

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of)	Docket No. 50-346-LR
First Energy Nuclear Operating Company)	
(Davis-Besse Nuclear Power Station, Unit 1))	August 16, 2012
.)	

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**INTERVENORS' FIFTH MOTION TO AMEND AND/OR SUPPLEMENT PROPOSED
CONTENTION NO. 5 (SHIELD BUILDING CRACKING)**

*APPENDIX I: NRC FOIA RESPONSES (MAILING ENVELOPE, INDEX,
B-1 THROUGH B-4 (PARTIAL))*

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NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001
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APPENDIX B
RECORDS BEING RELEASED IN THEIR ENTIRETY
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1.	undated	Davis-Besse Nuclear Power Plant, Unit Licensing Basis Seismic Ground Motion Concern. (3 pages)
2.	10/14/11	Email from P. Hernandez, NRR to J. Zimmerman, NRR RE: 2011-10-13, POP – Davis-Besse Containment Shield Building. (1 page)
3.	10/18/11	Email from J. Zimmerman, NRR to P. Hernandez, NRR Re: FYI – Davis Besse Shield Building issue update. (1 page)
4.	10/18/11	Email from S. CuardadoDeJesus, NRR to R. Auluck, NRR et al. on Davis-Besse Shield Building Issue Summary. (2 pages)
5.	10/19/11	Email from T. Lupold, NRR to A. Rezai, NRR RE: Davis Besse Shield Building Call. (1 page)
6.	10/20/11	Email from P. Hernandez, NRR to J. Zimmerman, NRR RE: GT. (1 page)
7.	10/21/11	Email from P. Hernandez, NRR to E. Thomas, NRR on Davis Besse Shield Building Issue. (1 page)
8.	10/28/11	Email from P. Hernandez, NRR to R. Auluck, NRR et al., on Davis Besse SB Dist Group. (3 pages)
9.	11/04/11	Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII on Questions about Davis Besse Shield Building Report from DORL. (2 pages)
10.	11/07/11	Davis Besse Shield Building Issue NRC Technical Reviewer Focus Questions. (1 page)
11.	11/08/11	Email from P. Hernandez, NRR to R. Auluck, NRR on Davis Besse questions for licensee. (1 page)
12.	11/09/11	Email from J. Zimmerman, NRR to P. Hernandez, NRR Query: Letter from UCS. (1 page) (Enclosure is public in ADAMS at ML11327A126)
13.	11/09/11	Email from P. Hernandez, NRR to R. Auluck, NRR et al. Re: Davis Besse Shield Building teleconference. (1 page)
14.	11/10/11	Email from T. Lupold, NRR to A. Rezai, NRR RE: Davis Besse SB extent of condition. (1 page)

15. 11/11/11 Email from J. Zimmerman, NRR to M. Evans, NRR re: DB shield building. (1 page)
16. 11/12/11 Discussion points relayed to the licensee after our internal technical discussion (1 page)
17. 11/14/11 Email from W. Jessup, NRR to M. Murphy, NRR on November 13, 2011 Davis-Besse External Call. (1 page)
18. 11/15/11 Email from P. Hernandez, NRR to J. Zimmerman, NRR on Draft email. (1 page)
19. 11/15/11 Email from P. Hernandez, NRR to M. Evans, NRR et al. RE: Updated Davis-Besse Containment Shield Building POP. (1 page)
20. 11/15/11 Email from P. Hernandez, NRR to M. Evans, NRR et al. on Davis Besse Call Summary. (1 page)
21. 11/16/11 Email from P. Hernandez, NRR to R. Auluck, NRR et al., on Davis Besse conf call. (1 page)
22. 11/17/11 Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII on Davis Besse Operability question. (1 page)
23. 11/17/11 Davis-Besse Containment System Primary Steel Containment an Shield Building. (1 page)
24. 11/17/11 Email from P. Hernandez, NRR to M. Evans, NRR et al., on Davis Besse Operability question. (2 pages)
25. 11/21/11 Davis-Besse Nuclear Power Station Containment Shield Building Issue. (8 pages)
26. 11/22/11 Email from A. Sheikh, NRR to E. Sanchez Santiago, RIII on Questions for the Conference Call. (1 page)
27. 11/23/11 Email from A. Howe, NRR to S. West, RIII et al. on Where do we stand on Davis Besse? (1 page)
28. 11/23/11 Email from A. Howe, NRR to M. Evans, NRR et al., on Call with Steve West on Davis Besse. (1 page)
29. 11/23/11 Email from J. Zimmerman, NRR to D. Hills, RIII on NSLAOrdersCommPlan.wpd. (5 pages)
30. 11/27/11 Email from J. Zimmerman, NRR to M. Evans, NRR Re: Davis-Besse Draft CAL. (2 pages)
31. 11/28/11 Email from B. Lehman, NRR to S. CuadradoDeJesus, NRR RE: Shield building discussion with Melanie next week. (1 page)

32. 12/01/11 Email from R. Haskell, NRR on New OpE Forum Posting: Davis Besse – Cracks Discovered in Shield Building During Reactor Vessel Head Replacement. (1 page)
33. 12/01/11 Email from B. Lehman, NRR to A. Sheikh, NRR et al., on Davis-Besse Shield Building. (1 page)
34. 12/01/11 Email from D. Morey, NRR to S. CuadradoDeJesus, NRR Re: Davis-Besse Shield Building. (1 page)
35. 12/02/11 Email from D. Morey, NRR to B. Lehman, NRR et al RE: Davis-Besse Shield Building. (1 page)
36. 12/02/11 Email from B. Lehman, NRR to S. Sakai, NRR et al. FW: Davis Besse POP. (2 pages)
37. 12/03/11 Email from J. Zimmerman, NRR to M. Evans, NRR et al. Fw: Press Release has been issued. Attachment is publicly available at (3 pages)
38. 12/05/11 Email from V. Mitleyng, RIII to T. Briley, RIII et al. on Davis-Besse coverage. (3 pages)
39. 12/05/11 Email from B. Lehman, NRR to S. Sakai, NRR et al., on Davis-Besse Shield Building Brief – Lehman.pptx. (1 page)
40. 12/06/11 Email from B. Lehman, NRR to S. CuadradoDeJesus, NRR on Shield Building RAI. (1 page)
41. 12/06/11 Presentation Slides on Davis-Besse Shield Building Crack. (6 pages)
42. 12/08/11 Email from M. Murphy, NRR to W. Jessup, NRR et al., FW: ET Significant Topic: Containment Delamination. (2 pages)
43. 12/13/11 Email from M. Murphy, NRR to C. Roquecruz, NRR RE: G20110823 – Cracks in the Concrete Wall of the Shield Building of the Davis-Besse Power Plant. (1 page)
44. 12/13/11 Email from M. Galloway, NRR to A. Sheikh, NRR et al., RE: Davis-Besse Shield Building. (1 page)
45. 12/13/11 Email from A. Sheikh, NRR to B. Lehman, NRR et al RE: Davis-Besse Shield Building RAI. (2 pages)
46. 12/14/11 Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII et al., FW: ET/LT Brief 12-22-11 – Containment Delamination Davis-Besse/ CR-3. (1 page)
47. 12/14/11 Email from R. Auluck, NRR to S CuadradoDeJesus, NRR et al., on DB Containment Crack RAI Abdul-RA. (2 pages)

- 48. 12/15/11 Email from P. Hernandez, NRR to A. Erickson, NRR , FW: ET/LT Brief 12-22-11 – Containment Delamination Davis-Besse/ CR-3. (5 pages)
- 49. 12/22/11 Presentation Slides on Shield Building /Containment Delamination. (11 pages)
- 50. 01/12/12 Email from D. Morey, NRR to M. Galloway, NRR et al., FW: Summary of meeting with OGC to dicuss Davis Besse-s new contention on the shield building crack. (2 pages)
- 51. 01/19/12 Davis-Besse Root Cause Review – Status Call 1/19/2012. (3 pages)
- 52. 01/19/12 Email from P. Hiland, NRR to M. Murphy, NRR RE: Without the Root Cause. (1 page)
- 53. 01/26/12 Davis-Besse Root Cause Review – Status Call 1-26-2012. (3 pages)

Davis-Besse Nuclear Power Plant, Unit 1
Licensing Basis Seismic Ground Motion Concern

Concern: During original review prior to operation, ACRS Committee believed 0.20g bedrock ground acceleration was more appropriate for Davis-Besse (DB) site than 0.15g used for design of structures, systems, and components.

Paragraph 2C.3.4 of DB USAR [Revision 28] indicates Maximum Possible Earthquake (SSE) design acclerograms were derived using 0.15g maximum ground acceleration. DB USAR specifies seismic design based on 0.15g not 0.20g for SSE. OBE seismic response spectra derived from SSE spectra using 0.08g/0.15g ratio.

References: NUREG-0136; Safety Evaluation Report Related to the Operation of Davis-Besse Nuclear Power Station Unit 1; December 1976

Supplement No. 1 to NUREG-0136; Safety Evaluation Report Related to the Operation of Davis-Besse Nuclear Power Station Unit 1; April 1977

Toledo Edison Letter to NRC dated January 27, 1977; Subject: Applicant Position for Using 0.15g SSE Acceleration

NRC Letter to Toledo Edison dated January 30, 1977; Subject: Guidelines for Applicant Seismic Reanalysis and Evaluation

Toledo Edison Letter to NRC dated February 24, 1977; Subject: Applicant Summary Report for Basis Using 0.15g SSE Acceleration

Toledo Edison Letter to NRC dated March 4, 1980; Subject: Application to Facility Operating License [request modification in DB-1 License Condition 2.C.(3) (r)]

NRC Letter to Toledo Edison dated August 27, 1980; Subject: Amendment No. 30 [deleted satisfied License Condition 2.C.(3) (r)]

NRC Letter to Toledo Edison dated May 31, 1983; Subject: Seismic Reanalysis of Piping and Components [NRR Safety Evaluation attached]

Discussion: During review to determine current design and licensing bases for DB shield building, Supplement No. 1 to NUREG-0136 documented ACRS Committee concern that 0.20g ground acceleration was more appropriate than 0.15g used in design.

The Committee recommended that the staff review in detail the plant systems needed to accomplish safe shutdown of the reactor and continued heat removal for a safe shutdown earthquake acceleration of 0.2g and that Regulatory Guide

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Davis-Besse Nuclear Power Plant, Unit 1
Licensing Basis Seismic Ground Motion Concern

1.60, "Design response Spectra for Seismic Design of Nuclear Power Plants," should be applied at the foundation level of the facility.

Staff agreed with Committee and conditioned the license to require the analysis and evaluation be completed prior to startup following the first regularly scheduled refueling outage.

As indicated in the above references, staff provided reanalysis guidance, license condition was established, license amendment deleted license condition, and NRR issued Safety Evaluation for the reanalysis review.

Of note, the licensee documented the position that 0.15g was appropriate – see above references. However, these letters predate the removal to the license condition and the NRR Safety Evaluation.

Evaluation: Licensee demonstrated adequate design margin for systems evaluated using a 0.20g ground motion and response spectra in accordance with Regulatory Guide 1.60.

Licensee was able to utilize higher piping system damping permitted in Regulatory Guide 1.61 – original licensee calculations used conservative damping.

Systems and components reanalyzed demonstrated adequate design margin for 0.20g ground motion.

Concern: What is the appropriate licensing basis maximum ground acceleration (SSE) at bedrock, 0.20g per ACRS Committee and licensing condition or 0.15g per Paragraph 2C.3.4 of DB USAR?

Non-conservative design scenario:

- Licensee modifies one of the reanalyzed systems or components
- Licensee uses Regulatory Guide 1.61 higher damping values
- Using seismic loading based on 0.15g ground motion would not be in accordance with ACRS Committee or prior licensing condition

Of note, recent functionality evaluations for shield building laminar indicated additional margin could be captured using higher SSE damping 7% damping for reinforced concrete permitted by current revision of Regulatory Guide 1.61.

- The functionality evaluation based on 0.15g not 0.20g maximum ground acceleration – shield building is anchored to bedrock.
- Will licensee use 7% damping for revised design

Davis-Besse Nuclear Power Plant, Unit 1
Licensing Basis Seismic Ground Motion Concern

Followup: Requested licensee to provide their licensing position regarding DB seismic licensing basis – 0.15g vs 0.20g horizontal ground motion for maximum possible earthquake.

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Hernandez, Pete

From: Hernandez, Pete *in reply*
Sent: Friday, October 14, 2011 7:40 AM
To: Zimmerman, Jacob
Subject: RE: 2011-10-13 POP - Davis-Besse Containment Shield Building.docx

Jake

It was a conditional question. After discussion it was decided that if no structural cracks were found through the chipping process, then we would be satisfied. If they were found, then we have to reevaluate. No one expects any cracks to be found. I left the question in place to call out what had been discussed and gave the result in the conclusion section. For clarity, next time I'll put the question and answer together. The expectation right now is that there will be no structural cracks found and this will be a non-issue; we are waiting until the licensee finishes their process; the licensee is unsure how long it will take.

Thanks,

Pete

From: Zimmerman, Jacob *in reply*
Sent: Thursday, October 13, 2011 5:17 PM
To: Hernandez, Pete
Subject: 2011-10-13 POP - Davis-Besse Containment Shield Building.docx

Pete

Nice job on the POP. I made a couple changes and have one outstanding question. See "Yellow" highlighted text in the attachment. Is that an open question that the Region or NRR tech. staff still?

Thanks

Jake

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Craver, Patti

From: Zimmerman, Jacob *mm*
Sent: Tuesday, October 18, 2011 2:01 PM
To: Hernandez, Pete
Subject: Re: FYI: Davis Besse Shield Building issue update

Thanks Pete. I'm in an NRR All Supervisor meeting until 3 pm. Please review and provide comments, as appropriate.

Jake

From: Hernandez, Pete *mm*
To: Zimmerman, Jacob; Mahoney, Michael
Sent: Tue Oct 18 13:57:54 2011
Subject: FYI: Davis Besse Shield Building issue update

I just spoke to Elba and she said that the region is planning to release a PN today or tomorrow. We'll see it for comments before it goes out. The core bore was about to start when I talked to her at 1:30.

Pete

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Davis-BesseHearingFile Resource

From: CuadradoDeJesus, Samuel *more*
Sent: Tuesday, October 18, 2011 3:53 PM
To: Auluck, Rajender; Morey, Dennis; Pelton, David; Pham, Bo; Cooper, Paula; Wrona, David; Sheikh, Abdul; Lehman, Bryce
Cc: Davis-BesseHearingFile Resource
Subject: FW: Davis Besse Shield Building Issue Summary 10 17 11.docx
Attachments: Davis Besse Shield Building Issue Summary 10 17 11.docx

FYI

From: Sanchez Santiago, Elba *Elba*
Sent: Tuesday, October 18, 2011 3:21 PM
To: CuadradoDeJesus, Samuel
Subject: Davis Besse Shield Building Issue Summary 10 17 11.docx

Sam,

Attached is the 1-page summary of the issue. I will send you the presentation in a separate e-mail.

Thanks,
Elba