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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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10 CFR 2.206 PETITION REVIEW BOARD (PRB)

CONFERENCE CALL

RE

BRAIDWOOD AND BYRON NUCLEAR GENERATION STATIONS

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THURSDAY

APRIL 13, 2017

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The conference call was held, Christopher Miller, Chairperson of the Petition Review Board, presiding.

PETITIONER: BARRY QUIGLEY

PETITION REVIEW BOARD MEMBERS

CHRISTOPHER MILLER, Director

Division of Inspection and Regional Support, Office of Nuclear Reactor Regulation

JOEL WIEBE, Petition Manager for 2.206 petition, Division of Operator and Reactor Licensing

1 KAIHWA (ROBERT) HSU, Senior Mechanical
2 Engineer, Division of Engineering
3 STEVEN JONES, Senior Reactor Systems Engineer,
4 Office of Nuclear Reactor Regulation
5 MOLLY KEEFE-FORSYTH, Human Factors Specialist,
6 Division of Inspection and Regional
7 Support, Office of Nuclear Reactor Regulation
8 EMILY MONTEITH, Attorney, Office of the
9 General Counsel
10 ERIC OESTERLE, Chief, Reactor Systems Branch,
11 Office of Nuclear Reactor Regulation
12 AHSAN SALLMAN, Senior Reactor Systems
13 Engineer, Office of Nuclear Reactor
14 Regulation
15
16 NRC HEADQUARTERS STAFF
17 MERRILEE BANIC, Petition Coordinator,
18 Office of Nuclear Reactor Regulation
19
20
21
22
23
24
25

1 ALSO PRESENT

2 RUSSELL ARRIGHI, Office of Enforcement

3 BRUCE BARTLETT, Project Engineer, Region III

4 JOHN FREEMAN, Corporate Licensing, Exelon
5 Corporation

6 DAVID GULLOTT, Corporate Licensing, Exelon
7 Corporation

8 JAMES HELLER, Allegation Coordinator, Region
9 III

10 MARK JEFFERS, Engineering Branch Chief,
11 Division of Reactor Safety, Region III

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P R O C E E D I N G S

(1:34 p.m.)

MR. WIEBE: Okay, this is Joel Wiebe at NRC Headquarters. You are on the telephone call to discuss the Barry Quigley 2.206 Petition dated February 8, 2017.

Just want to check to make sure, Barry, are you on the line?

MR. QUIGLEY: Yes, I am, Joel.

MR. WIEBE: Okay, okay, thanks.

We'll continue here. My name is Joel Wiebe. I am the NRC Petition Manager for this Petition.

We are here today to allow the Petitioner, Barry Quigley, to address the Petition Review Board regarding his 2.206 Petition dated February 8, 2017.

As part of the PRB's review of this Petition, Mr. Quigley has requested this opportunity to address the PRB.

The meeting is scheduled from 1:30 to 3:30 Eastern Time. The meeting is being recorded by the NRC Operations Center and will be transcribed by a court reporter. The transcript will become a supplement to the Petition. The transcript will also be made publically available.

1 I'd like to open this meeting with
2 introductions.

3 The Petition Review Board Chair is
4 Christopher Miller. And Chris is the Director of the
5 Division of Inspection and Regional Support in the
6 Office of Nuclear Reactor Regulation.

7 I'd like the rest of the Petition Review
8 Board to introduce themselves. As we go around the
9 room, please be sure to clearly state your name, your
10 position and the office that you work for within the
11 NRC for the record.

12 I'll start off, I'm Joel Wiebe, I'm the
13 Petition Manager for this Petition and I work in the
14 Division of Operator Reactor Licensing.

15 MR. MILLER: And I'm Chris Miller. I'm
16 the Petition Chair. I'm the Director of the Division
17 of Inspection Regional Support in the Office of
18 Nuclear Reactor Regulations.

19 MS. KEEFE-FORSYTH: I'm Molly Keefe-
20 Forsyth. I'm a Human Factor Specialist Subject Matter
21 Expert for Safety Culture and Safety Conscious Work
22 Environment. I work in the Division of Inspection and
23 Regional Support in the Office of Nuclear Reactor
24 Regulations.

25 MS. MONTEITH: I'm Emily Monteith, I'm an

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1 attorney in the Office of General Counsel.

2 MR. HSU: I'm Robert Hsu and I'm the
3 Senior Mechanical Engineer in the Division of
4 Engineering.

5 MS. BANIC: Lee Banic, 2.206 Petition
6 Coordinator in the Office of Nuclear Reactor
7 Regulation.

8 MR. SALLMAN: My name is Ahsan Sallman.
9 I'm the Senior Reactor Systems Engineer in the NRR.

10 MR. JONES: Steven Jones, Senior Reactor
11 Systems Engineer and Develop Plan Branch, Office of
12 Nuclear Reactor Regulation.

13 MR. WIEBE: And we've completed the
14 introductions of NRC staff at the NRC Headquarters.

15 Do we have any regional personnel on the
16 line?

17 MR. JEFFERS: Yes, this is Mark Jeffers,
18 the Engineer Branch Chief in the Division of Reactor
19 Safety from Region III.

20 MR. BARTLETT: This is Bruce Bartlett,
21 Project Engineer, Region III.

22 MR. HELLER: And Jim Heller, Allegation
23 Coordinator.

24 MR. WIEBE: Okay. Is the Court Reporter
25 on the line?

1 COURT REPORTER: Yes, the Court Reporter
2 is on the line.

3 MR. WIEBE: Okay. If there are any
4 licensee personnel on the line, I would like each of
5 you to email me your name, position and organization
6 and likewise for any public people on the line.

7 It is not required for members of the
8 public to introduce themselves, but if there any on
9 the phone that wish to do so, email me your name and
10 organization if it's applicable.

11 My email is joel.wiebe@nrc.gov.

12 Mr. Quigley, would you introduce yourself
13 for the record?

14 MR. QUIGLEY: Yes. Barry Quigley. I'm an
15 employee of Exelon Generation and I'm in Rockford,
16 Illinois.

17 MR. WIEBE: Okay. I'd like to emphasize
18 that we each need to speak clearly and loudly to make
19 sure the Court Reporter can accurately transcribe the
20 meeting.

21 If you do have something you would like to
22 say, please first state your name for the record.

23 We also ask you to minimize any side
24 conversations during the meeting. We will try to have
25 only one speaker at a time.

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1 For those dialing in to the meeting,
2 please remember to mute your phones to minimize any
3 background noise or distractions. If you do not have
4 a mute button, you can mute by pressing the keys star
5 six. To unmute, you press the star six keys again.

6 At this time, I will turn it over to the
7 PRB Chairman.

8 MR. MILLER: This is Chris Miller and we
9 have one more joining us at the Headquarters Office.

10 MR. OESTERLE: Yes, thanks, Chris. This
11 is Eric Oesterle, Chief at Reactor Systems Branch in
12 NRR.

13 MR. MILLER: Thank you, Eric.

14 Did anybody else join us on the phone that
15 we haven't identified or that wishes to have their
16 name on the record here?

17 MR. ARRIGHI: Yes, this is Russell
18 Arrighi, Office of Enforcement.

19 MR. MILLER: Thank you, Russ. Okay, thank
20 you.

21 Again, my name is Chris Miller and I want
22 to welcome you and thank you, Mr. Quigley, for
23 bringing us -- bringing these issues to our attention.

24 And thank you for all the participants
25 that are here and to help us work through these

1 issues. I appreciate it. These are issues that are
2 important issues. But, you've got a lot of other
3 important issues, so I appreciate your time and the
4 use of it and we'll try to work through this process
5 efficiently and get to the details as best we can in
6 an efficient manner.

7 First, let me share some background on the
8 process.

9 Section 2.206, that's Title 10 of the Code
10 Federal Regulations, describes the Petition process.
11 And, I think, Mr. Quigley, you're aware of the way of
12 it. Let me just cover in very short order.

13 It's a primary mechanism for the public to
14 request enforcement action by the NRC in a public
15 process. This process permits anyone to Petition NRC
16 to take enforcement type action related to NRC
17 licensees or license activities.

18 Depending on the results of the
19 evaluation, NRC could modify, suspend or revoke an NRC
20 issued license or take any other appropriate
21 enforcement action to resolve a problem.

22 The NRC staff's guidance for the
23 disposition of 2.206 process is located in our
24 Management Directives, that's Management Directive
25 8.11, which is also publically available.

1 The purpose of today's meeting is to give
2 you, Mr. Quigley, the Petitioner, an opportunity to
3 provide any additional explanation or support for the
4 Petition before us, the Petition Review Board's
5 initial considerations and recommendations.

6 A couple things that merit mentioning,
7 this is not a hearing nor is it an opportunity for the
8 Petition to question or examine the PRB on the merits
9 of the issues presented in the Petition Request.

10 No decisions regarding the merits of this
11 Petition will be made at this particular meeting.

12 Following the meeting, the Petition Review
13 Board will conduct its internal deliberations. So,
14 we're really just trying to get the best information
15 that we can with your help, Mr. Quigley, to be able to
16 conduct those internal deliberations.

17 The outcome of this internal meeting will
18 be discussed with you, Mr. Quigley, the Petitioner.

19 The Petition Review Board consists of
20 myself as Chairman, usually the Manager at the Senior
21 Executive Service level of the NRC.

22 We help the Petition Manger who has been
23 identified as Petition Review Board Coordinator, and
24 you've heard both of them identify themselves.

25 Other Members of the Board are determined

1 by the NRC staff based on the content of the
2 information in the Petition Request. The Members have
3 already introduced themselves.

4 And so we try to bring, you know, the best
5 knowledgeable people on the specific issues that are
6 brought up together. They're experts in their areas
7 to be able to render decisions there.

8 As described in our process, the NRC staff
9 may ask clarifying questions in order to better
10 understand, Mr. Quigley, your presentation and to
11 reach a reasoned decision whether to accept or reject
12 the Petitioner's request for review under the 2.206
13 process.

14 Also, as described in that process, the
15 licensee has been invited to participate in today's
16 meeting to ensure they understand the concerns about
17 their facility or activities completely.

18 Have any other members besides the ones
19 identified members for the licensee staff?

20 MR. WIEBE: There may be some on here.

21 MR. MILLER: Okay, we have none that have
22 identified themselves, let's put it that way.

23 Also, as described in our -- okay -- while
24 the licensee may ask questions to clarify the issues
25 raised by the Petitioner, I want to stress that the

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1 licensee is not part of the PRB's decision making
2 process.

3 When we talk about an internal meeting,
4 we're talking about the NRC experts and the Board
5 Members getting together and having that discussion
6 and there are no other members of the public or
7 members of the licensee staff that participate in
8 that.

9 So, I want to summarize the scope that --
10 with those kind of background comments, the next area
11 I want to summarize the scope of the Petition under
12 consideration.

13 And from our read, we think the Petition
14 identifies four concerns, the analysis of record for
15 the main steam isolation valve room pressurization
16 following the high energy line break is deficient.

17 Next one of the concerns is the that the
18 corrective action to resolve an issue in the analysis
19 of record are long overdue, eight years and improperly
20 tracked.

21 Number three is a proposed revision to the
22 analysis of record shows that the MSIV room slabs will
23 be injected by the high pressures in the MSIV rooms
24 becoming potential missiles.

25 And number four is engineering management

1 is dismissive of dissenting views such that
2 operability issues are not promptly addressed and
3 safety conscious work environment is not assured.

4 As a reminder for the phone participants,
5 please identify yourself if you make any remarks and
6 this will help us in preparation of the transcript
7 which we noted earlier that will be made publically
8 available.

9 Since this is a public meeting, I would
10 like to remind the PRB Members, licensees, the
11 Petitioner and other meeting participants of the need
12 to refrain from discussing any NRC sensitive or
13 proprietary information during today's meeting.

14 And now, Mr. Quigley, I'll turn the
15 discussion over to you to allow you the opportunity to
16 provide any information you believe the Petition
17 Review Board should consider as part of this Petition.

18 MR. QUIGLEY: All right, thank you.

19 I would like this to be interactive. As
20 we go through the points, if any of the staff have
21 questions, I'll be happy to address them.

22 I would note that the supporting
23 documentation for this Petition runs through several
24 thousand pages, so I may not be able to properly
25 answer a question, but I will be able to get back with

1 the staff.

2 MR. MILLER: Okay, I appreciate that.

3 MR. QUIGLEY: Okay. I do believe this
4 Petition introduces new and significant information
5 that the NRC has not been aware of.

6 And just going through each of the points,
7 the analysis of record is deficient in a couple of
8 points.

9 I sent the FSAR sections to the staff as
10 part of the Petition and the analysis that supports
11 that FSAR is deficient for two reasons.

12 In 1996 when we did our steam generator
13 replacement project, we had a vendor calculate new
14 massive energy releases for the new steam generators.

15 And in doing so, they improperly extracted
16 from the RELAP probe the internal energy instead of
17 the enthalpy. And, the internal energy is about 13
18 percent less than the enthalpy. And, that is a
19 significant defect in the calculations.

20 Another one with the analysis of record is
21 the failure to use a secondary side volume of the main
22 steam piping.

23 It may come as a surprise, but there's
24 roughly 11,000 to 12,000 cubic feet of steam in the
25 steam lines whereas the individual generator has a

1 volume of 5,000 cubic feet or so. So, it's very
2 significant.

3 And when we did the steam line break
4 inside the containment analysis, that volume was
5 included.

6 When the reanalysis was redone in 2013, we
7 contracted with another company to provide the mass
8 energy releases and they did use the volume in the
9 piping which caused the room pressurization rates to
10 go up a fair amount.

11 So, those are the two significant things
12 with the analysis of record.

13 MR. MILLER: I'm sorry, could I just ask
14 you a clarifying question there?

15 MR. QUIGLEY: Who's speaking, please?

16 MR. MILLER: I'm sorry, this is Chris
17 Miller asking a clarifying question.

18 So, what you're saying in -- you're saying
19 it was previously used the volume in the secondary
20 side and then in 2013, it was also used but then
21 eventually that got taken out or help me out with that
22 second part about 2013.

23 MR. QUIGLEY: Well, the inside containment
24 steam line break, for the inside containment steam
25 line break, we used the volume of the external

1 secondary piping because it will feedback in in the
2 containment. So, it was used properly there.

3 However, in our original analysis of
4 record, it was not used for the outside containment
5 break.

6 MR. MILLER: Okay.

7 MR. QUIGLEY: And then we had a contractor
8 in 2012 that calculated new mass end releases and when
9 they did that, they did properly use, in my view,
10 properly, the external secondary piping.

11 And when they did so, that additional
12 energy of the pressure in the rooms to go up
13 substantially.

14 Does that clarify your question?

15 MR. MILLER: Yes. So, you believe that
16 the calculations that were done in '12 and '13 were
17 done properly?

18 MR. QUIGLEY: With regards --

19 (Simultaneous speaking.)

20 MR. QUIGLEY: It was done better.

21 MR. MILLER: Okay, okay.

22 MR. QUIGLEY: There's some other minor --

23 MR. MILLER: Okay, got it. Thank you,
24 that's all I was just trying to -- I was just trying
25 to get that clarification. Thank you.

1 Go ahead, I'm sorry, I'm just trying to --

2 MR. QUIGLEY: No, this is a very, very
3 complicated issue. We have four vendors involved. It
4 spans, you know, 20 years so it's very difficult to
5 follow. So, questions are not a problem at all.

6 MR. MILLER: Thank you.

7 MR. SALLMAN: Excuse me, this is Ahsan
8 Sallman.

9 Is this calculation that was done a
10 revised calculation became the analysis of record or
11 not?

12 MR. MILLER: You're talking about the
13 2013?

14 MR. SALLMAN: Yes, the new calculations
15 that was done?

16 MR. QUIGLEY: That is not the analysis of
17 record. The one that shows was just last looking, not
18 the analysis of record.

19 MR. SALLMAN: It did not become the
20 analysis of record? Okay.

21 MR. QUIGLEY: Basically, Exelon did not
22 like the results and kind of didn't do a whole lot
23 with it.

24 MR. SALLMAN: So, what was their rationale
25 for that?

1 MR. QUIGLEY: The rationale for that was
2 that they didn't believe a double-ended guillotine
3 break in the MSIV room was part of the current
4 licensing basis.

5 In my -- in concern number four, I explain
6 that a little bit more about their basis.

7 MR. SALLMAN: But the break in the -- I'm
8 sorry, this is Ahsan Sallman again. Was the break
9 assumed inside the main steam valve room or outside?
10 Is there a -- is that a part of the room, inside the
11 room or outside?

12 MR. QUIGLEY: The analysis of record that
13 licensed us in the early days assumed a double-ended
14 break inside the room.

15 MR. SALLMAN: Okay, that was the new
16 analysis, okay.

17 MR. QUIGLEY: And then that was also used
18 for the new analysis. And then we -- Exelon did not
19 like the results so they began questioning whether a
20 double-ended break was required or not.

21 MR. SALLMAN: Thank you.

22 MR. HSU: Also, can I ask you a question?
23 Okay, since --

24 MR. QUIGLEY: What's your name?

25 MR. HSU: Robert Hsu. Okay, so -- and in

1 the -- at the UFSAR analysis, there's an assumption at
2 the doors and the HAV chamber in the upper chamber of
3 the barred room are initially assumed the cones are
4 intact. At the differential pressure equal to 1.5 psi
5 where flow opened the door and the panel to --

6 So, if this applies to you, and then, how
7 could the room be pressurized to 1185 psi? Because,
8 they say if the differential pressure it just equals
9 1.5 psi. Your panel is compromised. Your door is
10 open completely to that ATM.

11 So, if that apply to this calculation?

12 MR. QUIGLEY: The fact that the --

13 MR. HSU: This is at 3616-3S.

14 MR. QUIGLEY: The blow out panels do blow
15 out, but the area provided is not sufficient to fully
16 vent, therefore, the pressure of the room keeps going
17 up to be around, you know, 25 pounds or so.

18 MR. MILLER: Does that answer your
19 question?

20 MR. HSU: Yes, but this answers the
21 question, but this creates another thing. Okay? He
22 already has a vent, so are you -- but, so, given your
23 calculation, okay, did not consider this vent?

24 MR. QUIGLEY: It does consider the vent.

25 MR. HSU: They did consider or they

1 didn't?

2 MR. QUIGLEY: Yes, they did.

3 MR. HSU: The new analysis or record that
4 was discarded the Exelon did consider the vent to be
5 open during this transient, right? Is that correct?

6 MR. QUIGLEY: Yes.

7 MR. HSU: Okay, okay, thank you.

8 MR. MILLER: Okay, please continue. We'll
9 keep on asking the questions when we need a little bit
10 more clarity, but I appreciate your helping us get
11 through it.

12 MR. QUIGLEY: Yes, like I said, it's very
13 difficult. So, that's why I'm saying that the
14 analysis of record is deficient.

15 Moving on to the second one, it's
16 relatively simple. In 2008, it was recognized that
17 the internal energy instead of the enthalpy was used
18 in the analysis of record at that time.

19 And, so, an IR was written, however, no
20 corrective action was made to resolve the issue and
21 the analysis of record still contains the non-
22 conservative break.

23 MR. MILLER: Just back up, you said
24 something was written, what was written?

25 MR. QUIGLEY: A condition report.

1 MR. MILLER: Oh, okay.

2 MR. QUIGLEY: Yes.

3 MR. MILLER: Thank you.

4 So, they recognized the problem back in
5 2008, documented it in a CR and they have not taken
6 action to correct that?

7 MR. QUIGLEY: Correct.

8 MS. KEEFE-FORSYTH: This is Molly Keefe-
9 Forsyth. Have they -- did they close that CR?

10 MR. QUIGLEY: It got closed to another
11 action and I did not follow it. I did not follow the
12 trail completely, I simply based my statement on, I
13 can look at the analysis today and see that's it's not
14 been corrected.

15 MR. MILLER: Got it. So, you're haven't
16 followed the CR trail, but between 2008 and now, the
17 same error still exists in the -- or the analysis of
18 record?

19 MR. QUIGLEY: Yes.

20 MR. KEEFE-FORSYTH: This is Molly, again.
21 Have there been anymore CRs written on
22 this issue?

23 MR. QUIGLEY: There have been -- on the
24 exact issue of using the internal energy instead of
25 enthalpy, there have been no new IRs. There have been

1 other issues related to high energy line breaks, but
2 nothing directly related to this.

3 MS. KEEFE-FORSYTH: Okay, thank you.

4 MR. QUIGLEY: Yes. All right --

5 MR. MILLER: Go ahead.

6 MR. QUIGLEY: -- moving on to -- yes, yes.

7 MR. MILLER: Yes, no, I think that's all
8 the questions we have from here on those two issues.

9 MR. QUIGLEY: That's a hard one to argue.

10 MR. MILLER: Yes, yes.

11 MR. QUIGLEY: I don't mean it that way,
12 like an argument. I'm just saying it's very, in my
13 view, it's what it is.

14 So, the next one is the main steam
15 isolation valve roof slab injections.

16 Vendor one, which was Sargent & Lundy, was
17 contracted in late 2013, early 2014 to revise the
18 analysis of record. And they used massive energy
19 releases that were provided by Fauske & Associates.

20 When they put those -- well, let me back
21 up. So, that's what they did. And then Sargent &
22 Lundy had done some work for us in 2005 or 2008 with
23 tornados and the ability for the roof slabs to be
24 lifted by a tornado.

25 They turned out that that wasn't the case,

1 but that did make Sargent & Lundy sensitive to the
2 fact that the roof slabs exist and they can move.

3 So, when they did their analysis on this
4 one, they used RELAP4 to do the pressurization
5 analysis. And, when they did that, they determined
6 that the pressure in the room, even including the vent
7 area of the blowout panels was enough to cause the
8 slabs to lift out of their openings.

9 Basically, they're just set in, they're
10 not bolted down, they just rely on gravity.

11 And, then, they determined that the 5,000
12 pound slabs would be ejected with a velocity of 32
13 feet per second. And, in our FSAR, it clearly states
14 there are no credible secondary missiles flown from
15 the postulated break of piping. And, the vendor found
16 one.

17 There was quite a bit of disagreement
18 within Exelon as to the validity of these results.
19 And, the main point of contention was that Sargent &
20 Lundy had used a break location in the main steam
21 isolation room because that is what the analysis of
22 record had also used.

23 And, you know, I was in agreement that
24 Sargent & Lundy had indeed used the correct break
25 location. And not a whole lot was done with this

1 issue. Basically, it just got tabled. There was
2 nothing driving it and so, it just sat.

3 In August 2015, I began FMLA to deal with
4 a medical issue and then in September, Exelon started
5 moving again and they contracted Enercon to perform a
6 new analysis for the main steam isolation valve room
7 to be --

8 MR. MILLER: This was September of '15?

9 MR. QUIGLEY: Yes.

10 MR. MILLER: Okay.

11 MR. QUIGLEY: So, the harsh view of this
12 is that Sargent & Lundy gave them results they didn't
13 like so they went to somebody else.

14 And then Enercon, you know, questioned
15 what break location to be used and Exelon directed
16 them to use a break location outside the main steam
17 isolation room.

18 And this break location and also a much
19 smaller break size. And, of course, when you use a
20 break outside the room with a smaller break, the --
21 low and behold, the roof slabs did not lift. That
22 analysis has not been finalized yet, either.

23 MR. SALLMAN: This is Ahsan Sallman.
24 You're saying Enercon, right, is that the vendor three
25 that you -- that's in your questions?

1 MR. QUIGLEY: Yes, and Enercon, yes.

2 MR. SALLMAN: Enercon, okay.

3 MR. QUIGLEY: Yes.

4 MR. SALLMAN: So, they used smaller break
5 area?

6 MR. QUIGLEY: Yes.

7 MR. SALLMAN: How did they come up with a
8 smaller break area? Because the break area should be
9 the limiter times four, I guess, is that the limiter
10 break area times four?

11 MR. QUIGLEY: That's correct.

12 MR. SALLMAN: How did they --

13 MR. QUIGLEY: That's what I used.

14 MR. SALLMAN: That is your -- okay. And,
15 how did they come with the break area?

16 MR. QUIGLEY: Exelon told them what to
17 use. And, Exelon basically picked the smaller break
18 area based on a question that came up during our
19 licensing and that's part of the Petition and they
20 interpreted that question to mean that no breaks were
21 required in the main steam isolation valve room.

22 MR. SALLMAN: So, the two things that you
23 mentioned, the break area was smaller and the other
24 thing is the user break outside the MSIV room so that,
25 obviously, that would not lift up any roof or

1 anything.

2 MR. QUIGLEY: That's correct.

3 MR. SALLMAN: Okay. Please go ahead,
4 thank you.

5 MR. MILLER: And can I just ask one thing
6 regarding the question that came up during licensing,
7 this was the Request for Additional Information from
8 the NRC I'm thinking, is that what you're saying?

9 MR. QUIGLEY: Yes, that's correct.

10 MR. MILLER: And do you -- did you provide
11 that in your information we have? Okay, yes, my
12 staff's telling me yes.

13 MR. QUIGLEY: Yes.

14 MR. MILLER: Or the staff's telling me
15 yes. Okay, thanks.

16 MR. QUIGLEY: Yes.

17 MR. HSU: Can I ask you a question? This
18 is Robert Hsu from Division of Engineering.

19 Okay, you're talking about a slab. In the
20 whole slab is solid, okay, during this pressurization.
21 And, so, you're talking about 510, okay, the roof,
22 okay, all together going to be ejected.

23 But, however, usually this was to be the
24 concrete, is that right? And, the concrete has a
25 corner collection. Okay, it's -- according to the ACI

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1 code, okay, there's a special corner steel, okay, to
2 reinforce the corners.

3 And, so, when you reinforce the corners
4 and they -- if you pressurize this thing, okay,
5 basically, there's no way, okay, you can say this
6 thing is going to be, okay, completely blown off, as
7 completely intact, okay. Because when you pressurize
8 that, okay, the weak point, okay, definitely going to
9 crack. The weak point is not this solid, okay, slab
10 according to the fact, it's going to crack first and
11 then concrete blow out.

12 MR. QUIGLEY: Okay. I understand what
13 you're saying and I recognize that when I wrote this,
14 I was not as clear as I should have been.

15 When I say the roof slab, I'm not talking
16 about the entire roof. There are access points so --
17 for the room. Basically, the -- a portion of the roof
18 is removable. You can come in with a crane, lift
19 these slabs and then access the room.

20 So, what I'm talking about is not the
21 entire roof coming off, but one of the access slabs
22 that are just sitting there by gravity.

23 MR. HSU: Yes, because my point is, okay,
24 if this is a cracking open, actually, that's relieved
25 the pressure already. And, so, the only thing like

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1 you say, okay, concrete, okay, blow up, okay, but
2 concrete blow out, okay, on the -- as a missile. But,
3 that's just small piece of concrete. Okay?

4 It's blown up to the sky. As long as,
5 okay, which is nothing to hit the containment
6 building. That's no safety issue at all.

7 MR. QUIGLEY: This is --

8 MR. HSU: If based on your calculations.

9 MR. QUIGLEY: This is not the concrete
10 cracking, this is not a structural failure of the
11 concrete due to over pressurization.

12 What this is is, like I said, the roof has
13 -- basically, the roof has a big hole in it by design.
14 And, that hole is filled with a concrete slab, a
15 concrete plug, if you will, a plug, maybe that's a
16 better word to use.

17 And, when the room pressurizes, this plug
18 is what's being ejected.

19 MR. MILLER: Yes, I think we understand
20 that and maybe -- this is Chris Miller -- and we may
21 be talking by each other, but I think we understand.

22 MR. QUIGLEY: Okay.

23 MR. MILLER: And we can evaluate, you
24 know, our thoughts on that separately. But, I guess
25 we understand.

1 I thought I heard you say 5,000 pounds and
2 then I heard 5,000 tons.

3 MR. QUIGLEY: Yes, yes, I got that, too.
4 It's 5,000 pounds.

5 MR. MILLER: Five thousand pounds, so it's
6 -- these concrete plugs that are plugging the hole in
7 the roof are 5,000 pound concrete -- each one is 5,000
8 pounds of concrete?

9 MR. QUIGLEY: Yes.

10 MR. MILLER: Thank you.

11 MR. WIEBE: This is Joel Wiebe and also,
12 I think your statement in your Petition here, and
13 you're not saying or commenting on the safety
14 significance of this effect, but you say it's contrary
15 to the FSAR that says there are no credible secondary
16 missiles formed from the postulated break of piping?

17 MR. QUIGLEY: That's correct, that's the
18 point.

19 MR. WIEBE: That's your point and you have
20 not evaluated the safety significance of that at this
21 point?

22 MR. QUIGLEY: No, I have not.

23 MR. MILLER: And more than that -- this is
24 Chris Miller -- more than that, you believe that they
25 -- that the licensee -- that Exelon has not gotten an

1 evaluation of that, is that right?

2 MR. QUIGLEY: They have not gotten an
3 evaluation because they don't believe it credible.

4 MR. MILLER: Okay.

5 MR. QUIGLEY: So they're not going to
6 evaluate it.

7 MR. MILLER: Okay.

8 MR. JONES: This is Steve Jones. Getting
9 to that credible point, now, you mentioned your -- in
10 the incoming Petition that the -- there's a, you know,
11 break exclusion zone definition and there's
12 contradictions in the FSAR about where -- how far that
13 extends.

14 MR. QUIGLEY: Yes.

15 MR. JONES: If it extends to the -- as one
16 of the statements goes, to the latter pipe restraint
17 downstream of the MSIV, that is at the boundary of the
18 valve room, correct?

19 MR. QUIGLEY: Correct.

20 MR. JONES: Okay. So, if there is no
21 break in that area, there would not be any ejection of
22 the plug. It's if you take the alternate assumption
23 of the break exclusion zone terminating at the
24 downstream well from the MSIV, then, you have a break
25 in the room and then you ejected these plugs?

1 MR. QUIGLEY: That's correct.

2 MR. JONES: That's what -- okay.

3 MR. SALLMAN: One more, this is Ahsan
4 Sallman. Is the Sargent & Lundy analysis that said 32
5 feet per second, is that a quality record in the
6 system in Exelon?

7 MR. QUIGLEY: In Exelon? No, it has been
8 prepared and reviewed by a competent vendor, in
9 Appendix B program. But, like I said, Exelon has not
10 accepted it into the system because they didn't like
11 the results.

12 MR. SALLMAN: Thank you.

13 MR. QUIGLEY: All right, now we come to
14 the most difficult one of my concerns and that is the
15 fact that actually management does not want to deal
16 with this issue.

17 So, basically, in 2014, I was the only
18 person that felt that, you know, a break was required
19 in the main steam isolation valve room.

20 There was a lot of pointing to this FSAR
21 question which I did not accept and I provided a
22 rationale. And then, you know, the issue kind of
23 died. I got assigned other work, then I went on FMLA.

24 One thing I really want to point out in
25 the Petition, there's a typographical error. It says

1 I returned to work in late April of 2016, that was
2 actually 2015.

3 When I say back in April 2015, I was
4 assigned a high priority task that didn't complete
5 until October and then I started looking into on my
6 own initiative, you know, what had happened with this
7 break in this concern. And I tried to, you know, push
8 this through. I tried in 2016, December 2016, and it
9 didn't go anywhere.

10 And, finally, on January 27th, I sent an
11 email to entering management where I pretty much laid
12 it out and I said, you know, the analysis of record
13 that is in the FSAR that we were licensed to assumes
14 a double-ended break in the room.

15 I mean, my logic is there, my logic is
16 sound. Sargent & Lundy is the one that did the
17 analysis, they said it's a double-ended break in the
18 room. And so, I thought that this email would kind of
19 move things along finally.

20 And then, on January 31st, there was a
21 conference call with Byron & Briarwood Engineering.
22 And, I presented my rationale again and the Byron
23 manager pulled out the FSAR question and said, no, we
24 don't have to take a break in the room because this
25 question says we don't.

1 I told them that the question was not part
2 of the current licensing basis because it had not been
3 incorporated into the FSAR. And then, I, again,
4 pointed out that something is in the FSAR, it does say
5 that the break is in the room.

6 And without looking at the FSAR, without
7 considering the point, the managers just stated that
8 the information in the FSAR was excessive detail and
9 they directed that we take it out of the FSAR.

10 And I told them I'm not going to take it
11 out FSAR because I don't think it's appropriate. And
12 then, he just told the Briarwood personnel on the call
13 to take it out of the FSAR.

14 Also, during this conference call, I
15 pointed out the discrepancy in the FSAR about where
16 the break exclusion zone is at. And, you know, this
17 discrepancy was just dismissed by saying, well, the
18 FSAR needs to be cleaned up and to remove the
19 discrepancies.

20 So, there's really not a whole lot of
21 rigor going into these conclusions. They're very
22 dismissive.

23 And, also, this is not an isolated
24 incident with this manager. Less than a month
25 earlier, there was an operability concern regarding a

1 seismic qualification of safety related relays. And
2 as we worked through the issue, we had a seismic
3 engineer with about 30 years of experience questioning
4 whether the relay was adequately tested.

5 And there was some back and forth and then
6 it was ultimately determined that there was no
7 problem. The manager relied on the statement from
8 somebody else that was demonstrably irrelevant. And,
9 just, you know, pretty much, that was the end of the
10 issue.

11 So, Exelon management is not really
12 interested in some engineering. Management is not
13 really interested in resolving problems, they're just
14 interested in making them go away.

15 What questions are there on this last one?

16 MR. JONES: Steve Jones. Just stepping
17 back a little bit, what's your understanding of the
18 reason for the break exclusion zone in this section of
19 piping?

20 MR. QUIGLEY: Why I believe it's required?

21 MR. JONES: Well, why is it in the Byron
22 & Briarwood licensing basis to have a break exclusion
23 zone in this area?

24 MR. QUIGLEY: Well, the break exclusion
25 zone comes out of the Standard Review Plan 361 and

1 362. And, we were licensed to those criteria and they
2 do specify that the break exclusion zone extends to
3 the downstream weld of the MSIV.

4 And then, you know, and that's how we
5 licensed the plant. They're very, very original
6 analysis assumed a break at the downstream weld inside
7 the MSIV room.

8 MR. JONES: Okay, so you're saying the
9 initial licensing was consistent with the Standard
10 Review Plan, and the FSAR statement about going to the
11 downstream or stream was added at some later point or
12 incorrectly added?

13 MR. QUIGLEY: It was added at the later
14 point. So, you know, that introduced a conflict.

15 You know, so, the way I look at it is, you
16 know, I've got an FSAR one place it says, you don't
17 have to take a break here, in another part of the
18 FSAR, it says you have to take a break here.

19 But then, when you look at what we
20 analyzed, what we analyzed and what we submitted to
21 the NRC was a break in the room.

22 MR. JONES: And that original break,
23 though, did not determine any ejection because it was
24 non-conservative with respect to the energy release
25 rate? Is that --

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1 MR. QUIGLEY: Actually, the pressures
2 would have lifted the slab, it's just nobody even
3 thought about the slab lifting at that time.

4 MR. JONES: Okay.

5 MS. KEEFE-FORSYTH: This is Molly Keefe-
6 Forsyth. I know that you said that there had been the
7 one, I guess you call them IRs written for issue
8 number two. And then, you said that there hadn't been
9 any issued since then but you knew that the issue
10 hadn't been resolved.

11 Have there been IRs written about any of
12 these other issues? I'm trying to get a sense for how
13 much -- how often this has been raised.

14 MR. QUIGLEY: Well, it was raised by me
15 because I was involved in 2008 with the -- I didn't
16 write the IR but I was involved with the using the
17 wrong enthalpy.

18 MS. KEEFE-FORSYTH: Okay.

19 MR. QUIGLEY: Then, when the slab ejection
20 issue came up in 2014, nobody wanted to write an IR
21 because it was an unapproved calculation. But, then,
22 we never did anything to resolve it. We didn't do
23 anything timely to resolve it.

24 And as far as the stuff in January, you
25 know, when I sent out this email, you know, the

1 manager did tell me that, you know, I could write an
2 issue report on it if I wanted, but, you know, he's
3 the manager. So, if I write an issue report, he's
4 just going to say, well, it doesn't apply because of
5 this FSAR question. And, nobody else is going to
6 question it, so I really didn't bother.

7 You know, at that point, I just decided
8 to, you know, submit the Petition.

9 MS. KEEFE-FORSYTH: Okay. So, there
10 haven't been IRs written on this but hasn't done due
11 to formal corrective action process of being
12 prioritized and tracked and trended here.

13 What about raising the issue above the
14 engineering manager? Has it gone up to the plant
15 manager or to site VP level?

16 MR. QUIGLEY: No, and the reason is, I
17 mean, this is hard to -- but, you know, I lack faith.
18 You know, Jim Heller's on the line, he could provide
19 you some, you know, some background.

20 I don't have a lot of faith in Exelon
21 management to resolve issues. This is my fourth 2.206
22 Petition with them. And, probably, you know, 30 or 40
23 allegations in the last 25 years. They are just not,
24 in my view, they just want this to go away.

25 MS. KEEFE-FORSYTH: Okay. Have you spoken

1 with any of your other colleagues about these issues?
2 Do they -- do you get a sense that they feel the same
3 way?

4 MR. QUIGLEY: Yes. In point number four
5 where I talk about a conversation that was held a
6 month earlier about safety related relays, basically,
7 we came out of that meeting, you know, one of the
8 engineers, you know, commented that, to me, you know,
9 well, thanks for sticking up him because basically the
10 engineering manager was kind of steam rolling the
11 other two people and I was also in the room and I kind
12 of tried to call him out on it.

13 So, you know, other people do recognize
14 this, yes.

15 MR. MILLER: So, this is Chris Miller.
16 Could I just ask a little bit more into that, the
17 managers? Because, you indicated that, you know,
18 various statements and I'm not quoting you directly,
19 but engineering management has just, you know,
20 concerned with getting these things to go away but not
21 necessarily resolving them in a technical manner.

22 Would that -- at what level is it? Is it
23 basically just one person like the engineering manager
24 or is it many levels of engineering manager or
25 anything more you can tell us about that?

1 MR. QUIGLEY: It is a very longstanding
2 culture with Exelon. I wasn't prepared to go into a
3 lot of detail on it right now because I'd have to go
4 back to my notes and stuff. But, you know, this is a
5 longstanding concern I've had with Exelon management.

6 I've been interviewed by attorneys I don't
7 know how many times for Exelon. And, the -- they just
8 want to make things go away, they don't want to deal
9 with them.

10 MR. MILLER: Thank you.

11 MR. QUIGLEY: Other questions that people
12 would like to ask at this point?

13 MR. HSU: This is Robert Hsu. Okay, I
14 just had the question, okay, I've been thinking about
15 it. This is a generic design problem because Byron
16 and Braidwood, okay, that's a very standard
17 Westinghouse design, okay, for those plants that same
18 stage at the same time.

19 They're also usually, okay, when it's a
20 Westinghouse design, it's a plant design which is
21 going to our -- prior to the second plant design.

22 So, if they have this problem, it's
23 difficult, do you think just going back to generic
24 design problem? That's one thing.

25 The second thing I would like to ask you,

1 you really think, okay, this is a really a big safety
2 significant problem?

3 MR. QUIGLEY: Well, first of all, for the
4 generic, of course, it applied to Byron & Briarwood.
5 I did do some -- searched ADAMS and looking at other
6 plants FSARs and the whole high energy line break
7 outside containment was very, well, let's call it
8 fluid.

9 It was changing a lot from 72 to 81. And,
10 so, it's really going to be a type specific kind of
11 thing. And, plus, you know, others may have, you
12 know, analyzed breaks in the relay. I really wasn't
13 able to get a feel to whether it was generic or not.

14 As far as the safety significance, a
15 double-ended rupture is a very low probability event.
16 The safety significance here is a licensee who ignores
17 contrary information. I think that's the biggest
18 safety significant thing.

19 And if they're doing it for this, what
20 else are they doing it for? So, I think that's where
21 the safety significance lies.

22 MR. HSU: Yes, why I asked this question
23 is because that, high energy line breaks, okay,
24 actually, internally in the Division of Engineering,
25 mechanical engineer, people look at this, okay,

1 because which was set up about 40 years.

2 So, people based on their point of view,
3 okay, conceptual point of view says, hey, I can't use
4 as a backup, okay, greater than .1 got to be
5 considered and allow for stress. Okay?

6 MR. QUIGLEY: Right, oh, yes.

7 MR. HSU: Point eight, that becomes
8 compute at that, but in reality, up to 40 years later,
9 okay, we already know, okay, these things is not going
10 to happen based on the current criteria.

11 Current criteria is even the accumulation
12 -- I say accumulation, you suspect that because 1.0,
13 the pipe is not going to break at all. Just it's the
14 only impact is 1.0 where the potential crack
15 initiation, not even cracked through. And then to
16 allow for ASME itself has said that cracks up to 3.5
17 safety factor.

18 So, internally, okay, we understanding,
19 okay, the criteria we set also have a little bit of
20 problems since these were set up about 40 years ago.

21 So, we were talking about it in this area.
22 Okay, safety plus the high energy line breaks that you
23 assume is like a pipe, it's like suddenly,
24 immediately, okay, both rupture. But, in reality, all
25 the steel has already demonstrated, okay, they have

1 the crack stability. Even they have a crack, they
2 are not going to create immediately, okay, rupture.

3 That's the point I'm talking about it.

4 MR. QUIGLEY: Well, there is something --

5 MR. HSU: Your problem is not really the
6 safety in those types, it's like a regulatory
7 paperwork consistency type, is that right?

8 MR. QUIGLEY: Yes, there's a difference
9 between reality and licensing. Byron is licensed to
10 a deterministic basis. And, I refer to those as thou
11 shalt. Thou shalt take a break in that power license.

12 I'm aware of the 0.8 and usage factors and
13 so on. I would also like to point out, yes, they are
14 40 years old, but they're also being used for the
15 AP1000s. So, it hasn't gone away yet.

16 So, I would be uncomfortable with this
17 issue of not being addressed because it's a low
18 probability event. I would say, you know, large break
19 LOCAs are a low probability event, but they're still
20 part of the licensing basis, the deterministic
21 licensing basis.

22 MR. HSU: Yes, I'm talking about that
23 because like you mentioned, okay, AP1000. AP1000
24 actually is the first line, it's the first time we
25 grant leak-before-break to the same lot.

1 And they demonstrate, okay, there's no way
2 you can have the sudden break and then -- because a
3 leak-before-break break already at those criteria,
4 okay, you've got to show the crack stability.

5 MR. MILLER: I think we have that. I
6 think we have the information that he's quoting which
7 is that your concern, because the licensing basis and
8 what the plant was analyzed to says that they've got
9 to deal with the break.

10 And your point is that, while I'm not
11 dealing with the break if they haven't addressed it
12 and they show the tendency to not want to address it.
13 I think that's what I'm getting.

14 This is Chris Miller, by the way.

15 MR. QUIGLEY: Yes.

16 MR. MILLER: Okay, other questions for
17 folks around the table here or OE which is another
18 Headquarters bunch and anybody there and then I'll get
19 to the region for questions.

20 (No response.)

21 MR. MILLER: Okay, not hearing any more
22 from the folks here, regions, any questions for Mr.
23 Quigley?

24 MR. JEFFERS: No questions.

25 MR. MILLER: Okay, thank you.

1 If there are any representatives of the
2 licensee listening, do any of those representatives
3 have any comments?

4 MR. GULLOTT: We don't have any comments
5 at this point.

6 MR. MILLER: Okay.

7 MR. GULLOTT: This is Dave GULLOTT, by the
8 way, from Corporate Licensing with John Freeman.

9 MR. MILLER: Dave Gullott and John
10 Freeman?

11 MR. GULLOTT: That is correct.

12 MR. MILLER: Okay, thank you.

13 Okay, so let me just summarize. I think
14 we have an understanding of your issues. You have
15 provided us more detailed information and we have that
16 in our possession for review.

17 I want to thank you, Mr. Quigley, for
18 taking your time. I acknowledge the staff for taking
19 their time, but you've also got a lot of things on
20 your plate and I want to thank you for taking your
21 time to bring these issues up for clarifying the
22 information for us related to the Petition that you've
23 provided to us.

24 Before I close the meeting, is there
25 anything that the Court Report needs for additional

1 information for the meeting transcript? Anything you
2 didn't get or have a question about?

3 COURT REPORTER: This is the court
4 reporter, I don't have any questions at this time.
5 Thank you.

6 MR. MILLER: Okay, thank you.

7 Okay, with that, this meeting is
8 adjourned. We'll be terminating the phone connection
9 and we'll be providing more communication on this
10 issue as we described in the process earlier.

11 Thank you all for your time, I really
12 appreciate it. This is Chris Miller.

13 Thank you.

14 (Whereupon, the above-entitled matter went
15 off the record at 2:33 p.m.)

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CERTIFICATE

This is to certify that the attached proceedings
before the United States Nuclear Regulatory
Commission

Proceeding: 10 CFR 2.206 Petition Review Board RE
Braidwood and Byron NGS

Docket Number: N/a

Location: Teleconference

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