graciously provided us with this
12 beautiful hearing room for this hearing, as well as
13 for the conference room that we had yesterday.

14 Hopefully we can all be mindful of that
15 and take very good care of all this equipment and, as
16 I might remind you, be sure and don't move those two
17 tables at the back there.

18 One more thing: To the extent that anyone
19 has their cell phone with them, please be sure it's
20 off or on vibrate or something so it won't interrupt
21 our proceedings. If you need to use your phone,
22 please do so outside as a courtesy to the participants
23 here.

24 To provide some context for our hearing
25 today, we are here because Nuclear Innovation North

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1 America cannot proceed with its planned construction
2 of two proposed nuclear reactors in Matagorda County
3 until it has secured combined operating licenses from
4 the United States Nuclear Regulatory Commission.

5 Today and tomorrow this board will conduct
6 an evidentiary hearing on whether the United States
7 Nuclear Regulatory Commission, which is proposed to
8 issue these combined operating licenses, may do so
9 consistent with the Atomic Energy Act, the National
10 Environmental Policy Act, and the regulations that
11 implement both of these statutes.

12 Nuclear Innovation North America, which
13 we'll be referring to as NINA for short, is proposing
14 to locate these two planned nuclear reactors on a site
15 that currently houses two existing nuclear reactors.

16 The two existing reactors will be referred
17 to as Units 1 and 2, and the proposed reactors will be
18 referred to as Units 3 and 4.

19 As planned, proposed Units 3 and 4 would
20 employ the advanced boiling water reactor design.
21 This is significant because, after spending several
22 years evaluating the advanced boiling water reactor
23 design, the United States Nuclear Regulatory
24 Commission certified this design as safe.

25 Consequently, all of the safety issues

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1 that relate to the advanced boiling water reactor
2 design have already been resolved by the Commission's
3 certification of this design, and so those issues are
4 beyond the permissible scope of this proceeding.

5 On April 21, 2009, three organizations --
6 the Sustainable Energy and Economic Development
7 Coalition, the South Texas Association for Responsible
8 Energy, and Public Citizen -- jointly filed a petition
9 to intervene in this licensing proceeding.

10 In their petition these three groups
11 challenged several environmental aspects of the
12 planned construction and operation of planned Units 3
13 and 4.

14 On August 27 of 2009, this board ruled
15 that these three groups had standing to proceed with
16 their challenge to the license application and that
17 they had properly pleaded admissible contentions in
18 accordance with the Nuclear Regulatory Commission
19 rules. For the sake of brevity, we will refer to
20 these three groups as Intervenors.

21 Now, after we issued the August 2009
22 order, a lot of things happened in this case. This
23 board issued several additional orders, held several
24 additional oral arguments. The Nuclear Regulatory
25 Commission resolved appeals from some of those -- the

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1 orders that we issued.

2 NINA amended its application and mooted
3 some of the Intervenor's contentions by those
4 amendments. The Nuclear Regulatory Commission staff
5 issued an Environmental Impact Statement on this
6 proposed license, and the Intervenor filed additional
7 new and amended contentions to challenge this project.

8 Frankly, however, that's mostly inside
9 baseball for purposes of why we're here today, because
10 there's not much we could gain from dwelling on the
11 denials -- the details of that procedural history.

12 The larger point is that there's currently
13 only three matters that are before this board. One of
14 these matters is the Intervenor's recently-filed
15 contention challenging whether there is improper
16 foreign ownership, domination, and control of these
17 two planned reactors.

18 Yesterday, in Building F, we held oral
19 argument on that contention, and we will not be
20 addressing it during this evidentiary hearing today or
21 tomorrow.

22 The other two remaining matters are two
23 environmental contentions that Intervenor has
24 raised. The first of these concerns whether NINA
25 properly estimated replacement power costs as part of

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1 its evaluation of severe accident mitigation design
2 alternatives in its environmental report.

3 The Intervenor's second contention concerns
4 whether the Nuclear Regulatory Commission staff
5 properly accounted for energy-efficient building code
6 rules in its assessment of whether there is a
7 sufficient need for power to justify going forward
8 with these two nuclear reactors.

9 It is these two environmental contentions
10 that we will address in our evidentiary hearing today
11 and tomorrow.

12 As we have noted in previous orders, these
13 proceedings over the next two days will be governed by
14 10 Code of Federal Regulations Part 2, Subpart L.
15 These proceedings will develop a record for this
16 board's decision on these two contentions.

17 That record will consist of written
18 testimony and whatever documentary evidence we admit,
19 as well as the answers to questions that the board
20 members may pose to each party's witnesses.

21 Before we proceed with the case, it might
22 be useful to explain the differing roles of the
23 Nuclear Regulatory Commission personnel here.

24 The Atomic Energy Act established the
25 Nuclear Regulatory Commission to regulate nuclear

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1 facilities in this country. The Nuclear Regulatory
2 Commission is headed by five commissioners who are
3 appointed by the President and confirmed by the United
4 States Senate.

5 The Commissioners have a large staff
6 working for them. During this proceeding we will
7 refer to them as the NRC staff or sometimes as the
8 staff. The NRC staff is represented here today with
9 lawyers and with technical people who have spent a
10 great deal of time working on this application.

11 That brings us back to this Atomic Safety
12 and Licensing Board. Although the Atomic Safety and
13 Licensing Board is physically housed within the
14 Nuclear Regulatory Commission and although individual
15 judges receive their appointments from the
16 commissioners of the Nuclear Regulatory Commission, we
17 are an independent entity, and we are separate and
18 apart from the NRC staff.

19 The staff appears here as one of the three
20 parties and will represent its side in this dispute.
21 And as three independent judges, we will consider the
22 views of the NRC staff, just as we will consider those
23 of NINA, the Applicant, and of the Intervenors, and we
24 will accord each side equal weight.

25 If one of the three parties here does not

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1 agree with the ruling that we ultimately make after
2 this hearing, that party can appeal our initial
3 decision to the commissioners.

4 Now, I should emphasize that this hearing
5 today is essentially a trial. This board will be
6 receiving evidence in the form of exhibits and
7 testimony from sworn witnesses for the three parties
8 who are here before us.

9 This board and the counsel and the
10 witnesses for the three parties to this proceeding,
11 who are sitting here at the front of the room, will be
12 the only people who will have speaking parts at this
13 proceeding.

14 If you came here to talk about your
15 concerns with these proposed nuclear reactors, I'm
16 sorry, but this is not the forum for that.

17 However, under 10 CFR 2.328, this hearing
18 is open to the public, and so those of you in the
19 audience are certainly welcome to be here and to be at
20 the proceedings, and we are appreciative for your
21 attendance.

22 In addition, you should know that Section
23 2.315(a) of Title 10 of the Code of Federal
24 Regulations authorizes members of the public who are
25 not represented here today to provide this board with

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1 written statements, so-called limited-appearance
2 statements, expressing their views on the proposed
3 construction and operation of these planned nuclear
4 reactor in Matagorda County.

5 All of those limited-appearance statements
6 will be transcribed and will be placed into the
7 official docket of this proceeding. Although limited-
8 appearance statements are not evidence, they may
9 assist the board and the parties as this licensing
10 process goes forward.

11 I should also note today that we will be
12 utilizing some technology in the hearing room that
13 will, I hope, enable the board and the parties to
14 conduct this proceeding more efficiently. Only time
15 will tell. However, I want to apologize in advance
16 for any bugs that we may have not yet worked out with
17 the system.

18 The Atomic Safety and Licensing Board
19 Panel used this technology for the first time in the
20 Vogtle early-site permit proceeding in March of 2009,
21 and it has used it several times since, although this
22 is the first time that these three board members have
23 attempted to use it in an evidentiary hearing.

24 The Digital Data Management System, which
25 is called DDMS for short, is our attempt to digitize

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1 the documentary record of an evidentiary hearing and
2 make it accessible and usable in a courtroom setting.

3 One of the things that we'll be doing with
4 the DDMS during this proceeding is marking the
5 parties' exhibits electronically rather than using an
6 ink stamp or labels, as is customary in most judicial
7 hearings. This may involve some interchange between
8 the board and Mr. Andrew Welkie, whom we've previously
9 introduced as a member of our panel's IT staff.

10 Once the exhibits are marked, they will be
11 transmitted electronically to the electronic hearing
12 docket of the Nuclear Regulatory Commission, thus
13 keeping the process entirely electronic from start to
14 finish.

15 In addition, as I noted, we'll be
16 transcribing this proceeding, and at the conclusion of
17 it, we will establish a mechanism for the parties to
18 correct the transcript of any errors.

19 Further, we anticipate using display
20 technology as part of our evidentiary demonstrations.
21 You see we have a screen here to the left of me, and
22 to your right, and as well a television set out there.
23 So hopefully everyone will be able to see what we're
24 doing. Hopefully this will make the information more
25 accessible and understandable.

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1 Finally, there's a couple of minor
2 housekeeping matters. First of all, we're planning to
3 be able to conclude this proceeding before the end of
4 the day tomorrow.

5 Second, this proceeding will be a little
6 different from most trials that you may have seen or
7 participated in as a juror or counsel. Perhaps the
8 most unusual aspect of a Subpart L proceeding is that
9 the attorneys for the parties will not be questioning
10 the witnesses. Instead the board members will be
11 questioning the witnesses.

12 These witnesses for the parties have
13 already prefiled their testimony, and so the questions
14 the board will be asking are based on that prefiled
15 testimony.

16 Many of the board's questions will be
17 based on suggested questions that the parties have
18 provided to the board through in-camera submissions.
19 Although the board will be asking questions of the
20 witnesses, once we've completed our examination of an
21 individual witness, we will take a 15-minute break --
22 is that what we agreed on yesterday the pretrial? I
23 believe.

24 We will be taking a 15-minute break after
25 the we've finished examining the witness and allow the

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1 parties an opportunity to suggest -- write up
2 additional questions that they would like us to ask
3 that we did not cover in our examination. We will
4 then come back and will attempt to ask those questions
5 of the witness.

6 One thing to keep in mind as this hearing
7 proceeds is to realize that it would be folly to
8 ascribe any particular significance to the number and
9 types of questions the board directs to a particular
10 witness as compared to any other witness.

11 Trying to draw any conclusions about how
12 the board perceives the testimony of a witness or
13 witnesses on a particular matter, based on the number
14 and types of questions the board asks, is not fair to
15 the witness, not fair to the party that sponsored the
16 witness, and not fair to the board.

17 In questioning any particular witness or
18 group of witnesses, the board is attempting to create
19 a record to support a fair and reasonable
20 determination of the issues that are before us for
21 decision.

22 Unless the board members have anything
23 further or unless the participants have something else
24 they need to bring to the Court's attention, I think
25 we will proceed with admitting evidence.

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1 Let me say that as we proceed, NINA will
2 go first with this, because under 10 CFR 2.325, NINA,
3 the Applicant, has the burden of proof in this
4 proceeding, and under 10 CFR 2.324, it will open and
5 close our hearing.

6 Accordingly, we will begin with the
7 Applicant, NINA.

8 MR. EYE: Your Honor, I do have a matter
9 to bring before the panel.

10 JUDGE GIBSON: Oh, I'm sorry, Mr. Eye.
11 Yes.

12 MR. EYE: Your Honor, yesterday evening I
13 received a call from Mr. Mosenthal, and he has
14 developed a medical issue that will, according to his
15 physician's orders, preclude him from traveling. He
16 has developed a systemic infection and has requested
17 the possibility of testifying by telephone, or
18 providing his cross-examination testimony by
19 telephone.

20 I have inquired of Mr. Frantz, Mr.
21 Spencer, and they do not object to that arrangements.
22 If there is an alternative to that that we can come up
23 with -- that is, to the telephone -- we would
24 certainly explore that, but I would seek leave to do
25 that tomorrow when he is set to sit for cross-

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1 examination.

2 JUDGE GIBSON: Let me first see if it's
3 possible to do that.

4 Mr. Welkie?

5 (Pause.)

6 JUDGE GIBSON: Mr. Welkie indicates that
7 it is possible to do that tomorrow, and there is no
8 objection from either party?

9 MR. SPENCER: No objection.

10 MR. FRANTZ: No objection, and we would
11 urge the board to do that.

12 JUDGE GIBSON: Okay. I mean, the only
13 alternative I think we have is to submit written
14 questions to the witness and have them submit them
15 back to us, and the record would remain open quite a
16 while. And frankly, we can actually carry on a
17 dialog, but let me see if Judge Charbeneau or Judge
18 Arnold has any questions.

19 MR. EYE: Thank Your Honor.

20 JUDGE CHARBENEAU: I have a question.
21 Will he have any ability to see exhibits that we're
22 displaying here?

23 MR. EYE: Other than his reference to the
24 exhibits that he would have in front of him, I don't
25 think that there's a way to transmit the video image

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1 of those exhibits, at least as far as I'm aware.

2 JUDGE CHARBENEAU: Would we be able to
3 send, possibly by fax, copies of pages of exhibits
4 with highlighted sections that we could talk from?

5 MR. EYE: I don't see why not.

6 JUDGE CHARBENEAU: Does he have access to
7 a fax machine?

8 MR. EYE: Yes. And I was going to say
9 either that or perhaps even email those to him, and
10 presumably he would have the similar sort of access
11 that might even be quicker, but whichever way would
12 accommodate the proceedings and the panel, we would
13 certainly endeavor to meet those.

14 JUDGE CHARBENEAU: And he has copies of
15 all of the exhibits that have been filed?

16 MR. EYE: I believe he does.

17 JUDGE CHARBENEAU: I have no objections to
18 it.

19 JUDGE GIBSON: Mr. Eye, I would encourage
20 you to confirm that with him --

21 MR. EYE: I will.

22 JUDGE GIBSON: -- before we proceed. I
23 think the important thing is at least we have until
24 tomorrow, so if we have to FedEx something or we have
25 to PDF it or we have to fax it, we can do this in

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1 advance of his testimony.

2 The other thing that we will need to be
3 doing, I supposed, is -- I guess that will be fine,
4 because these will just -- if they're not going to be
5 highlighted copies of an exhibit but some
6 demonstrative that either Judge Charbeneau or Judge
7 Arnold creates, we'll just have to figure out a way to
8 get that to him and to the parties as well, I suppose.

9 But we'll -- I'm sure where there's a will
10 there's a way. It's important that we accommodate
11 everyone here. And since neither the Applicant nor
12 the staff's opposed it, Judge Charbeneau, Judge Arnold
13 are okay with this, then I guess we'll proceed.

14 MR. EYE: Thank you very much. We
15 appreciate that.

16 JUDGE GIBSON: But like I said, at the
17 next break if you could just confirm that and let us
18 know when we come back on the record.

19 MR. EYE: I should have a call to him
20 right now, so I'm expecting to hear from him directly.
21 Thank you.

22 JUDGE GIBSON: Okay. I need to bring
23 something else to y'all's attention before Mr. Frantz
24 proceeds.

25 Mr. Welkie reminded me that microphone --

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1 when you use the microphone, you need to push the
2 button on the microphone where it says "push." And
3 that will ensure that your microphone is on.

4 If you don't want to broadcast some
5 conversation you're having with somebody next to you,
6 it might be a good idea to push that button again so
7 that everyone else doesn't hear it. Fair enough?

8 Okay. I understand that we will be -- for
9 those of you that do need wireless connection in here,
10 it is possible to have a wireless connection. The
11 user name, I believe, is Agenda, but I do not know
12 what the password is. Does anybody know what the
13 password is?

14 VOICE: Google.

15 JUDGE GIBSON: Google. The password is
16 Google. So we'll have -- the user name is Agenda, and
17 the password is Google. Are they all small or caps,
18 or does it matter? It's not case sensitive? Okay.

19 Okay. I believe Judge Charbeneau's got
20 something else.

21 JUDGE CHARBENEAU: Just another follow-up
22 question with regard to Mosenthal. Will he be
23 listening in to the examination of the other experts?

24 MR. EYE: Actually I was going to inquire
25 to determine whether that was allowable or if that

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1 would be possible to do. I mean, I -- he would like
2 to. I know I spoke with him about that very point,
3 and he actually inquired if that would be possible,
4 for him to be able to be in by phone.

5 JUDGE GIBSON: Hold on just one second.

6 (Pause.)

7 JUDGE GIBSON: Mr. Welkie believes that
8 it's going to be possible to do all these things, but
9 while you're trying to get ahold of your witness, Mr.
10 Welkie is trying to get ahold of the IT coordinator
11 here to find out how we can do that, but he's pretty
12 confident that -- this is a very sophisticated system
13 here -- IT system, and so it appears likely we should
14 be able to do all that by telephone.

15 MR. EYE: Very well. Thank you, Judge.

16 MR. SPENCER: Your Honor?

17 JUDGE GIBSON: Yes, Mr. Spencer?

18 MR. SPENCER: Yes. The board has stated
19 that the Applicant would go first and present evidence
20 on contention CL-2 and tomorrow DEIS-1. However, I
21 just want to remind the board that we presented
22 testimony from our project manager for the sole
23 purpose of sponsoring the EIS into the record, so --

24 JUDGE GIBSON: Right.

25 MR. SPENCER: I doubt that there's really

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1 a need to question our project manager, because the
2 testimony is for the sole purpose of sponsoring the
3 exhibits into the record, but we would like the
4 exhibits to be entered and admitted, including the
5 entire EIS.

6 JUDGE GIBSON: Before NINA makes its
7 offer?

8 MR. SPENCER: The timing is fine.

9 JUDGE GIBSON: Okay.

10 MR. SPENCER: Whichever timing the board
11 wants to use, that's fine by us.

12 JUDGE GIBSON: Okay. Fair enough. I
13 think that we'll -- my suspicion is that everyone's
14 going to want to use it, so everybody's probably going
15 to be willing to stipulate that it's a true and
16 correct copy of your EIS, but we'll -- if it's okay
17 with you, we'll let you address that as soon as we
18 have an offer of evidence from the Applicant.

19 Is there a reason for you to do this
20 first?

21 MR. SPENCER: Well, I mean --

22 JUDGE GIBSON: Maybe there is.

23 Mr. Frantz?

24 MR. FRANTZ: It does not matter to us
25 either way.

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1 JUDGE GIBSON: Well, why don't we just go
2 ahead and let you take care of this, Mr. Spencer.

3 MR. SPENCER: Okay. That's fine. Do you
4 want the witness to be sworn in?

5 JUDGE GIBSON: Oh, yeah. If you want to
6 go ahead and present your witness over there, we can
7 do that.

8 (Pause.)

9 JUDGE GIBSON: Would you please state your
10 name.

11 MS. MUIR: I'm Jessie Muir with the
12 Nuclear Regulatory Commission.
13 Whereupon,

14 JESSIE MUIR
15 having been first duly sworn, was called as a witness
16 herein and was examined and testified as follows:

17 JUDGE GIBSON: Thank you.

18 MR. SPENCER: Ms. Muir, on the screen is
19 Exhibit NRC000001, prefiled direct testimony of Jessie
20 M. Muir, sponsoring NUREG 1937 into the hearing
21 record. Do you recognize this exhibit?

22 MS. MUIR: Yes, I do.

23 MR. SPENCER: Is that your testimony?

24 MS. MUIR: Yes, it is.

25 MR. SPENCER: Is that testimony true and

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1 correct, to the best of your knowledge and belief?

2 MS. MUIR: Yes, it is.

3 MR. SPENCER: I would like this exhibit to
4 be marked and admitted into the record.

5 JUDGE GIBSON: Okay. It's already been
6 marked, I assume. Is there --

7 MR. SPENCER: Well, I thought the DDMS
8 system had a separate marking.

9 JUDGE GIBSON: All you need to do is
10 identify it; it's already been marked.

11 MR. SPENCER: Okay.

12 JUDGE GIBSON: Identify it and then offer
13 it.

14 MR. SPENCER: Okay. Can you bring up --
15 well, I'll offer it into --

16 JUDGE GIBSON: There you go.

17 MR. SPENCER: Okay.

18 JUDGE GIBSON: Any objection?

19 MR. EYE: None from the Intervenors, Your
20 Honor.

21 MR. FRANTZ: No objection.

22 MR. SPENCER: Can you bring up NRC000002?

23 (Pause.)

24 MR. SPENCER: The title of this document
25 is Resume of Jessie M. Muir. Do you recognize this

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1 document?

2 MS. MUIR: Yes, I do.

3 MR. SPENCER: Is the contents of this
4 document true and correct to the best of your
5 knowledge and belief?

6 MS. MUIR: Yes, it is.

7 MR. SPENCER: The exhibit having been
8 identified, we offer it into evidence.

9 JUDGE GIBSON: Okay. Any objection?

10 MR. EYE: None.

11 MR. FRANTZ: No objection.

12 JUDGE GIBSON: Both documents will be
13 admitted as evidence.

14 (The documents referred to,
15 having been previously marked
16 for identification as NRC000001
17 and NRC000002, were received in
18 evidence.)

19 MR. SPENCER: Ms. Muir offered into
20 evidence the FEIS -- that's Exhibit NRC000003A through
21 D, because it's a large document.

22 JUDGE GIBSON: Okay.

23 MR. SPENCER: Before -- on the screen is
24 a document titled Environmental Impact Statement for
25 Combined Licenses for South Texas Project Electric

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1 Generating Station Units 3 and 4.

2 Do you recognize this document?

3 MS. MUIR: Yes, I do.

4 MR. SPENCER: The document having been
5 identified, we offer it into evidence.

6 MR. EYE: No objection.

7 MR. FRANTZ: No objection.

8 JUDGE GIBSON: It will be admitted.

9 (The document referred to,
10 having been previously marked
11 for identification as
12 NRC000003A, was received in
13 evidence.)

14 MR. SPENCER: 3B, this is a portion of the
15 FEIS, starting with Section 2.4, Ecology. Do you
16 recognize this document?

17 MS. MUIR: Yes.

18 MR. SPENCER: The document having been
19 admitted, we would like to enter into evidence --
20 offer into evidence NRC000003B.

21 JUDGE GIBSON: Any objection?

22 MR. EYE: No, Your Honor.

23 MR. FRANTZ: No objection.

24 JUDGE GIBSON: It will be admitted.

25 (The document referred to,

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1 having been previously marked
2 for identification as
3 NRC000003B, was received in
4 evidence.)

5 MR. SPENCER: 3C, please. This is Exhibit
6 NRC000003C. The title is Section 3.0, Site Layout and
7 Plant Description. It is a portion of the EIS --
8 Final EIS. Do you recognize this document?

9 MS. MUIR: Yes, I do.

10 MR. SPENCER: Having been identified, we
11 would like to offer this exhibit into evidence?

12 JUDGE GIBSON: Any objection?

13 MR. EYE: No objection from the
14 Intervenors.

15 MR. FRANTZ: No objection.

16 JUDGE GIBSON: Okay. It is admitted.

17 (The document referred to,
18 having been previously marked
19 for identification as
20 NRC000003C, was received in
21 evidence.)

22 MR. SPENCER: 3D. This is volume 2 of the
23 Final Environmental Impact Statement for STP. It is
24 labeled Exhibit NRC000003D.

25 Do you recognize this document?

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1 MS. MUIR: Yes, I do.

2 MR. SPENCER: The document having been
3 identified, we would like to offer it into evidence.

4 JUDGE GIBSON: Any objection?

5 MR. EYE: No objection.

6 MR. FRANTZ: No objection.

7 JUDGE GIBSON: Does that conclude your
8 examination of this witness?

9 MR. SPENCER: Yes, Your Honor.

10 JUDGE GIBSON: Just one question. Do you
11 have any corrections to any of these exhibits --

12 MS. MUIR: No, sir.

13 JUDGE GIBSON: -- from what they have --
14 as they've been offered?

15 MS. MUIR: No.

16 JUDGE GIBSON: Okay. Can the witness be
17 excused?

18 MR. SPENCER: Yes, Your Honor.

19 JUDGE GIBSON: Any objection to the
20 witness being excused?

21 MR. EYE: None for the Intervenors, Your
22 Honor.

23 (The document referred to,
24 having been previously marked
25 for identification as

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1 NRC000003D, was received in
2 evidence.)

3 JUDGE GIBSON: I don't know why you'd need
4 to stick around, but, you know, this is pretty
5 exciting stuff, so you may want to stick around the
6 next two days. Thank you.

7 (Whereupon, the witness was excused.)

8 JUDGE GIBSON: Okay. Now that we've
9 gotten the Environmental Impact Statement in the
10 record, I think that you can proceed, Mr. Frantz.

11 What I had envisioned was that we would go
12 through the documents, have an offer of them, have any
13 objections, and then we would proceed to testimony,
14 but perhaps we needed to do that that way, so that's
15 fine. We did.

16 MR. FRANTZ: And that was my vision also,
17 based on our discussion yesterday at the pretrial
18 conference, that we would introduce exhibits as a
19 group, and with the board's leave, I propose to do
20 that now with respect to our exhibits.

21 JUDGE GIBSON: Yes.

22 MR. FRANTZ: In referring to the exhibit
23 numbers, I will skip the numerous zeros in the
24 exhibits and just reference the final digits.

25 I'd like to refer the board to the

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1 following exhibits: STP1 through 3, STP5 through 8,
2 STP10 through 13, STP16 and STP18 through 35.

3 JUDGE GIBSON: Can you go over those one
4 more time? I got to 8, and then I didn't hear you
5 after that.

6 MR. FRANTZ: 10 through 13, 16, and 18
7 through 35.

8 JUDGE GIBSON: And these are as noted on
9 your May 31, 2011, exhibit list?

10 MR. FRANTZ: And also the exhibit list we
11 filed yesterday, so that exhibit list is marked as
12 August 17, 2011.

13 JUDGE GIBSON: Okay. And that would
14 include the ones of 32 to 35?

15 MR. FRANTZ: That's correct. And each of
16 these documents has been marked already. Each of
17 those documents, as you indicate, has been identified
18 in our exhibit list.

19 Additionally, with respect to those
20 exhibits which are prefiled testimony, the prefiled
21 testimony itself swears to the truthfulness and
22 accuracy of those exhibits and that testimony.

23 JUDGE GIBSON: Okay.

24 MR. FRANTZ: And so at this time we would
25 offer up these exhibits for admission into evidence.

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1 JUDGE GIBSON: Objections, Mr. Eye?

2 MR. EYE: No objection, Your Honor.

3 JUDGE GIBSON: Mr. Spencer, any
4 objections?

5 MR. SPENCER: No objections.

6 JUDGE GIBSON: Okay. As offered, the
7 following exhibits will be admitted: STP1, 2, 3, 5,
8 6, 7, 8, 10, 11, 12, 13, 16, 18, 19, 20, 21, 22, 23,
9 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35.

10 (The documents referred to,
11 having been previously marked
12 for identification as STP1
13 through 3, 5 through 8, 10
14 through 13, 16, and 18 through
15 35, were received in evidence.)

16 MR. FRANTZ: Thank you, Your Honor.

17 JUDGE GIBSON: Let me ask a question, just
18 for clarification's sake. Exhibits that have been
19 previously been marked 4, 9, 14, 15, 17, are you
20 effectively withdrawing those exhibits?

21 MR. FRANTZ: No. What happened, those
22 were part of our draft exhibit list. We distributed
23 that list shortly before we initially filed it. As it
24 turns out, those numbers that we had initially had on
25 our list were duplicates of documents the staff also

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1 had on its list.

2 JUDGE GIBSON: Okay.

3 MR. FRANTZ: And so they are not actually
4 different from what the staff has, and we don't have
5 any separate documents corresponding to those numbers.

6 JUDGE GIBSON: Okay. Bear with me just
7 one second.

8 Mr. Welkie?

9 (Pause.)

10 JUDGE GIBSON: Mr. Spencer?

11 MR. SPENCER: Yes, Your Honor.

12 JUDGE GIBSON: With respect to the staff
13 exhibit list, would you like to make an offer?

14 MR. SPENCER: Yes. We can do this en
15 masse, too. We would like to offer into evidence
16 Exhibits NRC -- and I'll leave out the zeros, too --
17 NRC4 to NRC72.

18 Now, NRC4, is a revised exhibit. The
19 exhibit number for that is NRCR000004. We offered
20 that into evidence yesterday.

21 JUDGE GIBSON: Actually, you provided it
22 to Mr. Welkie yesterday. Right?

23 MR. SPENCER: Okay. We -- Exhibits 61
24 through -- 66 through 71 were also provided yesterday.
25 There's also an Exhibit 72, which is an affidavit of

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1 Dan Mussatti and Michael Scott, two of our witnesses,
2 with respect to the additional exhibits.

3 JUDGE GIBSON: And you say the additional
4 exhibits -- you're referring to NRC66 to 71. Is that
5 correct?

6 MR. SPENCER: Yes, Your Honor. And the --
7 Exhibit 72 was provided yesterday to Mr. Welkie and
8 the Intervenors and the Applicant. We have not
9 provided it to the board; we have extra hard copies if
10 you wish to see the affidavit.

11 JUDGE GIBSON: Okay. It might be good to
12 have one copy, anyway, up here, if you don't mind.
13 Mr. Esser can keep it.

14 Now, does that conclude your offer?

15 MR. SPENCER: Yes, Your Honor.

16 JUDGE GIBSON: Okay.

17 (Pause.)

18 MR. SPENCER: Yes, all subparts. So when
19 I said NRC4 to 72, that would include the exhibits
20 with multiple subparts: 8A, 8B, I think 9A and 9B;
21 there may be a few others that have subparts, but
22 every exhibit within that range.

23 JUDGE GIBSON: Okay. So your offer
24 includes all exhibit numbers and all subparts of those
25 numbers.

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1 MR. SPENCER: Yes, Your Honor.

2 JUDGE GIBSON: Okay. Now -- and then
3 previously we've had -- 1, 2, and 3 have already been
4 offered and admitted as a result of the testimony we
5 just had from your witness with respect to the EIS.
6 Is that right?

7 MR. SPENCER: Yes, Your Honor.

8 JUDGE GIBSON: Okay. And the only revised
9 exhibit you have is 4; all the rest of them are clean.

10 MR. SPENCER: Yes, Your Honor.

11 JUDGE GIBSON: Okay. Fair enough.

12 Okay. Mr. Eye, any objections?

13 MR. EYE: No, Your Honor.

14 JUDGE GIBSON: Mr. Frantz?

15 MR. FRANTZ: We have no objection.

16 JUDGE GIBSON: Okay.

17 Mr. Welkie, just a second.

18 (Pause.)

19 JUDGE GIBSON: So you have no gaps at all
20 like the Applicant did.

21 MR. SPENCER: No, Your Honor.

22 JUDGE GIBSON: Okay. NRC staff Exhibits
23 4 through 72 are admitted in evidence.

24 (The documents referred to,
25 having been previously marked

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1 for identification as NRC4
2 through NRC72, were received in
3 evidence.)

4 JUDGE GIBSON: Mr. Eye?

5 MR. EYE: Yes, Your Honor.

6 JUDGE GIBSON: Let me ask you, first of
7 all, are we operating off the July 14 -- are we
8 operating off the August 11, 2011, exhibit list?

9 MR. EYE: Yes, sir.

10 JUDGE GIBSON: Okay. Thank you.

11 MR. EYE: We would offer into evidence --
12 and I will also dispense with the numerous zeros and
13 just go with the final number designations.

14 JUDGE GIBSON: Good call.

15 MR. EYE: We would offer Intervenors'
16 Exhibits 1 through 4, 7, 9, 11 through 17, 19 through
17 40 -- excuse me; it should be 19 through 41; excuse
18 me -- 45 to 49. Exhibit Number 50 should be a revised
19 50; INTR50, and then 51 through 54, and 55 would be
20 INTR55.

21 JUDGE GIBSON: Okay. Let me make sure
22 I've got this right now. You're offering essentially
23 all the exhibits on your July 14 list -- I'm sorry --
24 your August 11 list, except for the ones that are
25 obviously marked through.

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1 MR. EYE: That's correct, Your Honor.

2 JUDGE GIBSON: And the only exhibits that
3 have a different number than are on this August 11
4 exhibit list are INT50 is now INTR50, and Exhibit
5 INT55 is now INTR55. Is that correct?

6 MR. EYE: I believe that's correct.

7 Mr. Welkie, did you have --

8 (Pause.)

9 MR. EYE: I beg your pardon; it should
10 be -- yes.

11 JUDGE GIBSON: And INTR1.

12 MR. EYE: I beg your pardon; that's
13 correct.

14 MR. FRANTZ: And I believe some of the
15 prefiled testimony also had an R designation, if I
16 recall correctly, because we went through multiple
17 revisions of it.

18 MR. EYE: INTR did, and I think his direct
19 is 1, and his rebuttal is -- I beg your pardon; 41
20 should also be INTR, Your Honor.

21 JUDGE GIBSON: Yes.

22 MR. EYE: Is that what you have as well?
23 Okay.

24 MR. SPENCER: Your Honor?

25 JUDGE GIBSON: Hold on just one second.

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1 Let me just finish with Mr. Eye -- clarifying what Mr.
2 Eye's offering first, and then we'll address it.

3 INT45, however, is not a revision. Is
4 that right?

5 MR. EYE: It is not. I don't believe
6 there was anything changed from its original version.

7 JUDGE GIBSON: Okay. Let me go back
8 through this one more time, just to be sure that we're
9 all on the same page of the same hymnal about what Mr.
10 Eye is making an offer about, and then we'll let you
11 talk, Mr. Spencer.

12 MR. SPENCER: Okay.

13 JUDGE GIBSON: INTR1, INT2 to 4, INT7,
14 INT9, INT11 to 17, INT19 to 40, INTR41, INT45 to 49,
15 INTR50, and INTR55.

16 MR. EYE: That's correct.

17 JUDGE GIBSON: And that's what you're
18 offering.

19 MR. EYE: Yes, it is, Your Honor.

20 JUDGE GIBSON: Okay. Now, let me just ask
21 Mr. Welkie -- does that comport with what you've
22 received?

23 MR. WELKIE: Okay.

24 JUDGE GIBSON: Now, Mr. Spencer, you had
25 a question?

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1 MR. SPENCER: Yes. In terms of Mr.
2 Johnson's rebuttal testimony, INT45, I believe the
3 latest version that was submitted was labeled INTR.
4 00045, and there was an earlier version that was just
5 INT, a series of zeros, and 45.

6 Now, I'm not clear on which version is
7 being offered into evidence.

8 JUDGE GIBSON: Fair enough. so you're
9 saying that there's two 45s; there's an INT45 and an
10 INTR45.

11 MR. SPENCER: Yes, Your Honor.

12 JUDGE GIBSON: Okay. Mr. Eye, which one
13 is it you're offering?

14 MR. EYE: Well, they're the same, so we
15 would withdraw the -- we'll just withdraw the R, and
16 that was -- there were no changes in the rebuttal
17 testimony subsequent to the motion to strike.

18 MR. SPENCER: I just want to bring to the
19 Court's attention that the -- I think the R version of
20 the testimony was missing page 18.

21 MR. EYE: Well, that's why we're
22 withdrawing it.

23 JUDGE GIBSON: That's all the more reason
24 to withdraw INTR45. So thank you for bringing that to
25 our attention, Mr. Spencer.

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1 MR. SPENCER: Yes.

2 JUDGE GIBSON: And again, Mr. Welkie, that
3 comports with what you're received?

4 MR. WELKIE: Yes.

5 JUDGE GIBSON: Okay. Now, Mr. Eye has
6 made an offer. Do we have any objections to his
7 offer?

8 MR. FRANTZ: Your Honor, in our motion in
9 limine, we objected to certain portions of the
10 prefiled testimony and certain of the exhibits. The
11 board denied that motion in part, purely to preserve
12 our position, and we like to just renew our objection
13 to those same portions; otherwise we have no
14 objections to the exhibits.

15 JUDGE GIBSON: Thank you. Your objections
16 are duly noted, and a record has been made. Thank
17 you.

18 Mr. Spencer?

19 MR. SPENCER: Your Honor, we also filed a
20 motion in limine, and the board also denied that
21 motion in part. We renew the objections we made that
22 the board denied to preserve our objections for the
23 record.

24 One other issue: On INTR1, there was --
25 I believe the revision was made yesterday, and I

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1 haven't seen -- I think it was to page 13, and I just
2 wanted to -- if I could see page 13 of that exhibit,
3 that would -- on the screen would be fine. I could --

4 JUDGE GIBSON: Mr. Welkie, could you put
5 up INTR-1 on page 13, just so Mr. Spencer can see it?

6 (Pause.)

7 MR. SPENCER: Your Honor, the -- when
8 we -- Your Honor, in the board's order on the motion
9 in limine -- I refer the board to page 2 and item
10 1(a), and excluding from Mosenthal's direct testimony
11 stated, The two sets of lines that deal with federal
12 equipment standards and the resulting impacts on net
13 need after federal equipment standards, and two lines
14 have been blacked out on this table, but the lines
15 that the board said should be blacked out haven't been
16 blacked out.

17 And that's important to us because we
18 believe that these are outside the scope of the
19 contention, and the Intervenor's agree that the
20 surrounding testimony could be excluded.

21 JUDGE GIBSON: So what you're suggesting,
22 if I may put it in my own words, is Mr. Eye has failed
23 to strike out the appropriate lines. Has he --

24 Mr. Eye, have you stricken the wrong lines
25 and not stricken the right lines?

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1 MR. EYE: Well, the lines that were to be
2 stricken would have been lines 8 and 9, and it looks
3 like it was -- what got stricken were the two just
4 above it.

5 JUDGE GIBSON: Which probably shouldn't
6 have been stricken.

7 MR. EYE: That would be correct, Your
8 Honor.

9 JUDGE GIBSON: This is what I would like
10 to do. When -- this is going to be coming up on
11 Friday. Right?

12 MR. EYE: Correct.

13 JUDGE GIBSON: Okay. What I would like to
14 do is, if we can get an agreement from all parties,
15 Mr. Eye will agree to strike the lines regarding
16 equipment standards and unstrike the lines that he
17 didn't intend to strike, which I think we're all in
18 agreement are okay, other than perhaps with your
19 motion in limine they're okay. And we'll go ahead and
20 admit this exhibit but allow Mr. Eye to provide us all
21 with a corrected page 13 of this Exhibit INTR1.

22 Is that right?

23 MR. EYE: Absolutely, Your Honor. Thank
24 you very much.

25 JUDGE GIBSON: Does that work, Mr. Frantz?

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1 MR. FRANTZ: Yes, it does, and just to
2 clarify, Mr. Eye, I think it's not only lines 8 and 9,
3 but it's also at the bottom, so it's two sets.

4 MR. EYE: That's correct. It would be the
5 federal equipment appliance standard savings net need
6 after federal equipment appliance standards, and then
7 the last two substantive lines of that that deal with
8 the comparable data.

9 MR. FRANTZ: Yes. Thank you.

10 MR. EYE: Thank you.

11 JUDGE GIBSON: I don't want to overburden
12 Mr. Welkie, but, frankly, if this is not done right,
13 it will overburden him. So I'm going to offer his
14 services to you, Mr. Eye. Try to make sure that this
15 page is done properly so that we can all live happily
16 ever after. Okay?

17 MR. EYE: I appreciate the accommodation.
18 Thank you very much.

19 JUDGE GIBSON: Okay. All right. With
20 that offer and the objections duly noted, all of the
21 exhibits will be offered as offered, subject to one
22 thing -- hold on a second, please.

23 (Pause.)

24 JUDGE GIBSON: One other thing I'd like
25 for you to do. Mr. Welkie got this, but I guess no

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1 one else did. Exhibit R45 is missing page 18, but it
2 does have an affidavit. The original 45 you submitted
3 does have page 18, but it does not have an affidavit.

4 Now, what I would like you do is also
5 clean up Exhibit 45 to Mr. Welkie's satisfaction.
6 And, again, I'm assuming that you all have no
7 objection to having a proper affidavit and page 18 for
8 Exhibit 45?

9 MR. EYE: That's correct.

10 JUDGE GIBSON: You all okay with that? I
11 think it was just an oversight and nothing nefarious
12 here in that not being done properly.

13 Mr. Welkie, thank you.

14 Okay. Subject to correcting -- providing
15 corrected copies of Exhibits 1 and 45 or R1 and R45,
16 those exhibits will be admitted.

17 (The documents referred to,
18 having been previously marked
19 for identification as INTR1,
20 INT2 to 4, INT7, INT9, INT11 to
21 17, INT19 to 40, INTR41, INT45
22 to 49, INTR50, and INTR55, were
23 received in evidence.)

24 JUDGE GIBSON: And I think what we will do
25 now is to take a break for ten minutes, and then we

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1 will -- let's make it 15, and then we will come back
2 on and begin examination of witnesses?

3 Is there anything further before we take
4 a break?

5 (Whereupon, a brief recess was taken.)

6 JUDGE GIBSON: Before we call our
7 witnesses, I was just apprised during our break that
8 there has been some discussion about the possibility
9 of using Skype as a way to hook Mr. Eye's witness up
10 for tomorrow.

11 I have no idea if that is going to be
12 technically feasible. If it is, however, I would like
13 you all to give some thought to whether there's any --
14 you see any problems with that. And if not, then that
15 may be an even better solution than doing it by
16 telephone, because we'll at least have a visual image
17 of the witness.

18 MR. FRANTZ: Your Honor, we fully agree
19 with that. That's a marvelous idea.

20 MR. SPENCER: No objections.

21 JUDGE GIBSON: Okay. Great.

22 If there's nothing further with regard to
23 offers of evidence, I believe the next order of
24 business will be for the Applicant's witnesses with
25 respect to contention CL-2.

1 MR. FRANTZ: Yes. I'd like to call Mr.
2 Jeffrey Zimmerly and Adrian Pieniazek to the witness
3 stand, please.

4 Whereupon,

5 JEFFREY ZIMMERLY

6 and

7 ADRIAN PIENIAZEK

8 having been first duly sworn, were called as
9 witnesses herein and were examined and testified as
10 follows:

11 JUDGE GIBSON: Thank you.

12 MR. FRANTZ: Would each of you identify
13 yourself for the board, please.

14 MR. ZIMMERLY: My name is Jeffrey
15 Zimmerly. I work for Tetra Tech.

16 MR. PIENIAZEK: My name is Adrian
17 Pieniazek, with NRG Energy.

18 MR. FRANTZ: Your Honor, their testimony
19 has already been admitted into evidence and sworn to,
20 and so we would turn the witnesses over to the board
21 for questioning.

22 JUDGE GIBSON: Let me just ask first, do
23 either of you have any corrections to your testimony
24 as it's been admitted?

25 MR. ZIMMERLY: No.

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1 MR. PIENIAZEK: No.

2 JUDGE GIBSON: Okay. I believe that Judge
3 Arnold has some questions.

4 JUDGE ARNOLD: A few. I'm going to start
5 out with need for power.

6 Mr. Welkie, I had a figure.

7 (Pause.)

8 JUDGE ARNOLD: Question for Mr. Pieniazek.

9 Have you -- you have prior experience in
10 purchasing or forecasting large amounts of electrical
11 power, do you?

12 MR. PIENIAZEK: Yes, I do.

13 JUDGE GIBSON: Okay. Have you ever been
14 able to compare a forecast made before a purchase to
15 the actual price after it's been purchased?

16 MR. PIENIAZEK: With the actual price?

17 JUDGE ARNOLD: Yes.

18 MR. PIENIAZEK: I do recall being involved
19 in some backcast analyses, but I, you know, don't
20 recall details at this time in what those were.

21 JUDGE ARNOLD: So it would be difficult to
22 really say how accurate a forecast of the cost of
23 power is?

24 MR. PIENIAZEK: You could certainly
25 backcast it to determine how accurate your forecast

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1 was, by looking at the actual price after you tried to
2 forecast. Sure.

3 JUDGE ARNOLD: I'm just trying to
4 understand -- and I've got some simple cartoons --
5 where the need for power comes from. And from
6 descriptions given in testimony, I made this simple
7 cartoon up, where the red line would be the baseload
8 power, and there's some daily variation on top of
9 that, and my understanding is you try to predict what
10 the highest demand is going to be over some period,
11 and that's your maximum peak demand, and on this
12 figure I said that's your 100-percent demand.

13 And then you try to have your system
14 capacity 13.75 percent above that. So is this
15 essentially a reasonable cartoon of demand and supply?

16 MR. PIENIAZEK: Yes, it is. That's --
17 this is very similar to the method that ERCOT uses.

18 JUDGE GIBSON: Judge Arnold, I'm sorry;
19 excuse me. Is this going to be marked in some way for
20 the record so that we can go back and refer to it in
21 the transcript or some other way?

22 Hold on just a second, Mr. Welkie.

23 (Pause.)

24 JUDGE GIBSON: Sorry about that. I forgot
25 to push the green button. What we'll do is we'll just

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1 make this Board Demonstrative 1, for simplicity
2 purposes, so that to the extent that either -- any of
3 us may use a demonstrative that's not part of an
4 exhibit, it will be -- that way y'all can follow it
5 when y'all do your -- review the transcript.

6 So we can call it BD1, Board Demonstrative
7 1. Is everyone okay with that?

8 Mr. Eye?

9 MR. EYE: That's fine, Your Honor.

10 JUDGE GIBSON: Mr. Spencer?

11 MR. SPENCER: Yes, Your Honor.

12 JUDGE GIBSON: Okay. And Mr. Frantz?

13 MR. FRANTZ: Yes, thank you very much.

14 JUDGE GIBSON: Okay. Mr. Welkie's okay
15 with it, too, so I think we're all right. Thank you.

16 (The document referred to was
17 marked for identification as
18 Board Demonstrative 1.)

19 JUDGE GIBSON: I'm sorry, Judge Arnold.

20 Thank you.

21 Just one more thing before you get
22 started.

23 Mr. Welkie?

24 (Pause.)

25 JUDGE ARNOLD: From Mr. Johnson's direct

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1 testimony, he says that the -- all four STP plants
2 together would represent about 6 percent of all
3 generation in ERCOT. Is that approximately correct?

4 MR. PIENIAZEK: The sum of all four? That
5 sounds about right, in ballpark, sure.

6 JUDGE ARNOLD: Mr. Welkie, could we go to
7 the next figure.

8 JUDGE GIBSON: And this will be BD2.

9 (The document referred to was
10 marked for identification as
11 Board Demonstrative 2.)

12 JUDGE ARNOLD: So a loss of all four STP
13 units essentially drops your capacity around that 6
14 percent, and from what I understand, this shows that
15 there's still adequate capacity within ERCOT to meet
16 the demand; it's just a matter of getting those units
17 that you need up and running?

18 MR. PIENIAZEK: Right. What that would
19 indicate is that if you lost all four units, since you
20 have a reserve planning margin of 13.75 percent,
21 losing the 6 percent should give you still enough
22 margin to meet load and still have a little bit of
23 reserve.

24 JUDGE ARNOLD: It's not even a matter of
25 restoring mothballed plants or trying to import power;

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1 it's just starting up some units that aren't currently
2 operating?

3 MR. PIENIAZEK: That's correct.

4 JUDGE ARNOLD: Mr. Welkie, the third
5 figure.

6 JUDGE GIBSON: This will be BD3.

7 (The document referred to was
8 marked for identification as
9 Board Demonstrative 3.)

10 JUDGE ARNOLD: What I did on this was I
11 looked at the instantaneous demand, and I increased it
12 by the 13.75 percent to see what happens now is at
13 times at peak demand you may no longer have your
14 required reserve margin.

15 What would you do about that? Are -- is
16 that a serious concern or --

17 MR. PIENIAZEK: Well, I guess the first
18 thing I would say is that ERCOT carries operating
19 reserves around the clock, and so if you had an
20 incident -- and that amount of reserve is typically
21 2300 megawatts for responsive, approximately 11- or
22 1200 megawatts for non-spin, and then there's some
23 reg-up. Those reserves are always there.

24 If you had all four STP units trip, now,
25 likely they wouldn't happen instantaneously; they

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1 would -- you know, you might have them over a little
2 time, but regardless of that situation, you would have
3 a little bit of an upset, but after things -- after
4 the other units started coming on, ERCOT is going to
5 as quickly as possible put those operating reserves
6 back on line with the other units that weren't on at
7 the time of the unit trips.

8 So it's a concern immediately, but after
9 a certain time frame, you have those same responsive
10 reserves back on line later on.

11 JUDGE ARNOLD: Okay. I want to -- I'm
12 done with the figures.

13 I want to move on to the discount rate.
14 Now, if I wanted to know everything about discount
15 rates, I'd probably want to talk to an economist or
16 someone in that field. Is that correct?

17 MR. PIENIAZEK: Sure. I guess an
18 economist would probably know more about a discount
19 rate than an engineer like myself would.

20 JUDGE ARNOLD: So you're an engineer, not
21 an economist.

22 MR. PIENIAZEK: That's correct.

23 JUDGE ARNOLD: But you consider yourself
24 knowledgeable on use of discount rates in this. And
25 how did you acquire that knowledge?

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1 MR. PIENIAZEK: On using --

2 JUDGE ARNOLD: On how to use a discount
3 rate?

4 MR. PIENIAZEK: From a personal
5 perspective, it was after I graduated from engineering
6 school. Later on I went and got an MBA, business --
7 master's in business. And of course we did a whole
8 lot of that type of present-value calculations and the
9 like in business school.

10 JUDGE ARNOLD: Sounds good, because I am
11 not sure about what a discount rate is, so could you
12 tell me what exactly the discount rate represents?

13 MR. PIENIAZEK: It represents -- it's
14 basically -- since cash flows and expenses in the
15 future have a different value than cash revenue and
16 expenses do today, it's a way of discounting those
17 future cash flows back to the present day.

18 And that's why it's called present value
19 when you use a discount rate.

20 JUDGE ARNOLD: So if you discount it to
21 present-day value and whatever that amount of money
22 is, you had it today and you earmarked it for that
23 future expense, you could be pretty much sure that at
24 that time in the future you'd have the correct amount?

25 MR. PIENIAZEK: What I -- I guess if I

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1 understand your question, depending on the discount
2 rate you use, high or low, it's like I can hold
3 that -- hold those cash flows now, or I compare to
4 what I would have in the future, but I'm discounting
5 them back, to just -- to make sure that I -- or to try
6 to determine what my -- what the value of those future
7 flows -- cash flows would be.

8 I'm not sure I'm answering your question
9 correctly, but it does give you a present value of
10 future cash flows, and that's why you discount it
11 back.

12 JUDGE ARNOLD: In the SAMDA analysis, how
13 exactly is the discount rate applied? What is it
14 you're discounting and --

15 MR. PIENIAZEK: You're discounting the
16 future -- in this particular case you're discounting
17 back the cost -- the maximum cost risk, including the
18 replacement cost, because a core -- the -- a problem
19 in a reactor could occur at any time in the life of
20 that reactor, so it's a way to discount those back to
21 a value that you can compare the SAMDA with.

22 JUDGE ARNOLD: Well, if you're discounting
23 back from some -- the time of the accident, how do you
24 do that without knowing what year the accident's going
25 to occur in?

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1 MR. PIENIAZEK: That's why you do it back
2 to the present value, because you don't know, so you
3 can compare the SAMDA cost right then and there with
4 the discounted flows in today.

5 MR. ZIMMERLY: NUREG/BR-0184 sets up a
6 formula that accounts for any future year that it
7 could occur in.

8 JUDGE ARNOLD: So is it essentially an
9 average? You discount it from the first year of
10 operation, and then you also discount it from the
11 second year, third year, fourth year, and average them
12 to get an expected discounted rate?

13 MR. ZIMMERLY: The calculation uses the
14 start date of the plant and the end date of the plant,
15 and each year it's discounted.

16 JUDGE ARNOLD: Okay.

17 MR. PIENIAZEK: And I would add, Your
18 Honor, that in the calculations we perform, we
19 basically just follow the guidance that was provided.
20 Again, we're not -- or I'm not, anyway, an economist.
21 We just follow the process as outlined by NUREG
22 documents, and they suggested the discount rates to
23 use and how to apply those.

24 JUDGE ARNOLD: Okay. There is some
25 disagreement between the parties as to what index to

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1 use for adjusting the SAMDA costs from 1991 up to the
2 present.

3 Now, if I wanted to know about price
4 indexes, I'd probably, once again, want to go to an
5 economist. Right? You're not an economist, but
6 you're still knowledgeable in indexes, are you not?

7 MR. PIENIAZEK: Yes. I'm certainly
8 familiar with them.

9 JUDGE ARNOLD: And, once again, this
10 knowledge was initially acquired through your MBA
11 program?

12 MR. PIENIAZEK: Initially, yes.

13 JUDGE ARNOLD: One difficulty I see in
14 determining what index should be used for adjusting a
15 SAMDA is the fact that the definition of SAMDA is
16 somewhat nebulous.

17 So I want to look into what are the
18 possible cost components of a SAMDA. I made up my own
19 list, and I'd like you to just complete it, if you
20 could, or say it's adequate.

21 Any SAMDA is going to require some
22 engineering design and analysis. Most SAMDAs will
23 involve some procurement --

24 JUDGE GIBSON: Hold on just a second.
25 Could -- I'm sorry to interrupt you.

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1 If you could be sure to give a verbal
2 response, a nod of the head does not help this court
3 reporter. She's got enough on her plate right now, so
4 please give a verbal response to questions that you're
5 asked. Thank you.

6 JUDGE ARNOLD: There'll be some
7 procurement, manufacturing, shipping, whatever -- you
8 have to pay for that. Correct?

9 MR. PIENIAZEK: Yes.

10 MR. ZIMMERLY: That's correct.

11 JUDGE ARNOLD: Then if it's any sort of
12 hardware, there'll be an installation process.

13 MR. PIENIAZEK: Correct.

14 MR. ZIMMERLY: That's correct.

15 JUDGE ARNOLD: And SAMDA could involve
16 developing and implementing procedures. Correct?

17 MR. PIENIAZEK: Correct.

18 JUDGE GIBSON: As always in the nuclear
19 field, there'll be some QA involved. Right?

20 MR. ZIMMERLY: Correct.

21 JUDGE ARNOLD: And it seems to me that
22 ABWR is a design-certified plant, so there'll be some
23 work involving the NRC, to get permission on some of
24 the SAMDAs. Correct?

25 MR. ZIMMERLY: Correct.

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1 JUDGE ARNOLD: Can you think of anything
2 else that would be a major cost in a SAMDA?

3 MR. ZIMMERLY: It's likely that labor
4 hours would be equivalent to the other alternatives to
5 that SAMDA, so labor probably would not be included.
6 I can't think of any other.

7 JUDGE ARNOLD: Okay. Now, you used the
8 Bureau of Labor Statistics Consumer Price Index for
9 this adjustment. Correct?

10 MR. ZIMMERLY: That's correct.

11 JUDGE ARNOLD: The staff used the, what,
12 Gross Domestic Product Implicit Price Deflator for
13 Non-Residential Structures. And I'm just going to
14 call that the implicit price deflator, because I will
15 have difficulty with that otherwise. And Intervenors
16 used the Core Personal Consumption Expenditures.

17 For engineering design analysis, do you
18 believe that the consumer price index is -- provides
19 the best reflection of the cost of engineering design
20 and analysis of those three indexes?

21 MR. ZIMMERLY: No.

22 JUDGE ARNOLD: Which would be a best?

23 MR. ZIMMERLY: I believe likely the
24 inflator that the NRC used would be the best.

25 JUDGE ARNOLD: Okay. For procurement,

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1 including manufacturing and shipping, the same
2 question: What would be the best index?

3 MR. ZIMMERLY: Probably the NRC's
4 inflator.

5 JUDGE ARNOLD: Installation -- and we'll
6 include labor in that.

7 MR. ZIMMERLY: NRC's.

8 JUDGE ARNOLD: Development of procedures?

9 MR. ZIMMERLY: (No response.)

10 JUDGE ARNOLD: Which is basically
11 engineering work and administrative.

12 MR. ZIMMERLY: That one has a lot of labor
13 in it, but, yes, that would probably also be the
14 NRC's.

15 JUDGE ARNOLD: QA work?

16 MR. ZIMMERLY: NRC's.

17 JUDGE ARNOLD: And if you have to
18 interface with the NRC and there's any licensing cost?

19 MR. ZIMMERLY: NRC's.

20 JUDGE ARNOLD: Is there anything in the
21 consumer price index that really follows any of these
22 component pricing?

23 MR. PIENIAZEK: No.

24 MR. ZIMMERLY: No.

25 JUDGE ARNOLD: Okay. Thank you.

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1 On page 44 to 49 of your direct testimony,
2 you refer to a dispatch model. Can you briefly
3 explain what a dispatch model is and how it works?
4 Very briefly, because it's a term I'm not familiar
5 with.

6 MR. PIENIAZEK: Sure. In this case --
7 well, any dispatch model is designed to take whatever
8 fleet of generation you have in that particular model;
9 in this case it was the ERCOT fleet. And you -- each
10 of those different technologies have different
11 underlying cost structures.

12 For example, a wind unit has basically
13 zero marginal cost, so it's very low. Nuclear has a
14 fairly low marginal cost, so it's typically next in
15 line to be dispatched.

16 So you -- the dispatch model will
17 basically dispatch those units in merit order, to meet
18 whatever load that you have -- you are projecting, and
19 that's basically how I built this dispatch model.

20 JUDGE ARNOLD: So it ranks your potential
21 sources in terms of cost to run --

22 MR. PIENIAZEK: That's correct.

23 JUDGE ARNOLD: -- and then just picks them
24 off in order.

25 MR. PIENIAZEK: And then it dispatches

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1 them in merit order, so it would be wind and then
2 nuclear and then coal and lignite, and you would
3 probably get into your combined-cycle gas units, and
4 then finally simple-cycle --

5 JUDGE ARNOLD: And about how much
6 experience have you had with dispatch models?

7 MR. PIENIAZEK: A lot of experience. Not
8 so much in the past few years. I still am aware of
9 them, but in previous job I was the director of
10 generation planning for the City of San Antonio, and
11 we had a lot of elaborate dispatch models at that
12 time, and I was quite familiar with them.

13 JUDGE ARNOLD: Okay. How -- what do you
14 consider to be the uncertainty in dispatch-model
15 calculations? Is it a couple of percent, 10 percent?

16 MR. PIENIAZEK: Depends on the complexity
17 of the model. The one that I put together for this
18 particular testimony, we tested it using fuel prices
19 from 2008, and -- because I already had an average
20 annual wholesale price from 2008 that actually
21 occurred, and I compared my model with it, and it was
22 within a couple of dollars per megawatt-hour.

23 It probably -- you know, the more
24 elaborate you make it, the more accurate it will be.
25 Depends on the time and effort that you want to put

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1 into it, I suppose.

2 JUDGE ARNOLD: How well would a dispatch
3 model represent power production 20 or 30 years in the
4 future?

5 MR. PIENIAZEK: It would only be as good
6 as the assumptions you make 20 or 30 years from now,
7 and that's hard to do. That's extremely -- that's a
8 long way to look out to determine.

9 So I think when you get 20, 30 years out,
10 I don't think model results are very useful at all, to
11 be honest.

12 JUDGE ARNOLD: Thank you. In answer 92 of
13 your testimony, you describe your model as being
14 conservative. What does conservative mean in this
15 context?

16 MR. PIENIAZEK: That was 92?

17 JUDGE ARNOLD: Answer 92, page 46.

18 MR. PIENIAZEK: In this particular answer
19 I was stating it was conservative because the
20 ancillary services that I mentioned earlier -- the
21 responsive reserve and the non-spin reserve and the
22 regulation reserve -- those reserves are not energy;
23 they're just capacity.

24 So they're there, but you don't actually
25 have to generate any energy; they're there for

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1 contingencies.

2 But in my model I went ahead and
3 dispatched all the way out through the ancillary
4 services as if they were energy, so that puts you
5 further out on the marginal cost curves by actually
6 dispatching through them to the energy.

7 JUDGE ARNOLD: Is the ultimate consequence
8 that your dispatch model calculates a price that is
9 actually higher than what you --

10 MR. PIENIAZEK: That's correct, Your
11 Honor.

12 JUDGE ARNOLD: When you purchase power,
13 you would generally try to go for the low-cost
14 provider. Right?

15 MR. PIENIAZEK: Yes, sir.

16 JUDGE ARNOLD: Of the plants that are not
17 currently producing power, what are those low-cost
18 providers?

19 MR. PIENIAZEK: Let me make sure I
20 understand.

21 JUDGE ARNOLD: If we had four units drop
22 out and you had to buy a large amount of power, who
23 would those -- where would you get it from? I mean,
24 if you're looking for low cost?

25 MR. PIENIAZEK: You would -- naturally you

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1 would buy it from other generation providers, and
2 typically that generation provider is going to want to
3 use their least-expensive generation for their own
4 obligations.

5 So typically you're getting the next
6 tranche of energy, which is at generally a higher
7 price, and that is why, in this particular model, we
8 used the very highest marginal clearing price as an
9 example of the cost.

10 So the overall -- if you lost all four
11 units, the overall wholesale price is going to go up,
12 because you've now moved further out on your dispatch
13 curve.

14 JUDGE ARNOLD: Does the 13.75 percent
15 reserve margin -- does that help to control price
16 fluctuations during periods when some generators are
17 unable to generate power?

18 MR. PIENIAZEK: Right. I think the way I
19 would characterize it is the 13.75 is a target
20 planning margin. So you want to have 13.75 percent
21 throughout the year so that you have enough operating
22 reserves.

23 The operating reserves, each hour of every
24 day, what really matters in the 13.75 percent is like
25 your available generation to supply those operating

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1 reserves.

2 JUDGE ARNOLD: Okay. I want to move on to
3 impact on consumers, was your direct testimony, page
4 52.

5 In answer 103 of your direct testimony,
6 you are discussing how an increase in electricity
7 price will affect the community. Is that correct?

8 MR. PIENIAZEK: Yes, the -- in this line
9 of questioning it is a sensitivity analysis on the
10 impacts to consumers of a loss of all four STP units.

11 JUDGE ARNOLD: And do you consider
12 yourself to be an expert in this area in that type of
13 calculation?

14 MR. PIENIAZEK: Yes, sir.

15 JUDGE ARNOLD: Okay. If an increase in
16 electricity price has an economic effect on the
17 community, does this in turn result in any additional
18 increase in the price of replacement power?

19 MR. PIENIAZEK: Ask it one more time?

20 JUDGE ARNOLD: Let me try to frame it
21 better. This contention is fairly narrowly focused on
22 the cost of replacement power.

23 Your answer in 103 was basically saying an
24 increase in the cost of electrical power would have an
25 effect on the community, economic losses. But I'm

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1 trying to determine if that in some way then affects
2 the cost of electrical power, and I don't see any
3 connection.

4 MR. PIENIAZEK: Well, this increase that
5 I calculate shows an increase in the price when you
6 lose those units, and that increase in price would
7 filter down --

8 JUDGE ARNOLD: Into the community.

9 MR. PIENIAZEK: -- into the community in
10 this particular instance, yes.

11 JUDGE ARNOLD: You have -- what's your
12 expertise in SAMDA analysis? Did you perform this
13 one?

14 MR. PIENIAZEK: The SAMDA analysis? No.
15 Jeff did more of that.

16 JUDGE ARNOLD: Then I'll ask Mr. Zimmerly.
17 Should the cost of the community be
18 included in the SAMDA cost-versus-benefit evaluation?

19 MR. ZIMMERLY: Since the plant will not be
20 paying those costs, no. Why would the plant want to
21 add that to their costs if someone else is paying it?
22 It's not a cost that they have to incur.

23 JUDGE ARNOLD: Well --

24 MR. ZIMMERLY: Unless there were fines or
25 something along those lines. I don't see that.

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1 JUDGE ARNOLD: -- I look in a -- in the
2 SAMDA analysis in other ones, and the offsite costs
3 are included.

4 MR. ZIMMERLY: Correct.

5 JUDGE GIBSON: There's an offsite exposure
6 cost and an offsite economic cost. But you're saying
7 that offsite economic cost shouldn't be in the SAMDA
8 evaluation?

9 MR. ZIMMERLY: The offsite economic cost
10 included in the SAMDA evaluation is for cleaning up
11 and interdicting food sources, cleaning people's
12 property, compensating for that property that was
13 damaged as a direct result of the releases of
14 radiation.

15 It's not to repay consumers for an
16 increase in the electricity cost and does not include
17 that.

18 JUDGE ARNOLD: Okay. And if I were to say
19 this cost to the community certainly shouldn't be
20 added to the replacement power cost, you would agree
21 with that?

22 MR. ZIMMERLY: Without a mechanism for the
23 State of Texas to charge that to the plant, I agree
24 with that.

25 JUDGE ARNOLD: Good answer. I believe I

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1 want to go back to Mr. Pieniazek.

2 Have you performed a sensitivity analysis
3 to determine whether inclusion of impact to consumers
4 would have an effect on the outcome of the SAMDA
5 analysis?

6 MR. PIENIAZEK: Yes. Actually I
7 calculated quite a few sensitivity analyses, and based
8 on what was raised by Intervenors and others,
9 basically found that, conservatism on top of
10 conservatism on top of conservatism on top of
11 conservatism, I still -- at the end of the analysis
12 there was no cost-effective SAMDA.

13 JUDGE ARNOLD: Okay. Changing subject now
14 to price spikes. According to your testimony Answer
15 106, Price spikes are defined as when the market
16 clearing price exceeds some specified threshold.
17 Correct?

18 MR. PIENIAZEK: That's correct.

19 JUDGE ARNOLD: And in this case the
20 threshold is the prevailing natural gas price times
21 some fixed constant. Is that correct?

22 MR. PIENIAZEK: Right. That constant is
23 the heat rate of the system. Commonly called the heat
24 rate. It's a common term that we use.

25 JUDGE ARNOLD: So the way this definition

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1 works a price spike is always an increase?

2 MR. PIENIAZEK: A price spike is defined
3 as -- and this is a definition that I took from the
4 state-of-the-market report by the independent market
5 monitor in ERCOT. It's an 18 MMBTU per megawatt heat
6 rate times whatever the prevailing gas price, because
7 ERCOT is typically natural gas on the margin market.

8 JUDGE ARNOLD: Uh-huh. Okay.

9 MR. PIENIAZEK: But it is an increase.

10 JUDGE ARNOLD: It's an increase.

11 MR. PIENIAZEK: It's --

12 JUDGE ARNOLD: But do you --

13 MR. PIENIAZEK: -- from typical prices.

14 JUDGE ARNOLD: Do you ever see a decrease
15 from typical prices or is this really asymmetrical?

16 MR. PIENIAZEK: No. You do see decreases.
17 You can even see negative prices, believe it or not.
18 I can give you -- and example is the wind units have
19 production tax credits that they're paid for megawatt
20 hour of approximately \$18 a megawatt hour. And
21 sometimes there are transmission constraints. And the
22 wind has to drop to avoid overloading the transmission
23 line. Well, they'll drive to negative \$5 per megawatt
24 hour and you'll still make some money on the
25 production tax credit. So you actually can see

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1 negative prices on the grid.

2 JUDGE ARNOLD: Okay. Is the marking --
3 market clearing price -- is that generally fairly
4 stabile or is there always some variation in it?

5 MR. PIENIAZEK: It's usually -- well, it's
6 stabile if natural gas prices are stabile, which they
7 have been. You will see fluctuations in it certainly.
8 Just the past couple of weeks we've seen some fairly
9 high prices because we are in an unprecedented heat
10 and drought situation here in Texas. So we've had
11 some fairly strong pricing during the peak hours. So
12 you do see fluctuations in it. But most of hours of
13 the day it's steady -- fairly steady.

14 JUDGE ARNOLD: Uh-huh. The market
15 clearing price and the cost of natural gas. Are they
16 typically closely related?

17 MR. PIENIAZEK: Yes. In ERCOT they are
18 almost always -- they're related almost 24 hours a
19 day, 365 days a year.

20 JUDGE ARNOLD: Uh-huh. So do the -- does
21 the price spikes indicate that the market clearing
22 price is being affected by something other than the
23 cost of producing electricity?

24 MR. PIENIAZEK: Typically, a price spike
25 is to do some type of anomaly on the grid.

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1 JUDGE ARNOLD: Uh-huh. And how quickly
2 does the market clearing price normally respond to
3 changes in the price of natural gas?

4 MR. PIENIAZEK: How quickly does it
5 respond -- let me make sure I understand. How quickly
6 does the market clearing price respond to a change in
7 natural gas price?

8 JUDGE ARNOLD: Yes. Well --

9 MR. PIENIAZEK: It --

10 JUDGE ARNOLD: Let me give you an analogy.
11 I'm not familiar with natural gas. But I -- I buy gas
12 at the pumps. And when oil goes up the price at the
13 pump shoots up real quick. But when the price of oil
14 goes down I'm sitting there waiting for the price to
15 come down and it eventually does. Is that similar to
16 natural gas or --

17 MR. PIENIAZEK: No. I would -- thank you
18 for the analogy. That's helpful. I would say that in
19 ERCOT region the price goes up -- I mean, the natural
20 gas goes up the price of power's going to go up. If
21 the natural gas goes down price is going to go down
22 also and it's going to happen quickly. It's a very
23 competitive market here in ERCOT.

24 JUDGE ARNOLD: Okay. In Answer 68 on page
25 33 of your testimony you state, "Based on the 15-

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1 minute settlement interval data for the first 11
2 months of 2010 the average balancing energy market
3 price across ERCOT was \$35.42 per megawatt hour."
4 When you calculate that average balance and energy
5 market price did you remove the price spikes or are
6 they included in that calculation?

7 MR. PIENIAZEK: And, Your Honor, just to
8 be clear, the prices that you just quoted were actual
9 prices from ERCOT. These particular ones are not ones
10 that I calculated.

11 JUDGE ARNOLD: Uh-huh.

12 MR. PIENIAZEK: Those were the actual
13 prices from the ERCOT market for that time frame. So
14 they would include price spikes that occurred during
15 the year.

16 JUDGE ARNOLD: Uh-huh.

17 MR. PIENIAZEK: And in my testimony I do
18 talk about that, that there are -- any time you use
19 the actual price it includes the spikes that have
20 occurred throughout the year. And they do happen.

21 JUDGE ARNOLD: Uh-huh. In fact, in the
22 Johnson direct testimony I believe he says there's --
23 there were -- he cites one year where there was an
24 average of 60-some odd price spikes per month. Or a
25 couple -- that meant well, about two a day. Is it

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1 reasonable to not include price spikes in any average
2 that you do? I mean, people have to pay it. Correct?

3 MR. PIENIAZEK: As I've testified to, the
4 effect of price spikes doesn't change the conclusions.

5 JUDGE ARNOLD: Uh-huh.

6 MR. PIENIAZEK: And I did account for
7 those price spikes that Mr. Johnson mentioned.

8 JUDGE ARNOLD: Uh-huh.

9 MR. PIENIAZEK: And recalculated, add
10 additional cost on my calculations to account for
11 them. And it still made no difference. So --

12 JUDGE GIBSON: Just a follow-up question
13 on that. When you say you recalculated them are you
14 referring in your first calculations in your direct
15 and you're saying calculations during your rebuttal or
16 is this as a result of his affidavit that was
17 submitted in support of the contention? I'm -- I just
18 want to make sure I understand where you're referring
19 to these calculations in your testimony?

20 MR. PIENIAZEK: Oh, particularly for price
21 spikes?

22 JUDGE GIBSON: Yes. Thank you.

23 MR. PIENIAZEK: Hold on one second,
24 please. (Perusing document.) On page 56 on my direct
25 testimony I -- this is where I accounted for

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1 additional price spikes. And what the base line was
2 was the highest average price that ERCOT has seen
3 since deregulation, which was 2008. And then I
4 added -- and so that price already had all the price
5 spikes that occurred in 2008. And the state-of-the-
6 market report said there was a 20 percent addition to
7 price because of price spikes so I added another 20
8 percent even on top of the 20 percent that was already
9 there.

10 JUDGE GIBSON: Uh-huh.

11 MR. PIENIAZEK: So I -- the price spikes
12 were already included but I added 20 percent more
13 which was extremely conservative. But I did account
14 for them in my direct.

15 JUDGE GIBSON: So this was basically in
16 response to, in effect, the comments that Mr. Johnson
17 put in his affidavit in support of the contention and
18 you were addressing them in your direct testimony
19 here?

20 MR. PIENIAZEK: Yes, Your Honor.

21 JUDGE GIBSON: And it wasn't a result of
22 something he said in his direct testimony later? I
23 just want to make sure the context in which you made
24 these calculations. That's all.

25 MR. PIENIAZEK: The context that I've made

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1 all my calculations is based on what has been raised
2 by Intervenors. And I addressed each one of them --

3 JUDGE GIBSON: Okay.

4 MR. PIENIAZEK: -- procedurally. I can't
5 recall which document may have had it. But --

6 JUDGE GIBSON: That's okay. Obviously, if
7 it was your direct testimony you weren't doing it in
8 response to his direct testimony because --

9 MR. PIENIAZEK: Rebuttal.

10 JUDGE GIBSON: -- they were submitted at
11 the same time.

12 MR. PIENIAZEK: That --

13 JUDGE GIBSON: So --

14 MR. PIENIAZEK: Yes. I did make other
15 calculations in my rebuttal, though, that were also in
16 response to --

17 JUDGE GIBSON: And I know that Judge
18 Arnold probably asked you about that. But I just
19 wanted to be sure that we had the context.

20 MR. PIENIAZEK: Yes.

21 JUDGE GIBSON: Thank you.

22 MR. PIENIAZEK: Thank you.

23 JUDGE ARNOLD: In your testimony you also
24 mentioned the zonal market. And I guess it's now
25 become a nodal market?

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1 MR. PIENIAZEK: Yes.

2 JUDGE ARNOLD: To your knowledge has this
3 affected the current price spikes?

4 MR. PIENIAZEK: The reason we went to a
5 nodal market is because it is a more efficient way to
6 dispatch. And all else being equal, you should see --
7 and we have seen -- lower prices, all things being
8 equal in nodal than we did in zonal. That's the
9 reason we went to a zonal. Zonal was a good market
10 design but it was inefficient in the way it handled
11 transmission congestion and the like.

12 I will say that in the nodal market we did
13 have a period on February 2 due to an arctic cold
14 front. We had some very high prices for a few hours.
15 And so that kind of skews the averages. But all else
16 being equal, you will get lower prices in nodal than
17 you will get in zonal.

18 JUDGE ARNOLD: But my question is has it
19 affected the occurrence of price spikes.

20 MR. PIENIAZEK: And that's why I
21 quantified my answer, because of the February event.

22 JUDGE ARNOLD: Uh-huh.

23 MR. PIENIAZEK: And 2011 has been unusual,
24 not only in February but it's been unusual right now,
25 because we have exceeded all of our demand forecasts.

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1 We've had to bring back units that never were intended
2 to run. So it's hard to say -- there's just not
3 enough data, I don't believe, to say that the nodal
4 market is going to be significantly lower than zonal.
5 I just know that all else being equal and in my
6 judgment and my experience you will get lower prices
7 in nodal over the long run.

8 JUDGE ARNOLD: Thank you. Moving on to
9 another issue. Buying replacement power or -- is not
10 an unusual thing. You have to in a smaller scale do
11 it every time you Units 1 or 2 have an outage.
12 Correct?

13 MR. PIENIAZEK: Buying and selling power
14 happens every day within NRG and other participants.
15 We buy and sell all the time. And some of it's
16 because of planned outages. Some it was because of
17 forced outages. Some of it's just because we can get
18 it cheaper from somebody else.

19 JUDGE ARNOLD: When you're in a period
20 of -- let's take for instance, STP Unit 1 or 2 shut
21 down and you're buying replacement power. Have you
22 found that the occurrence of price spikes
23 significantly affects your replacement power costs?

24 MR. PIENIAZEK: Not if -- are you asking
25 about a planned outage or a --

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1 JUDGE ARNOLD: A planned outage.

2 MR. PIENIAZEK: A planned outage you won't
3 get much of a change at all. Our purchasers of power
4 are the folks that do that for a living. They know
5 when our outages are coming up months in advance. So
6 they might buy power ahead of time and get a very good
7 price for that knowing when the outage is going to be.
8 And that's -- so, you don't see much of a change in
9 market prices when you can plan ahead. And the only
10 time you really see a hiccup is on a -- say, a unit
11 trip. And it usually lasts a very short amount of
12 time.

13 JUDGE ARNOLD: Okay. Would examining
14 long-term energy price trends in the ERCOT region be
15 a viable means of estimating replacement power costs
16 some day in the future?

17 MR. PIENIAZEK: I don't think it would be.
18 As I said earlier, projecting power costs in the
19 future is a difficult proposition. It can be -- it is
20 done. We do that. But there's a lot of uncertainty
21 there. There -- and it's just hard to do consistently
22 well, I would say.

23 JUDGE ARNOLD: Okay. On page 11 of Mr.
24 Johnson's rebuttal testimony he contends that in the
25 long-term the natural gas price will escalate faster

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1 than inflation. I believe that -- well, do you agree
2 with that?

3 MR. PIENIAZEK: No, sir. I don't.

4 JUDGE ARNOLD: And why not?

5 MR. PIENIAZEK: Hold on one second. I
6 recall answering a similar question. (Perusing
7 document.) Hold on one second. I'm looking for Table
8 6 in my testimony, because that table illustrates how
9 pricing in ERCOT, which is based predominantly on
10 natural gas doesn't follow any type of normal
11 pattern -- normal economic indicator pattern. You
12 can -- I'm sorry.

13 JUDGE GIBSON: It appears to me Table 6
14 may be displayed. Is that what you were looking for?

15 MR. PIENIAZEK: Oh, yes. Thank you.

16 JUDGE GIBSON: Surely.

17 MR. PIENIAZEK: Yes. I think if Mr.
18 Johnson was correct we wouldn't see 2010 prices and
19 2009 prices being lower than 2004 and 2005. Those are
20 ERCOT actual prices. As I mentioned earlier, they're
21 based on natural gas. And natural gas has fluctuated
22 tremendously. It doesn't really follow any kind of
23 normal economic indicator. Now, I also testified that
24 it looks like, based on shell gas finds that natural
25 gas a fairly stabile and flat future projection based

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1 on the Energy Institute projections. So they at least
2 forecast it's going to be stabile in the near future.

3 JUDGE ARNOLD: Uh-huh.

4 MR. PIENIAZEK: But they probably said
5 that in 2003, as well.

6 JUDGE ARNOLD: In the way you performed
7 the SAMDA analysis does the future cost of natural gas
8 actually figure into it somewhere?

9 MR. PIENIAZEK: The future cost?

10 JUDGE ARNOLD: Yes.

11 MR. ZIMMERLY: Which SAMDA analysis would
12 that be? Would that be the one --

13 MR. PIENIAZEK: I did so many.

14 MR. ZIMMERLY: -- presented in the --

15 MR. PIENIAZEK: I did so many I can't --

16 MR. ZIMMERLY: -- or the additional
17 calculations that we did afterwards?

18 JUDGE ARNOLD: I -- well --

19 MR. ZIMMERLY: For the most part you want
20 to get the SAMDA cost and the SAMDA benefit to the
21 same time frame.

22 JUDGE ARNOLD: Uh-huh.

23 MR. ZIMMERLY: And that -- so that's what
24 all the calculations were doing.

25 MR. PIENIAZEK: I've seen --

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1 MR. ZIMMERLY: So I didn't project any
2 future power costs.

3 JUDGE ARNOLD: Okay. Having to do with
4 the -- on -- Mr. Johnson, on page 12 of his rebuttal,
5 discusses the ERCOT Long-Term Planning Task Force
6 report of May 2011. He cites this reference to
7 support a future locational, marginal price of \$87.75
8 per megawatt hour in 2030. Are you familiar with
9 that?

10 MR. PIENIAZEK: I'm familiar with his
11 rebuttal. And I did --

12 JUDGE ARNOLD: Okay. What -- does that
13 have any -- what meaning would that have with respect
14 to your SAMDA analysis?

15 MR. PIENIAZEK: None. No, because I --
16 the way that my calculations fell on top of each
17 other, I kept adding in what was raised by the
18 Intervenor, I accounted for situations that exceeded
19 this amount sometimes. So I would say it would have
20 no effect on this analysis.

21 JUDGE ARNOLD: Thank you. Moving on to
22 loss of grid that was also brought up by Intervenor,
23 are you qualified to answer questions concerning loss
24 of grid cause and effects and --

25 MR. PIENIAZEK: Yes, I feel like I -- I've

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1 never experienced one, because we've never had one
2 here in ERCOT. But I certainly know why they -- you
3 know, why we carry reserves and how the transmission
4 grid works and things like that.

5 JUDGE ARNOLD: Uh-huh. And -- you
6 answered my third question.

7 MR. PIENIAZEK: Oh.

8 JUDGE ARNOLD: Second question: How long
9 have you been in this industry?

10 MR. PIENIAZEK: Right at 28 years.

11 JUDGE ARNOLD: Yes. Going to the loss of
12 generation that occurred here February 2, you
13 previously said that that was due to extreme weather.
14 Correct?

15 MR. PIENIAZEK: That's correct.

16 JUDGE ARNOLD: Are the events that caused
17 the loss of generation in February similar to the
18 events being considered here in the SAMDA analysis,
19 that being a severe accident at one of the units
20 causing the controlled shut down of the other three?
21 Is there any similarity?

22 MR. PIENIAZEK: Yes. I would say that the
23 actual events of February are quite similar to what
24 we're trying to analyze here. Other than in February
25 we actually lost more generation. The sum was around

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1 7,000 megawatts, which exceeds the amount of all four
2 STP units. So it was a good case study of what we're
3 trying to analyze here. And everything went well in
4 February.

5 JUDGE ARNOLD: Do the events of -- in
6 February indicate that a loss of STP -- one of the STP
7 units followed by the shut down of the rest -- do
8 those -- did the February incident suggest that loss
9 of STP would result -- that it would likely result in
10 a loss of the grid?

11 MR. PIENIAZEK: No, I wouldn't say that.
12 I would say that the February event was a large loss
13 of generation that exceeded the value of the four STP
14 units. And it was during a very high load demand
15 period. It was extremely cold and we had very high
16 demand. And so I think it's -- it's almost a worse
17 situation.

18 Now, I'm not trying to understate the loss
19 of STP units. That would certainly be a significant
20 event. But that case study proves that it can be
21 handled quite well and that the effect on wholesale
22 prices is very short term in duration. The wholesale
23 market responded. We brought on units that were able
24 to meet the load. Now, there was some load shed.
25 ERCOT had to take some actions. But the grid remains

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1 stabile.

2 JUDGE ARNOLD: Uh-huh.

3 MR. PIENIAZEK: And we got out of it
4 within, you know, six, seven, eight hours.

5 JUDGE ARNOLD: Okay. In the February
6 event did the ERCOT responsive reserve capacity fall
7 below the minimum reserve capacity requirements?

8 MR. PIENIAZEK: Yes, it did fall below the
9 2,300 megawatt requirement. I don't recall for how
10 long. I can find out. But it was an hour or two, I
11 believe.

12 JUDGE ARNOLD: Okay. And in February how
13 long
14 did it take to get the grid restored with alternate
15 power supplies and all or --

16 MR. PIENIAZEK: My recollection is that --
17 and when you say restored what I would characterize
18 that is that all the load is now being served again.
19 And from about 5:30 a.m. on February 2 to
20 approximately 11:00 a.m. ERCOT did have some rolling
21 outages. The maximum was 4,000 megawatts. But I
22 believe by 11:00, approximately five or six hours
23 later, all load was being served again. And they were
24 able to restore all load. And it remained that way
25 for the next few days even though it remained very

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1 cold for the next few days.

2 JUDGE ARNOLD: Uh-huh. Do you know of any
3 grid outages in the U.S. that have been caused by a
4 shutdown -- unexpected shutdown of a nuclear power
5 plant?

6 MR. PIENIAZEK: I'm not aware of any. I
7 know the northeast blackout was trees on lines or
8 something that caused a cascading. But it wasn't
9 nuclear related. That's the one that sticks in my
10 head because it was 2003. But I -- no. I mean, the
11 short answer to your question is, no, I'm not aware of
12 any.

13 JUDGE ARNOLD: Okay. Does the
14 potential -- or should the potential for a grid outage
15 be considered in a SAMDA analysis?

16 MR. PIENIAZEK: I --

17 MR. ZIMMERLY: No.

18 MR. PIENIAZEK: Thank you. We did it
19 because it was raised and -- as a contention. But
20 I'll let Jeff answer that one.

21 JUDGE ARNOLD: Going to -- let's see.
22 Your rebuttal testimony on page 11, you have a table
23 that lists calculated replacement power costs for
24 several sets of assumptions?

25 MR. PIENIAZEK: Yes, Your Honor.

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1 JUDGE ARNOLD: If we could get that on
2 the --

3 JUDGE GIBSON: I believe it's on page 11
4 of the rebuttal.

5 JUDGE ARNOLD: Now, what vintage dollars
6 are those listed in? What year is this?

7 MR. PIENIAZEK: This is -- I mean, it
8 depends on which line of the table. Like, for
9 example, the first line was 1993 dollars. And then as
10 we ran through the different scenarios --

11 JUDGE ARNOLD: Oh.

12 MR. PIENIAZEK: -- we used different time
13 frames.

14 MR. ZIMMERLY: I believe the ones that are
15 unmarked are 2009. I can confirm that.

16 MR. PIENIAZEK: Yes.

17 JUDGE ARNOLD: And these are compared --
18 let's see -- what year is the cost versus benefit made
19 in? What dollars?

20 MR. PIENIAZEK: I --

21 JUDGE ARNOLD: These -- this is the
22 monetized -- the impacts. Right? And you have to
23 compare that with the cost of implementing the SAMDA?

24 MR. PIENIAZEK: Right. And we started at
25 the top, as it's indicated, using the replacement of

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1 the power cost in 1993 dollars. And the SAMDA was in
2 '91 dollars.

3 JUDGE ARNOLD: Okay.

4 MR. PIENIAZEK: And then we, you know,
5 added on to that. But each time we were comparing,
6 you know, replacement power costs and the like at the
7 same time frame as the SAMDA costs, so some of them --

8 JUDGE ARNOLD: The --

9 MR. PIENIAZEK: -- were 2009; some, I
10 think, were 2008.

11 JUDGE ARNOLD: So the --

12 MR. PIENIAZEK: This --

13 JUDGE ARNOLD: Oh, I'm sorry.

14 MR. PIENIAZEK: Go ahead.

15 JUDGE ARNOLD: You adjusted the SAMA
16 implementation cost for each one of them to be
17 appropriate?

18 MR. PIENIAZEK: That's correct. The SAMDA
19 cost?

20 JUDGE ARNOLD: Yes.

21 MR. PIENIAZEK: Yes.

22 MR. ZIMMERLY: I believe the SAMDA costs
23 were in 2009 dollars, unless we compared the Table 2
24 values, which were still in 1991 dollars.

25 MR. PIENIAZEK: It depends on the scenario.

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1 MR. ZIMMERLY: So what was in the ER had
2 1991 dollars, because that's what the SAMDA costs were
3 given to us from the TSD. And 1993 dollars is the
4 replacement power costs from NUREG/BR-0184. But since
5 then I believe we -- our SAMDA costs were escalated to
6 2009 dollars. And we may have done a 2008 in that
7 year, but most of the time the 2009 dollars, the
8 \$93,000 -- 982,500 is in 2009.

9 MR. FRANTZ: Mr. Zimmerly, you referred to
10 ER and TSD. Could you define those terms for the
11 record, please.

12 MR. ZIMMERLY: Yes. The TSD is the
13 Technical Support Document and the ER is environmental
14 report.

15 JUDGE GIBSON: Thank you, Mr. Frantz. I
16 was just about to ask the same question.

17 To the extent there are some witnesses
18 here that hear that -- you know, to the extent you can
19 not use acronyms, it would really be helpful for the
20 record. Thank you.

21 It's noon. We probably ought to break for
22 lunch. We'll recess until 1:30. If there's nothing
23 else, we'll see you at 1:30. Thank you.

24 (Whereupon, at 12:00 p.m., the hearing was
25 recessed, to reconvene at 1:30 p.m.)

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A F T E R N O O N S E S S I O N

1:30 p.m.

JUDGE GIBSON: Judge Arnold, before you resume your examination of the witnesses, I've got a couple of things I need to note.

It's my understanding that during the lunch break Mr. Eye and Mr. Welkie were, I think, able to put together the two exhibits. If we could -- could we call up Intervenor's revised Exhibit 001?

Now, this is the new exhibit that hopefully -- would you scroll down just a little bit -- contains the direct testimony of Mr. Mosenthal.

Is that correct, Mr. Eye?

MR. EYE: Yes, it is.

JUDGE GIBSON: And there's a page 18 to this?

MR. EYE: There's a page 13.

JUDGE GIBSON: There's a page 13. And the lines are stricken that you intended to strike and the lines are not stricken that you didn't intend to strike. Is that a fair statement?

MR. EYE: Yes, sir.

JUDGE GIBSON: Okay. Are there any other changes to this exhibit, Mr. Eye?

MR. EYE: I don't believe that -- I think

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1 that was the extent of the changes we needed to make.

2 JUDGE GIBSON: Okay.

3 Any objection to this exhibit in this form
4 now?

5 MR. SPENCER: No, Your Honor.

6 JUDGE GIBSON: Mr. Frantz?

7 MR. FRANTZ: No.

8 JUDGE GIBSON: Okay.

9 Then it will be admitted as Intervenor's
10 Exhibit R-20001.

11 (The document referred to
12 was marked for identification as
13 INTR20001 and received in
14 evidence.)

15 JUDGE GIBSON: Now, could you please call
16 up Intervenor's Exhibit R20045?

17 This is the rebuttal testimony of Mr.
18 Johnson. Is that correct, Mr. Eye?

19 MR. EYE: Yes, it is, sir.

20 JUDGE GIBSON: Okay. And if we could turn
21 to page 18. Does this have -- is this page 18 that
22 should have been in here?

23 MR. EYE: Yes, sir.

24 JUDGE GIBSON: Okay. And is the affidavit
25 to this attached?

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1 MR. EYE: Yes, sir.

2 JUDGE GIBSON: Okay.

3 MR. EYE: Although it's rotated --

4 JUDGE GIBSON: All right.

5 MR. EYE: -- it is.

6 JUDGE GIBSON: That's okay. Is this
7 everything that was changed to this exhibit?

8 MR. EYE: Yes, sir.

9 JUDGE GIBSON: Okay.

10 Mr. Spencer, any objection?

11 MR. SPENCER: No objections.

12 JUDGE GIBSON: Mr. Frantz?

13 MR. FRANTZ: No.

14 JUDGE GIBSON: Okay.

15 So this exhibit will be admitted as
16 Intervenor's Exhibit R000045.

17 (The document referred to
18 was marked for identification as
19 INTR20045 and received in
20 evidence.)

21 MR. EYE: Thank you, Your Honor.

22 JUDGE GIBSON: Now, by doing this are we
23 withdrawing -- are you withdrawing Intervenor's
24 Exhibit 1 and Intervenor's Exhibit 45 and 45R and 1R?

25 MR. EYE: Yes, sir.

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1 JUDGE GIBSON: Okay. So we all set there
2 on that? Okay.

3 Now, I just have one other question. Mr.
4 Welkie, do we need a revised exhibit list or are we
5 okay?

6 MR. WELKIE: No, we're good.

7 JUDGE GIBSON: We're good to go. Okay.

8 If you would just make a handwritten note
9 on your exhibit list that these things have been put
10 in in case you have any questions that should suffice.

11 Is there anything else before we resume
12 the examination of these witnesses? Oh, I think three
13 is one other thing. Apparently, we are not going to
14 be able to connect Mr. Mosenthal via Skype. And we'll
15 probably have to do this by telephone. So if anything
16 changes in the interim well, we'll let you know. But
17 that is apparently what we'll have to be doing
18 tomorrow.

19 MR. EYE: Thank you.

20 JUDGE GIBSON: Okay.

21 Thank you, Judge Arnold.

22 JUDGE ARNOLD: Could I have displayed the
23 direct testimony here? Exhibit STP-11. And page 64.
24 Now, this is Table 11 of your direct testimony. And
25 it's quite a extensive list of monetized impacts and

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1 SAMDA costs for a variety of assumptions. Is one of
2 these entries what you would consider to be the most
3 reasonable estimate of replacement costs?

4 MR. PIENIAZEK: Give me one second to --

5 JUDGE ARNOLD: Okay.

6 MR. ZIMMERLY: The first two lines -- the
7 first two entries in that table, the one being the
8 1993 dollars and then the ones escalated to 2009
9 dollars, either of those would be the most reasonable.

10 JUDGE ARNOLD: Okay. So the basis of
11 those is the new reg, BR-0184?

12 MR. ZIMMERLY: That is correct.

13 JUDGE ARNOLD: And that's a better basis
14 than either the 2008 or 2009 ERCOT prices?

15 MR. ZIMMERLY: Correct.

16 JUDGE ARNOLD: I'm surprised at that,
17 though. Could you tell me why the new reg is -- gives
18 you a more reasonable result?

19 MR. ZIMMERLY: The -- well, the most
20 reasonable result would be the new reg value. We've
21 included the rest of these values as a sensitivity
22 analysis to respond to the Intervenor's comments on
23 our analysis. And we believe the most reasonable
24 value would be the value we had originally given.

25 JUDGE ARNOLD: Okay. And does this most

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1 reasonable value include any market effects?

2 MR. ZIMMERLY: No.

3 JUDGE ARNOLD: Does it include effect of
4 price spikes?

5 MR. ZIMMERLY: No.

6 JUDGE ARNOLD: Is there any accounting for
7 grid outages?

8 MR. ZIMMERLY: No.

9 JUDGE ARNOLD: And is there any accounting
10 for consumer impacts?

11 MR. ZIMMERLY: No.

12 JUDGE ARNOLD: Okay. In his rebuttal
13 testimony Mr. Johnson on page 10 advanced his opinion
14 of replacement power costs. He calculated a cost of
15 \$68.39 per megawatt hour in 2010 based on NRG revenues
16 of \$3.057 billion and sales of 44.7 megawatt hours.
17 Are you familiar with that calculation?

18 MR. ZIMMERLY: Yes, I'm familiar with that
19 calculation.

20 JUDGE ARNOLD: Do you agree with it?

21 MR. ZIMMERLY: No, I do not.

22 JUDGE ARNOLD: And why not?

23 MR. ZIMMERLY: The -- he took this value
24 from -- make sure I'm on the right one. This is from
25 the 10k report. Correct? Where he took the --

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1 JUDGE ARNOLD: Yes. He took --

2 MR. ZIMMERLY: Yes.

3 JUDGE ARNOLD: -- some numbers out of a
4 table.

5 MR. ZIMMERLY: Yes. That -- let me find
6 the exhibit first. (Perusing document.)

7 JUDGE ARNOLD: Yes. Exhibit Intervenor's
8 50. I believe the NRG 2010 Annual Report.

9 MR. ZIMMERLY: Right. No. The numbers
10 that he used for revenues are not all related to power
11 production. There are revenues that NRG has in other
12 endeavors that add --

13 JUDGE ARNOLD: Just --

14 MR. ZIMMERLY: -- revenue --

15 JUDGE ARNOLD: One moment.

16 Andy, can you go down one page? There
17 should be a --

18 MR. ZIMMERLY: Oh.

19 JUDGE ARNOLD: This is the full one.

20 MR. ZIMMERLY: It's page 15, I believe.

21 JUDGE ARNOLD: I think so, yes. Okay.
22 That's the -- is that the table?

23 MR. ZIMMERLY: Yes. As -- an example of
24 what's wrong with this calculation is -- just one
25 example. We have a trading floor that buys and sells

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1 power all the time. And if I buy 100 megawatts today
2 for \$30 and then I sell it three days from now for \$5
3 more I made money on that transaction but I didn't
4 produce any megawatts at all. There was no megawatts
5 related to that. And he took our actual generation
6 and divided it by revenues that include much more than
7 just the revenues from power sales.

8 Another example is we are a large buyer
9 and seller of coal. And we sometimes have excess
10 inventory. And we have other entities that are short
11 sometimes. And we will divert trains and sell that
12 coal to other entities. And that's a revenue but it
13 has nothing to do with the generation that our power
14 plants produced.

15 JUDGE ARNOLD: Okay. From the information
16 available here could a person that is knowledgeable on
17 this table and the way you operate calculate a
18 reasonable average cost from these numbers? Or is
19 that --

20 MR. ZIMMERLY: Not a reasonable average
21 cost of wholesale power, no.

22 JUDGE ARNOLD: Mr. Johnson also makes some
23 arguments concerning cost of power in the year 2060.
24 Are forecasts of electrical power costs 50 years
25 away -- are they -- do you know of any credible

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1 calculations of that sort?

2 MR. ZIMMERLY: Predicting power costs two
3 years from now is difficult. Sixty years would be
4 impossible, in my opinion. I just -- there's
5 absolutely no way you could credibly do it, in my
6 opinion. There's just too much that can happen in
7 that amount of time frame.

8 JUDGE ARNOLD: Uh-huh. Would you agree
9 that in circumstances of low reserve margins pivotal
10 generators are able to charge higher prices compared
11 to during circumstances when reserve margins are high?

12 MR. ZIMMERLY: And just so I'm clear, the
13 reserve margins you're talking about -- well, there's
14 operating reserves and then there's planning reserves.
15 But you're talking about, I guess, operating -- when
16 we're real -- in real time and it's tight --

17 JUDGE ARNOLD: That's correct.

18 MR. ZIMMERLY: Good description. I think
19 theoretically when you are tight power the load is
20 high and you've had some maybe, you know, generators
21 that aren't producing as much as they could just about
22 anybody can be pivotal. And I think at those time
23 frames, yes, there can be -- there's definitely an
24 opportunity to set prices at a higher value.

25 I think -- in fact, I -- the market design

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1 we have here in ERCOT even allows certain generation
2 entities to bid high prices as long as they don't own
3 a certain amount of generation. But even those
4 generators can be pivotal if things are tight.

5 JUDGE ARNOLD: Uh-huh.

6 MR. ZIMMERLY: So I -- you know, that's
7 maybe too much detail. But, yes, if things are tight
8 prices can -- are going to be higher.

9 JUDGE ARNOLD: Are there any limits on
10 that regulatory or --

11 MR. PIENIAZEK: Yes. There is a -- an
12 offer cap. You cannot exceed \$3,000 per megawatt
13 hour. And I might add just from my personal
14 experience there are certain generators that have a
15 certain size in ERCOT. NRG is one of them. Luminant.
16 Calpine, City of San Antonio. They're a fairly decent
17 size. And so oftentimes they may be more pivotal than
18 some of the smaller ones.

19 And just my personal experience -- we have
20 an independent market monitor here in ERCOT that I
21 believe is one of the smartest and most diligent
22 market monitors in any region. And there is no way,
23 in my opinion, that any of those entities could get
24 away with anything remotely similar to, you know, a
25 market power type situation. He watches those very

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1 closely. He has my personal phone number. I see him
2 all the time and so do the other generation entities.

3 JUDGE ARNOLD: Thank you.

4 Do you personally have experience with the
5 environmental reviews, other than the SAMDA analysis?

6 MR. PIENIAZEK: No, I don't -- I do not
7 have any experience with environmental reviews.

8 JUDGE ARNOLD: Uh-huh.

9 MR. PIENIAZEK: Jeff does.

10 MR. ZIMMERLY: I do.

11 JUDGE ARNOLD: Well, what has been your
12 involvement in the past? How extensive is your
13 knowledge?

14 MR. ZIMMERLY: With Tetra Tech I've
15 performed many ERs and EISs. But for the DOE, the NRC
16 performed five or six COLAs and worked on 20 or 30
17 license renewal ERs.

18 JUDGE ARNOLD: Okay. And these reviews
19 have been performed in order to satisfy the
20 requirements of the National Environmental Policy Act.
21 Correct?

22 MR. ZIMMERLY: Right.

23 JUDGE ARNOLD: So you're familiar with
24 NEPA?

25 MR. ZIMMERLY: Yes.

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1 JUDGE ARNOLD: In general, the National
2 Environmental Policy Act requires a reasonable
3 evaluation of the outcome of a government action.
4 Does this agree with your understanding of NEPA?

5 MR. ZIMMERLY: Yes.

6 JUDGE ARNOLD: The SAMDA analysis is part
7 of the Environmental Impact Statement. Can a
8 reasonable SAMDA evaluation be performed without
9 considering potential market manipulation that would
10 be extreme enough to affect the outcome? Does NEPA
11 require you to consider such market action?

12 MR. ZIMMERLY: I do not believe that NEPA
13 requires that.

14 JUDGE ARNOLD: So consideration of market
15 manipulation is not reasonable within the context of
16 NEPA?

17 MR. ZIMMERLY: I would agree with that.
18 Yes.

19 JUDGE ARNOLD: Okay. I want to discuss
20 the cost of implementing SAMDAs. Who would be most --
21 okay. Great. Okay. You've just detailed your
22 experience in that area. In your direct testimony on
23 page 23 you introduced the concept that in general the
24 SAMDA alternatives do not avert all core damage.

25 MR. ZIMMERLY: Correct.

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1 JUDGE ARNOLD: From this you conclude that
2 the original averted accident cost provided in the
3 environmental report are significantly conservative.
4 Correct?

5 MR. ZIMMERLY: Correct.

6 JUDGE ARNOLD: By conservative it means
7 that they are higher than the actual values would be,
8 the cost --

9 MR. ZIMMERLY: Yes.

10 JUDGE ARNOLD: The averted costs were
11 higher than they would actually be?

12 MR. ZIMMERLY: That's correct.

13 JUDGE ARNOLD: In the current cost benefit
14 analysis provided in your testimony you accounted for
15 this difference for some of the SAMDAs by increasing
16 the SAMDA cost rather than by reducing the SAMDA
17 benefit. Is that correct?

18 MR. ZIMMERLY: That's correct.

19 JUDGE ARNOLD: Why is it appropriate to
20 increase the SAMDA cost to account for a reduced
21 benefit?

22 MR. ZIMMERLY: In this case, for this
23 demonstration for this hearing we felt that increasing
24 the SAMDA cost would be a easier understandable
25 calculation than to decrease the SAMDA benefit.

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1 JUDGE ARNOLD: Okay. Now, this accounting
2 for the fact that all of the risk is not averted, does
3 that account for the lowest cost SAMDA going from a
4 cost of \$158,000 to \$982,500?

5 MR. ZIMMERLY: No, it does not. The
6 reason why the SAMDA went from \$100,000 to \$982,000 is
7 because we applied the risk to that specific SAMDA to
8 that SAMDA benefit. Originally, we applied the risk
9 of the entire ABWR, the Advanced Billing Water Reactor
10 CDF to the entire suite of SAMDAs. And in this case
11 we're actually breaking out the individual CDFs that
12 are associated with the SAMDA themselves.

13 JUDGE GIBSON: You used an acronym there,
14 CDF.

15 MR. ZIMMERLY: CDF.

16 JUDGE GIBSON: Would you please make that
17 clear what you're talking about?

18 MR. ZIMMERLY: That is the Core Damage
19 Frequency.

20 MR. PIENIAZEK: Your Honor, may I have
21 just a second to chat with him for a second?

22 JUDGE ARNOLD: Okay.

23 MR. ZIMMERLY: One correction. The SAMDA
24 value didn't go from 100,000 to 982,500. The -- that
25 SAMDA changed to another value. The \$750,000 SAMDA

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1 went to 982,500.

2 JUDGE ARNOLD: Uh-huh.

3 MR. ZIMMERLY: But that then became the
4 lowest cost beneficial SAMDA --

5 JUDGE ARNOLD: Uh-huh.

6 MR. ZIMMERLY: -- based on risk.

7 JUDGE ARNOLD: Okay. In his rebuttal
8 testimony Mr. Johnson challenges adjusting the cost --
9 or the cost of SAMDAs. And he states, "The staff and
10 applicant have not provided adequate support for their
11 assumption that measures which mitigate rather than
12 prevent core damage have no effect on co-located units
13 or off-site replacement power." I want to look into
14 that statement a bit.

15 The cost of a severe accident is reduced
16 when the -- by -- or in your case looking at the
17 reduction in Core Damage Frequency when the SAMDA is
18 implemented. Correct?

19 JUDGE GIBSON: Will you be sure and give
20 a verbal answer, rather than a nod of your head,
21 because the court reporter can't pick that up.

22 MR. ZIMMERLY: Oh, yes. I wasn't
23 answering it. I was --

24 JUDGE GIBSON: Thank you.

25 MR. ZIMMERLY: Could you repeat the

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1 question?

2 JUDGE ARNOLD: The cost of a severe
3 accident is reduced when the -- when implementation of
4 the SAMDA reduces the Core Damage Frequency. Right?

5 MR. ZIMMERLY: The cost benefit of the
6 SAMDA -- the overall -- well, I do not believe that
7 those two follow each other, because the cost benefit
8 of a SAMDA being reduced would not have any relation
9 to the whole -- it's the whole plant's cost that would
10 drop if you implemented a SAMDA, not the individual
11 SAMDA cost. So I'm not sure that --

12 JUDGE ARNOLD: I'm not sure I'm getting
13 my --

14 MR. ZIMMERLY: That was the same --

15 MR. PIENIAZEK: -- question across --

16 MR. ZIMMERLY: Right.

17 JUDGE ARNOLD: -- real well. So let me
18 continue. Let's see. On page 26 of your direct
19 testimony, let's see, there's a Table 3 that lists all
20 the SAMDAs having implementation costs of \$750,000 or
21 less in 1991 dollars. Correct?

22 MR. ZIMMERLY: That is correct.

23 JUDGE ARNOLD: Great. And I believe what
24 you did was you demonstrated the low cost SAMDAs
25 adjusted for the -- their respective risk reduction

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1 would yield an effective cost greater than 750,000.

2 MR. ZIMMERLY: That is correct.

3 JUDGE ARNOLD: And then you used 750,000
4 as the lowest -- lower bound on implementing any
5 SAMDA?

6 MR. ZIMMERLY: That is correct.

7 MR. PIENIAZEK: Oh, Your Honor, I
8 apologize for interrupting. But -- and that 750,000
9 conservatively assumes a 100 percent reduction in Core
10 Damage Frequency.

11 MR. ZIMMERLY: Of the entire plant.

12 JUDGE ARNOLD: Okay. Is reducing the Core
13 Damage Frequency the only way in which a SAMDA could
14 affect the probability-weighted cost of a severe
15 accident? Would really -- would reducing the vision
16 product release but maintaining the same Core Damage
17 Frequency change the cost of the severe accident?

18 MR. ZIMMERLY: Yes it would.

19 JUDGE ARNOLD: So basically you have
20 assumed that a reduction due to mitigative properties
21 is negligible -- or is small?

22 MR. ZIMMERLY: I believe that's what the
23 NRC did. What we did is if there was any CDF we had
24 assumed that that entire CDF was removed. So if you
25 implemented a SAMDA with a CDF -- a low CDF you would

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1 not have that accident happening at all. When, in
2 fact, most of these SAMDAs only mitigate the effect.
3 In other words, it would be a reduced cost, not
4 eliminating the cost altogether.

5 JUDGE ARNOLD: Uh-huh.

6 MR. ZIMMERLY: So we've zeroed out the
7 cost.

8 JUDGE ARNOLD: Okay. I want to go through
9 the SAMDAs in this table.

10 MR. ZIMMERLY: Okay.

11 JUDGE ARNOLD: The first one, SAMDA 1-A,
12 Severe Accident Emergency Procedure Guidelines and
13 Accident Mitigation Guidelines. Now, in this table
14 you say there is no reduction in the Core Damage
15 Frequency. Correct?

16 MR. ZIMMERLY: That is correct.

17 JUDGE ARNOLD: Looking at the Technical
18 Support Document, Section A.4.1.1 makes the statement,
19 "Currently, the EPGs are under revision and accident
20 management guidelines are being developed for severe
21 accidents. These should provide a significant
22 improvement which reduces the likelihood of a severe
23 accident." To me, that would suggest that the SAMDA
24 actually has been implemented. Is my impression
25 correct?

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1 MR. ZIMMERLY: Could you give me a moment
2 to find that?

3 MR. PIENIAZEK: Can you repeat the
4 reference?

5 JUDGE ARNOLD: Excuse me?

6 MR. PIENIAZEK: The exhibit that you
7 mentioned -- or the TSD I know. The page number?

8 JUDGE ARNOLD: It's from the Technical
9 Support Document.

10 MR. ZIMMERLY: What page was that? Do you
11 know?

12 JUDGE GIBSON: Do you have, Andy, what the
13 exhibit number for the Technical Support Document is?

14 JUDGE ARNOLD: 7.B -- 7.A or 7.B.

15 MR. SPENCER: I believe it's NRC 9.B in
16 this case.

17 JUDGE ARNOLD: 9.B.

18 MR. SPENCER: NRC 9.5.

19 MR. FRANTZ: Yes. And I believe that the
20 discussion is Severe Accident Guidelines -- Management
21 Guidelines is on page 36 and 37.

22 JUDGE GIBSON: Does that look like it? Is
23 this the page you're looking for?

24 MR. ZIMMERLY: Yes.

25 JUDGE GIBSON: Okay.

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1 JUDGE GIBSON: Just a minute. I think the
2 record should reflect the witness is looking at
3 Exhibit Number --

4 What is it, Mr. Frantz?

5 MR. FRANTZ: NRC 9.5.

6 JUDGE GIBSON: At pages 37 and 38?

7 MR. FRANTZ: 36 and 37.

8 JUDGE GIBSON: 36 and 37.

9 MR. ZIMMERLY: Okay. Could you repeat the
10 question again?

11 JUDGE ARNOLD: Well, the passage in the
12 Technical Support Document sounds to me like they were
13 in the process of implementing that SAMDA when the
14 original SAMA analysis was being performed by the
15 vendor. So I get the impression that this SAMA has
16 been implemented. Not by you but by GE.

17 MR. ZIMMERLY: I believe that there are
18 EPGs, the -- sorry -- the Emergency Procedure
19 Guidelines and the Accident Management Guidelines that
20 go along with the ABWR.

21 JUDGE ARNOLD: Okay.

22 MR. ZIMMERLY: There would be site-
23 specific additional documents, I believe, that would
24 go along with the site. But as a plant, yes.

25 JUDGE GIBSON: Just for clarification's

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1 sake we're talking about something that would be
2 resolved as part of this design as opposed to
3 something that would be site-specific. Are the site-
4 specific costs, if you will, that are -- that you're
5 referring to -- they're not -- I assume they're
6 nothing like the order of magnitude that they're
7 talking about here. Is that right?

8 You -- the -- what you're talking about
9 when you're talking about the cost of this particular
10 item that's going to be resolved as part of the
11 design, it may be reflected in this table. But
12 something that's site-specific, I take it would be
13 something -- it would be a -- comparatively, a
14 relatively minimal cost. Is that a fair statement?

15 MR. ZIMMERLY: Yes, I believe so.

16 JUDGE GIBSON: Okay. I just wanted to be
17 sure that was clear. So the site-specific piece is
18 not reflected in this table but it's something that's
19 relatively small. If this is resolved by the
20 design -- that's the reason it's on here. But it
21 might have been resolved by the design.

22 MR. ZIMMERLY: Correct.

23 JUDGE GIBSON: Okay.

24 Sorry.

25 Thank you.

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1 JUDGE ARNOLD: Okay. SAMDA 1-B, Computer-
2 Aided Instrumentation. The cost of this in 1991 was
3 approximately 600,000. Correct?

4 MR. ZIMMERLY: Correct.

5 JUDGE ARNOLD: And today, depending on
6 which index you use to bring the cost current that
7 would be somewhere between 786,000 if you use
8 Intervenor's number, to 1,350,000 if you use the NRC
9 staff's number. Which kind of brackets the \$982,000
10 that you're using as the lowest cost SAMDA in today's
11 dollars. So there's very little implementation cost
12 difference between the two. Is that correct?

13 MR. ZIMMERLY: That would seem correct.

14 JUDGE ARNOLD: The Technical Support
15 Document estimates that this SAMDA would reduce the
16 Core Damage Frequency by 3 percent. Correct?

17 MR. ZIMMERLY: Correct.

18 JUDGE ARNOLD: Is it credible that any
19 amount of mitigation would make -- due to this SAMDA
20 would make the cost significantly less than the
21 \$750,000 you used as the minimum-cost SAMDA?

22 MR. ZIMMERLY: Could you repeat the
23 question?

24 JUDGE ARNOLD: Okay. In correcting the
25 cost of this you accounted for a 3 percent reduction

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1 in Core Damage Frequency. But you did not account for
2 any potential mitigation of any other accidents. Due
3 to the -- well, is there any way that a credible
4 amount of mitigation could -- well, mitigation will
5 always increase the cost. Correct? Or --

6 MR. ZIMMERLY: Mitigation should decrease
7 the cost. But in this case implementing a SAMDA to
8 get that mitigation would increase the cost.

9 JUDGE ARNOLD: So the assumption that --
10 of neglecting the mitigative effect is reasonable for
11 this SAMDA?

12 MR. ZIMMERLY: Yes.

13 JUDGE ARNOLD: SAMDA --

14 MR. FRANTZ: Dr. Arnold, I think the
15 record may be getting confused here. There has been
16 no discounting of mitigation costs. If you look at
17 our various tables in the direct testimony they do
18 account in every case for the mitigation costs at 100
19 percent.

20 JUDGE ARNOLD: Right. I agree. And I
21 certainly will not -- well --

22 Could you repeat that?

23 MR. FRANTZ: Yes. Just to give you a few
24 examples. If you look at Table 10 on page 51 of the
25 direct testimony.

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1 JUDGE GIBSON: Just a minute. We have
2 Table 10 here.

3 MR. FRANTZ: Okay. The very first row,
4 non-replacement power costs. Those are 100 percent in
5 every case for every SAMDA. So we did not discount --
6 the witnesses did not discount any of that. And
7 that's also true of Table 8 and every other table. As
8 you'll see as you go through, in every case we account
9 fully for the -- every mitigation cost.

10 JUDGE ARNOLD: But I believe this is the
11 averted mitigation costs. But in Table 11, in
12 evaluating the cost of implementing the SAMDA there
13 has been an adjustment due to the fact that you -- due
14 to the fact that the SAMDAs do not avert all costs.

15 MR. FRANTZ: I think -- perhaps the
16 witness is better to address this. But Table 11
17 doesn't deal with SAMDA costs. It deals with SAMDA
18 benefits.

19 JUDGE ARNOLD: Oops. Well, just cited the
20 wrong table then.

21 JUDGE GIBSON: Was that in the rebuttal
22 testimony?

23 MR. FRANTZ: That was in the direct
24 testimony on page 64.

25 JUDGE ARNOLD: Thank you.

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1 MR. PIENIAZEK: Oh, were you talking about
2 this?

3 JUDGE ARNOLD: Oh, Table 3 on page 26 of
4 your direct testimony.

5 JUDGE GIBSON: It's right here.

6 JUDGE ARNOLD: Okay. The second column is
7 the cost in 1991 dollars. The right-hand column is
8 Risk-Adjusted SAMDA Implementation Costs.

9 MR. FRANTZ: Uh-huh.

10 JUDGE ARNOLD: And that is used to find
11 that the lowest cost is the 750,000.

12 MR. FRANTZ: Uh-huh.

13 JUDGE ARNOLD: It's just that that
14 adjustment is based upon the Core Damage Frequency and
15 does not -- it's not clear to me that that adjustment
16 would also account for any mitigative effect that
17 didn't --

18 MR. FRANTZ: Yes.

19 JUDGE ARNOLD: -- affect the Core Damage
20 Frequency.

21 MR. FRANTZ: And that was my point. We
22 accounted for the mitigation costs in the other
23 tables, in the Table 10, Table 8, for example.

24 MR. PIENIAZEK: It's entitled, Non-
25 Replacement Power Costs. Is the -- what Mr. Frantz is

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1 referring to.

2 MR. ZIMMERLY: I think the question you're
3 asking though, if I may -- the CDF -- the reduction in
4 the CDF would lead to a greater reduction -- or would
5 lead to greater benefits than just looking at the
6 mitigative. So in this case if we were to include the
7 mitigative it would only increase the fifth -- or the
8 last column on this table, instead of just looking at
9 the CDF. There would be less of a benefit if you just
10 looked at the mitigative costs as opposed to
11 eliminating the entire accident. There would be less
12 benefit.

13 JUDGE ARNOLD: Okay.

14 MR. ZIMMERLY: And that would -- made the
15 cost go up. So our analysis is conservative because
16 we assume that the entire CDF is removed. There is no
17 accident if you implement this SAMDA.

18 JUDGE ARNOLD: So for instance, SAMDA 1-C
19 has a cost of \$299,000. If you account for 9 percent
20 reduction in Core Damage Frequency the cost goes up to
21 3 million. If you have additional mitigation that
22 would just cause the \$3 million to go up higher?

23 MR. ZIMMERLY: No. If you were only to
24 account for say, it mitigates 5 percent. Then instead
25 of dividing by 9 you'd be dividing by 5, which would

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1 increase the number, because we're not going to
2 account for the accident not happening and account for
3 the fact that the accident costs less money.

4 JUDGE ARNOLD: Well --

5 MR. ZIMMERLY: We're assuming this -- the
6 accident doesn't happen at all. So that is --

7 JUDGE ARNOLD: You're --

8 MR. ZIMMERLY: -- obviously the greatest
9 saving.

10 JUDGE ARNOLD: You're saying that one
11 specific or a group of accident sequences within the
12 PRA event tree doesn't occur. What happens if there's
13 mitigation on a different portion of the event tree
14 that does not reduce the Core Damage Frequency of that
15 sequence but does mitigate the accident?

16 MR. ZIMMERLY: We applied that using the
17 CDF percent reduction. So if it affected two
18 different sequences in the PRA, one by reducing the
19 CDF and the other by eliminating some of the CDF --

20 JUDGE ARNOLD: Uh-huh.

21 MR. ZIMMERLY: -- then that's already
22 accounted for in this reduction --

23 JUDGE ARNOLD: Uh-huh.

24 MR. ZIMMERLY: -- percent reduction CDF.

25 JUDGE ARNOLD: So let me see if I

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1 understand that. This Core Damage Frequency reduction
2 on -- of 9 percent may actually be a Core Damage
3 Frequency of 5 percent. But on another 4 percent you
4 have mitigative effects and you've said, Well --

5 MR. ZIMMERLY: Well, it only affects the
6 CDF. If there were additional -- I guess -- if we
7 were to account for mitigation instead of the CDF we
8 would add the CDF back into the value or in this case
9 there would be zero percent reduction CDF, which
10 obviously makes the value go up.

11 Well, if there were somewhere between zero
12 and the CDF percent reduction in risk that value would
13 make the value in the fifth column -- or the last
14 column be higher than the value we have presented. So
15 the reduction -- the mitigative actions would not be
16 as much of a benefit as eliminating the accident.

17 JUDGE ARNOLD: I still get the impression
18 that you're speaking of mitigation along the same
19 accident sequence that leads to the Core Damage
20 Frequency reduction. I mean, I would agree with what
21 you've said under those circumstances. But say you
22 implemented a SAMDA that eliminates Core Damage
23 Frequencies having to do with a loss of coolant
24 accident. So there's a Core Damage Frequency
25 reduction there. It has no effect on a loss of off-

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1 site power. You get the same Core Damage Frequency
2 for a loss of off-site power but it mitigates the
3 effects. Have you accounted for the Core Damage
4 Frequency reduction only in that case?

5 MR. ZIMMERLY: Yes.

6 JUDGE ARNOLD: Okay.

7 MR. FRANTZ: And again, Judge, just so the
8 record's clear. There are two aspects of risk. One
9 is prevention. One is mitigation. They only took
10 into account risk reduction with respect to the
11 preventive aspects. For the mitigative aspects they
12 assumed 100 percent mitigation for every SAMDA.

13 MR. EYE: Your Honor, I'm going to object
14 and move to strike the comments of counsel because
15 he's actually testifying now. And I think that's
16 improper under our proceedings.

17 JUDGE GIBSON: Thank you, Mr. Eye.

18 Mr. Frantz, we appreciate you being a good
19 advocate for your client. But sometimes it is
20 important to let your witnesses speak.

21 MR. FRANTZ: Yes, Your Honor.

22 JUDGE GIBSON: If we could move along,
23 please?

24 JUDGE ARNOLD: We're going to skip ahead
25 in my questioning here. I'll have to think on that

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1 for awhile. SAMDA Local Cost Adjustment. On page 21
2 of your direct testimony you address the claim of
3 expert witness Mr. Johnson, that the cost of
4 implementing a SAMDA -- his claim was the cost of
5 implementing a SAMDA should be adjusted downward by
6 the regional cost adjustment of 91 percent. Is that
7 correct? You addressed it there?

8 MR. ZIMMERLY: We addressed the question.
9 That is correct.

10 JUDGE ARNOLD: Okay. The Technical
11 Support Document does indicate that the costs of
12 SAMDAs were estimated to be conservatively biased on
13 the low side. But is there any indication that the
14 conservatism in the estimated costs are sufficient to
15 cover a regional cost adjustment of 91 percent?

16 MR. ZIMMERLY: Multiplying by 91 percent?
17 That --

18 JUDGE ARNOLD: Does the Technical Support
19 Document give you any quantification of how
20 conservative?

21 MR. ZIMMERLY: Subject to re-review of the
22 Technical Support Document I do not believe it gives
23 any quantification to the conservatisms that it
24 applies.

25 JUDGE ARNOLD: Okay. Now, we're talking

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1 about a 9 percent adjustment. The Technical Support
2 Document at 8.1.1 states, "Improvements have been
3 reviewed against conservative estimates of risk
4 reduction based on the PRA and minimum order of
5 magnitude costs." Can you describe what would be an
6 order of magnitude cost in this instance? What does
7 that mean?

8 MR. ZIMMERLY: Could you repeat the
9 reference to where that was?

10 JUDGE ARNOLD: It was in 8.1.1, the
11 background.

12 JUDGE GIBSON: If anybody has a more
13 specific page, please let us know.

14 JUDGE ARNOLD: It's a very short section,
15 I think. I believe it's page 31 of NRC 9-B.

16 JUDGE GIBSON: Exhibit 9-B page 31.

17 Mr. Welkie, can you put that up for us?

18 In the background section. Right?

19 JUDGE ARNOLD: That's what I said.

20 JUDGE GIBSON: Okay.

21 JUDGE ARNOLD: Let's see if I'm right.
22 The last paragraph.

23 MR. ZIMMERLY: Could you repeat the
24 question, please?

25 JUDGE ARNOLD: The question is in this

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1 context what does a minimum order of magnitude cost
2 mean. How accurate were they trying to be?

3 MR. ZIMMERLY: I believe if we refer to
4 Section A.1.3.2 it gives a little bit better
5 definition of what it means.

6 JUDGE GIBSON: Could you tell us what page
7 A.1.3.2 is on?

8 MR. ZIMMERLY: Page 32.

9 JUDGE GIBSON: Thirty-two? Thank you.

10 MR. ZIMMERLY: The first paragraph there
11 and really all the way through at least the third
12 paragraph.

13 JUDGE ARNOLD: In your opinion were these
14 costs intended to be accurate to within 9 percent?

15 MR. ZIMMERLY: Yes. Conservatively.

16 JUDGE ARNOLD: In the Technical Support
17 Action you -- Section A.5 -- let me see --

18 MR. ZIMMERLY: Can I go back to that last
19 question and --

20 JUDGE ARNOLD: Okay.

21 MR. ZIMMERLY: Do I believe that these
22 costs are accurate to the actual cost of
23 implementation to 9 percent? The answer to that is
24 no. The -- other than what's presented here, I don't
25 really know what goes into these costs. And for what

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1 they were trying to produce I believe it's accurate
2 within an order of magnitude of what they were trying
3 to produce. And that's really the answer I answered.
4 But I don't believe that was the answer that you
5 gave -- the question you gave me.

6 JUDGE ARNOLD: Okay. In A.5 first
7 paragraph, the last couple of lines, This section
8 summarizes the cost basis for each of the
9 modifications evaluated in Section A.4. This basis is
10 generally the cost estimate less the credit for on-
11 site averted costs. That last sentence there, the
12 basis is the cost estimate less the credit for on-site
13 averted costs. Could you explain what that means?

14 MR. ZIMMERLY: Could you give me a moment
15 to read the --

16 JUDGE ARNOLD: Yes.

17 MR. ZIMMERLY: -- section? (Perusing
18 document.) What that statement is saying is that this
19 section, A.5, will be comparing the cost benefits to
20 the costs of the SAMDA

21 JUDGE ARNOLD: It sounds to me as though
22 the cost of implementing the SAMDA has been reduced in
23 this comparison by the on-site averted costs.

24 MR. ZIMMERLY: I believe the third
25 sentence to the end says, "This section summarizes the

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1 cost basis for each of the modifications evaluated in
2 Section A.4." So the cost basis. This basis is
3 generally the cost estimate less the credit for on-
4 site averted costs. So this section is discussing the
5 cost basis. Not the previous sections.

6 JUDGE ARNOLD: Right. But the -- it
7 sounds to me as though the cost basis they used in
8 their cost versus benefit analysis, the cost basis has
9 been reduced by an amount that should be on the other
10 side of the comparison. A fair thing. You subtracted
11 the same amount from both sides. So these costs are
12 not the actual implementation costs, they are the
13 implementation costs less the on-site averted costs.

14 MR. ZIMMERLY: Okay.

15 JUDGE ARNOLD: Okay. In Answer 35 of your
16 direct testimony concerning SAMDA calculation you
17 state, "The replacement power costs calculated above
18 were added to the other monetized impacts, e.g., on-
19 site exposure cost and cleanup cost to provide the
20 total monetized impacts for each unit." Now, these
21 on-site exposure costs and clean up costs -- would
22 these be the same things that were credit for on-site
23 averted costs cited in the Technical Support Document?

24 MR. ZIMMERLY: Could you give me a moment
25 to review that?

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1 JUDGE ARNOLD: Yes, I can.

2 MR. ZIMMERLY: I would have to look at
3 what the definition of the on-site averted costs that
4 GE is using here and compare that to what the
5 definition that the new reg, the R-0184 gives us on
6 site-averted costs. But it would appear that, yes, it
7 is there.

8 JUDGE ARNOLD: Okay.

9 MR. ZIMMERLY: So --

10 JUDGE ARNOLD: Let's just assume for a
11 moment that they both refer to the same cost. That
12 means in your cost benefit analysis you've taken the
13 cost of the SAMDA and reduced it by the on-site
14 averted costs. Yet you've left them in this side. So
15 that would, in fact, be a treatment that would favor
16 finding a cost-effective SAMDA. Correct?

17 MR. ZIMMERLY: That's correct.

18 JUDGE ARNOLD: So you would consider that
19 to be conservative?

20 MR. ZIMMERLY: That's correct.

21 JUDGE ARNOLD: So it's -- would not be an
22 error that would, if corrected, cause you to find a
23 new cost. Okay. Thank you.

24 MR. ZIMMERLY: That's correct.

25 JUDGE ARNOLD: I'm done for now.

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1 JUDGE GIBSON: Judge Charbeneau?

2 JUDGE CHARBENEAU: I have one other
3 question I wanted to ask if I can find it here. I
4 understand that you did not use the GDP implicit price
5 deflator that the staff used originally. I'm just
6 curious. If you think it's more accurate why didn't
7 you use it?

8 MR. ZIMMERLY: It was more conservative to
9 use the price inflator that the Intervenors had
10 proposed.

11 JUDGE CHARBENEAU: Okay. Thank you.

12 JUDGE GIBSON: I think what we'll do at
13 this point is take a 15-minute break. You all can
14 compose any additional questions that you need.
15 Highlight your proposed cross if there's something
16 that Judge Arnold didn't cover. And we'll be -- come
17 back in 15 minutes and get those questions answered.
18 And then we'll go on to the next witness. We stand
19 recessed for 15 minutes. Thank you.

20 (Whereupon, a short recess was taken.)

21 JUDGE GIBSON: Back on the record.

22 JUDGE ARNOLD: Okay. We have one question
23 left. Do the witnesses agree that the primary cost
24 justification to build and operate STP Units 3 and 4
25 is tied to the rising cost of natural gas?

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1 MR. PIENIAZEK: I'll take that one. That
2 is certainly one of the critical components in the
3 decision. But it's just one of many decisions on
4 whether or not STP 3 and 4 should be built. Natural
5 gas price is one. Just taking the last few weeks into
6 account and the near shortages we've had for power
7 this summer, just a pure need comes into that, as
8 well. There are a myriad of things that go into
9 making that decision. And certainly, natural gas is
10 one of them. But it's not the only thing.

11 JUDGE ARNOLD: Thank you.

12 JUDGE GIBSON: Okay. I believe that
13 concludes our examination. And the two of you are
14 excused. I do want to remind you that you remain
15 sworn and you are subject to being recalled by the
16 Board. But we thank you for your time and appreciate
17 your testimony. Thank you.

18 While they are leaving I have a couple of
19 housekeeping matters I'd like to bring up with you
20 all.

21 First of all, Mr. Eye, have you confirmed
22 with Mr. Mosenthal that he does have copies of all the
23 exhibits?

24 MR. EYE: I spoke to him. And he is in
25 the process of checking. And he believes he does.

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1 But he's --

2 JUDGE GIBSON: Okay.

3 MR. EYE: -- going to go back through and
4 make certain that he does.

5 JUDGE GIBSON: Okay. Well, assuming for
6 the sake of argument that he has them, I doubt
7 seriously that he has what has been filed this week.
8 And so I'm curious, especially since some of these
9 things involve the replacement power costs contention,
10 if it wouldn't be appropriate to make sure that he
11 gets emailed a copy -- or transmitted in some way --
12 an electronic copy of the exhibits that were filed
13 yesterday and today.

14 MR. EYE: Yes. I believe those got sent
15 but I will double check and make sure.

16 JUDGE GIBSON: Okay. Okay.

17 The other thing I wanted to bring up, Mr.
18 Spender, yesterday you raised a question about the --
19 updating the hearing file. And I just wanted to make
20 sure that there wasn't any misunderstanding. When the
21 record closed -- the record won't close tomorrow.

22 But when the hearing closes tomorrow your
23 obligation to update the hearing file will be
24 terminated as to the two contentions that are the
25 subject of this proceeding. But obviously, if there

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1 are any other obligations that are not encompassed
2 within these two proceedings, then obviously you'll
3 need to continue to update the hearing file. I'm not
4 telling you that you -- there is any such obligation,
5 but I just wanted to be sure that the only thing
6 that's going to change that is -- has to do with those
7 two contentions.

8 MR. SPENCER: Your Honor, I'd like to
9 speak to our obligations just to clarify what they
10 are. The hearing file was triggered by the admission
11 of contentions. The mandatory disclosures under 2336
12 are also triggered. However, our obligations are not
13 tied to any particular contention. They encompass the
14 application, all correspondence between the Applicant
15 and the NRC, documents supporting the staff's review.

16 I would say 99 percent or more of the
17 documents that we -- that are in the hearing file have
18 nothing to do with any of the admitted contentions.

19 JUDGE GIBSON: Uh-huh.

20 MR. SPENCER: So it may just be with
21 the -- we go on doing what we've been doing. Is
22 that --

23 JUDGE GIBSON: But let's say that you have
24 a hearing terminated, you know, that the hearing
25 closes --

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1 MR. SPENCER: Right.

2 JUDGE GIBSON: -- and then we have some
3 pending contentions. But they may or may not be
4 admitted or denied.

5 MR. SPENCER: Right.

6 JUDGE GIBSON: At that point, if there
7 no -- if there's nothing live from the proceeding then
8 I would assume our obligation's conclude.

9 MR. SPENCER: Yes. Well, I appreciate
10 that it's not a completely unambiguous decision. A
11 ruling on our part. I can only tell you that I
12 realize there's these -- a pending contention that we
13 had oral argument on yesterday. There is another one
14 that's been filed with respect to Fukushima. But I
15 guess it was just filed last week.

16 And so there -- and I assume, you know, potentially
17 there's going to be other safety matters because
18 the -- I guess the safety issues -- there are no
19 safety issues. But I guess there could be once those
20 safety documents come out.

21 And I'm not suggesting to you that you
22 have an obligation to continue to update the file. I
23 only want to make clear to you that the extent of our
24 ability to provide you with dispensation from updating
25 the hearing file is limited to these two contentions.

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1 If you have no more obligation other than that then
2 obviously, you don't have to update the hearing file.

3 But, I mean, I can't provide you with an
4 advisory opinion about what your obligations are. But
5 I can tell you that in our -- in -- with -- you know,
6 with respect to updating the hearing file, if you have
7 no other obligations -- you determine that on your
8 own -- if you have no other obligations other than as
9 they relate to these two contentions, then you're
10 completely safe in not updating the hearing file. If
11 you conclude that you don't then you're going to have
12 to continue to do it. Okay?

13 MR. SPENCER: Okay. Thanks, Your Honor.

14 JUDGE GIBSON: Okay.

15 I believe the Intervenor's witness is up
16 next if there's nothing else.

17 MR. EYE: Thank you, Your Honor. We would
18 call Clarence Johnson.

19 JUDGE GIBSON: Please raise your right
20 hand.

21 Whereupon,

22 CLARENCE JOHNSON

23 having been first duly sworn, was called as a witness
24 herein and was examined and testified as follows:

25 JUDGE GIBSON: Thank you. I believe that

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1 Judge Arnold has some questions.

2 MR. EYE: Before we begin, may I -- just
3 a preliminary matter, Judge Arnold.

4 Mr. Johnson, was there an acronym that you
5 used in your rebuttal that may need to be explained or
6 corrected?

7 MR. JOHNSON: Yes. On page 16 of my
8 rebuttal I just noticed that on occasion I used the
9 acronym CDR instead of CDF. And that was a
10 typographical error. I think it's pretty obvious from
11 the context since I spell out Core Damage Frequency.
12 But I just wanted to make that clear.

13 MR. EYE: Okay. In all other respects is
14 your testimony -- are there any other changes you need
15 to make?

16 MR. JOHNSON: No.

17 MR. EYE: All right. Thank you.

18 We tender the witness for cross-
19 examination, Your Honor. Thank you.

20 JUDGE ARNOLD: Okay.

21 Are you qualified to answer questions
22 concerning estimates of costs for power purchases?

23 MR. JOHNSON: Yes.

24 JUDGE ARNOLD: And what are those
25 qualifications?

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1 MR. JOHNSON: Well, I've worked -- I
2 worked for the Office of Public Utility Counsel for 25
3 years. Among my duties were reviewing purchase power
4 contracts and purchase power expenses of regulated
5 utilities for reasonableness.

6 JUDGE ARNOLD: Uh-huh. Have you ever
7 personally been responsible for purchasing power for
8 cost estimating?

9 MR. JOHNSON: Other than for my household
10 use, no.

11 JUDGE ARNOLD: Okay. Have you ever
12 performed any sort of environmental impact study?

13 MR. JOHNSON: No.

14 JUDGE ARNOLD: Have you experience
15 relative to environmental impact statements?

16 MR. JOHNSON: I have reviewed
17 environmental impact statements as sort of a side part
18 of my -- of work I've done in regulated utility area.
19 However -- for instance, before the Public Utility
20 Commission can issue a certificate of convenience and
21 necessity for generation or for transmission there is
22 an environmental review. So I am familiar and have
23 made recommendations on those areas. But those are
24 more limited than, you know, a complete environmental
25 impact statement.

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1 JUDGE ARNOLD: Uh-huh. And are you in
2 general knowledgeable of the National Environmental
3 Policy Act, NEPA?

4 MR. JOHNSON: I am familiar with what it
5 is. I -- it's been awhile since I've read it.

6 JUDGE ARNOLD: Yes. Would you agree with
7 me that a NEPA evaluation -- its purpose is to inform
8 the federal agency about the expected effects of a
9 proposed action?

10 MR. JOHNSON: Yes.

11 JUDGE ARNOLD: Would you also agree that
12 the goal of the NEPA analysis is to provide a
13 reasonable and hopefully realistic evaluation of those
14 expected effects?

15 MR. JOHNSON: Yes.

16 JUDGE ARNOLD: In a NEPA technical review,
17 looking for expected results rather than bounding
18 results would mean the analyst would not intentionally
19 bias the analysis in any direction. Would you agree
20 with that?

21 MR. JOHNSON: Generally, yes.

22 JUDGE ARNOLD: Have you ever used a
23 dispatch model in your work?

24 MR. JOHNSON: I have not run a dispatch
25 model myself. I have reviewed multitude of dispatch

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1 models and results. They are a pretty essential
2 element of electric utility operations. And in my
3 work evaluating fuel costs in a regulatory setting I
4 have reviewed the assumptions and the results of many
5 dispatch simulations.

6 JUDGE ARNOLD: Uh-huh. And have you
7 performed any independent estimate of replacement
8 power costs for STP Units 1, 2, 3 and 4?

9 MR. JOHNSON: I'm sure at some point in
10 time I have made estimates of replacement power costs
11 for STP Units 1 and 2, probably during the 1990s. You
12 know, my testimony in this proceeding constitutes what
13 work I have done in terms of reviewing the replacement
14 power cost estimates produced by the Applicant and the
15 staff.

16 JUDGE ARNOLD: Uh-huh. In performing a
17 replacement power cost estimate what is the best basis
18 for such an estimate? Would it be new Reg BR-0184,
19 2009 ERCOT prices, 2008 ERCOT prices or something
20 else?

21 MR. JOHNSON: Based on the information
22 that's before us here I would recommend 2008 ERCOT
23 market prices.

24 JUDGE ARNOLD: And why would that be?

25 MR. JOHNSON: Well, first of all, I think

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1 it's important to reflect the fact that power prices
2 in Texas and within ERCOT are determined in a
3 competitive market. Whereas, the approach originally
4 taken in the GE estimates were based upon power pools
5 composed of regulated utilities, were based on a cost-
6 of-service basis for setting fuel costs. So I think
7 there's clearly factually an important distinction to
8 make with respect to the fact that an actual practice
9 costs -- replacement power costs will be determined in
10 a market in ERCOT.

11 With respect to choosing 2008, in my view
12 the other potential data point or year, which is 2009,
13 is -- will under-state forward looking natural gas
14 prices. And that's because 2009 had the lowest
15 average gas price since 2001. It also reflected
16 recession conditions since it was the -- essentially
17 the depths of the recession. So 2008 admittedly is a
18 higher cost than many of the years in the 2000 decade.

19 However, we also have to consider that STP
20 most likely will not be in commercial operation until
21 2020 or later and that I think any -- you know, any
22 respected or forecasts of natural gas prices on the
23 long term would indicate that gas prices would be
24 moving upward and closer to the 2008 number.

25 JUDGE ARNOLD: Uh-huh. When you speak of

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1 market effects is that essentially the same thing that
2 I might consider to be the law of supply and demand?
3 That --

4 MR. JOHNSON: Yes. And, you know, in some
5 cases it's the principle of a supplier will charge
6 what the market will bear.

7 JUDGE ARNOLD: Should the price estimate
8 include market effects?

9 MR. JOHNSON: I'm not sure if you're
10 meaning something other than just, you know, the
11 impact of market determination of prices. I -- so I'm
12 unclear on your question. I mean, in general, yes, it
13 should include market effects.

14 JUDGE ARNOLD: Okay. In your opinion does
15 the dispatch model include market effects?

16 MR. JOHNSON: The dispatch model assumes
17 that prices will be reflective of marginal costs,
18 which is the variable and fuel costs of operating each
19 type of plant in the market. In my opinion that
20 probably understates the actual market prices that
21 will be produced. I can't say, though, whether the
22 under-statement is significant or whether it's
23 relatively small. But we do know that in general --

24 Let me step back a second and say that
25 when -- the market prices are set on an hourly basis,

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1 even shorter intervals than an hour. And it's based
2 on each generator bidding a price. And the generator,
3 of course, is aware of its marginal costs. And my
4 expectation would be that they would bid above their
5 marginal costs because they're in a business to get a
6 profit. So it may be a small margin but they probably
7 will bid above their marginal costs. And this is with
8 respect to at least generating units that are close to
9 the margin.

10 And then secondly, they will be aware of
11 changes that are occurring, whether they be units that
12 are down and that are pushing prices up and they will
13 begin to -- in those situations begin to bid prices
14 that are higher and may be significantly higher than
15 their marginal costs.

16 The -- you know, the winning price, the
17 market-clearing price sets the price for all
18 generating units that are supplying power in that time
19 interval, whether it's an hour, 15 minutes, whatever
20 number you want to use there. So --

21 In addition that, is -- I think there are
22 potential market power effects. If -- a market power
23 occurs when essentially a generator or set of
24 generators has the ability to charge, you know,
25 essentially what the market will bear and up to

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1 whatever the cap is that's established by the Public
2 Utility Commission. And so that's another factor that
3 leads to prices above marginal cost.

4 The dispatch model generally doesn't take
5 those factors into account. And in general, if you
6 look at, you know, prices in the market they generally
7 tend to be somewhat higher than marginal cost. And in
8 some markets when there's a scarcity condition they
9 are significantly higher than marginal cost.

10 JUDGE ARNOLD: Should the cost estimate
11 account for effects of price spikes?

12 MR. JOHNSON: Yes. And I think just to be
13 clear, when I suggested the inclusion of price spikes
14 the reason for that is not that there aren't already
15 price spikes that are included in the average price,
16 for example, in 2008, but it's the fact that price
17 spikes are more frequent and more likely if there's a
18 major event on the grid, such as, you know, 5,600
19 megawatts being lost on the grid.

20 JUDGE ARNOLD: That would certainly be
21 true for the first month. But we're talking a couple
22 years of replacement power costs. Would you expect
23 price spikes to be exacerbated for years or --

24 MR. JOHNSON: My expectation would be that
25 over time the price spikes would begin to approach

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1 more normal levels as the market adjusts. I don't
2 know what that time frame would be.

3 JUDGE ARNOLD: Uh-huh. The Applicant has
4 performed sensitivity studies in which price spikes
5 are first off accounted for within their average price
6 over the ERCOT 2008 prices or ERCOT 2009 prices and
7 have added in an additional 20 percent effect. Is
8 that a sufficient accounting for price spikes?

9 MR. JOHNSON: For purposes of my testimony
10 I accepted that. I do not have an alternate
11 calculation. I think that was a -- you know, it was
12 an effort to try to simulate that effect.

13 JUDGE ARNOLD: Okay. Should the
14 replacement power cost estimate include in some way
15 the effect of a potential grid outage?

16 MR. JOHNSON: Yes, I think that's a -- as
17 I stated in my testimony, it's a fairly low
18 probability but high consequence type event. And for
19 purposes of my testimony, when I say -- when I refer
20 to grid outage I refer not just to an extremely -- an
21 extreme event like loss -- a blackout of the grid,
22 which would be catastrophic, but also to the more --
23 what I would call a controlled blackouts, which would
24 be rolling blackouts that are used, in fact, to
25 prevent the catastrophic level from being reached.

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1 JUDGE ARNOLD: Uh-huh. And should the
2 price estimate include impact to consumers? Is the
3 impact to consumers -- does that impact end up
4 affecting the cost of the power again?

5 MR. JOHNSON: I think it is a consequence
6 of the outage at the unit and the replacement cost at
7 the unit. Certainly, the estimates that would have
8 been provided in previous impact statements that
9 looked at a regulated utility would have encompassed
10 the consumer impacts because one utility served all
11 consumers. And in this case because it's deregulated
12 the STP has it's own replacement cost. But there is,
13 in fact, just as in the regulated utility, there is an
14 impact of the loss of the unit on all of the
15 consumers. And in the case of STP there is an impact
16 on all of the consumers in ERCOT. So I believe it
17 should be included, even though I understand the
18 argument that it's not a cost that is directly paid by
19 the owners of STP.

20 JUDGE ARNOLD: Uh-huh. Within the SAMDA
21 analysis there's basically, I believe, five categories
22 of sub-costs. Two of them are on-site exposure and
23 on-site clean up. Two of them are off-site, off-site
24 exposure, off-site other economic costs. And then
25 there's replacement power costs. If you were going to

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1 consider consumer impacts in a SAMDA analysis wouldn't
2 it make more sense to categorize that as an off-site
3 cost as opposed to a replacement power cost?

4 MR. JOHNSON: I'm not sure I would agree
5 with that. I think that the consumer impact is a
6 consequence of the STP's outage. It's a consequence
7 of STP requiring more power to replace it's own power
8 and thereby driving up the price for all the
9 participants in the market. So in my mind if -- in my
10 mind it does fit within the category of replacement
11 costs -- replacement power costs.

12 JUDGE ARNOLD: Uh-huh. Okay. On page 10
13 of your rebuttal testimony you state, "The average
14 price per megawatt generated by NRG in 2010 was \$68.39
15 based on dividing the power revenues by the power
16 sold." Is that correct?

17 MR. JOHNSON: Yes.

18 JUDGE ARNOLD: Did you -- you were here
19 for this morning's testimony?

20 MR. JOHNSON: Yes.

21 JUDGE ARNOLD: Would you still stand on
22 that number, 68.39?

23 MR. JOHNSON: It may not be the exact
24 number. I think -- if one were to take out costs
25 that they don't -- do not consider as appropriate

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1 costs of, you know, purchasing power in the market.
2 But I would point out in the SEC Form 10K all of those
3 items are related to energy revenues or capacity
4 revenues. So they are power revenues. They reflect
5 what NRG actually paid for all of it's power-related
6 activities in the Texas market on a rate basis
7 compared to how much power they generated.

8 I think that the fact that that number is
9 significantly higher than the balancing energy market,
10 even accounting for the possibility that if one were
11 to do an -- you know, a specific accounting you might
12 take some revenues out -- even accounting for that it
13 strikes me as unlikely that it does not show what I
14 intended for it to show, which is that the bilateral
15 market prices may be higher than the energy --
16 balancing energy market prices that we are using to,
17 you know, evaluate power costs within ERCOT.

18 JUDGE ARNOLD: Have you ever been directly
19 involved in evaluation of a loss-of-grid event?

20 MR. JOHNSON: No.

21 JUDGE ARNOLD: Have you by some other
22 means developed an understanding of grid dynamics and
23 how a loss of grid may occur?

24 MR. JOHNSON: Yes. I am not an engineer,
25 and I cannot necessarily get to the engineering level

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1 of discussing it. However, I have attended courses at
2 ERCOT, training courses for the market participants on
3 understanding, you know, some of the programs such as
4 the Black Start Program, which is the basic program
5 operated by ERCOT to prevent -- in the event that
6 there were to be a complete loss of the grid, a
7 complete blackout.

8 JUDGE ARNOLD: Okay. Previously you in
9 your testimony here stated that the loss of grid is a
10 low-probability high-consequence event. Correct?

11 MR. JOHNSON: Yes.

12 JUDGE ARNOLD: Now, the SAMA evaluation
13 itself is a quantification of the effects of a very
14 unlikely event, that being a severe accident.
15 Correct?

16 MR. JOHNSON: Yes.

17 JUDGE ARNOLD: In fact, the Technical
18 Support Document describes the Core Damage Frequency
19 for the ABWR is 1.6 times ten to the minus 7 per
20 reactor year. So that is quite unlikely. Correct?

21 MR. JOHNSON: Yes.

22 JUDGE ARNOLD: Is it reasonable and
23 realistic that a SAMDA evaluation done to satisfy NEPA
24 requirements of a reasonable evaluation -- should it
25 need to consider an unlikely event, loss of grid, in

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1 conjunction with a very unlikely event, a severe
2 accident? I mean, aren't you just piling up an awful
3 lot of very small probabilities?

4 MR. JOHNSON: Yes. They are both -- both
5 events are low probability but very high consequence.
6 And I think the fact that the grid outage is a very
7 high consequence event is a reasonable basis for
8 considering it.

9 JUDGE ARNOLD: Okay. We're considering a
10 narrowly focused contention challenging the cost of
11 replacement power used in the SAMDA evaluation. Now,
12 you claim that in order to determine the cost of
13 replacement power we should consider a loss of grid.
14 Correct?

15 MR. JOHNSON: Yes. And I would point out
16 the loss of grid is a certainly replacement power cost
17 issue since it means there is zero replacement power
18 flowing.

19 JUDGE ARNOLD: I would think that during
20 a period when there's no power flowing that cost of
21 power would be either considered negligibly small or
22 incalculably large. I mean, it just --

23 MR. JOHNSON: It would be --

24 JUDGE ARNOLD: It's difficult for me to
25 see how that could be quantified and added into a cost

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1 of replacement power. Can you explain that?

2 MR. JOHNSON: It is hard to quantify. And
3 all we can do is look at those studies which have been
4 performed on grid outages. And, you know, the
5 Applicant -- again, I have not challenged the
6 Applicant's quantification in their response to my
7 testimony and in their direct testimony because I
8 believe it is very hard to calculate.

9 But I also think that accepting a zero
10 when we know there is a actual possibility that it
11 would occur that accepting that zero is not the
12 reasonable course that I would take. I would tend
13 toward including the costs to those events which could
14 happen and particularly, if they're of a high-
15 consequence nature.

16 JUDGE ARNOLD: Okay. On page 12 of your
17 direct testimony you state, "The combination of high
18 prices and rolling blackouts in the 2000-2001
19 California energy crisis produced economic damage in
20 the range of \$45 billion." Now, do you have personal
21 experience in the California electrical system that
22 would cover such things as production, distribution,
23 use?

24 MR. JOHNSON: Certainly, I think anyone
25 who is involved in the regulation of electric

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1 utilities and in the participation in developing
2 competitive power markets has studied to some degree
3 the California market. It was a -- an event that was
4 very significant and which raised many questions about
5 the operation of competitive market, market rules and
6 so forth. So I certainly -- I did not participate in
7 regulatory proceedings in California.

8 However, I know that in many of the
9 proceedings I've participated in in Texas this -- the
10 issue of the causes and the consequences of the
11 California power market prices have -- were issues
12 that were addressed and that, you know, I did -- I
13 provided testimony on.

14 JUDGE ARNOLD: Uh-huh. In this contention
15 we're concerned with an unexpected outage of four STP
16 units and the resultant effects on the ERCOT grid.
17 Would you agree with me that the situation in
18 California was not caused by circumstances similar to
19 the unexpected outage of four STP units?

20 MR. JOHNSON: Yes. And I should mention,
21 I did not raise the quantification with respect to
22 California's energy crisis to say that it was caused
23 in the same way as an STP outage. I was simply trying
24 to give an idea of the range of damages that were
25 discussed and provided in reports with respect to that

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1 crisis.

2 JUDGE ARNOLD: Okay. In the ERCOT region
3 the reserve capacity is sufficient to supply 100
4 percent of the grid's needs even with the loss of STP
5 Units 1, 2, 3 and 4. Correct?

6 MR. JOHNSON: Would you repeat the
7 question? Or maybe clarify it? If you were talking
8 about what you mean by the -- that it's -- go -- just
9 repeat the question, please. I guess I didn't
10 understand it.

11 JUDGE ARNOLD: Well, with a reserve margin
12 of 13.75 percent and with STP Units 1, 2 and 3, 4
13 representing about 4 -- or 6 percent of the grid
14 capacity you can remove all four of those and still
15 have sufficient capacity to provide all the power
16 needed in ERCOT. Correct?

17 MR. JOHNSON: Yes. From an installed
18 capacity standpoint, which is again, quite different
19 from an operating capacity or operating reserve
20 standpoint, yes, you do. Even though I would also
21 point out that that would result in a severe
22 degradation of the reserve margin, which means that
23 there would be an increase in the probability of
24 outages.

25 JUDGE ARNOLD: Now, in California in 2001

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1 did they have a similarly large reserve capacity?

2 MR. JOHNSON: California purchased power
3 from other states. And I guess what I'm saying is
4 they did not rely upon the installed capacity located
5 within -- only within the State of California.
6 Through longstanding practice they relied upon power
7 throughout the western region. Whether there was
8 sufficient installed capacity or not is really a --
9 within that whole region is a -- you know, a question
10 of dispute among many parties. Certainly, within the
11 State of California the installed capacity reserve
12 margin was quite low. But as I say, that really
13 doesn't reflect the way that the California utilities
14 and market had operated.

15 JUDGE ARNOLD: Let -- in -- let's see.
16 Page 12 of your direct testimony concerning a grid
17 outage, lines 11 through 13 you state, "These events
18 may represent close to worst-case examples but they
19 illustrate that grid outage costs can produce severe
20 economic damages beyond replacement power costs."
21 Now, you call them, Beyond replacement power costs,
22 which to me would imply that it's, you know, not
23 included in replacement power costs. Is that what you
24 intended to say? Or --

25 MR. JOHNSON: No. I think maybe a better

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1 wording of that would be direct replacement power
2 costs, as opposed to indirect or consequential damages
3 flowing.

4 JUDGE ARNOLD: Okay. Now, just a minute
5 ago you said that you cited the California event
6 primarily to demonstrate the extent that the monetary
7 cost of an outage could reach. Right?

8 MR. JOHNSON: Yes.

9 JUDGE ARNOLD: Might the extent of those
10 costs be dependent upon the grid structure and
11 characteristics in California that are dissimilar to
12 grid structure and characteristics in Texas?

13 MR. JOHNSON: Well, I don't disagree that
14 there can be differences in the grid structure and
15 characteristics. I think, though, I would separate
16 the question of whether the probabilities of events
17 occurring in California are the same as in Texas.
18 Maybe they're not because of the grid characteristics.

19 However, my point here had to do with what
20 are the range of severe consequences of rolling
21 blackouts and exercise of market power in the face of
22 shortages -- you know, in the face of power shortages.
23 You know, California did not have a blackout, in terms
24 of the worst case where the grid goes down. They
25 entered into a period of rolling blackouts in order to

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1 control the blackout situation and control the grid.
2 So --

3 And in Texas we've had rolling blackouts
4 here, too. And my point with respect to STP has been
5 that it could be succeeded by a period of rolling
6 blackouts, price spikes, all -- and potentially
7 exercise of market power, all of those things which
8 occurred in the California and produced extreme
9 damage. Now, I will agree with you and grant you that
10 the probability that the same events happen in Texas
11 may be different because of differences in market
12 rules and in the design of the grid.

13 JUDGE ARNOLD: Uh-huh. Okay. Changing
14 topics here. Could you explain to me how the discount
15 rate is used in the SAMDA evaluation?

16 MR. JOHNSON: Well, a discount rate is
17 used to determine the present value of cash flows in
18 the future today. In other words, it's often --
19 present value is often referred to as determining a
20 time value of money. And it's really reflecting the
21 opportunity cost for funds, for expenditures in the
22 future. That is to say, if you expend funds five
23 years from now in the intervening time period your
24 opportunity cost is your ability to make other
25 investments in the intervening time frame. So as --

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1 in the SAMDA context I think the time value of money
2 is reflected as it is in any cost benefit study, which
3 is to reflect the opportunity cost over a period in
4 the future.

5 JUDGE ARNOLD: All right. Well, I'm
6 having difficulty with the concept of current value.
7 I keep thinking, Well, if somebody promised -- told me
8 that I was going to receive a million dollars ten
9 years from now, well, that doesn't put any food on my
10 table tonight.

11 MR. JOHNSON: Uh-huh.

12 JUDGE ARNOLD: So that's not worth even
13 the cost of a meal to me. Is there any generally-
14 accepted definition of what the current value means?

15 MR. JOHNSON: The first thing. In
16 response to your, you know, comment about the promise
17 of money in the future, I think a good analogy or --
18 for present value is to look at winning the lottery.
19 In Texas if you win the lottery you're given a choice.
20 You can have X amount of money paid out over the next
21 ten years on a yearly basis or you can have a smaller
22 amount paid out today. And, of course, Texas lottery
23 is just using a discount factor to equate those two
24 flows.

25 The -- in terms of the concepts of present

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1 value, I think -- and discount rates -- you know,
2 there are -- probably many books have been written on
3 it and much debate over proper discount rates. But in
4 my view in a project evaluation there's two ways to
5 look at the discount rate.

6 One way is to say what is the discount
7 rate to a private investor. In this case, you know,
8 for instance, in a power plant if you're looking at it
9 just from the standpoint of the private investor you
10 might look at the interest rate available to that
11 investor or perhaps to their weighted average cost of
12 capital.

13 The other way of looking at present value
14 is to look at a societal discount rate, which takes
15 into account that in most cases the society discount
16 rate is assumed to be significantly lower than the
17 discount rate for individual investors. And I don't
18 know if that answered your question or if that got too
19 far astray.

20 JUDGE ARNOLD: Well, let me give you a
21 for-instance. If I know that there is going to be a
22 severe accident in the future and at that time I will
23 need a specific amount of money to clean up for that
24 accident I could say, Well, I need to put aside X
25 amount of dollars now, invest it such that down the

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1 line when I need that amount of money, this money here
2 will have become that amount of money. Now, that to
3 me would be the present value of it. Is that a
4 reasonable --

5 MR. JOHNSON: That's one approach, yes.

6 JUDGE ARNOLD: That's one. And there are
7 other reasonable approaches?

8 MR. JOHNSON: Yes. As I said, I think if
9 you're looking at it from a private investor's
10 standpoint, like the owners of STP, you would -- in
11 most cases I think studies would use their cost of
12 capital, which would be, you know, what they expect to
13 earn for investors and then what they have to pay in
14 their interest rates. And it's assumed that that
15 represents the return or their cost of money between
16 now and whenever the event -- the project is
17 completed, for example.

18 However, I could see -- you know, I -- you
19 know, one could argue that you could take like a --
20 create a sinking fund and determine what interest rate
21 you think you would earn or would be -- would flow
22 from -- you know, from that fund from putting money
23 into the fund.

24 JUDGE ARNOLD: Uh-huh. Okay. Price index
25 for escalating SAMDA costs from 1991. What are your

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1 qualifications for providing expert testimony on costs
2 of a severe accident mitigation design alternative?
3 And that would include escalating the costs.

4 MR. JOHNSON: I have -- as I've stated
5 previously in my previous employment and consultant
6 activities, I have participated in regulatory
7 proceedings where the -- there are many studies, many
8 projects that are evaluated that -- in which
9 escalation rates must be used and applied.

10 I have not previously dealt with specific
11 SAMDA issues, in terms of escalation, but certainly in
12 any cost benefit study -- and I am familiar with doing
13 cost benefit studies -- any cost benefit study --
14 escalation and price inflation are important
15 components.

16 JUDGE ARNOLD: Uh-huh. Have you ever done
17 yourself any cost estimating for engineering projects
18 or have you just reviewed them?

19 MR. JOHNSON: Reviewed them and provided
20 testimony on the reasonableness of the estimates. But
21 I have not been employed by an engineering firm nor
22 have I been employed by a utility to do those tasks.

23 JUDGE ARNOLD: Okay. Would you agree that
24 the rate of escalation of costs of various goods and
25 services depends upon the specific goods and services

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1 in question?

2 MR. JOHNSON: Yes.

3 JUDGE ARNOLD: Okay. On page 15 of your
4 direct testimony you state, "A weakness of the CPI is
5 that it is based on fixed proportions of expenditure
6 components and does not account for household's
7 ability to change those proportions over time in
8 response to price or other factors." Do you recall
9 that?

10 MR. JOHNSON: Yes.

11 JUDGE ARNOLD: Okay. Now, the expenses
12 involved in implementing any specific SAMDA are linked
13 to specific required items in fixed proportion. So I
14 do not understand how an index that reflects changing
15 proportions provides a better means of adjusting the
16 SAMDA cost. Could you explain that?

17 MR. JOHNSON: Well, first of all, I'm --
18 it's not clear to me that SAMDA costs or the costs
19 that comprise SAMDA are fixed in proportion over all
20 time or should be fixed over all time. Presumably as
21 new estimates are made and new processes are developed
22 those proportions may change. If -- in other words,
23 I am assuming that if you did a budget today it may
24 not have the same composition as a budget in 1991. So
25 I guess I am not willing to just accept that

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1 assumption that they are fixed proportions.

2 I think my comment here had to do with
3 comparing this CPE to the Consumer Price Index. And
4 the preference of the CPE over the Consumer Price
5 Index is that if you want to know what the proper
6 index is for consumer expenditures then you should
7 reflect that consumer households change the
8 composition of their expenses based on changes of
9 prices in the economy.

10 JUDGE ARNOLD: Uh-huh. On page 15 of your
11 direct testimony you state that, "Gross Domestic
12 Product implicit price deflator is used to convert
13 nominal cost to real cost." And I just want to make
14 sure I understand what the nominal cost and the real
15 cost are when you say that.

16 MR. JOHNSON: The tack that has been taken
17 in this case by the Applicant is to establish cost as
18 of 2009. So they've taken nominal costs that were
19 proposed to be expended at an earlier time and applied
20 an escalation rate to put them into 2009 dollars.

21 JUDGE ARNOLD: Uh-huh.

22 MR. JOHNSON: I should say the nominal
23 rate means, you know, the cost in the year it was
24 expended. And in that situation we're saying the year
25 it would have been expended in that budget in 1991 or

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1 1992.

2 JUDGE ARNOLD: Uh-huh. Let's see. Now,
3 you used the implicit price deflator for non-
4 residential structures. NINA used the Bureau of Labor
5 Statistics Consumer Price Index and this -- no wait.
6 I'm sorry. Staff used the implicit price deflator for
7 non-residential structures. NINA used the Consumer
8 Price Index. And you are a proponent of the core
9 personal consumption expenditures. All right.

10 Earlier today I questioned Applicant's
11 expert about the specific components that are generic
12 amongst various SAMDAs. And we decided that one would
13 be an engineering design analysis. It would be pretty
14 much universal on any SAMDA. There might be some
15 procurement, including manufacturer and shipping.
16 Installation, if it's hardware. Procedure
17 modifications. QA and any licensing action required
18 with the NRC. And he gave us his opinion as to which
19 inflator best represented how those components would
20 change in price.

21 And I want to go through that same list
22 with you to see if you believe that the core personal
23 consumption expenditures is the best inflator to use
24 for each of them. The first one is engineering design
25 and analysis.

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1 MR. JOHNSON: I think in each of these
2 cases I would concur with the staff on the point that
3 a consumer expenditure index is probably not the most
4 reflective index. However, I would not have picked a
5 non-residential fixed investment.

6 I would probably have picked, if -- from
7 that standpoint of picking a non-consumer index, I
8 probably would have picked the gross domestic private
9 investment, which is composed of both non-residential
10 structures and equipment and software because of the
11 fact that the SAMDA should -- to a significant degree
12 should include a reflection of computer communication
13 technologies, as well as equipment. I assume that
14 when you talked about procurement you're meaning
15 fabricated equipment that is installed, which would
16 fit in the definition of equipment and software.

17 So in terms of each of those items you
18 mentioned in the previous cross-examination, I
19 probably -- without further information, anyway, I
20 would probably lean towards saying that the gross
21 domestic private investment index is probably
22 preferable. Otherwise, one could even go further up
23 and have a more global index, such as the growth --
24 such as the GDP implicit price deflator. But if one
25 wants to focus on investment then I would probably

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1 suggest the gross domestic private investment, as I
2 state in my rebuttal testimony.

3 JUDGE ARNOLD: Huh. I find that
4 interesting. I look at engineering design and
5 analysis to be very similar to work that an architect
6 might do -- architect and drafters might do in -- for
7 non-residential structures. So --

8 MR. JOHNSON: Yes. I --

9 JUDGE ARNOLD: Would that be better
10 reflected in the GDP private investment?

11 MR. JOHNSON: Well, I mentioned the GDP
12 private investment because we do not know -- I do not
13 know specifically what the percentage composition or
14 breakdown is of each SAMDA in each of these
15 components. And not knowing that and without that
16 kind of analysis, I would suggest a index -- an index
17 which is a composite of the components that are likely
18 for the SAMDAs as -- that's my -- that would be my
19 inclination.

20 JUDGE ARNOLD: On page 6, lines 3 and 4 of
21 your direct testimony you state that the accident at
22 Fukushima likely will result in permanent shutdown of
23 all six units. Then on page 14 and 15 of your direct
24 testimony you state, "The accident at Fukushima in
25 Japan provides a new reference point whereby accident

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1 damage to three units will likely result in the
2 permanent shutdown of all six units." Do you still
3 stand by that statement?

4 MR. JOHNSON: I don't know if they will
5 result in permanent shutdown of all six units. But I
6 think that's a possibility. I have to rely on news
7 accounts of, you know, what's happening there. But
8 that's -- my impression is that there will -- several
9 of the units will be permanently shut down and the
10 possibility of all six units. So -- but with that
11 clarification, yes, I agree with the concept I'm
12 stating there.

13 JUDGE ARNOLD: Okay. Would you
14 characterize this as an opinion then?

15 MR. JOHNSON: Yes.

16 JUDGE ARNOLD: Yes. Now, you stated
17 earlier that you're not an engineer. Do you have any
18 formal education in engineering or physical sciences?

19 MR. JOHNSON: I'm not an engineer. I
20 haven't taken any engineering courses. I, you know,
21 have taken science courses in college. But --

22 JUDGE ARNOLD: Okay. Do you have any
23 expertise in severe accident phenomena?

24 MR. JOHNSON: No.

25 JUDGE ARNOLD: Well, are you an expert

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1 qualified to submit testimony -- in testimony an
2 expert opinion on severe accidents and their
3 consequences?

4 MR. JOHNSON: I feel that I am qualified
5 to take the information that's available and attempt
6 to apply it in an economic study. And I think that's
7 what many economists do, which is to take assumptions
8 with respect to the consequences of an accident and
9 apply it within an economic study. I am not
10 testifying as to all of the physical actions that
11 occur in the accident or in the sequence of the
12 accident. But here I am more or less relying upon the
13 fact that there are -- that there is a new reference
14 point with respect to accidents, that it should be
15 taken into account and considered in a policy
16 situation.

17 JUDGE ARNOLD: The situation being
18 considered in the STP contention concerns a four-unit
19 plant where a severe accident occurs at one unit
20 resulting in shutdown of the other three units for
21 some period of time. The situation at Fukushima
22 concerns a six-unit plant where severe accidents
23 occurred simultaneously at three of six plants. The
24 other three units had been shut down prior to the
25 accident. What about the Fukushima plant and the

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1 accident makes this a reasonable benchmark for
2 estimating the shutdown time for the three unaffected
3 plants being considered in this contention?

4 MR. JOHNSON: Oh, I think that the fact
5 that there is consideration of permanent shutdown of
6 the other units that were shut down and were not
7 directly affected indicates that the impact of an
8 accident on a co-location unit may have a longer time
9 period than the time period that occurred at TMI. In
10 fact, the two-year period was based on a sample size
11 of one, which was Three Mile Island. And as more
12 examples arise they may be -- there may be critical
13 differences and have to be taken into account. But as
14 they arise they need to be factored into the
15 consideration, too.

16 JUDGE ARNOLD: Uh-huh. Okay. Well, since
17 you opened up the topic of world experience in severe
18 accidents as providing a benchmark I would like you to
19 consider another severe accident, that which occurred
20 at Chernobyl in 1986. I assume you're familiar with
21 that accident? At least.

22 MR. JOHNSON: Yes.

23 JUDGE ARNOLD: Okay. The situation at
24 Chernobyl involved four co-located plants. A severe
25 accident occurred at one of the four units. This

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1 resulted in controlled shutdown of the other three
2 units within a day. It seems to me that the situation
3 being considered by the SAMDA analysis of South Texas
4 is much closer to Chernobyl, in terms of the number of
5 units present, the number of units at which the
6 accident occurs and the number of units shut down.
7 Would you agree?

8 MR. JOHNSON: If you're looking at those
9 parameters, yes.

10 JUDGE ARNOLD: Okay. Likewise, the units
11 at Chernobyl were not identical. Units 1 and 2 were
12 of an older design than units 3 and 4. This would
13 also appear more similar to the situation at the STP
14 contention, where Units 1 and 2 will be of an older
15 design than Units 3 and 4. Would you also agree this
16 is more similar?

17 MR. JOHNSON: I do not know of the
18 vintages of the units at Chernobyl. So based on your
19 characterization, that would appear -- you know,
20 given -- that would appear to be the case.

21 JUDGE ARNOLD: Uh-huh.

22 MR. JOHNSON: But I am accepting your
23 characterization on that.

24 JUDGE ARNOLD: I assure you Units 1 and 2
25 were older than 3 and 4.

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1 MR. JOHNSON: Okay.

2 JUDGE ARNOLD: In addition, at Chernobyl
3 the accident occurred at Unit 4, one of the newer
4 plants. That also is similar to the situation we're
5 considering at STP. We're considering an accident at
6 Unit 3 or 4 and -- resulting in shutdown of all the
7 plants. Would you agree that that is a closer
8 similarity to STP than the Fukushima situation
9 provides?

10 MR. JOHNSON: Again, given those -- if
11 you're looking at those parameters it is. I really
12 haven't done the analysis to say whether there are
13 other parameters that would make Fukushima more
14 comparable. But given the parameters of your
15 question, I would agree with that.

16 JUDGE ARNOLD: Okay. At Chernobyl Unit 3,
17 which was adjacent to Unit 4 where the accident
18 occurred was restarted about a year-and-a-half after
19 the accident at Unit 4. Units 1 and 2 have been
20 restarted approximately six months after the accident.
21 Why shouldn't this be considered a better benchmark
22 than Fukushima for how long STP units would be shut
23 down following an accident?

24 MR. JOHNSON: Well, I suppose that -- I
25 would be reluctant to accept that the nuclear safety

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1 regulations with respect to radiation exposure and so
2 forth in the Soviet Union -- former Soviet Union is
3 comparable to the United States or is -- put another
4 way, I would assume that Japan's requirements would be
5 more comparable to the United States, in terms of the
6 safety margin required to restart the units.

7 JUDGE ARNOLD: I'm done, sir.

8 JUDGE GIBSON: I know you've been sitting
9 here quite a while. If you'll bear with me I've just
10 a couple more questions. I don't know if Judge
11 Charbeneau has any. Then I think we can take a 15-
12 minute recess.

13 First of all, you used the acronym CPE.
14 And I want to make sure for the court reporter's
15 benefit she knows what CPE stands for.

16 MR. JOHNSON: I'm sorry. I should have
17 said PCE.

18 JUDGE GIBSON: PCE. Okay.

19 MR. JOHNSON: Personal Consumer
20 Expenditures.

21 JUDGE GIBSON: And this is the discount
22 factor that you used?

23 MR. JOHNSON: Yes, in my direct testimony
24 and in reviewing the Applicant's revision I suggested
25 that the core PCE index should be used instead of the

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1 Consumer Price Index.

2 JUDGE GIBSON: Okay. Now, in your --
3 in this -- I assume you've read the staff witness, Mr.
4 Anderson's testimony and you've heard the testimony by
5 the witnesses for NINA this morning about this
6 price -- these discount factors and their conviction
7 that the GDP implicit price deflator's the best
8 measure. Do you agree that it is the best measure?

9 MR. JOHNSON: Well, first of all, when you
10 shorten it to GDP implicit price deflator that's
11 something I can agree with. In fact, I mentioned it
12 as an alternative in my direct testimony. But I think
13 what the --

14 JUDGE GIBSON: Please correct me --

15 MR. JOHNSON: Yes. Right.

16 JUDGE GIBSON: -- if I used the wrong
17 term.

18 MR. JOHNSON: I think what they were --

19 JUDGE GIBSON: I'm sorry.

20 MR. JOHNSON: Yes. I think what they were
21 referring to was the non-residential structures.
22 Let's see. Where is the --

23 JUDGE GIBSON: The non-residential
24 structures component of the GDP implicit price
25 deflator. Is that what it was?

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1 MR. JOHNSON: Yes.

2 JUDGE ARNOLD: Okay.

3 MR. JOHNSON: I think that's right. And
4 as I stated in -- under previous cross-examination
5 here, I think there is merit to saying that the index
6 should not be a consumer index and that it should be
7 an investment index. And as I stated, I would propose
8 to use -- make sure I've -- (Perusing document.)
9 Okay. The -- it's stated there. The gross domestic
10 private investment component of the GDP index is -- it
11 would be my suggestion if we are deciding to use an
12 index other than the consumer index, which I think has
13 merit to do that. But I think that is preferable
14 because it does include the equipment and software
15 component of fixed investment.

16 JUDGE GIBSON: Now, I just want to make
17 clear. Do your -- have you actually calculated the
18 number with that index?

19 MR. JOHNSON: No, I have not. However,
20 that index would reduce -- would produce a lower
21 escalation factor than the PCE, Personal Consumer
22 Expenditures index. So it would produce a result that
23 is more conservative from the standpoint of my
24 recommendation than the personal expenditures index.

25 JUDGE GIBSON: Okay. What's more

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1 conservative from your standpoint I don't fully
2 appreciate. So let me --

3 MR. JOHNSON: No. I understand.

4 JUDGE GIBSON: -- just ask you this. How
5 does it -- how would it affect replacement power
6 costs? Would it make them higher or lower?

7 MR. JOHNSON: Well, this is --

8 JUDGE GIBSON: If you used this
9 alternative measure.

10 MR. JOHNSON: You -- okay. These indexes
11 are not being used on the replacement power costs.
12 They're being used on the SAMDA --

13 JUDGE GIBSON: Right.

14 MR. JOHNSON: -- expenditure.

15 JUDGE GIBSON: Okay. I'm sorry. On the
16 SAMDA expenditure. I'm sorry.

17 MR. JOHNSON: And my recollection is that
18 my -- that the PCE was at 1.3 -- was a factor of
19 1.31 --

20 JUDGE GIBSON: Uh-huh.

21 MR. JOHNSON: -- escalator and the gross
22 domestic private investment escalator is 1.19 for the
23 same time period.

24 JUDGE GIBSON: Okay. Thank you. Now, one
25 other question. The -- you heard the testimony today

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1 from the NINA witnesses about the experience that they
2 have had this summer with incredibly high temperatures
3 in this heat wave and the demand it's put on the
4 system, as well as the experience that they had during
5 an arctic blast that came through here in February.

6 My question is, is that experience
7 persuasive to you? Does it affect your testimony in
8 any way? And if not, why not?

9 MR. JOHNSON: First of all, I think,
10 starting with the February event, I perhaps have a
11 somewhat different take on the implications of that
12 event. It -- well, first of all, it was a very severe
13 event that the independent market monitor stated that
14 responsive reserve capacity fell as low as 445
15 megawatts, compared to the requirement of 2,300
16 megawatts, and characterized the operating reserves as
17 "perilously low for a sustained period of time."

18 So, yes, it's true the system got through
19 that and without more than rolling blackouts, which
20 were a form of grid outage, but at least they were a
21 controlled form.

22 But the independent market monitor's
23 report and -- would indicate that there were
24 significant red flags from that event, one of the red
25 flags being that a number of the Black Start

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1 generators tripped and were unavailable. If the grid
2 had gone black and there were no Black Start
3 generators, there would have been, you know, a
4 catastrophic result.

5 Second, I think if you look at the
6 February event and compare it to what's happening this
7 summer, there's a difference between the two events.
8 We have low reserve margins now -- and I'm talking
9 about installed reserve margins -- because demand is
10 very high. However, we do not have a supply problem,
11 in that the units have -- basically, the units are
12 continuing to operate as they are supposed to.

13 In February we had a situation in which
14 the event was caused by a supply problem. That is the
15 generating units were unavailable; they didn't
16 operate. I think the concern I would have is if you
17 were to have similar supply problems at a time when
18 it's in the summer at a very -- when reserve
19 margins -- actual reserve margins are very low, you
20 would be pressing your luck, in terms of the outcome
21 for ERCOT.

22 JUDGE GIBSON: Thank you.

23 Judge Charbeneau? Judge Arnold?

24 (No response.)

25 JUDGE GIBSON: Okay. What we will do is

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1 we will recess for 15 minutes, give you all an
2 opportunity to ask any questions that need to be done,
3 either for rehabilitation or cross-examination. And
4 we'll consider those, and then we'll take -- come back
5 on 15 minutes from now and -- at 4:30 and we'll start
6 up. Thank you.

7 (Whereupon, a short recess was taken.)

8 JUDGE GIBSON: We're back on the record.

9 I believe Judge Arnold has another
10 question to ask.

11 JUDGE ARNOLD: And we want to see Exhibit
12 NRC22 page 6-3.

13 The second row on this, what does that
14 say? Investment equipment and software. Okay. The
15 question here -- overall question is does the
16 definition of equipment and software provided by the
17 Bureau of Economic Analysis include components that
18 are installed as part of a nuclear power plant.
19 Referring to this exhibit, the second row on equipment
20 and software, the second column provides a definition
21 of equipment and software. And the last entry for
22 that box explicitly -- does that last entry explicitly
23 state that equipment and software does not include
24 equipment that are integral parts of structures?

25 MR. JOHNSON: That's what the statement

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1 says.

2 JUDGE ARNOLD: Okay. And if you look at
3 the same page at the first row do you agree that
4 equipment that is an integral part of a structure is
5 considered to be part of the structure part of the
6 index, not the equipment and software part?

7 MR. JOHNSON: Can you take this over just
8 a little? I just was trying to see what column or
9 what --

10 All right. That's what I was trying to
11 determine. This page includes certain types of
12 equipment such as plumbing and heating systems and
13 elevators that are considered an integral part of the
14 structure.

15 JUDGE GIBSON: Excuse me just a second.
16 You're going to have to talk into the microphone or --

17 MR. JOHNSON: Oh, I'm sorry.

18 JUDGE GIBSON: -- otherwise, we won't hear
19 a word you're saying.

20 MR. JOHNSON: I'm just repeating what it
21 states there. It says, "Includes certain types of
22 equipment such as plumbing and heating systems and
23 elevator that are considered an integral part of the
24 structure."

25 Again, I would have to say that it's

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1 unclear to me exactly whether the SAMDA costs fall
2 under, for instance, equipment installed, whether it
3 falls under -- which of these categories it falls
4 under. Obviously, it could fall under structures.
5 And it depends on, you know, the definition of what
6 integral part means.

7 JUDGE ARNOLD: Okay. My understanding of
8 this table is that the second row is a description of
9 the equipment and software component that -- or it's
10 a description of what's -- I -- let me ask you this.
11 Table 6.1 is labeled, Content of Private Fixed
12 Investment. So this would be the entire index. And
13 one component of it is what you think would be the
14 proper price inflator? And that being the equipment
15 and software portion?

16 MR. JOHNSON: Well, I proposed the private
17 fixed investment total index, I think, in my -- let me
18 look at my rebuttal testimony, make sure I'm --
19 (Perusing document.) The gross domestic private
20 investment, which is -- includes all of those
21 components there.

22 JUDGE ARNOLD: Okay. Thank you.

23 JUDGE GIBSON: We appreciate your
24 testimony. You're excused. Although I want to remind
25 you that you remain sworn and you're subject to being

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1 recalled by the Board. We appreciate your testimony.

2 MR. JOHNSON: Thank you.

3 JUDGE GIBSON: Mr. Spencer?

4 MR. SPENCER: Your Honor, I would like to
5 call Mr. Richard L. Emch, Jr., Mr. David M. Anderson
6 and Mr. Jeremy P. Rishel to the stand.

7 JUDGE GIBSON: Would you please step
8 forward. Please raise your right hands.
9 Whereupon,

10 RICHARD EMCH, JR., DAVID ANDERSON and JEREMY RISHEL
11 having been first duly sworn, were called as
12 witnesses herein and were examined and testified as
13 follows:

14 JUDGE GIBSON: Thank you.

15 I believe that Judge Charbeneau -- I mean,
16 Judge Arnold has some questions.

17 JUDGE ARNOLD: Can we start out with your
18 names so I know which one of you is which?

19 MR. ANDERSON: I'm David Anderson.

20 MR. EMCH: I'm Rich Emch.

21 MR. RISHEL: And I'm Jeremy Rishel.

22 JUDGE GIBSON: Let me just ask one
23 question real quick. Are there any corrections at all
24 to your testimony as it has been admitted in this
25 proceeding, that you're aware of?

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1 MR. EMCH: No.

2 MR. ANDERSON: No.

3 MR. RISHEL: No.

4 JUDGE GIBSON: Thank you.

5 JUDGE ARNOLD: Which one of you is most
6 experienced with SAMDA evaluations?

7 MR. EMCH: That would be me, sir.

8 JUDGE ARNOLD: Okay. And Mr. Emch?

9 MR. EMCH: Yes, sir.

10 JUDGE ARNOLD: Okay. And can you describe
11 what experience you have with SAMDA evaluations?

12 MR. EMCH: Yes. I've been involved in the
13 evaluation of SAMDA evaluations for numerous license
14 renewal applications and for pretty much all of the
15 COL applications over the last ten years or so. And
16 I was one of the authors of an interim staff guidance
17 document on the -- it was the approval of NEI 0501 on
18 how to do a SAMDA analysis -- SAMA analysis.

19 JUDGE ARNOLD: Uh-huh. And I take it it's
20 your professional opinion that the staff SAMDA
21 analysis for Units 3 and 4 is reasonable?

22 MR. EMCH: Yes, sir.

23 JUDGE ARNOLD: Does the SAMDA analysis
24 conclude that there is no alternative that is cost
25 beneficial?

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1 MR. EMCH: It does, sir. Can I expand on
2 that a little bit, sir?

3 JUDGE ARNOLD: Surely.

4 MR. EMCH: Okay. The design of the ABWR
5 as is the case with most of the new designs, but the
6 ABWR was designed with PRA in mind. I mean, it was
7 used as a tool. And the -- any vulnerabilities that
8 PRA analyses had shown in current operating designs
9 and in -- and from all the research and experience
10 that we have with severe accident phenomenology -- GE
11 incorporated a lot of that information into the design
12 of the ABWR.

13 And, in fact, the proof of the pudding is
14 a Core Damage Frequency of something in the
15 neighborhood of -- I believe you said 2 times 10 to
16 the minus 7 per reactor year. We'll go with that.
17 And so the point of this little discussion is to say
18 they've already incorporated many things into the
19 design to get rid of or to fix whatever risk
20 vulnerabilities had been identified over the years.

21 So in a roundabout way or in a -- kind of
22 essentially, you could think of the entire design of
23 the ABWR was a exercise in SAMDA. Okay? They were
24 looking for ways to improve the design and they
25 were -- and so it -- in a sense it would be quite a

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1 surprise to us if there were any cost beneficial
2 SAMDAs at this stage, simply put. So --

3 JUDGE ARNOLD: Uh-huh. Now, you were at
4 the Atomic Energy Commission and then the NRC since
5 1974?

6 MR. EMCH: Yes, sir.

7 JUDGE ARNOLD: Okay. So you were at the
8 NRC at the time of the TMI accident. Correct?

9 MR. EMCH: Yes, sir.

10 JUDGE ARNOLD: To your knowledge, did that
11 accident result in any grid outage?

12 MR. EMCH: Okay. I'll have to qualify
13 this with I was pretty much a pure health physicist
14 back then. But to my knowledge, I don't believe so,
15 no.

16 JUDGE ARNOLD: Okay. During your career
17 at the Atomic Energy Commission and the Nuclear
18 Regulatory Commission, have you been aware of any
19 unanticipated shutdowns of a nuclear power plant in
20 the U.S.? Unexpected scram?

21 MR. EMCH: Oh, yes, sir. Yes.

22 JUDGE ARNOLD: A lot?

23 MR. EMCH: From time to time.

24 JUDGE ARNOLD: Do you know of any grid
25 outages caused by a non-anticipated shutdown of a

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1 nuclear power plant?

2 MR. EMCH: I'm not aware of any, sir, no.

3 JUDGE ARNOLD: In your experience are --
4 have you been aware of any situations where more than
5 one nuclear power plant on the same grid shut down
6 unanticipated?

7 MR. EMCH: I don't think so. I was -- to
8 make sure I understand your question right. For
9 instance, when Hurricane Andrew was approaching the
10 Florida coast Turkey Point took a couple of -- you
11 know, the -- both nuclear units out of hot -- you
12 know, they took them out of operation and took them --
13 I believe they went down to hot standby to maximize
14 the number of systems they would have available to
15 them.

16 JUDGE ARNOLD: Okay.

17 MR. EMCH: I'm not sure that that's what
18 you were driving at, though.

19 JUDGE ARNOLD: Right. There have been
20 cases where more than one plant on a grid shut down.

21 MR. EMCH: Right. And actually, most of
22 the plants that are anywhere in a zone where
23 hurricanes are an issue, they have a hurricane
24 procedure, so to speak, where they make sure
25 everything's tied down, everything's in place and they

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1 take the plant down to -- if they think they're going
2 to be within the cone of influence they'll take the
3 plant down, like I said, to like, hot shut down or
4 something like that.

5 JUDGE ARNOLD: Uh-huh. In your
6 professional opinion is it likely that a severe
7 accident at STP Unit 3 or 4 would result in a grid
8 outage?

9 MR. EMCH: I don't believe I'm really the
10 one to answer that. I'm not quite sure who is. But
11 I -- well, for a moment. We'll go back to the -- I
12 don't know if this is along the lines of what you're
13 thinking of. But Hurricane Andrew. Okay.

14 Actually, the plant survived quite well.
15 The Turkey Point units. But, of course, the
16 surrounding area did not. Okay. Simply speaking,
17 everything around for many, many miles was flattened
18 and Turkey Point, because of -- for whatever,
19 corporate pride or whatever, wanted to start up right
20 away. And the answer was, You know what, we really
21 don't need you to start up because there's nobody to
22 give power to.

23 JUDGE ARNOLD: Okay. Yes.

24 MR. EMCH: I don't know if that's where
25 you were headed or not, sir. But --

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1 JUDGE ARNOLD: Should the potential for a
2 grid outage be considered within the SAMDA evaluation?

3 MR. EMCH: I don't believe so, sir, no.
4 Earlier there was discussions about the probability of
5 a severe accident and then the probability on top of
6 that of some sort of a grid or a loss of something.
7 And to some extent that's why I was talking about the
8 Turkey Point example. If you've got a phenomena,
9 let's say a weather phenomena that's widespread
10 enough, you know, it's a bigger deal than just the
11 nuclear power plants shutting down. So --

12 JUDGE ARNOLD: Uh-huh. Well, I would --

13 MR. EMCH: We believe that the combination
14 would be remote and speculative in the vernacular of
15 NEPA.

16 JUDGE ARNOLD: Yes. Thank you very much.

17 Mr. Anderson, you advocate using the Gross
18 Domestic Product implicit price deflator for non-
19 residential structures for escalating the cost of a
20 SAMDA to current dollars. Correct?

21 MR. ANDERSON: That's correct.

22 JUDGE ARNOLD: Are there any other indexes
23 that would provide a reasonable estimate of SAMDA cost
24 escalation?

25 MR. ANDERSON: Not in my view, Your Honor.

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1 There are other approaches. And it depends on the
2 level of reasonableness that you're willing to accept,
3 I suppose. For example, the guidance in NUREG/BR-0184
4 I believe calls for use of the Consumer Price Index.
5 That would not be the index that an economist would
6 choose.

7 JUDGE ARNOLD: On page 6 of his rebuttal
8 testimony --

9 MR. EMCH: Excuse me --

10 JUDGE ARNOLD: -- Mister --

11 MR. EMCH: You -- earlier you asked -- as
12 sort of a follow-up earlier you asked some of the
13 other witnesses about the various items that might be
14 part of, components of a SAMDA. And I just wanted to
15 mention one thing. You might have -- I was going to
16 mention training as an additional component. Now,
17 sometimes people think of training as being another
18 form of procedures. And so you might have had that in
19 mind. But I was just going to mention that I would
20 say I would add to the list training of the --

21 JUDGE ARNOLD: Okay. Thank you. And I
22 will be getting around to that. So --

23 MR. EMCH: Oh, okay.

24 JUDGE ARNOLD: On page 6 of his rebuttal
25 testimony Mr. Johnson advocates use of the equipment

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1 and software -- or, I guess, the GDP private non-
2 residential fixed investment, which includes equipment
3 and software as the proper tool for escalating SAMDA
4 costs. Are you familiar with that?

5 MR. ANDERSON: Yes, sir.

6 JUDGE ARNOLD: Okay. What exactly would
7 this equipment and software component reflect?
8 What --

9 MR. ANDERSON: Well, you had that exhibit
10 up during Mr. Johnson's testimony. If you -- I forget
11 the exhibit number. But we could put it back up and
12 look exactly at what it's -- what's included.

13 JUDGE ARNOLD: Okay.

14 MR. ANDERSON: But I might point out maybe
15 a better exhibit to show you would be Exhibit -- NRC
16 Exhibit 18. we can address this, also if you'd like.
17 Whichever one.

18 JUDGE ARNOLD: Okay.

19 MR. ANDERSON: That's what you were
20 referring to was the second row of this table. And
21 that's distinct from the non-residential structures.
22 These are the specific definitions of the two indexes
23 that have been mentioned.

24 JUDGE GIBSON: Just one second, please.

25 MR. ANDERSON: Sure.

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1 JUDGE GIBSON: Mr. Welkie, which exhibit
2 is this and what page?

3 MR. WELKIE: 22, 6.3.

4 JUDGE GIBSON: Whose 22?

5 MR. WELKIE: The NRC.

6 JUDGE GIBSON: The NRC staff Exhibit 22 at
7 page --

8 MR. WELKIE: 6.3.

9 JUDGE GIBSON: -- 6.3

10 MR. ANDERSON: Correct.

11 JUDGE GIBSON: This is what your testimony
12 is referring to right now?

13 MR. ANDERSON: Yes.

14 JUDGE GIBSON: Thank you.

15 JUDGE ARNOLD: All right. Okay. The
16 various lines in this table reflect different indexes?
17 Or --

18 MR. ANDERSON: Yes. And the other exhibit
19 that I propose to show will show you the hierarchy of
20 these indices so that you can get a better context for
21 what we're discussing.

22 JUDGE ARNOLD: Okay. Is the better --

23 MR. ANDERSON: Well --

24 JUDGE ARNOLD: Is the other --

25 MR. ANDERSON: -- it puts this table into

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1 perspective.

2 JUDGE ARNOLD: Well, which is the better
3 thing to be displaying here?

4 MR. ANDERSON: They're both of equal
5 weight.

6 JUDGE ARNOLD: Okay. So the --

7 MR. ANDERSON: These are the definitions.
8 And the other exhibit will show you where these
9 indices fall in the hierarchy of Gross Domestic
10 Product --

11 JUDGE ARNOLD: So --

12 MR. ANDERSON: -- deflators.

13 JUDGE ARNOLD: So the second line is the
14 equipment and software?

15 MR. ANDERSON: Correct.

16 JUDGE ARNOLD: Could we zoom in on the
17 right-hand column, second line?

18 MR. ANDERSON: Yes.

19 JUDGE ARNOLD: Oh, boy. You have no idea
20 how un-enlightening this is to me.

21 MR. ANDERSON: Well, but the key that you
22 should focus on is the last sentence there, "Excludes
23 equipment that are integral parts of structures."
24 Which that equipment is reflected in the index that we
25 used.

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1 JUDGE ARNOLD: And you say that most SAMDA
2 would consist of such --

3 MR. ANDERSON: Well --

4 JUDGE ARNOLD: -- structures?

5 MR. ANDERSON: -- let me back up. Perhaps
6 a way to put this in context for you would be to
7 explain how the staff views this entire consideration
8 of SAMDAs. SAMDAs are really alternatives to plant
9 design that affect the entire project, the entire
10 construction project of the reactors. And so it's the
11 staff's position that the prospect of looking at
12 SAMDAs should be viewed in the context of the overall
13 project construction.

14 And when you do that I feel that the non-
15 residential structures index is the most appropriate
16 index to apply to the entire plant construction, of
17 which the SAMDAs are minor variations and design.

18 JUDGE ARNOLD: Uh-huh.

19 JUDGE GIBSON: Before we leave this
20 exhibit I'd like to focus on that last sentence you
21 were just mentioning, that that's the one we ought to
22 focus on, that says, "Excludes certain types of
23 equipment that are integral parts of structures that
24 are not included in the value of structures."

25 MR. ANDERSON: Right.

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1 JUDGE GIBSON: Now, it -- there's
2 something that's a little bit ambiguous about that
3 sentence because it says, Excludes certain types.
4 Which means there's certain types that are included
5 and some that are excluded. Can you give us some
6 perspective from the staff's point of view about what
7 certain types of equipment -- because this was not
8 designed for nuclear power plants, this was designed
9 for all kinds of facilities.

10 MR. ANDERSON: That's correct.

11 JUDGE GIBSON: What about a nuclear power
12 plant would be excluded or included under that last
13 line from the staff's perspective?

14 MR. ANDERSON: From the staff's
15 perspective the best answer I can give you is the
16 preceding cell of the table, just above where we're
17 looking now, where it does describe --

18 JUDGE GIBSON: Okay.

19 MR. ANDERSON: -- the types of equipment.

20 JUDGE GIBSON: That would be the first
21 cell.

22 MR. ANDERSON: Yes.

23 JUDGE GIBSON: Okay.

24 Could we go to the first cell, Mr. Welkie,
25 so we -- I make sure we know what we're talking about

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1 here.

2 Okay. That? Is that what you wanted to
3 look at.

4 MR. ANDERSON: That's correct.

5 JUDGE GIBSON: Okay.

6 MR. SPENCER: Your Honor, it's -- for the
7 purpose of transcript, it may not be clear what the
8 first cell is tied to --

9 JUDGE GIBSON: Thank you.

10 MR. SPENCER: -- which --

11 JUDGE GIBSON: Excellent point, Mr.
12 Spencer. Thank you.

13 Okay.

14 MR. ANDERSON: This --

15 JUDGE GIBSON: Hold on a minute.

16 MR. ANDERSON: All right.

17 JUDGE GIBSON: This is the first cell of
18 Table 6.1 on the exhibit that we've been discussing,
19 which is on page 6.3. Is this Exhibit --

20 MR. ANDERSON: Twenty-two.

21 JUDGE GIBSON: -- 22? Okay. Now -- and
22 we're talking about the first cell under comments on
23 that exhibit. And Mr. Welkie is highlighting that for
24 the witness so that you can explain to us what the
25 significance is of this first cell for explaining what

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1 the last sentence of the second cell means. Please
2 proceed.

3 MR. ANDERSON: "Includes certain types of
4 equipment." I'm reading now the third sentence.
5 "Includes certain types of equipment such as plumbing
6 and heating systems and elevators that are considered
7 integral parts of the structure." I would agree that
8 it's not --

9 JUDGE GIBSON: Yes, I know.

10 MR. ANDERSON: -- explicit --

11 JUDGE GIBSON: Because it contains --

12 MR. ANDERSON: -- to a nuclear plant. But
13 what you have to keep in mind with these indices that
14 are developed by the Bureau of Economic Analysis is
15 that they're intending to throw a wide net --

16 JUDGE GIBSON: Sure.

17 MR. ANDERSON: -- and they can never get
18 a specific -- you know, you have to get as specific as
19 you can.

20 JUDGE GIBSON: Fair enough. It's just
21 what is difficult for me to understand the value of
22 the statement is that in the first cell it says,
23 Includes certain types of equipment. In the second
24 cell it says, Excludes certain types of equipment. So
25 essentially, what we've got is there's the things that

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1 are in and the things that are out but we don't really
2 know what they are, other than plumbing, heating
3 systems and elevators. That's the extent of it.
4 Right? With some qualification --

5 MR. ANDERSON: That's the extent of --

6 JUDGE GIBSON: -- that's there --

7 MR. ANDERSON: -- what's been documented,
8 yes. That's correct.

9 JUDGE GIBSON: Okay. So -- because the
10 qualification, That are considered an integral part of
11 the structure refers back to certain types of
12 equipment. So --

13 MR. ANDERSON: Right. But --

14 JUDGE GIBSON: -- it seems to me that in
15 some ways we're chasing our tail trying to use this
16 table. Now, I realize there's another one that you
17 want to refer to. And we're going to get to that.

18 MR. ANDERSON: Well, I --

19 JUDGE GIBSON: But I want you to see if
20 you can provide some context for us because certain
21 types of equipment seems to me to be basically
22 useless, because it includes them in one and excludes
23 them in the other and doesn't say what it is.

24 MR. ANDERSON: I agree. Except that the
25 point of focus on this table should be what is

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1 included, in terms of the big ticket items, in my
2 view. So we're talking about construction of a non-
3 residential structure.

4 JUDGE GIBSON: Okay.

5 MR. ANDERSON: The major construction
6 activities. Which are identified there, such as --
7 you know, they talk about additions, alterations,
8 structural replacements, pipelines, railroad tracks,
9 power lines and plants, dams and levies. Large
10 industrial construction. That's the reason that the
11 staff chose this particular index. It was the most
12 specific available index --

13 JUDGE GIBSON: Okay.

14 MR. ANDERSON: -- in my view.

15 JUDGE GIBSON: Okay. Well, that's fine.
16 I just -- so you think it basically -- the includes
17 refers to big stuff and the excludes is little
18 stuff --

19 MR. ANDERSON: Yes.

20 JUDGE GIBSON: -- essentially. Is that
21 right?

22 MR. ANDERSON: Correct.

23 JUDGE GIBSON: Okay. Now, you indicated
24 there was another --

25 MR. ANDERSON: Exhibit?

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1 JUDGE GIBSON: -- exhibit that you believe
2 is perhaps more useful for purposes of understanding
3 this.

4 MR. ANDERSON: It provides additional
5 context.

6 JUDGE GIBSON: Okay. Provides additional
7 context.

8 MR. ANDERSON: Yes. That would be Exhibit
9 18 --

10 JUDGE GIBSON: Okay.

11 MR. ANDERSON: -- I believe.

12 JUDGE ARNOLD: Before we get into that,
13 just one more question on this table. The fact that
14 certain types of equipment -- or wait -- "includes
15 certain types of equipment," in the first line, where
16 it's investment and structures by private business.
17 Does that refer to the same stuff that is excluded in
18 the second line?

19 MR. ANDERSON: That's my belief.

20 JUDGE ARNOLD: Thank you.

21 JUDGE GIBSON: Okay. What was the other
22 exhibit?

23 MR. ANDERSON: Eighteen.

24 JUDGE GIBSON: Okay. And this would be
25 NRC Staff Exhibit 18.

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1 MR. ANDERSON: If you could focus on
2 the --

3 JUDGE GIBSON: Correct?

4 MR. ANDERSON: -- far left. Yes. NRC
5 Exhibit --

6 JUDGE GIBSON: Okay.

7 MR. ANDERSON: -- 18.

8 JUDGE GIBSON: And is this just a one-page
9 document?

10 MR. ANDERSON: Yes.

11 JUDGE GIBSON: Or is this -- so this is
12 only one page? So we're -- your testimony is now
13 referring to Staff Exhibit 18.

14 MR. ANDERSON: Correct.

15 JUDGE GIBSON: Is that correct? Okay.
16 Thank you.

17 MR. ANDERSON: This is an attempt to show
18 the hierarchy of these various indices. So if you
19 focus at line 7 you start by looking at gross private
20 domestic investment. Okay? And then you nest down
21 into more specific indices as you nest inward. Okay?
22 So the structures index that I'm -- or the non-
23 residential structures index that I'm referring to
24 nests down through line 8 and 9 to line 10. That's
25 how you arrive at the index. And the other, the

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1 equipment and software, is -- well, let me back up.

2 Line 10 is the index that was represented
3 by the first line of the table in Exhibit 22. The
4 second line of the table in Exhibit 22 is represented
5 by line 11 in this table. So you could see these are
6 the most detailed levels that you can get to in terms
7 of a domestic product implicit price deflator to use
8 for inflation scaling.

9 JUDGE GIBSON: Now, do I understand
10 correctly that the staff uses this document for --
11 well, let me rephrase.

12 What is the -- what does the staff use
13 this document for?

14 MR. ANDERSON: Okay. This document is
15 used to develop the inflation scaling factor that is
16 used in the SAMDA analysis.

17 JUDGE GIBSON: Okay. And so you basically
18 use different inflation factors, depending on what the
19 item is. Is that right? Where it falls on this
20 table?

21 MR. ANDERSON: Well, in the context of
22 this analysis the item is the overall project --
23 construction project.

24 JUDGE GIBSON: Okay. And would that fit
25 under structures?

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1 MR. ANDERSON: In my view.

2 JUDGE GIBSON: Okay. And so anything
3 that's a structure, in your estimation, would fit
4 under that. Okay?

5 MR. ANDERSON: A non-residential --

6 JUDGE GIBSON: At a nuclear --

7 MR. ANDERSON: -- structure.

8 JUDGE GIBSON: -- power plant?

9 MR. ANDERSON: Correct.

10 JUDGE GIBSON: Okay. And that would be
11 the appropriate inflation adjustment or deflator,
12 whatever we're going to call it, discount rate or
13 something that we're going to use. Is that right?

14 MR. ANDERSON: Well, it's definitely --
15 it's called a deflator.

16 JUDGE GIBSON: A deflator. Okay.

17 MR. ANDERSON: That's the proper term.
18 It -- you use it by taking a -- the target year over
19 the source year. And that ratio gives you the factor.

20 JUDGE GIBSON: Okay.

21 MR. ANDERSON: That's explained in the
22 testimony.

23 JUDGE GIBSON: Okay. And that's the
24 reason that you chose the --

25 MR. ANDERSON: The 2.2 --

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1 JUDGE GIBSON: -- non-residential
2 structures component of the GDP implicit price
3 deflator because it matches up to this table?

4 MR. ANDERSON: Correct.

5 JUDGE GIBSON: Okay. Thank you.

6 JUDGE ARNOLD: We're going to look at
7 equipment and software. We've already discussed the
8 equipment portion of that. But looking at software,
9 in my experience I've run across two different types
10 of software. And that is commercial off-the-shelf
11 software that you can just go out and -- to a vendor
12 and buy. And then there's software that's more
13 developed for a specific purpose. I'm trying to
14 figure out the -- in the equipment and software is
15 that software better reflective of off-the-shelf or
16 individual developed software?

17 MR. ANDERSON: It's my believe that it's
18 more reflective of the individually developed
19 software, special purpose software. However, the
20 SAMDA that addresses that should be viewed in the
21 context of the overall plant construction. So, you
22 know, when you evaluate all these questions they need
23 to be in the context of the real thing that you're
24 valuing is a plant with some alternatives added to it.
25 Rather than simply looking at each SAMDA like it's on

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1 a menu, for example.

2 JUDGE ARNOLD: Uh-huh. Okay. As I did
3 with NINA and the Intervenors, I want to go through
4 the components of a SAMDA and get you opinion as to
5 what index is best -- the best reflector of the cost
6 of that. I previously divided the SAMDA into various
7 cost components. The first one was engineering design
8 and analysis. What index would provide the best
9 reflection of that cost?

10 MR. ANDERSON: Well, again, Your Honor,
11 the way I viewed this question was in the context of
12 the entire plant. So all of my analysis is based on
13 how would you scale the cost of an entire plant with
14 varying alternatives in the -- in SAMDA space. So I
15 don't have a way to ascribe a specific index for each
16 SAMDA measure. If you -- is there another way you
17 could pose -- or -- the question to perhaps help my
18 understanding or -- do you understand --

19 JUDGE ARNOLD: Well, let me put it like
20 this. The costs of the SAMDA, the estimate -- I don't
21 think they sat down and estimated the entire plant
22 cost without the SAMDA and then sat down and evaluated
23 the cost of the entire plant with the SAMDA. I think
24 they had the plant cost done and they said, To add
25 this SAMDA it would cost an additional so many

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1 dollars. So I think that would kind of argue against
2 your position. And your position doesn't exactly help
3 me develop an understanding of what index is the
4 best -- is the most appropriate. But I don't think I
5 can reword this in a way that fits into your picture
6 of how to do it.

7 Is there anyone else to -- Mr. Emch, do
8 you have any opinions here?

9 MR. EMCH: With some trepidation. I once
10 heard a nuclear power plant described as a really
11 large collection of piping and cables -- once you get
12 outside of the reactor -- a really large collection of
13 piping and cables. I -- you know, that kind of sounds
14 to me like the index that Dave is talking about.

15 And as you've pointed out, Judge Arnold,
16 there are several -- I mean, depending on which SAMDA
17 you pick out of the list they're going to varying
18 degrees use -- be composed of these components that
19 you've already talked to us about. But -- and we felt
20 that the one that Dave picked was the appropriate one.

21 The only other thing I wanted to add is
22 after just the little bit of looking that we did at
23 the indexes that were proposed by the various parties
24 here, my impression -- and I think that the numbers
25 would bear this out -- I don't really think it makes

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1 that much difference, sir. Okay. I don't think -- I
2 think that the -- you know, within reason whatever
3 index you choose, I believe it's not going to change
4 the conclusions of the analysis that there are no
5 cost-beneficial SAMDAs.

6 JUDGE ARNOLD: Uh-huh.

7 Mr. Anderson, I think this is for you. In
8 providing an estimate of replacement power costs
9 what's the best, most realistic basis for that, the
10 NUREG/BR-0184, ERCOT prices in 2008, ERCOT prices in
11 2009 or something else?

12 MR. ANDERSON: Well, as I stated I believe
13 in my testimony, it's important to reflect realistic
14 conditions. To the effect that -- or to the degree
15 that the NRC guidance was written for regulated
16 markets it may not fully apply, though parts of it do.
17 And it's the only guidance available. Recognizing
18 that it's not unwarranted to look at the effects of
19 prices that are actually observed in the market that
20 you're considering. Which was done in both the
21 Applicant and staff analysis, again, with the bottom
22 line conclusion that that does not change.

23 JUDGE ARNOLD: Uh-huh. And to what extent
24 should market effects be included in the cost
25 estimate?

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1 MR. ANDERSON: In reflection on the
2 testimony -- well, let me back up a little bit. In
3 the staff's testimony on this point the intent was to
4 lay out our analysis in sort of a side-by-side
5 comparison with how the Applicant proceeded through
6 their analysis. Saying that, we adopted all of the --
7 or similar approaches on the treatment of market
8 effects.

9 And it's my belief that the impact on
10 price, the multiplier, if you will, to price that you
11 can determine by removing the STP units from service
12 is sufficient to account for market effects and that
13 the additional step of multiplying that price by all
14 the megawatt hours ever produced in a year is simply
15 a re-characterization of the same impact.

16 JUDGE ARNOLD: Uh-huh. And price spikes.
17 Should there be some special accounting for those?

18 MR. ANDERSON: I don't think it's
19 unreasonable to account for price spikes. Since -- in
20 the case of ERCOT, anyway, there is documentation to
21 suggest some level of price spike behavior that can be
22 observed in the market. It's not unrealistic to
23 perform some sort of add-on, if you will, for price
24 spikes.

25 JUDGE ARNOLD: Uh-huh. Should the SAMDA

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1 analysis consider the effect of a grid outage?

2 MR. ANDERSON: In my opinion, no. Again,
3 the information that we have about grid outages is
4 speculative. We've already heard testimony about how
5 remote the options for complete grid outage are. And
6 staff did not look at or address the potential for
7 rolling blackouts or any of that type of potential
8 impact. Again, we're not aware of a reliable
9 probability to assign to such events.

10 The probability that was adopted by -- or
11 assumed by the Applicant and reflected in the staff
12 analysis, as well is a 10 percent probability. I
13 think we all agree that that is probably a high --
14 very high number, making it conservative. And the
15 multiplication of probabilities results in although a
16 potentially significant event, when risk weighted it's
17 very small. Very small contribution to the impact.

18 JUDGE ARNOLD: And should the effect of
19 consumer impacts be included in SAMDA as part of the
20 replacement power costs?

21 MR. ANDERSON: Not in my opinion. It's
22 already reflected in the multipliers that you get to
23 the average balancing prices.

24 JUDGE ARNOLD: Of the two discount rates
25 used by Applicant, 7 percent and 3 percent, which of

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1 these is most appropriate and why?

2 MR. ANDERSON: Well, in the view of the
3 staff the 7 percent discount rate is favored for a
4 couple of reasons. The Office of Management and
5 Budget suggests that for federal projects, federal
6 actions, the 7 percent rate should be used. It
7 reflects the opportunity costs of capital faced by the
8 commercial sector. And as such, the Applicant being
9 a commercial entity, it would reflect a more realistic
10 opportunity cost of capital for them. There is also
11 a suggestion in the guidance to use 3 percent to
12 reflect the societal discount rate, which the staff
13 and the Applicant have done, as well in our analysis.
14 That's fairly standard practice in benefit cost
15 analysis.

16 JUDGE ARNOLD: And depending -- do you get
17 any different SAMDA conclusion if you use a 3 percent
18 versus 7?

19 MR. ANDERSON: No, sir.

20 JUDGE ARNOLD: No. Okay. That's it for
21 me.

22 JUDGE GIBSON: What we'll do is we'll
23 recess at this point. It may not take you all 15
24 minutes to know whether you have any -- to put your
25 questions together. But we will go in our break-out

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1 room and Mr. Esser will come back out in a few
2 minutes.

3 MR. EMCH: Judge Gibson?

4 JUDGE GIBSON: Yes?

5 MR. EMCH: There was some discussion about
6 one particular topic earlier today that we, as the
7 staff, feel that we'd like to be heard on. The
8 discussion about --

9 MR. EYE: Your Honor, I'm going to object.
10 There's not a pending question. So I don't think this
11 is a proper statement.

12 JUDGE GIBSON: Well, you -- your counsel
13 is welcome to propose some rehabilitation if that's
14 necessary, if that's -- okay?

15 So we'll -- we will recess to our break-
16 out room. And when you all are ready for us we'll
17 come back on and finish this up today. Thank you.

18 (Whereupon, a short recess was taken.)

19 JUDGE GIBSON: A couple of minor
20 housekeeping matters before we get back into our
21 examination. First of all, the security guards, as I
22 understand it, have left. And the doors are locked.
23 So when you leave this place please be sure and put
24 your badge by the security desk where you got it this
25 morning. And realize that once you're out of there

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1 you're not getting back in here. Okay?

2 The second thing is, Counsel, I would
3 definitely like for you all to give some thought to
4 how long you're going to need for closing argument
5 tomorrow. You can tell us -- you don't need -- don't
6 know this now. But we would like to know it by -- in
7 the morning. You all can think about that. Okay?

8 And final thing is when we conclude here
9 I believe this is going to conclude our examination
10 with respect to Contention CL-2. And so if the
11 witnesses or other personnel that are involved in that
12 need to go back I don't think there's going to be any
13 reason why we're going to need to call them tomorrow.
14 So you can make your own decisions. But at least I
15 wanted to let you know that.

16 Yes?

17 MR. SPENCER: Your Honor, I have one
18 questions on closing argument tomorrow.

19 JUDGE GIBSON: Yes?

20 MR. SPENCER: Would the Board mind if the
21 staff used two different attorneys for part of the
22 closing argument? Or does the Board just want one
23 attorney for closing argument?

24 JUDGE GIBSON: No, that will be just fine.
25 That will be fine.

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1 MR. SPENCER: Thank you.

2 JUDGE GIBSON: Sure.

3 Okay. I'd like -- I don't know which one
4 of you is -- I guess, Mr. Anderson, are you the expert
5 in non-residential structures index?

6 MR. ANDERSON: Yes, sir.

7 JUDGE GIBSON: Okay. Does the non-
8 residential structures index cover the following
9 aspects of SAMDA cost components? First, design. Yes
10 or no?

11 MR. ANDERSON: Yes.

12 JUDGE GIBSON: Procurement?

13 MR. ANDERSON: Yes.

14 JUDGE GIBSON: Installation?

15 MR. ANDERSON: Yes.

16 JUDGE GIBSON: Procedures?

17 MR. ANDERSON: Yes.

18 JUDGE GIBSON: Quality assurance?

19 MR. ANDERSON: Yes.

20 JUDGE GIBSON: License activities for
21 seeking regulatory approval?

22 MR. ANDERSON: I believe so.

23 JUDGE GIBSON: Okay.

24 Now, who is the expert in Core Damage
25 Frequency?

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1 MR. RISHEL: I think that question can be
2 referred to me.

3 JUDGE GIBSON: Okay. Can you explain how
4 Core Damage Frequency is used in the staff's refined
5 analysis?

6 MR. RISHEL: Yes. In the staff's direct
7 testimony it would probably be appropriate to bring up
8 Table 13 to begin with, if possible.

9 JUDGE GIBSON: Okay. Just a minute.
10 Table 13 to what? Your testimony?

11 MR. RISHEL: Yes, the staff's direct
12 testimony.

13 JUDGE GIBSON: Okay. What page is that
14 on?

15 MR. RISHEL: That's on page 62.

16 JUDGE GIBSON: And that would be of the
17 direct or rebuttal?

18 MR. RISHEL: Correct.

19 JUDGE GIBSON: No. I mean, actually, it's
20 one or the other.

21 MR. RISHEL: Oh, this is the direct.
22 Sorry.

23 JUDGE GIBSON: Okay.

24 MR. RISHEL: I thought you said correct.

25 JUDGE GIBSON: No. That's okay. That's

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1 okay.

2 MR. RISHEL: Sorry about that.

3 JUDGE GIBSON: I understand. It's late in
4 the day. But we are going to finish today on this
5 contention. So what page?

6 MR. RISHEL: This is page 62.

7 JUDGE GIBSON: Okay. Before you say
8 anything let's let Mr. Welkie get it up there for you.

9 Now, it's on the side. Maybe we can turn
10 that around? Okay. Anyway we can make that a little
11 bigger, Mr. Welkie? Thank you.

12 Okay.

13 MR. RISHEL: I bring this table to the --
14 to your attention primarily to show one thing.
15 Basically, in our SAMDA analysis up to this very point
16 we're doing what's called a screening analysis.

17 And what I mean by that is as we did the
18 averted cost calculations we assumed that the SAMDA --
19 the lowest cost SAMDA in this case, which pre-
20 inflation adjusted, mitigated 100 percent of the Core
21 Damage Frequency. So in essence what we're doing is
22 we're taking the lowest cost SAMDA and saying it can
23 reduce 100 percent of the accident sequences for the
24 reactor.

25 We do that as a screening analysis,

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1 because if the screening analysis didn't show a SAMDA
2 as being cost beneficial clearly, if you introduce the
3 actual Core Damage Frequency reduction it would just
4 spread the gap. And this case here is --

5 JUDGE GIBSON: Hold on a minute. It would
6 just spread the gap?

7 MR. RISHEL: Well --

8 JUDGE GIBSON: You'll have to explain what
9 you mean by that.

10 MR. RISHEL: What I mean by that is if you
11 start introducing the actual Core Damage Frequency for
12 the SAMDA -- each SAMDA's ability to reduce Core
13 Damage Frequency it cannot avert as much cost as you
14 asserted in the screening analysis. The screening
15 analysis assumes 100 percent meaning that it can get
16 rid of all accident classes when, in fact, it can only
17 address a certain accident class or maybe little bits
18 of several, but not 100 percent. So it would just be
19 a fraction of that. And so the benefit of that SAMDA
20 is not nearly as good as it is stated here in this
21 particular table. And so the benefit is actually
22 significantly less. And so what I mean by the gap is
23 in terms of the SAMDA's cost and its benefit they
24 spread apart.

25 MR. EMCH: Another way of looking at it,

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1 if you look on this table the -- let's say very top
2 one there -- 14.6. If that number gets to one well,
3 you've reached the edge of cost beneficial, cost-
4 effective. Okay? And so when we refer -- we've got
5 into the habit of referring to it as the gap, because
6 as we evaluate each factor we say, Does it spread the
7 gap or bring them closer together -- or bring it --
8 make it closer to being cost-effective. So that's why
9 I'm sorry that we used that terminology, the gaps.

10 JUDGE GIBSON: No need to apologize. It
11 was just -- I didn't didn't know what you were talking
12 about.

13 MR. EMCH: So --

14 JUDGE GIBSON: And it's probably a good
15 idea if I do. So --

16 MR. RISHEL: And I apologize. So in Table
17 13 I just wanted to bring that to the counsels'
18 attention that what we're assuming here is that the
19 lowest cost SAMDA is reducing 100 percent of the Core
20 Damage Frequency.

21 JUDGE GIBSON: Okay.

22 MR. RISHEL: When we -- if you could
23 actually go back to -- one step back -- one table
24 back, Table 12 in the staff's testimony.

25 JUDGE GIBSON: Page 60.

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1 MR. RISHEL: Yes, that's on page 60.

2 JUDGE GIBSON: Just the table?

3 MR. RISHEL: Yes, just the table.

4 JUDGE GIBSON: Okay.

5 See if we can highlight that and make it
6 a little bigger.

7 MR. RISHEL: Yes.

8 JUDGE GIBSON: Let me just make sure. The
9 witness is testifying about Table 12 on page --

10 MR. RISHEL: Sixty.

11 JUDGE GIBSON: -- 60 of your --

12 MR. RISHEL: Direct.

13 JUDGE GIBSON: -- direct testimony.

14 MR. RISHEL: Correct.

15 JUDGE GIBSON: Okay. Thank you.

16 MR. RISHEL: This table's essentially the
17 last row of Table 13, which we had just looked at.

18 But

19 the reason I'm looking at this particular table, Table
20 12 is the attributes of a SAMDA analysis. So we look
21 at public exposure and property damage. They're off-
22 site costs.

23 And then we also look at the averted on-
24 site costs. The contention focuses on replacement
25 power costs. In this particular table here we have

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1 assumed all the Intervenor's preference in terms of
2 power spikes, consumer costs and outages. And that's
3 how we get to the replacement power costs being there,
4 for example, on the 7 percent discount rate of
5 \$170,592.

6 The assumption here is that that's the
7 maximum benefit. So any SAMDA that you would
8 implement is actually going to only account for a
9 certain fraction of that dollar amount, not that
10 dollar amount that you see there. And so what the
11 staff did as the next step -- the next logical step in
12 the SAMDA analysis you would actually introduce the
13 Core Damage Frequency for each SAMDA.

14 And so if you look here, for example, the
15 off-site costs are very, very small. Public exposure
16 and property damage only amount to \$86. So if you
17 have a mitigative SAMDA, for example, it's only going
18 to address those numbers very minimally. The
19 replacement power one, in order to have replacement
20 power costs you in effect need to take the reactor
21 offline. You need to damage it. You need to have
22 Core Damage Frequency. By mitigating and accident you
23 still allow the accident to occur, you still have core
24 damage, you still need replacement power.

25 And so to address SAMDAs or to refine the

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1 analysis the next step would be to say, Well, does
2 this SAMDA actually reduce Core Damage Frequency. And
3 so the staff does that in its direct testimony and
4 also, the rebuttal testimony. So I would refer as the
5 final table to look at, in this case we could look at
6 Table 14 in the staff's direct testimony.

7 JUDGE GIBSON: Okay.

8 And let's find that, Mr. Welkie, please.

9 MR. RISHEL: That would be on -- let's see
10 here -- page 69 of the staff's direct testimony.

11 JUDGE GIBSON: Okay. The witness will be
12 testifying from -- or off of page 69 of the direct
13 testimony, Table 14.

14 MR. RISHEL: In Table 14, column 2 --
15 well, column 1 has the SAMDAs that actually reduce
16 Core Damage Frequency. Out of the 21 SAMDAs that GE
17 proposed in the Technical Support Document only a
18 handful actually reduce Core Damage Frequency. The
19 majority of them are mitigative. So they will allow
20 the core to damage. And so you'll have replacement
21 power costs for all those.

22 It's these few here that actually reduce
23 the probability of a Core Damage Frequency. And so
24 these are the ones that are going to mitigate the
25 power costs. And so these are the ones that you would

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1 focus on the next step beyond the screening analysis
2 where you assumed 100 percent reduction with every
3 SAMDA.

4 In this case here you can see that of
5 these seven or eight SAMDAs that are listed in this
6 table, they don't reduce 100 percent. In some cases
7 they reduce a fractional amount, 2 percent, anywhere
8 up to 52 percent. So this is as good as it gets for
9 these SAMDAs. This is getting more at the actual
10 reduction potential. And so this --

11 JUDGE GIBSON: Hold on.

12 MR. RISHEL: Sure.

13 JUDGE GIBSON: You say it's as good as it
14 gets, you know. What do you mean as good as it gets
15 for these SAMDAs?

16 MR. RISHEL: In terms of being able to
17 reduce Core Damage Frequency they're not 100 percent.
18 They're not capable of reducing Core Damage Frequency
19 at 100 percent.

20 JUDGE GIBSON: Okay.

21 MR. RISHEL: It's some value less than
22 that. This is --

23 JUDGE GIBSON: So there is core damage?

24 MR. RISHEL: Well, this is the reduction
25 probability --

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1 JUDGE GIBSON: Right.

2 MR. RISHEL: -- of that 100 percent value.

3 And --

4 JUDGE GIBSON: Okay.

5 MR. RISHEL: So some of these -- for
6 example, 2-C, the very first one there, does some
7 reduction of Core Damage Frequency. And when you
8 introduce the reduction of Core Damage Frequency, the
9 actual value, you can see that in the column -- let's
10 see. It's --

11 JUDGE GIBSON: Yes. Actually, we need you
12 to slide it a little bit to the left. Thank you.

13 MR. RISHEL: The -- column 4, the actual
14 averted on-site costs. That column there is showing
15 you it's more reflective of the benefit of the SAMDAs.
16 So it's not what was in Table 13 using the screening
17 analysis. This here is reflective of the actual
18 benefit of the handful of SAMDAs that do reduce Core
19 Damage Frequency. Minding the fact that we have
20 included all the assumptions that the Intervenor
21 proposed. So the numbers tend to be fairly high, in
22 terms of the base numbers, than what we would normally
23 consider in a traditional SAMDA analysis.

24 So when you introduce the actual Core
25 Damage Frequency you find that, for example, the best

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1 performing SAMDA here, the cost of the SAMDA -- it's
2 SAMDA --

3 If you could slide to the left, please, so
4 I can just see -- it's that bottom one there, 9-B.
5 And then back over again. Sorry.

6 JUDGE GIBSON: It's the next-to-the-
7 bottom, wasn't it -- isn't it?

8 MR. RISHEL: Yes. It's the next -- yes.

9 JUDGE GIBSON: Okay.

10 MR. RISHEL: The best one there, the cost
11 of the SAMDA is 29.3 times more than its expected
12 benefit. When you start introducing the actual Core
13 Damage Frequency reduction potential of these SANDAs.
14 This is a -- including all areas that the Intervenor
15 took with regard to replacement power. So all those
16 considerations are in there. And the only thing we
17 have done in this one step is introduce actual Core
18 Damage Frequency reduction.

19 And so it shows here that even though you
20 might -- even with consideration of these additional
21 effects for replacement power costs when you take away
22 one level of conservatism, meaning you step out of the
23 screening analysis mode and start applying the actual
24 Core Damage Frequency, those considerations don't
25 afford you a cost-beneficial SAMDA, even with their

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1 consideration. So when we --

2 JUDGE GIBSON: When you say even with
3 their consideration you mean even using their numbers?

4 MR. RISHEL: Exactly.

5 JUDGE GIBSON: Is that what you mean?

6 MR. RISHEL: Yes. Sorry.

7 So even when you include those costs
8 calculations in, in the replacement power ledger, that
9 part that we've been talking about today, the price
10 spikes, the consumer impacts, the grid outage,
11 regardless of their merit, if you just include them
12 based on the assumption of how they were calculated,
13 you get to a situation here, when you start
14 introducing actual Core Damage Frequency, where these
15 considerations don't actually change the conclusion,
16 meaning that there is no cost-beneficial SAMDA with --
17 when you do consider them.

18 So you could look at it two ways. You
19 could argue each one independently and say, Is this
20 the right way, the correct way to account for that
21 piece; say grid outage, for example. Or you could
22 look at this way, where you could say, Well,
23 regardless of that, assuming that it's been accounted
24 for in some meaningful way, and then you introduce the
25 actual Core Damage Frequency of these SAMDAs you find

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1 that you don't get to a situation where you will find
2 a cost-beneficial SAMDA for the proposed plants.

3 JUDGE GIBSON: Okay.

4 MR. EMCH: Let me try to -- try it a
5 little bit different. Can we go back to the table --
6 it was 12, I believe -- yes, 12 on page -- was it 60?

7 MR. RISHEL: Yes.

8 MR. EMCH: Page 60.

9 JUDGE GIBSON: Assume you'll be very
10 brief. There's just some other point you needed to
11 make?

12 MR. EMCH: Yes, sir.

13 JUDGE GIBSON: Okay.

14 MR. EMCH: Oh, actually, it's not that
15 one. It's the -- 13? Yes, Table 13 on page 62.

16 Throughout the testimony, both --

17 JUDGE GIBSON: Just a minute. Let him get
18 Table 13 up there. Okay.

19 MR. EMCH: Throughout the testimony --
20 throughout our testimony we talked about the fact that
21 it -- the original analysis was a screening analysis.

22 JUDGE GIBSON: Right.

23 MR. EMCH: And I can tell you from my
24 experience that all the SAMDA analyses are usually --
25 start out as a screening analysis. They make some

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1 very conservative assumptions such as the ones that
2 Jeremy was talking about, about the -- that each of
3 the SAMDAs will make all of the residual risk of the
4 plant go to zero.

5 JUDGE GIBSON: Uh-huh.

6 MR. EMCH: Okay? So instead of one or two
7 times ten to the minus seven you're actually talking
8 zero. Okay. That's not possible. Okay. That's the
9 point -- one of the points Jeremy was trying to make.
10 So when you do the analysis that way and that last
11 column comes up like, 100, 200, 1,000 you say, We're
12 done, okay, we just did a very conservative analysis
13 and we didn't come anywhere close, there is no need to
14 refine the analysis.

15 JUDGE GIBSON: Uh-huh.

16 MR. EMCH: Okay. However, what we found
17 as we started incorporating the various issues that
18 the Intervenor had raised --

19 JUDGE GIBSON: When you say incorporating
20 the issues you mean accepting their numbers?

21 MR. EMCH: The economic --

22 JUDGE GIBSON: Okay.

23 MR. EMCH: -- factors. Right. Yes.

24 JUDGE GIBSON: Okay.

25 MR. EMCH: You can see the third line down

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1 there. We got down to a -- in our parlance the gap
2 narrowed to 1.4.

3 JUDGE GIBSON: Uh-huh. Okay.

4 MR. EMCH: When you get into that range
5 then you say, Okay, we need to do a more refined
6 analysis, it's time to move away from the screening
7 analysis because --

8 JUDGE GIBSON: Right.

9 MR. EMCH: -- the screening analysis told
10 us that --

11 JUDGE GIBSON: Right.

12 MR. EMCH: -- something's close.

13 JUDGE GIBSON: I got that. Now, where is
14 1.4 on there? Did you mean 1.3?

15 MR. RISHEL: The third line, last column.

16 JUDGE GIBSON: Okay. The third line.
17 Okay. 1.4. Okay. That's good.

18 Okay.

19 MR. EMCH: What -- could I give one more
20 point on this, sir?

21 JUDGE GIBSON: Okay. Please.

22 MR. EMCH: What we're trying to say about
23 preventive versus mitigative SAMDAs. If the
24 preventive SAMDA will -- the presumption is that you
25 may be able to avoid core damage.

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1 JUDGE GIBSON: Uh-huh.

2 MR. EMCH: Okay. And that's why if you
3 can avoid core damage you'll probably be shut down for
4 some period of time because of investigations and
5 things like that but you probably will not have the
6 longer-term shutdown that you would get -- if you
7 actually get core damage you're going to be down for
8 awhile.

9 JUDGE GIBSON: Right.

10 MR. EMCH: For a long while. Okay.
11 Versus the mitigative SAMDAs, which it says -- the
12 analysis says you're -- you are going to get core
13 damage. Okay. The --

14 JUDGE GIBSON: Uh-huh.

15 MR. EMCH: The mitigative SAMDAs say,
16 We're going to do something that reduces the amount of
17 radioactive material that gets released, reduces -- it
18 will eventually reduce the consequences. You know,
19 less release means less consequences --

20 JUDGE GIBSON: Right.

21 MR. EMCH: -- okay, to the public, et
22 cetera.

23 JUDGE GIBSON: All right.

24 MR. EMCH: And so that's the difference
25 here. And the release goes into Chapter -- I'm

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1 sorry -- Table 12 again, on page 60. And what Jeremy
2 was trying to point out is the mitigative SAMDAs will
3 give you some improvement on the first four lines up
4 there, the public exposure, property damage,
5 occupational exposure and in reality, cleanup and
6 decontamination, even though the equations don't show
7 that.

8 But the big contributor here, the
9 overwhelmingly large contributor here is the
10 replacement power. And in order to have an impact on
11 that you need to have -- the SAMDA needs to reduce
12 Core Damage Frequency. That was our point.

13 JUDGE GIBSON: Okay. Thank you. I
14 believe we are ready to recess for the day. I believe
15 that concludes our testimony with respect to
16 Contention CL-2.

17 And again your witnesses, I think, can be
18 released. I don't think we're going to have any
19 reason to call them back for anything on CL-2
20 tomorrow. We all pretty comfortable with that
21 assumption?

22 MR. EYE: Yes.

23 JUDGE GIBSON: Okay. And we'll stand in
24 recess. And we'll reconvene at 9:30 in the morning
25 here.

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1 And remember, put your badges out on the
2 security desk. Thank you.

3 (Whereupon, at 5:50 p.m., the hearing was
4 recessed, to reconvene at 9:30 a.m., Friday, August
5 19, 2011.)
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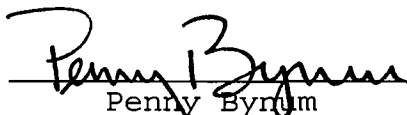
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in the matter of: South Texas Project
 Units 3 & 4

Name of Proceeding: Hearing

Docket Number: 52-012-COL and 52-013-COL

Location: Austin, Texas

were held as herein appears, and that this is the
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Penny Bynum
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