

LARGE FILING SEPARATOR SHEET

CASE NUMBER: 14-1297-EL-SSO

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SECTION: 5

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Public Comments

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12037A245>

2012

January 5, 2012: FENOC Presentation Slides, NRC Public Meeting (provided as Attachment 2 to FENOC's Original Contention 5 Answer filed February 6, 2012 and can be found at pdf page 59/137).

ML12037A245

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12037A245>

January 10, 2012: Original cracking contention.

January 31, 2012: NRC Integrated Inspection Report. 93 pages.

February 6, 2012: FENOC's Answer Opposing Intervenor's Motion for Admission of Contention No. 5 on Shield Building Cracking. 137 pages.

February 27, 2012: Filing based on U.S. Rep. Kucinich's (D-OH) revelation that the shield building's outer rebar layer was no longer structurally functional, due to the cracking. First contention supplement/amendment. (Associated coalition media release.)

February 27, 2012: Letter from B. Allen, Vice President-Nuclear, FENOC, to C. Pederson, Acting Administrator, NRC, Submittal of Shield Building Root Cause Evaluation (submitted as an enclosure to Letter from T. Matthews, FENOC Counsel, to Board, Notification of Filing Related to Proposed Shield Building Cracking Contention (Feb. 29, 2012).

ML12060A191

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12060A191>

April 5, 2012: Letter from D. Imlay, FENOC, to NRC, Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application (TAC No. ME4640) and License Renewal Application Amendment No. 25, Attachment L-12-028 (provided as an enclosure to the Board Notification for April 2012 RAI Response); Letter from T. Matthews, FENOC Counsel, to the Board, Notification of Filing Related to Proposed Shield Building Cracking Contention

ML12097A216

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12097A216>

May 7, 2012: Davis-Besse Nuclear Power Station Reactor Vessel Head Replacement and Shield Building Cracking Inspection Report 05000346/2012007 (DRS) (provided as an enclosure to Letter from B. Harris, Staff Counsel, to Board (May 10, 2012)).

ML12131A031

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12131A031>

May 17, 2012: Revised Root Cause Evaluation (dated May 8, but not submitted till May 17, as an enclosure to Letter from T. Matthews, FENOC Counsel, to Board, Notification of Filing Related to Proposed Shield Building Cracking Contention).

ML12138A361

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12138A361>

June 4, 2012: Filing, in response to FENOC's woefully inadequate Aging Management Plan (AMP) for the shield building's cracks. Second contention supplement/amendment.

July 16, 2012: Filing, in response to FENOC's revised root cause analysis report, which revealed that shield building cracking was first observed not in October 2011, but rather August 1976. Third contention supplement/amendment.

July 23, 2012: Filing, based on revelations in FENOC contractor Performance Improvement International's revised root cause assessment report, which revealed 27 areas of skeptical NRC questioning about FENOC's "Blizzard of 1978" theory of shield building cracking (the environmental intervenors also posted documents supportive of this fourth contention supplement/amendment).

August 22, 2012: Licensing Board Notice (Advising Parties of Amendments to 10 C.F.R. Part 2; unpublished).

ML12235A283

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12235A283>

November 20, 2012: Letter from T. Matthews, FENOC Counsel, to the Board, Notification of Filing Related to Shield Building Laminar Cracking:

ML12325A968

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12325A968>

Letter from D. Imlay, FENOC, to NRC, Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application (TAC No. ME4640) and License Renewal Application Amendment No. 36, Attachment L-12-418 (provided as an enclosure to the Board Notification for November 2012 RAI Response). The two documents below *are redundant but part of record - you may choose to include maybe not.*

ML12331A125

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12331A125>

Davis-Besse Shield Building Request for Additional Information Response - Advanced Copy

ML12349A079

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12349A079>

December 28, 2012: FirstEnergy Nuclear Operating Co. (Davis-Besse Nuclear Power Station, Unit 1), LBP-12-27, 76 NRC 583 (2012). ASLB Memorandum and Order.

ML12363A200

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML12363A200>

2013

The environmental coalition (Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and Sierra Club Ohio Chapter) intervention against Davis-Besse's steam generator replacement project included concerns about damage to the Shield Building. Arnie Gundersen, Chief Engineer of Fairewinds Associates, Inc., served as the coalition's expert witness. (Multiple filings)

See also:

September 3, 2013: NRC Safety Evaluation Report Related to the License Renewal of Davis-Besse Nuclear Power Station (Sept. 3, 2013), available at ADAMS Accession No. ML13248A267.

ML13248A267

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML13248A267>

November 1, 2013: Davis-Besse Nuclear Power Station NRC Integrated Inspection Report 05000346/20130004, , available at ADAMS Accession No. ML13308A283. (Excerpts from the November 2013 NRC Inspection Report were provided as Attachment 2 to FENOC's Answer to Contention 6.)

ML13308A283

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML13308A283>

2014

April 15, 2014: NRC Request for Additional Information (RAI) for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application (TAC No. ME4640).

ML14097A454

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14097A454>

May 16, 2014: FENOC's Answer Opposing Intervenor's Motion for Admission of Contention No. 6.

ML14136A486

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14136A486>

May 16, 2014: NRC Staff's Answer to Motion for Admission of Contention No. 6 on Shield Building Concrete Void, Cracking and Broken Rebar Problems.

ML14136A327

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14136A327>

May 23, 2014: Intervenor's Reply in Support of Motion for Admission of Contention No. 6 on Shield Building Concrete Void, Cracking and Broken Rebar Problems.

ML14144A000

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14144A000>

September 10, 2014: ASLBP Order (Granting Unopposed Motion to Establish Consolidated Briefing Schedule for Proposed Contention 7 Admissibility Filings (unpublished).

ML14253A288

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14253A288>

September 29, 2014: Letter from E. Sayoc, NRC, to R. Lieb, FENOC, Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station License Renewal Application (TAC No. ME4640), available at ADAMS Accession No. ML14258A285 (requesting supplemental information regarding 2013 Shield Building operating experience).

ML14258A285

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML14258A285>

Genesky, Donielle

From: Kevin Kamps <kevin@beyondnuclear.org>
Sent: Saturday, January 24, 2015 1:36 PM
To: Puco Docketing
Subject: OPPOSITION COMMENT UNDER CASE # 14-1297-EL-SSO: (#14) 2013 environmental coalition intervention contentions against Davis-Besse experimental steam generator replacement project
Attachments: 5 20 13 ML13141A243.pdf; 5 20 13 PETITION TO INTERVENE ML13141A250.pdf; 6 21 13 PETITIONERS REPLY ML13173A001.pdf; 7 8 13 Reply to FENOC strike COMPLET.pdf; 7 11 13 Reply to Staff Strike-1.pdf

OPPOSITION COMMENT UNDER CASE # 14-1297-EL-SSO: (#14) 2013 environmental coalition intervention contentions against Davis-Besse experimental steam generator replacement project

Dear Public Utilities Commission of Ohio,

Yesterday, I submitted 13 emails to you, including 11 contention filings from 2010 to 2012, regarding renewable energy (wind, solar PV), energy efficiency, and energy storage (FirstEnergy's own Norton Compressed Air Energy Storage facility, near Akron) alternatives to the proposed 20-year license extension at FENOC's problem-plagued, age-degraded Davis-Besse atomic reactor; severe accident cost underestimates (re: Severe Accident Mitigation Alternatives, SAMA, analyses); and the severe, and worsening, cracking of Davis-Besse's concrete containment Shield Building.

This 14th emailed submission regards 2013 contentions our environmental coalition filed, challenging Davis-Besse's risky, experimental steam generator replacement project.

First, on May 20, 2013, we filed "EXPERT WITNESS REPORT OF ARNOLD GUNDERSEN TO SUPPORT THE PETITION FOR LEAVE TO INTERVENE AND REQUEST FOR HEARING BY BEYOND NUCLEAR (TAKOMA PARK, MD), CITIZENS ENVIRONMENT ALLIANCE SW ONTARIO CANADA, DON'T WASTE MICHIGAN (MI), AND SIERRA CLUB OHIO CHAPTER (OH)."

This expert witness report is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/5%2020%2013%20ML13141A243.pdf>

It is also attached to this email.

Arnold Gundersen, the environmental coalition's expert witness, serves as Chief Engineer at Fairewinds Associates, Inc.

Second, also on May 20, 2013, our coalition's legal counsel, Terry Lodge of Toledo, Ohio, filed PETITION TO INTERVENE AND FOR AN ADJUDICATORY PUBLIC HEARING OF FENOC LICENSE AMENDMENT REQUEST.

This petition is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/5%2020%2013%20PETITION%20TO%20INTERVENE%20ML13141A250.pdf>

It is also attached to this email.

Please note that Phyllis Oster and Joe DeMare, Beyond Nuclear members who reside in Bowling Green, Ohio, provide the standing for Beyond Nuclear in the steam generator replacement project intervention proceeding.

Third, on June 21, 2013, the environmental coalition filed PETITIONERS' REPLY IN SUPPORT OF 'PETITION TO INTERVENE AND FOR AN ADJUDICATORY PUBLIC HEARING OF FENOC LICENSE AMENDMENT REQUEST'.

This reply was in response to answers filed by FirstEnergy and U.S. Nuclear Regulatory Commission staff in opposition to the environmental coalition's intervention and contentions.

This June 21, 2013 reply is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/6%2021%2013%20PETITIONERS%20REPLY%20ML13173A001.pdf>

It is also attached to this email.

Fourth, on July 8, 2013, the environmental coalition filed PETITIONERS' REPLY IN OPPOSITION TO 'FENOC MOTION TO STRIKE'.

This July 8, 2013 reply is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/7%208%2013%20Reply%20to%20FENOC%20strike%20COMPLET.pdf>

It is also attached to this email.

Fifth, on July 11, 2013, the environmental coalition filed PETITIONERS' REPLY IN OPPOSITION TO 'NRC STAFF MOTION TO STRIKE'.

This July 11, 2013 reply is posted online at:

<http://www.beyondnuclear.org/storage/7%2011%2013%20Reply%20to%20Staff%20Strike-1.pdf>

It is also attached to this email.

Just as Davis-Besse's severe, and worsening, Shield Building concrete containment cracking risks the near-term, permanent shutdown of a Crystal River, Florida (an atomic reactor permanently shutdown in 2013 after a steam generator replacement project fatally cracked its concrete containment), so too does Davis-Besse's experimental steam generator replacement risk the near-term, permanent shutdown of a San Onofre 2 & 3, California (the two San Onofre, CA reactors were permanently closed in June, 2013, after their experimental steam generator replacements failed after only a year or two of operation).

By the way, Arnold Gundersen of Fairewinds Associates, Inc., served as expert witness for Friends of the Earth in its successful intervention for permanent shutdown of San Onofre 2 & 3.

Also, it is ironic that Davis-Besse's experimental steam generator replacement project cost some \$600 million. This is about the same amount that FirstEnergy expended on its Hole-in-the-Head fiasco, its reactor lid corrosion near-miss, from 2002 to 2004, in terms of replacement power costs, repair and replacement costs, as well as a record NRC fine (\$33.5 million).

Given Davis-Besse's experimental steam generator replacement, which could lead to premature failure and permanent shutdown, we urge PUCO to not approve the massive ratepayer bailouts FirstEnergy seeks in order to prop up its age-degraded, problem-plagued atomic reactor.

Thank you.

Sincerely,

Kevin Kamps, Beyond Nuclear

--

Kevin Kamps

Radioactive Waste Watchdog

Beyond Nuclear

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Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the matter of

FirstEnergyNuclear Operating Company)	
(FENOC))	
Davis-Besse Nuclear Power Station	)	May 20, 2013
License Amendment Steam Generator)	
Docket No. 50-346)	
License No. NPF-3)	

EXPERT WITNESS REPORT OF ARNOLD GUNDERSEN
TO SUPPORT THE PETITION
FOR LEAVE TO INTERVENE AND REQUEST FOR HEARING
BY BEYOND NUCLEAR (TAKOMA PARK, MD), CITIZENS ENVIRONMENT
ALLIANCE SW ONTARIO CANADA, DON'T WASTE MICHIGAN (MI), AND
SIERRA CLUB OHIO CHAPTER (OH)

- 1 I, Arnold Gundersen, declare as follows:
- 2 My name is Arnold Gundersen. I am sui juris. I am over the age of 18-years-old.
- 3 Beyond Nuclear (Takoma Park, MD), Citizens Environment Alliance SW Ontario
- 4 Canada, Don't Waste Michigan (MI), and Sierra Club Ohio Chapter (OH) have retained
- 5 Fairewinds Associates, Inc to issue an expert report in support of the Parties' Petition For
- 6 Leave To Intervene And Request For Hearing. I have specifically been retained to
- 7 examine the licensing basis for the First Energy Nuclear Operating Company (FENOC)
- 8 proposed Replacement Once Through Steam Generator (ROTSG) modification to its
- 9 Davis-Besse (D-B) nuclear plant.

1 I earned my Bachelor Degree in Nuclear Engineering from Rensselaer Polytechnic
2 Institute (RPI) cum laude. I earned my Master Degree in Nuclear Engineering from RPI
3 via an Atomic Energy Commission Fellowship. Cooling tower operation and cooling
4 tower plume theory was my area of study for my Master's Degree.

5 I began my career as a reactor operator and instructor in 1971 and progressed to the
6 position of Senior Vice President for a nuclear licensee prior to becoming a nuclear
7 engineering consultant and expert witness. I hold one nuclear plant patent. My
8 Curriculum Vitae is Attachment 1.

9 I have testified as an expert witness to the Nuclear Regulatory Commission (NRC).
10 Atomic Safety and Licensing Board (ASLB) and Advisory Committee on Reactor
11 Safeguards (ACRS), in Federal Court, the State of Vermont Public Service Board, the
12 State of Vermont Environmental Court, and the Florida Public Service Commission.

13 I am an author of the first edition of the Department of Energy (DOE) Decommissioning
14 Handbook.

15 I have more than 40-years of professional nuclear experience *including and not limited*
16 *to:* Cooling Tower Operation, Cooling Tower Plumes, Consumptive Water Loss, Nuclear
17 Plant Operation, Nuclear Management, Nuclear Safety Assessments, Reliability
18 Engineering, In-service Inspection, Criticality Analysis, Licensing, Engineering
19 Management, Thermohydraulics, Radioactive Waste Processes, Decommissioning, Waste
20 Disposal, Structural Engineering Assessments, Nuclear Fuel Rack Design and
21 Manufacturing, Nuclear Equipment Design and Manufacturing, Prudency Defense,
22 Employee Awareness Programs, Public Relations, Contract Administration, Technical
23 Patents, Archival Storage and Document Control, Source Term Reconstruction, Dose
24 Assessment, Whistleblower Protection, and NRC Regulations and Enforcement.

25 I am employed as the chief engineer for Fairewinds Associates, Inc, an expert witness
26 and paralegal services firm specializing in nuclear engineering, nuclear operations, and
27 nuclear safety analysis and assessment.

1 My pertinent experience related to the Steam Generator matters being considered by this
2 proceeding include, but are not limited to:

- 3 • In my position as the Senior Vice President of Inspection Services, I was
4 responsible for a group of approximately 200-personnel performing ASME III
5 and ASME XI non-destructive piping inspections at nuclear plants throughout the
6 United States. These personnel used inspection techniques identical to those used
7 on steam generator tube inspections.
- 8 • As the Senior Vice President of Engineering Services, I was responsible for
9 the development of the first ever modern steam generator nozzle dams that were
10 sold to approximately 40-nuclear reactors in the US and Asia.

11 My declaration is intended to examine the licensing basis for the First Energy Nuclear
12 Operating Company (FENOC) proposed Replacement Once Through Steam Generator
13 (ROTSG) modification to its Davis Besse (D-B) nuclear plant.

14

15 **BACKGROUND**

16 There is a dearth of technical data in the Nuclear Regulatory Commission (NRC) Public
17 Document Room (PDR) regarding the First Energy Nuclear Operating Company
18 (FENOC) proposed Replacement Once Through Steam Generator (ROTSG) modification
19 to its Davis Besse (D-B) nuclear plant in Oak Harbor, Ohio. However, from published
20 reports it appears that FENOC placed its order for the Davis Besse replacement steam
21 generators with Babcock-Wilcox of Canada in early December of 2007.

22 Nuclear steam generators are critical, highly engineered pieces of
23 equipment that create the steam required for electrical power generation at
24 the nuclear plant. The Davis-Besse ROTSGs will weigh in excess of 450
25 tons each and require over five years to design and fabricate. The work on
26 these units will be completed at B&W's Cambridge, Ontario facility.¹

27 On December 5, 2007, via a Press Release in Reuters, McDermott International, Inc.
28 announced:

¹ Reuters, *B&W Awarded Nuclear Steam Generator Contract by FirstEnergy*, December 2007.
<http://www.reuters.com/article/2007/12/05/idUS141970+05-Dec-2007+BW20071205>

1 ...that a subsidiary of The Babcock & Wilcox Company ("B&W") has
2 been awarded a contract by FirstEnergy Nuclear Operation Company to
3 design, fabricate and deliver two replacement once-through steam
4 generators ("ROTSG") for the Davis-Besse Nuclear Power Station.²

5 The Press Release in Reuters implies that FENOC made the decision to replace its steam
6 generators at Davis-Besse and then developed a purchase specification and compared
7 bidders sometime in 2007 prior to awarding the contract to B&W Canada late that year.

8 The lack of publicly available technical analysis in the NRC PDR suggests that FENOC
9 made a secret determination under 10 C.F.R. § 50.59 that it was not necessary to apply
10 for a license amendment to replace the Davis-Besse steam generators. The lack of a
11 license application on file with the NRC also implies that Davis-Besse made the
12 determination that the "fit-form-function" of the replacement steam generators fell within
13 the licensing parameters of the original Davis-Besse license.

14 The first significant description revealing the true extent of the replacement steam
15 generator modifications appears to be in the 74-page PowerPoint entitled *Davis-Besse*
16 *Steam Generator Replacement Project: Project Overview/Public Meeting: NRC Region*
17 *III Office: March 20, 2013*, that FENOC submitted to the NRC.

18
19 **THE DAVIS-BESSE REPLACEMENT ONCE THROUGH STEAM**
20 **GENERATOR AND 10 C.F.R. § 50.59**

21 According to the PowerPoint presentation, FENOC had performed a 10 C.F.R. § 50.59
22 analysis that found that the RSG is "similar"³ to the OSG. Being "similar" to the original
23 steam generators without analyzing the impact so many changes from the original D-B
24 technical specifications is an inadequate criterion by which to determine if 10 C.F.R. §
25 50.59 has been assiduously applied.

26 A review by Fairewinds Associates of the critical design information first provided by
27 FENOC at the March 20, 2013 meeting with the NRC shows that the Davis-Besse

² Ibid.

³ *Davis-Besse Steam Generator Replacement Project: Project Overview/Public Meeting: NRC Region III Office: March 20, 2013*, Slides 10 and 31

1 ROTSG does not meet the criteria of 10 C.F.R. § 50.59. Moreover, the data reviewed
2 shows that FENOC should have applied for a license amendment with the requisite
3 public review six years ago when the ROTSG was originally designed, ordered, and
4 purchased.

5 Specifically, 10 C.F.R. § 50.59 requires that any licensee performing an experiment at a
6 licensed nuclear power plant must apply for a license amendment and include the
7 requisite public review. FENOC itself had acknowledged that the ROTSG design had
8 significant modifications in comparison to the original OTSG. More specifically, slides
9 10 through 13 identify the following significant, experimental modifications to the
10 original OTSG design:

- 11 1. The tube inspection lane was removed.
- 12 2. An additional tube support plate was added.
- 13 3. 150 additional tubes were added.
- 14 4. The tube alloy was changed.
- 15 5. The tube-to-tube sheet junction was modified extensively.
- 16 6. The overall design of the steam generator support structure was changed from
17 a cylindrical skirt to a pedestal cone.
- 18 7. The thickness of the pressure retaining walls of the ROTSG is two inches
19 thinner than the pressure retaining wall in the Original Once Through Steam
20 Generator.
- 21 8. The 180-degree elbow design will be extensively modified.
- 22 9. The alloy of the hot leg nozzles was also changed.

23 Each and every one of these aforementioned changes is significant individually, and
24 when taken together prove that the Replacement OTSG contains many experimental
25 parameters, especially in comparison to the Original OTSG.

26 Conveniently, the list of experimental changes identified by FENOC does not include the
27 additional modifications applied by FENOC to cut into the Davis-Besse containment for
28 the fourth time since it was constructed. To the best of Fairewinds' knowledge and
29 belief, no other containment structure has been cut open more than twice, yet Davis-

1 Besse's fourth containment perforation should have been identified by the 10 C.F.R. §
2 50.59 process as problematic and therefore requiring a license amendment review and
3 application.

4 Furthermore, 10 C.F.R. § 50.59 requires a formal license renewal application when a
5 license amendment change is required as a result of such a modification. The Atomic
6 Safety and Licensing Board (ASLB) has recently confirmed that Section 50.59
7 establishes standards for a licensee to request a license amendment before it may make

8 ... changes in the facility as described in the [updated] final safety analysis
9 report [UFSAR36], make changes in the procedures as described in the
10 [UFSAR], and conduct tests or experiments not described in the
11 [UFSAR]." 10 C.F.R. § 50.59(c)(1). Section 50.59 states that a licensee
12 need not request a license amendment pursuant to section 50.90 if "(i) A
13 change to the technical specifications incorporated in the license is not
14 required, and(ii) The change, test, or experiment does not meet any of the
15 criteria in paragraph (c)(2) of this section." Id. § 50.59(c)(1)(i)-(ii).
16 **Restated, a licensee must request a license amendment if the proposed**
17 **action requires that existing technical specifications be changed. If a**
18 **licensee is unable to operate a reactor in strict accordance with its**
19 **license, it must seek authorization from the NRC for a license**
20 **amendment (10 C.F.R. §§ 50.59, 50.90 to 50.92), which is a process that**
21 **triggers a right to request an adjudicatory hearing by persons whose**
22 **interests may be affected by the proceeding. [Emphasis Added]⁴**

23 The ASLB decision quoted above stresses that changing technical specifications
24 determine that the 50.59 criteria have not been met, and that a formal license amendment
25 is required. This point is so essential that the ASLB emphasized it by restating the
26 requirement for a formal license amendment review process if a technical specification
27 change were to be required. A review of the FENOC PowerPoint⁵ presentation submitted
28 to the NRC contains an extensive list of changes to the D-B Technical Specifications that
29 clearly identifies the necessity for complete technical review by the NRC via the formal
30 10 C.F.R. § 50.59-license amendment processes. It is evident that the formal license
31 amendment review is required due to the numerous and unreviewed proposed changes to
32 the D-B Technical Specifications.

⁴ *Southern California Edison Co.*, (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-13-07, pp. 18-19 (May 13, 2013)

⁵ *Davis-Besse Steam Generator Replacement Project: Project Overview/Public Meeting: NRC Region III Office: March 20, 2013*, Slides 15 through 17

1 **INDUSTRY EXPERIENCE**

2 In 2007 Davis-Besse awarded the design and fabrication of its ROTSG to B&W Canada.
3 Since that time, there have been numerous significant problems with other steam
4 generators throughout the United States. FENOC acknowledges these problems in its
5 PowerPoint, *Davis-Besse Steam Generator Replacement Project: Project*
6 *Overview/Public Meeting: NRC Region III Office: March 20, 2013*, slides 18 through 25.
7 Significant problems have arisen at Oconee (slide 19), ANO (slide 20), TMI (slide 21),
8 and San Onofre (slide 24).

9 In an effort to avoid the participatory public review aspect of the 50.59 license
10 amendment process, the nuclear power licensees and their parent corporations have made
11 an alleged strategic choice to avoid the license amendment process by manipulating
12 loopholes in the 50.59 processes.

- 13 • The last three steam generator replacement projects orchestrated by licensees
14 sought to avoid the 10 C.F.R. § 50.59 license amendment process.
- 15 • By avoiding the 50.59 license amendment processes for Crystal River 3 in
16 Florida, and San Onofre 2 and San Onofre 3 in California, the owners, Progress
17 Energy (Crystal River) and Edison (San Onofre Units 2 and 3) caused all three
18 units to experience total mechanical failures.

19 Moreover, all three major replacement steam generator problems previously discussed
20 and the failures at ANO and TMI described by FENOC in its PowerPoint were not
21 identified at these nuclear power plants until significant damage to both the steam
22 generators and the plants themselves had already occurred. Ratepayers were stuck with
23 millions of dollars in payments for flawed equipment. All five-replacement steam
24 generator equipment failures can be attributed to failure of these licensees to apply the
25 appropriate 10 C.F.R. § 50.59 screening criteria. Evading the 10 C.F.R. § 50.59 license
26 amendment processes allowed design errors to reach through fabrication and into plant
27 operation before regulators even began examining these significant design and fabrication
28 failures.

1 **TIMING OF THE DISCOVERY OF RSG FAILURES AT SAN ONOFRE AND**
2 **LESSONS TO LEARN FOR DAVIS-BESSE**

3 The timing of the discovery of the failure of the Replacement Steam Generators at both
4 San Onofre Units 2 and 3 is important to review and discuss in order to determine the
5 likelihood of failure for the Davis-Besse ROTSG project. From the reports reviewed, it
6 appears that FENOC most likely completed the new design for the D-B ROTSGs during
7 2008, and fabrication appears to have begun in 2009. FENOC now claims that lessons
8 learned from the San Onofre failures have been incorporated into the D-B ROTSG design
9 and fabrication. Such a claim is impossible since the San Onofre RSGs failed in 2012,
10 well after the D-B ROTSGs were already in fabrication. Quite simply, the Davis-Besse
11 ROTSG could not have been modified to reflect any lessons learned from the technical
12 failures at San Onofre Units 2 and 3.

13

14 **SIGNIFICANCE OF DESIGN MODIFICATIONS ON SAFETY⁶**

15 The requirements for the process by which nuclear power plant operators and licensees
16 may make changes to their facilities and procedures as delineated in the safety analysis
17 report and without prior NRC approval are limited by specific regulations detailed in the
18 Nuclear Regulatory Commission's *10 CFR Part 50, Domestic Licensing of Production*
19 *and Utilization Facilities, Section 50.59, Changes, Tests and Experiments.*

20 The implementing procedures for the 10 C.F.R. § 50.59 regulations have eight criteria
21 that are important for nuclear power plant safety.

22 “(2) A licensee shall obtain a license amendment pursuant to § 50.90 prior to
23 implementing a proposed change, test, or experiment if the change, test, or
24 experiment would:

25 (i) Result in more than a minimal increase in the frequency of occurrence
26 of an accident previously evaluated in the final safety analysis report
27 (as updated);

⁶ Declaration Of Arnold Gundersen Supporting The Petition To Intervene By Friends Of The Earth
Regarding The Ongoing Failure Of The Steam Generators At The San Onofre Nuclear Generating Station,
Docket No. 50-361 and 50-362, May 31, 2012

- 1 (ii) Result in more than a minimal increase in the likelihood of occurrence
2 of a malfunction of a structure, system, or component (SSC) important
3 to safety previously evaluated in the final safety analysis report (as
4 updated);
 - 5 (iii) Result in more than a minimal increase in the consequences of an
6 accident previously evaluated in the final safety analysis report (as
7 updated);
 - 8 (iv) Result in more than a minimal increase in the consequences of a
9 malfunction of an SSC important to safety previously evaluated in the
10 final safety analysis report (as updated);
 - 11 (v) Create a possibility for an accident of a different type than any
12 previously evaluated in the final safety analysis report (as updated);
 - 13 (vi) Create a possibility for a malfunction of an SSC important to safety
14 with a different result than any previously evaluated in the final safety
15 analysis report (as updated);
 - 16 (vii) Result in a design basis limit for a fission product barrier as described
17 in the FSAR (as updated) being exceeded or altered; or
 - 18 (viii) Result in a departure from a method of evaluation described in the
19 FSAR (as updated) used in establishing the design bases or in the
20 safety analyses.”
- 21 These implementing procedures created for 10 C.F.R. § 50.59 require that the license be
22 amended unless none of these eight criteria are triggered by any change made by a
23 nuclear power plant licensee like FENOC’s Davis-Besse. If a single criterion is met, then
24 the regulation requires that the licensee pursue a license amendment process.
- 25 By claiming that the steam generator replacements were a *like-for-like* design and
26 fabrication, FENOC, like Edison at San Onofre Units 2 and 3, is attempting to avoid the
27 more rigorous license amendment process. From the evidence reviewed, it appears that
28 the NRC has accepted FENOC’s statement and documents without further independent
29 analysis, just as it did for Edison on San Onofre’s RSGs.
- 30 In the analysis detailed of the Edison RSGs, Fairewinds identified 39 separate safety
31 issues that failed to meet the NRC 50.59 criteria. Any one of those 39 separate safety
32 issues should have triggered the license amendment review process by which the NRC
33 would have been notified of the proposed significant design and fabrication changes.

1 Now it appears that FENOC is also attempting to skirt the 10 C.F.R. § 50.59 processes on
2 its Davis-Besse ROTSG project. As the NRC guidelines state:

3 “(c)(1) A licensee may make changes in the facility as described in the
4 final safety analysis report (as updated), make changes in the procedures
5 as described in the final safety analysis report (as 1.187-A-1 updated), and
6 conduct tests or experiments not described in the final safety analysis
7 report (as updated) without obtaining a license amendment pursuant to §
8 50.90 only if: (i) A change to the technical specifications incorporated in
9 the license is not required, and (ii) **The change, test, or experiment does**
10 **not meet any of the criteria in paragraph (c)(2) of this section.”⁷**
11 [Emphasis Added]

12 In its previous reports, Fairewinds identified at least 39 *unreviewed* modifications to the
13 original steam generators at San Onofre. Now Fairewinds’ preliminary review of the D-
14 B ROTSG shows that FENOC made *at least nine unreviewed technical specification*
15 *changes to the Systems, Structures and Components (SSC)*. These major design changes
16 are not *like-for-like* and clearly show that FENOC should have applied for a license
17 amendment review of the D-B ROTSG under 10 C.F.R. § 50.59.

18 Additionally, FENOC has failed to include the Crystal River 3 ROTSG experience in its
19 PowerPoint presentation to the NRC. Like Davis-Besse, the Crystal River 3 steam
20 generator replacement is a Babcock & Wilcox design.

- 21 • The Crystal River 3 Containment failed three times in less than one year after
22 being cut open during its ROTSG modification.
- 23 • It is important to compare the upcoming Davis-Besse ROTSG modification to the
24 Crystal River 3 RSG, because the Davis-Besse Containment will also be cut open
25 again during this outage.
- 26 • Like Crystal River 3, the Davis-Besse design is also a Babcock & Wilcox design,
27 and also the D-B Containment will be cut open for the fourth time since it was
28 constructed according to slides 47 and 51.
- 29 • Finally, FENOC’s PowerPoint presentation does not address the fact that Davis-
30 Besse’s containment integrity issues are compounded by the damage its

⁷ Regulatory Guide 1.187 Guidance For Implementation Of 10 CFR 50.59, Changes, Tests, And Experiments, 1.187-A-1, <http://pbadupws.nrc.gov/docs/ML0037/ML003759710.pdf>

1 containment already suffered during the blizzard of 1978, allegedly resulting in all
2 of the cracking that now compromises D-B's containment integrity.

3 Of all the nuclear plants in the world, the Davis-Besse containment is the only one that
4 has such a complicated history of storm damage and being split open repeatedly. These
5 facts alone require a thorough NRC license application review and public hearing. While
6 FENOC acknowledges that three containment incisions have occurred, it also claims that
7 in this fourth containment incision:

- 8 • "Laminar cracking is not expected..."⁸
- 9 • And that if the containment were to crack, "Any deficiencies will be documented
10 in the Corrective Action program."

11 *Waiting for cracks to occur and then entering them into the corrective action program is*
12 *the very definition of a 10 C.F.R. § 50.59-trigger for NRC licensing review. It appears*
13 *that cutting the Davis-Bessie containment for the fourth time will in fact be an*
14 *"experiment" as defined under 10 C.F.R. § 50.59.*

16 **CONCLUSION**

17 Fairewinds concludes that the Replacement Once Through Steam Generator
18 modifications at Davis-Bessie require a full NRC license application under the rules of 10
19 C.F.R. § 50.59 because:

- 20 1. There are extensive experimental modifications to both the ROTSGs and to the
21 containment structures.
- 22 2. There are extensive modifications to the Davis-Besse technical specifications.

23 In the event that experimental changes are made, or in the event that technical
24 specification changes are required, 10 C.F.R. § 50.59 makes it clear that a formal license
25 amendment with public participation is required. Davis-Besse failed to comply with its
26 responsibility under 10 C.F.R. § 50.59 to file a license amendment request and must do
27 so before replacing its steam generator.

28 *End*

⁸ *Davis-Besse Steam Generator Replacement Project: Project Overview/Public Meeting: NRC Region III
Office: March 20, 2013 Slide 48*

Attachments:

Attachment 1 – Curriculum Vitae

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 20th day, May 2013 at Burlington, Vermont.

_____/s/_____

Arnold Gundersen, MSNE, RSO
Chief Engineer, Fairewinds Associates, Inc

CURRICULUM VITAE
Arnold Gundersen
Chief Engineer, Fairewinds Associates, Inc
May 20, 2013

Education and Training

ME NE	Master of Engineering Nuclear Engineering Rensselaer Polytechnic Institute, 1972 U.S. Atomic Energy Commission Fellowship Thesis: Cooling Tower Plume Rise
BS NE	Bachelor of Science Nuclear Engineering Rensselaer Polytechnic Institute, Cum Laude, 1971 James J. Kerrigan Scholar
RO	Licensed Reactor Operator, U.S. Atomic Energy Commission License # OP-3014

Qualifications – including and not limited to:

- Chief Engineer, Fairewinds Associates, Inc
- Nuclear Engineering, Safety, and Reliability Expert
- Federal and Congressional hearing testimony and Expert Witness testimony
- Former Senior Vice President Nuclear Licensee
- Former Licensed Reactor Operator
- Atomic Energy Commission Fellow
- 40-years of nuclear industry experience and oversight
 - Nuclear engineering management assessment and prudence assessment
 - Nuclear power plant licensing and permitting – assessment and review
 - Nuclear safety assessments, source term reconstructions, dose assessments, criticality analysis, and thermohydraulics
 - Contract administration, assessment and review
 - Systems engineering and structural engineering assessments
 - Cooling tower operation, cooling tower plumes, thermal discharge assessment, and consumptive water use
 - Nuclear fuel rack design and manufacturing, nuclear equipment design and manufacturing, and technical patents
 - Radioactive waste processes, storage issue assessment, waste disposal and decommissioning experience
 - Reliability engineering and aging plant management assessments, in-service inspection
 - Employee awareness programs, whistleblower protection, and public communications
 - Quality Assurance (QA) & records

Publications

Published Lecture — *The Lessons of the Fukushima Daiichi Nuclear Accident* published in the *International Symposium on the Truth of Fukushima Nuclear Accident and the Myth of Nuclear Safety*, August 30, 2012 University of Tokyo, Iwanami Shoten Publishers, Tokyo, Japan

- Author — *The Echo Chamber: Regulatory Capture and the Fukushima Daiichi Disaster, Lessons From Fukushima*, February 27, 2012, Greenpeace International
- Co-author — *Fukushima Daiichi: Truth And The Way Forward*, Shueisha Publishing, February 17, 2012, Tokyo, Japan.
- Co-author — *Fairewinds Associates 2009-2010 Summary to JFC, July 26, 2010* State of Vermont, Joint Fiscal Office, (<http://www.leg.state.vt.us/jfo/envy.aspx>).
- Co-author — *Supplemental Report of the Public Oversight Panel Regarding the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Power Plant July 20, 2010*, to the Vermont State Legislature by the Vermont Yankee Public Oversight Panel.
- Co-author — The Second Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding buried pipe and tank issues at Entergy Nuclear Vermont Yankee and Entergy proposed Enexus spinoff. See two reports: *Fairewinds Associates 2nd Quarterly Report to JFC* and *Enexus Review by Fairewinds Associates*.
- Author — Fairewinds Associates, Inc *First Quarterly Report to the Joint Legislative Committee*, October 19, 2009.
- Co-author — *Report of the Public Oversight Panel Regarding the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Power Plant*, March 17, 2009, to the Vermont State Legislature by the Vermont Yankee Public Oversight Panel.
- Co-author — *Vermont Yankee Comprehensive Vertical Audit – VYCVA – Recommended Methodology to Thoroughly Assess Reliability and Safety Issues at Entergy Nuclear Vermont Yankee, January 30, 2008 Testimony to Finance Committee Vermont Senate*.
- Co-author — *Decommissioning Vermont Yankee – Stage 2 Analysis of the Vermont Yankee Decommissioning Fund – The Decommissioning Fund Gap*, December 2007, Fairewinds Associates, Inc. Presented to Vermont State Senators and Legislators.
- Co-author — *Decommissioning the Vermont Yankee Nuclear Power Plant: An Analysis of Vermont Yankee's Decommissioning Fund and Its Projected Decommissioning Costs*, November 2007, Fairewinds Associates, Inc.
- Co-author — *DOE Decommissioning Handbook, First Edition*, 1981-1982, invited author.

Presentations & Media

Fairewinds Energy Education Corp 501c3 presentations:

- *What Did They Know And When? Fukushima Daiichi Before And After The Meltdowns*, Symposium: The Medical and Ecological Consequences of the Fukushima Nuclear Accident, The New York Academy of Medicine, New York City, NY, March 11, 2013
- *A Mountain of Waste 70 Years High*, Presentation: *Old and New Reactors*, University of Chicago, December 1, 2012
- Congressional Briefing September 20, 2012; invited by Representative Dennis Kucinich
- Presentations in Japan August/September 2012: Presentation at University of Tokyo (August 30, 2012), Presentation at Japanese Diet Building (members of the Japanese Legislature - August 31, 2012), Presentation to citizen groups in Niigata (September 1, 2012), Presentations to citizen groups in Kyoto (September 4, 2012), Presentation to Japanese Bar Association (September 2, 2012), and Presentation at the Tokyo Olympic Center (September 6, 2012)
- Multi-media Opera: *Curtain of Smoke*, by Filmmaker Karl Hoffman, Composer Andrea Molino, and Dramatist Guido Barbieri, Rome, Italy (2012-5-21,22)

- Curtain of Smoke Symposium (2012-5-21), with Dr. Sherri Ebadi 2004 Nobel Laureate
- The Italian National Press Club Rome (2012-5-21) with Dr. Sherri Ebadi 2004 Nobel Laureate: the relationship between nuclear power and nuclear weapons
- Radio 3 Rome (2012-5-21) Discussion of Three Mile Island and the triple meltdown at Fukushima Daiichi (Japan),
- Sierra Club Panel Discussions (2012-5-5): Consequences of Fukushima Daiichi with Paul Gunter and Waste Disposal with Mary Olson,
- Physicians for Social Responsibility Seattle (2012-3-17),
- Fukushima Daiichi Forum with Chiho Kaneko, Brattleboro, VT (2012-3-11),
- Physicians for Global Responsibility Vancouver (2012-3-11) Skype Video Lecture, University of Vermont (2 – 2011),
- Boston Nuclear Forum, Boston Library (6/16/11),
- Duxbury Emergency Management (6/15/11),
- Vermont State Nuclear Advisory Panel (VSNAP), Elder Education Enrichment,
- New Jersey Environmental Federation (5/14/11),
- Quaker Meeting House,
- Press Conference for Physicians for Social Responsibility (5/19/11),
- St. Johnsbury Academy – Nuclear Power 101.

Educational videos on nuclear safety, reliability and engineering particularly Fukushima issues. Videos may be viewed @ fairewinds.org (501c3 non-profit)

Expert commentary (many more unnamed): CNN (6), The John King Show (14), BBC, CBC, Russia Today, Democracy Now, KPBS (Radio & TV) VPR, WPTZ, WCAX, WBAI, CCTV, NECN, Pacifica Radio, CBC (radio & TV) (4), Rachel Maddow Show, *Washington Post*, *New York Times*, *The Guardian*, *Bloomberg* (print & TV), *Reuters*, *Associated Press*, *The Global Post*, *Miami Herald*, *Tampa Times*, *Orange County Times*, *LA Times*, *Al Jazeera* (print), *The Tennessean*, The Chris Martinson Show, *Mainichi News*, TBS Japan, *Gendai Magazine*, NHK television, *Scientific American*. *Huffington Post* (Paris) named Fairewinds.com the best go to site for information about the Fukushima Daiichi accident (5/9/11).

Patents

Energy Absorbing Turbine Missile Shield – U.S. Patent # 4,397,608 – 8/9/1983

Committee Memberships

Vermont Yankee Public Oversight Panel, appointed 2008 by President Pro-Tem Vermont Senate
National Nuclear Safety Network – Founding Board Member
Three Rivers Community College – Nuclear Academic Advisory Board
Connecticut Low Level Radioactive Waste Advisory Committee – 10 years, founding member
Radiation Safety Committee, NRC Licensee – founding member
ANSI N-198, Solid Radioactive Waste Processing Systems

Honors

U.S. Atomic Energy Commission Fellowship, 1972
B.S. Degree, Cum Laude, RPI, 1971, 1st in nuclear engineering class
Tau Beta Pi (Engineering Honor Society), RPI, 1969 – 1 of 5 in sophomore class of 700

James J. Kerrigan Scholar 1967–1971

Teacher of the Year – 2000, Marvelwood School

Publicly commended to U.S. Senate by NRC Chairman, Ivan Selin, in May 1993 – “It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service.”

Expert Witness Testimony and Nuclear Engineering Analysis and Consulting

Nuclear Regulatory Commission – May 6, 2013

Expert witness report Before The Secretary NRC: *Expert Witness Report Of Arnold Gundersen To Support The Petition For Leave To Intervene And Request For Hearing By The Blue Ridge Environmental Defense League, Bellefonte Efficiency And Sustainability Team, And Mothers Against Tennessee River Radiation*. Retained by BREDL et al.

Nuclear Regulatory Commission – April 30, 2013

Expert witness report to Atomic Safety and Licensing Board: *Testimony Of Arnold Gundersen Supporting Of Intervenors Contention 15: DTE Cola Lacks Statutorily Required Cohesive QA Program*. Retained by Don't Waste Michigan, Beyond Nuclear et al.

Canadian Nuclear Safety Commission (CNSC) – April 29, 2013

Expert witness report to Canadian Nuclear Safety Commission (CNSC): *Analysis Of The Relicensing Application For Pickering Nuclear Generating Station*. Retained by Durham Nuclear Awareness.

Nuclear Regulatory Commission – January 16, 2013

Expert witness presentation to NRC Petition Review Board: 2.206 Presentation San Onofre Units 2 and 3 Replacement Steam Generators Meeting With Petitioner Friends Of The Earth, Requesting Enforcement Action Against Southern California Edison Under 10 CFR 2.206

Expert Witness Report For Friends Of The Earth – July 11, 2012

San Onofre's Steam Generators: Significantly Worse Than All Others Nationwide

Expert Witness Report For Friends Of The Earth – May 15, 2012

San Onofre's Steam Generator Failures Could Have Been Prevented, Fairewinds Associates

Expert Witness Report For Friends Of The Earth – April 10, 2012

San Onofre Cascading Steam Generator Failures Created By Edison: Imprudent Design And Fabrication Decisions Caused Leaks, Fairewinds Associates

Expert Witness Report For Friends Of The Earth – March 27, 2012

Steam Generator Failures At San Onofre: The Need For A Thorough Root Cause Analysis Requires No Early Restart

Expert Witness Report For Greenpeace – February 27, 2012

Lessons From Fukushima: The Echo Chamber Effect, Fairewinds Associates

Nuclear Regulatory Commission – December 21, 2011

Expert witness report to Atomic Safety and Licensing Board: *Prefiled Direct Testimony of Arnold Gundersen Regarding Consolidated Contention RK-EC-3/CW-EC-1 (Spent Fuel Pool Leaks)*

New York State Department Of Environmental Conservation – November 15-16, 2011

Expert witness for Riverkeeper: hearing testimony regarding license extension application for Indian Point Units 2 and 3 – contention: tritium in the groundwater.

Nuclear Regulatory Commission – November 10, 2011

Expert witness report entitled: *Fukushima and the Westinghouse-Toshiba AP1000, A Report for the AP1000 Oversight Group by Fairewinds Associates, Inc.* and Video. Submitted to NRC by the AP1000 Oversight Group.

Nuclear Regulatory Commission – October 7, 2011

Testimony to the NRC Petition Review Board Re: Mark 1 Boiling Water Reactors, Petition for NRC to shut down all BWR Mark 1 nuclear power plants due to problems in containment integrity in the Mark 1 design.

New York State Department Of Environmental Conservation, October 4, 2011

Prefiled Rebuttal Testimony Of Arnold Gundersen On Behalf Of Petitioners Riverkeeper, Inc., Scenic Hudson, Inc., And Natural Resources Defense Council, Inc. To The Direct Testimony Of Matthew J. Barvenik (Senior Principal GZA Geoenvironmental, Inc.) Regarding Radiological Materials

Southern Alliance for Clean Energy (SACE) submission to TVA Board of Directors – August 3, 2011– Expert witness report entitled: *The Risks of Reviving TVA's Bellefonte Project*, and Video prepared for the Southern Alliance for Clean Energy (SACE).

New York State Department Of Environmental Conservation, July 22, 2011

Prefiled Direct Testimony Of Arnold Gundersen On Behalf Of Petitioners Riverkeeper, Inc., Scenic Hudson, Inc., And Natural Resources Defense Council, Inc. Regarding Radiological Materials

Nuclear Regulatory Commission – May 10, 2011

Comment to the proposed rule on the AP1000 Design Certification Amendment Docket ID NRC-2010-0131 As noticed in the Federal Register on February 24, 2011 Retained by Friends of the Earth as Expert Witness.

Nuclear Regulatory Commission – May 10, 2011

Comment to the proposed rule on the AP1000 Design Certification Amendment Docket ID NRC-2010-0131 As noticed in the Federal Register on February 24, 2011 Retained by Friends of the Earth as Expert Witness.

NRC Advisory Committee on Reactor Safeguards (ACRS) – May 26, 2011

Lessons learned from Fukushima and Containment Integrity on the AP1000.

Vermont Energy Cooperative (VEC) – April 26, 2011

Presentation to the Vermont Energy Cooperative Board of Directors, *Vermont Yankee – Is It Reliable for 20 more years?*

Vermont State Nuclear Advisory Panel (VSNAP) – February 22, 2011

Testimony and presentation entitled the *Vermont Yankee Public Oversight Panel Supplemental Report* regarding management issues at the Vermont Yankee Nuclear Power Plant to the reconvened Vermont State Nuclear Advisory Panel.

Vermont State Legislature Senate Committee On Natural Resources And Energy

February 8, 2011. Testimony: *Vermont Yankee Leaks and Implications*.

(<http://www.leg.state.vt.us/jfo/envy.aspx>)

Vermont State Legislature – January 26, 2011

House Committee On Natural Resources And Energy, and

Senate Committee On Natural Resources And Energy

Testimony regarding Fairewinds Associates, Inc's report: *Decommissioning the Vermont Yankee Nuclear Power Plant and Storing Its Radioactive Waste*

(<http://www.leg.state.vt.us/jfo/envy.aspx>). Additional testimony was also given regarding the newest radioactive isotopic leak at the Vermont Yankee nuclear power plant.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy

Nuclear Vermont Yankee Decommissioning the Vermont Yankee Nuclear Power Plant and Storing Its Radioactive Waste January 2011. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards (NRC-ACRS) AP1000 Sub-Committee

Nuclear Containment Failures: Ramifications for the AP1000 Containment Design, Supplemental Report submitted December 21, 2010. (<http://fairewinds.com/reports>)

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy

Nuclear Vermont Yankee Reliability Oversight Entergy Nuclear Vermont Yankee, December 6, 2010. Discussion regarding the leaks at Vermont Yankee and the ongoing monitoring of those leaks and ENVY's progress addressing the 90-items identified in Act 189 that require remediation. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Declaration Of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contention Regarding Consumptive Water Use At Dominion Power's Newly Proposed North Anna Unit 3 Pressurized Water Reactor in the matter of Dominion Virginia Power North Anna Power Station Unit 3 Docket No. 52-017 Combined License Application ASLBP#08-863-01-COL, October 2, 2010.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Declaration Of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's

New Contention Regarding AP1000 Containment Integrity On The Vogtle Nuclear Power Plant Units 3 And 4 in the matter of the Southern Nuclear Operating Company Vogtle Electric Generating Plant, Units 3&4 Combined License Application, Docket Nos. 52-025-COL and 52-026-COL and ASLB No. 09-873-01-COL-BD01, August 13, 2010.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – July 26, 2010

Summation for 2009 to 2010 Legislative Year For the Joint Fiscal Committee Reliability Oversight Entergy Nuclear Vermont Yankee (ENVY) Fairewinds Associates 2009-2010. This summary includes an assessment of ENVY's progress (as of July 1, 2010) toward meeting the milestones outlined by the Act 189 Vermont Yankee Public Oversight Panel in its March 2009 report to the Legislature, the new milestones that have been added since the incident with the tritium leak and buried underground pipes, and the new reliability challenges facing ENVY, Entergy, and the State of Vermont. (<http://www.leg.state.vt.us/jfo/envy.aspx>)

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)
Declaration Of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contentions in the matter of Dominion Virginia Power North Anna Station Unit 3 Combined License Application, Docket No. 52-017, ASLBP#08-863-01-COL, July 23, 2010.

Florida Public Service Commission (FPSC)

Licensing and construction delays due to problems with the newly designed Westinghouse AP1000 reactors in *Direct Testimony In Re: Nuclear Plant Cost Recovery Clause By The Southern Alliance For Clean Energy (SACE)*, FPSC Docket No. 100009-EI, July 8, 2010.

U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards (NRC-ACRS) AP1000 Sub-Committee

Presentation to ACRS regarding design flaw in AP1000 Containment – June 25, 2010
Power Point Presentation: <http://fairewinds.com/content/ap1000-nuclear-design-flaw-addressed-to-nrc-acrs>.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)
Second Declaration Of Arnold Gundersen Supporting Supplemental Petition Of Intervenors Contention 15: DTE COLA Lacks Statutorily Required Cohesive QA Program – June 8, 2010.

NRC Chairman Gregory Jaczko, ACRS, Secretary of Energy Chu, and the White House Office of Management and Budget

AP1000 Containment Leakage Report Fairewinds Associates - Gundersen, Hausler, 4-21-2010.
This report, commissioned by the AP1000 Oversight Group, analyzes a potential flaw in the containment of the AP1000 reactor design.

Vermont State Legislature House Committee On Natural Resources And Energy – April 5, 2010
Testified to the House Committee On Natural Resources And Energy – regarding discrepancies in Entergy's TLG Services decommissioning analysis. See *Fairewinds Cost Comparison TLG Decommissioning* (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – February 22, 2010

The Second Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding buried pipe and tank issues at Entergy Nuclear Vermont Yankee and Entergy proposed Enexus spinoff. See two reports: *Fairewinds Associates 2nd Quarterly Report to JFC* and *Enexus Review by Fairewinds Associates*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Senate Natural Resources – February 16, 2010

Testified to Senate Natural Resources Committee regarding causes and severity of tritium leak in unreported buried underground pipes, status of Enexus spinoff proposal, and health effects of tritium.

Vermont State Legislature Senate Natural Resources – February 10, 2010

Testified to Senate Natural Resources Committee regarding causes and severity of tritium leak in unreported buried underground pipes. <http://www.youtube.com/watch?v=36HJiBrJSxE>

Vermont State Legislature Senate Finance – February 10, 2010

Testified to Senate Finance Committee regarding *A Chronicle of Issues Regarding Buried Tanks and Underground Piping at VT Yankee*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature House Committee On Natural Resources And Energy – January 27, 2010 *A Chronicle of Issues Regarding Buried Tanks and Underground Piping at VT Yankee*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Submittal to Susquehanna River Basin Commission, by Eric Epstein – January 5, 2010

Expert Witness Report Of Arnold Gundersen Regarding Consumptive Water Use Of The Susquehanna River By The Proposed PPL Bell Bend Nuclear Power Plant In the Matter of RE: Bell Bend Nuclear Power Plant Application for Groundwater Withdrawal Application for Consumptive Use BNP-2009-073.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Declaration of Arnold Gundersen Supporting Supplemental Petition of Intervenors Contention 15: Detroit Edison COLA Lacks Statutorily Required Cohesive QA Program, December 8, 2009.

U.S. NRC Region III Allegation Filed by Missouri Coalition for the Environment

Expert Witness Report entitled: *Comments on the Callaway Special Inspection by NRC Regarding the May 25, 2009 Failure of its Auxiliary Feedwater System*, November 9, 2009.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee

Oral testimony given to the Vermont State Legislature Joint Fiscal Committee October 28, 2009. See report: *Quarterly Status Report - ENVY Reliability Oversight for JFO* (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee

The First Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding reliability issues at Entergy Nuclear Vermont Yankee, issued October 19, 2009.

See report: *Quarterly Status Report - ENVY Reliability Oversight for JFO*
(<http://www.leg.state.vt.us/jfo/envy.aspx>).

Florida Public Service Commission (FPSC)

Gave direct oral testimony to the FPSC in hearings in Tallahassee, FL, September 8 and 10, 2009 in support of Southern Alliance for Clean Energy (SACE) contention of anticipated licensing and construction delays in newly designed Westinghouse AP 1000 reactors proposed by Progress Energy Florida and Florida Power and Light (FPL).

Florida Public Service Commission (FPSC)

NRC announced delays confirming my original testimony to FPSC detailed below. My supplemental testimony alerted FPSC to NRC confirmation of my original testimony regarding licensing and construction delays due to problems with the newly designed Westinghouse AP 1000 reactors in *Supplemental Testimony In Re: Nuclear Plant Cost Recovery Clause By The Southern Alliance For Clean Energy*, FPSC Docket No. 090009-EI, August 12, 2009.

Florida Public Service Commission (FPSC)

Licensing and construction delays due to problems with the newly designed Westinghouse AP 1000 reactors in *Direct Testimony In Re: Nuclear Plant Cost Recovery Clause By The Southern Alliance For Clean Energy (SACE)*, FPSC Docket No. 090009-EI, July 15, 2009.

Vermont State Legislature Joint Fiscal Committee Expert Witness Oversight Role for Entergy Nuclear Vermont Yankee (ENVY)

Contracted by the Joint Fiscal Committee of the Vermont State Legislature as an expert witness to oversee the compliance of ENVY to reliability issues uncovered during the 2009 legislative session by the Vermont Yankee Public Oversight Panel of which I was appointed a member along with former NRC Commissioner Peter Bradford for one year from July 2008 to 2009. Entergy Nuclear Vermont Yankee (ENVY) is currently under review by Vermont State Legislature to determine if it should receive a Certificate for Public Good (CPG) to extend its operational license for another 20-years. Vermont is the only state in the country that has legislatively created the CPG authorization for a nuclear power plant. Act 160 was passed to ascertain ENVY's ability to run reliably for an additional 20 years. Appointment from July 2009 to May 2010.

U.S. Nuclear Regulatory Commission

Expert Witness Declaration regarding Combined Operating License Application (COLA) at North Anna Unit 3 *Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contentions* (June 26, 2009).

U.S. Nuclear Regulatory Commission

Expert Witness Declaration regarding Through-wall Penetration of Containment Liner and Inspection Techniques of the Containment Liner at Beaver Valley Unit 1 Nuclear Power Plant

Declaration of Arnold Gundersen Supporting Citizen Power's Petition (May 25, 2009).

U.S. Nuclear Regulatory Commission

Expert Witness Declaration regarding Quality Assurance and Configuration Management at Bellefonte Nuclear Plant *Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contentions in their Petition for Intervention and Request for Hearing*, May 6, 2009.

Pennsylvania Statehouse

Expert Witness Analysis presented in formal presentation at the Pennsylvania Statehouse, March 26, 2009 regarding actual releases from Three Mile Island Nuclear Accident. Presentation may be found at: <http://www.tmia.com/march26>

Vermont Legislative Testimony and Formal Report for 2009 Legislative Session

As a member of the Vermont Yankee Public Oversight Panel, I spent almost eight months examining the Vermont Yankee Nuclear Power Plant and the legislatively ordered Comprehensive Vertical Audit. Panel submitted Act 189 Public Oversight Panel Report March 17, 2009 and oral testimony to a joint hearing of the Senate Finance and House Committee On Natural Resources And Energy March 19, 2009.

<http://www.leg.state.vt.us/JFO/Vermont%20Yankee.htm>

Finestone v FPL (11/2003 to 12/2008) Federal Court

Plaintiffs' Expert Witness for Federal Court Case with Attorney Nancy LaVista, from the firm Lytal, Reiter, Fountain, Clark, Williams, West Palm Beach, FL. This case involved two plaintiffs in cancer cluster of 40 families alleging that illegal radiation releases from nearby nuclear power plant caused children's cancers. Production request, discovery review, preparation of deposition questions and attendance at Defendant's experts for deposition, preparation of expert witness testimony, preparation for Daubert Hearings, ongoing technical oversight, source term reconstruction and appeal to Circuit Court.

U.S. Nuclear Regulatory Commission Advisory Committee Reactor Safeguards (NRC-ACRS)

Expert Witness providing oral testimony regarding Millstone Point Unit 3 (MP3) Containment issues in hearings regarding the Application to Uprate Power at MP3 by Dominion Nuclear, Washington, and DC. (July 8-9, 2008).

Appointed by President Pro-Tem of Vermont Senate Shumlin (now Vermont Governor Shumlin) to Legislatively Authorized Nuclear Reliability Public Oversight Panel

To oversee Comprehensive Vertical Audit of Entergy Nuclear Vermont Yankee (Act 189) and testify to State Legislature during 2009 session regarding operational reliability of ENVY in relation to its 20-year license extension application. (July 2, 2008 to present).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Expert Witness providing testimony regarding *Pilgrim Watch's Petition for Contention 1 Underground Pipes* (April 10, 2008).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Expert Witness supporting *Connecticut Coalition Against Millstone In Its Petition For Leave To Intervene, Request For Hearing, And Contentions Against Dominion Nuclear Connecticut Inc.'s Millstone Power Station Unit 3 License Amendment Request For Stretch Power Uprate* (March 15, 2008).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Expert Witness supporting *Pilgrim Watch's Petition For Contention 1: specific to issues regarding the integrity of Pilgrim Nuclear Power Station's underground pipes and the ability of Pilgrim's Aging Management Program to determine their integrity.* (January 26, 2008).

Vermont State House – 2008 Legislative Session

- House Committee on Natural Resources and Energy – Comprehensive Vertical Audit: *Why NRC Recommends a Vertical Audit for Aging Plants Like Entergy Nuclear Vermont Yankee (ENVY)*
- House Committee on Commerce – Decommissioning Testimony

Vermont State Senate – 2008 Legislative Session

- Senate Finance – testimony regarding Entergy Nuclear Vermont Yankee Decommissioning Fund
- Senate Finance – testimony on the necessity for a Comprehensive Vertical Audit (CVA) of Entergy Nuclear Vermont Yankee
- House Committee on Natural Resources and Energy – testimony regarding the placement of high-level nuclear fuel on the banks of the Connecticut River in Vernon, VT

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

MOX Limited Appearance Statement to Judges Michael C. Farrar (Chairman), Lawrence G. McDade, and Nicholas G. Trikouros for the "Petitioners": Nuclear Watch South, the Blue Ridge Environmental Defense League, and Nuclear Information & Resource Service in support of *Contention 2: Accidental Release of Radionuclides, requesting a hearing concerning faulty accident consequence assessments made for the MOX plutonium fuel factory proposed for the Savannah River Site.* (September 14, 2007).

Appeal to the Vermont Supreme Court (March 2006 to 2007)

Expert Witness Testimony in support of *New England Coalition's Appeal to the Vermont Supreme Court Concerning: Degraded Reliability at Entergy Nuclear Vermont Yankee as a Result of the Power Uprate.* New England Coalition represented by Attorney Ron Shems of Burlington, VT.

State of Vermont Environmental Court (Docket 89-4-06-vtec 2007)

Expert witness retained by New England Coalition to review Entergy and Vermont Yankee's analysis of alternative methods to reduce the heat discharged by Vermont Yankee into the Connecticut River. Provided Vermont's Environmental Court with analysis of alternative methods systematically applied throughout the nuclear industry to reduce the heat discharged by nuclear power plants into nearby bodies of water and avoid consumptive water use. This report included a review of the condenser and cooling tower modifications.

U.S. Senator Bernie Sanders and Congressman Peter Welch (2007)

Briefed Senator Sanders, Congressman Welch and their staff members regarding technical and engineering issues, reliability and aging management concerns, regulatory compliance, waste storage, and nuclear power reactor safety issues confronting the U.S. nuclear energy industry.

State of Vermont Legislative Testimony to Senate Finance Committee (2006)

Testimony to the Senate Finance Committee regarding Vermont Yankee decommissioning costs, reliability issues, design life of the plant, and emergency planning issues.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB)

Expert witness retained by New England Coalition to provide Atomic Safety and Licensing Board with an independent analysis of the integrity of the Vermont Yankee Nuclear Power Plant condenser (2006).

U.S. Senators Jeffords and Leahy (2003 to 2005)

Provided the Senators and their staffs with periodic overview regarding technical, reliability, compliance, and safety issues at Entergy Nuclear Vermont Yankee (ENVY).

10CFR 2.206 filed with the Nuclear Regulatory Commission (July 2004)

Filed 10CFR 2.206 petition with NRC requesting confirmation of Vermont Yankee's compliance with General Design Criteria.

State of Vermont Public Service Board (April 2003 to May 2004)

Expert witness retained by New England Coalition to testify to the Public Service Board on the reliability, safety, technical, and financial ramifications of a proposed increase in power (called an uprate) to 120% at Entergy's 31-year-old Vermont Yankee Nuclear Power Plant.

International Nuclear Safety Testimony

Worked for ten days with the President of the Czech Republic (Vaclav Havel) and the Czech Parliament on their energy policy for the 21st century.

Nuclear Regulatory Commission (NRC) Inspector General (IG)

Assisted the NRC Inspector General in investigating illegal gratuities paid to NRC Officials by Nuclear Energy Services (NES) Corporate Officers. In a second investigation, assisted the Inspector General in showing that material false statements (lies) by NES corporate president caused the NRC to overlook important violations by this licensee.

State of Connecticut Legislature

Assisted in the creation of State of Connecticut Whistleblower Protection legal statutes.

Federal Congressional Testimony

Publicly recognized by NRC Chairman, Ivan Selin, in May 1993 in his comments to U.S. Senate, "It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service." Commended by U.S. Senator John Glenn for public testimony to Senator Glenn's NRC Oversight Committee.

PennCentral Litigation

Evaluated NRC license violations and material false statements made by management of this nuclear engineering and materials licensee.

Three Mile Island Litigation

Evaluated unmonitored releases to the environment after accident, including containment breach, letdown system and blowout. Proved releases were 15 times higher than government estimate and subsequent government report.

Western Atlas Litigation

Evaluated neutron exposure to employees and license violations at this nuclear materials licensee.

Commonwealth Edison

In depth review and analysis for Commonwealth Edison to analyze the efficiency and effectiveness of all Commonwealth Edison engineering organizations, which support the operation of all of its nuclear power plants.

Peach Bottom Reactor Litigation

Evaluated extended 28-month outage caused by management breakdown and deteriorating condition of plant.

Special Remediation Expertise:

Director of Engineering, Vice President of Site Engineering, and the Senior Vice President of Engineering at Nuclear Energy Services (NES) Division of Penn Central Corporation (PCC)

- NES was a nuclear licensee that specialized in dismantlement and remediation of nuclear facilities and nuclear sites. Member of the radiation safety committee for this licensee.
- Department of Energy chose NES to write *DOE Decommissioning Handbook* because NES had a unique breadth and depth of nuclear engineers and nuclear physicists on staff.
- Personally wrote the "Small Bore Piping" chapter of the DOE's first edition *Decommissioning Handbook*, personnel on my staff authored other sections, and I reviewed the entire *Decommissioning Handbook*.
- Served on the Connecticut Low Level Radioactive Waste Advisory Committee for 10 years from its inception.
- Managed groups performing analyses on dozens of dismantlement sites to thoroughly remove radioactive material from nuclear plants and their surrounding environment.
- Managed groups assisting in decommissioning the Shippingport nuclear power reactor. Shippingport was the first large nuclear power plant ever decommissioned. The decommissioning of Shippingport included remediation of the site after decommissioning.
- Managed groups conducting site characterizations (preliminary radiation surveys prior to commencement of removal of radiation) at the radioactively contaminated West Valley site in upstate New York.

- Personnel reporting to me assessed dismantlement of the Princeton Avenue Plutonium Lab in New Brunswick, NJ. The lab's dismantlement assessment was stopped when we uncovered extremely toxic and carcinogenic underground radioactive contamination.
- Personnel reporting to me worked on decontaminating radioactive thorium at the Cleveland Avenue nuclear licensee in Ohio. The thorium had been used as an alloy in turbine blades. During that project, previously undetected extremely toxic and carcinogenic radioactive contamination was discovered below ground after an aboveground gamma survey had purported that no residual radiation remained on site.

Additional Education

Basic Mediation Certificate Champlain College, Woodbury Institute
28-hour Basic Mediation Training September 2010

Teaching and Academic Administration Experience

Rensselaer Polytechnic Institute (RPI) – Advanced Nuclear Reactor Physics Lab

Community College of Vermont – Mathematics Professor – 2007 to present

Burlington High School

Mathematics Teacher – 2001 to June 2008

Physics Teacher – 2004 to 2006

The Marvelwood School – 1996 to 2000

Awarded Teacher of the Year – June 2000

Chairperson: Physics and Math Department

Mathematics and Physics Teacher, Faculty Council Member

Director of Marvelwood Residential Summer School

Director of Residential Life

The Forman School & St. Margaret's School – 1993 to 1995

Physics and Mathematics Teacher, Tennis Coach, Residential Living Faculty Member

Nuclear Engineering Work Experience 1970 to Present

Expert witness testimony in nuclear litigation and administrative hearings in federal, international, and state court and to Nuclear Regulatory Commission, including but not limited to: Three Mile Island, US Federal Court, US NRC, NRC ASLB & ACRS, Vermont State Legislature, Vermont State Public Service Board, Florida Public Service Board, Czech Senate, Connecticut State Legislature, Western Atlas Nuclear Litigation, U.S. Senate Nuclear Safety Hearings, Peach Bottom Nuclear Power Plant Litigation, and Office of the Inspector General NRC.

Nuclear Engineering, Safety, and Reliability Expert Witness 1990 to Present

- Fairewinds Associates, Inc – Chief Engineer, 2005 to Present
- Arnold Gundersen, Nuclear Safety Consultant and Energy Advisor, 1995 to 2005
- GMA – 1990 to 1995, including expert witness testimony regarding the accident at Three Mile Island.

Nuclear Energy Services, Division of PCC (Fortune 500 company) 1979 to 1990

Corporate Officer and Senior Vice President - Technical Services

Responsible for overall performance of the company's Inservice Inspection (ASME XI), Quality Assurance (SNTC 1A), and Staff Augmentation Business Units – up to 300 employees at various nuclear sites.

Senior Vice President of Engineering

Responsible for the overall performance of the company's Site Engineering, Boston Design Engineering and Engineered Products Business Units. Integrated the Danbury based, Boston based and site engineering functions to provide products such as fuel racks, nozzle dams, and transfer mechanisms and services such as materials management and procedure development.

Vice President of Engineering Services

Responsible for the overall performance of the company's field engineering, operations engineering, and engineered products services. Integrated the Danbury-based and field-based engineering functions to provide numerous products and services required by nuclear utilities, including patents for engineered products.

General Manager of Field Engineering

Managed and directed NES' multi-disciplined field engineering staff on location at various nuclear plant sites. Site activities included structural analysis, procedure development, technical specifications and training. Have personally applied for and received one patent.

Director of General Engineering

Managed and directed the Danbury based engineering staff. Staff disciplines included structural, nuclear, mechanical and systems engineering. Responsible for assignment of personnel as well as scheduling, cost performance, and technical assessment by staff on assigned projects. This staff provided major engineering support to the company's nuclear waste management, spent fuel storage racks, and engineering consulting programs.

New York State Electric and Gas Corporation (NYSE&G) — 1976 to 1979

Reliability Engineering Supervisor

Organized and supervised reliability engineers to upgrade performance levels on seven operating coal units and one that was under construction. Applied analytical techniques and good engineering judgments to improve capacity factors by reducing mean time to repair and by increasing mean time between failures.

Lead Power Systems Engineer

Supervised the preparation of proposals, bid evaluation, negotiation and administration of contracts for two 1300 MW NSSS Units including nuclear fuel, and solid-state control rooms. Represented corporation at numerous public forums including TV and radio on sensitive utility issues. Responsible for all nuclear and BOP portions of a PSAR, Environmental Report, and Early Site Review.

Northeast Utilities Service Corporation (NU) — 1972 to 1976

Engineer

Nuclear Engineer assigned to Millstone Unit 2 during start-up phase. Lead the high velocity flush and chemical cleaning of condensate and feedwater systems and obtained discharge permit for chemicals. Developed Quality Assurance Category 1 Material, Equipment and Parts List. Modified fuel pool cooling system at Connecticut Yankee, steam generator blowdown system and diesel generator lube oil system for Millstone. Evaluated Technical Specification Change Requests.

Associate Engineer

Nuclear Engineer assigned to Montague Units 1 & 2. Interface Engineer with NSSS vendor, performed containment leak rate analysis, assisted in preparation of PSAR and performed radiological health analysis of plant. Performed environmental radiation survey of Connecticut Yankee. Performed chloride intrusion transient analysis for Millstone Unit 1 feedwater system. Prepared Millstone Unit 1 off-gas modification licensing document and Environmental Report Amendments 1 & 2.

Rensselaer Polytechnic Institute (RPI) — 1971 to 1972

Critical Facility Reactor Operator, Instructor

Licensed AEC Reactor Operator instructing students and utility reactor operator trainees in start-up through full power operation of a reactor.

Public Service Electric and Gas (PSE&G) — 1970

Assistant Engineer

Performed shielding design of radwaste and auxiliary buildings for Newbold Island Units 1 & 2, including development of computer codes.

Media

Featured Nuclear Safety and Reliability Expert (1990 to present) for Television, Newspaper, Radio, & Internet – Including, and not limited to:

CNN: JohnKingUSA, CNN News, Earth Matters; DemocracyNow, NECN, WPTZ VT, WTNH, VPTV, WCAX, RT, CTV (Canada), CCTV Burlington, VT, ABC, TBS/Japan, Bloomberg: EnergyNow, KPBS, Japan National Press Club (Tokyo), Italy National Press Club (Rome), The Crusaders, Front Page, Five O'Clock Shadow: Robert Knight, Mark Johnson Show, Steve West Show, Anthony Polina Show, WKVT, WDEV, WVPR, WZBG CT, Seven Days, AP News Service, Houston Chronicle, Christian Science Monitor, Reuters, The Global Post, International Herald, The Guardian, New York Times, Washington Post, LA Times, Miami Herald, St. Petersburg Times, Brattleboro Reformer, Rutland Herald, Times-Argus, Burlington Free Press, Litchfield County Times, The News Times, The New Milford Times, Hartford Current, New London Day, Vermont Daily Briefing, Green Mountain Daily, EcoReview, Huffington Post, DailyKos, Voice of Orange County, AlterNet, Common Dreams, and numerous other national and international blogs

Public Service, Cultural, and Community Activities

2009 to Present –Fairewinds Energy Education Corp 501(C)3 non-profit board member

2005 to Present – Public presentations and panel discussions on nuclear safety and reliability at

University of Vermont, Vermont Law School, NRC hearings, Town and City Select Boards, Legal Panels, Local Schools, Television, and Radio.
2007-2008 – Created Concept of Solar Panels on Burlington High School; worked with Burlington Electric Department and Burlington Board of Education Technology Committee on Grant for installation of solar collectors for Burlington Electric peak summer use
Vermont State Legislature – Public Testimony to Legislative Committees
Certified Foster Parent State of Vermont – 2004 to 2007
Mentoring former students – 2000 to present – college application and employment application questions and encouragement
Tutoring Refugee Students – 2002 to 2006 – Lost Boys of the Sudan and others from educationally disadvantaged immigrant groups
Designed and Taught Special High School Math Course for ESOL Students – 2007 to 2008
NNSN – National Nuclear Safety Network, Founding Advisory Board Member, meetings with and testimony to the Nuclear Regulatory Commission Inspector General (NRC IG)
Berkshire School Parents Association, Co-Founder
Berkshire School Annual Appeal, Co-Chair
Sunday School Teacher, Christ Church, Roxbury, CT
Washington Montessori School Parents Association Member
Marriage Encounter National Presenting Team with wife Margaret
Provided weekend communication and dialogue workshops weekend retreats/seminars
Connecticut Marriage Encounter Administrative Team – 5 years
Northeast Utilities Representative Conducting Public Lectures on Nuclear Safety Issues

Personal

Married to Maggie Gundersen 1979. Two children: Eric, 33, president and founder of MapBox and Development Seed, and Elida, 30, paramedic in Florida. Enjoy sailing, walking, swimming, yoga, and reading.

End

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:	)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	May 20, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

**PETITION TO INTERVENE AND FOR AN ADJUDICATORY PUBLIC
HEARING OF FENOC LICENSE AMENDMENT REQUEST**

Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the "Petitioners," and hereby move to intervene in this proceeding and to request a public hearing.

This Petition is brought pursuant to the Federal Register notice of March 19, 2013, Vol. 78, No. 53, pp. 16883, part of the "Biweekly Notice; Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving No Significant Hazards Considerations," wherein FirstEnergy Nuclear Operating Company *et al.* gave notice of its intention to amend the technical specifications of the operating license of Davis-Besse Nuclear Power Station (Davis-Besse) related to the planned removal of existing steam generator equipment and installation of new steam generator equipment at the plant.

Petitioners bring their petition pursuant to 10 CFR § 2.309, and in support thereof, address the component requirements of the regulation below.

I. Standing

A. Legal Basis

Pursuant to 10 CFR § 2.309, a request for hearing or petition for leave to intervene must address (1) the nature of the petitioner's right under the Atomic Energy Act to be made a party to the proceeding, (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding, and (3) the possible effect of any order that may be entered in the proceeding on the petitioner's interest. In determining whether a petitioner has sufficient interest to intervene in a proceeding, the Commission has traditionally applied judicial concepts of standing. *See Metropolitan Edison Co.* (Three Mile Island Nuclear station, Unit 1), CLI-83-25, 18 NRC 327, 332 (1983) (citing *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610 (1976)). Contemporaneous judicial standards for standing require a petitioner to demonstrate that (1) it has suffered or will suffer a distinct and palpable harm that constitutes injury-in-fact within the zone of interests arguably protected by the governing statutes (*e.g.*, the Atomic Energy Act of 1954 (AEA), the National Environmental Policy Act of 1969 (NEPA), *etc.*); (2) the injury can be fairly traced to the challenged action; and (3) the injury is likely to be redressed by a favorable decision. *See Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plants), LBP-99-25, 50 NRC 25, 29 (1999). An organization that wishes to intervene in a proceeding may do so either in its own right by demonstrating harm to its organizational interests, or in a representational capacity, by demonstrating harm to its members. *See Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 271 (1998).

To intervene in a representational capacity, an organization must show not only that at

least one of its members would fulfill the standing requirements, but also that he or she has authorized the organization to represent his or her interests. *See Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 168, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998). *Pacific Gas & Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413, 426 (2002).

Standing to participate in this proceeding is demonstrated by the declarations of the organizations and individuals provided with this Petition. All of the individual Petitioners live within 50 miles of the Davis-Besse, and each one has designated one of the organizational Petitioners to represent his or her interests in this proceeding.

Because they live near the Davis-Besse site, *i.e.*, within 50 miles, the individually-named Petitioners have presumptive standing by virtue of their proximity to the nuclear power plant. *Diablo Canyon, supra*, 56 NRC at 426-427, citing *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 146, *aff'd*, CLI-01-17, 54 NRC 3 (2001). In *Diablo Canyon*, the Licensing Board noted that petitioners who live within 50 miles of a proposed nuclear power plant are presumed to have standing in reactor construction permit and operating license cases, because there is an "obvious potential for offsite consequences" within that distance. *Id.* Here, FENOC seeks an operating license amendment for the Davis-Besse nuclear reactor, near Oak Harbor, Ohio. Thus, the same standing concepts apply.

The Petitioners' members seek to protect their lives and health by opposing the license amendment for the steam generators at Davis-Besse. Petitioners seek to ensure that no license extension is issued by the U.S. Nuclear Regulatory Commission unless FENOC demonstrates full compliance with the Atomic Energy Act and NEPA.

Further, *locus standi* is based on three requirements: injury, causation and redressability. Petitioners hereby request to be made a party to the proceeding because (1) continued operation of the nuclear reactor at Davis-Besse continues to present a tangible and particular harm to the health and well-being of members living within 50 miles of the site, (2) the NRC has initiated proceedings for a license amendment, the granting of which would directly affect the named members and other individuals, and (3) the Commission is the sole agency with the power to approve, to deny or to modify an operating license of a commercial nuclear power plant.

A license amendment is authorization from the NRC to continue operation of a nuclear power plant at a specific site under altered conditions. Before issuing the license amendment, the NRC staff must complete safety and environmental reviews of the request. The license amendment must comply with provisions of the Atomic Energy Act, the National Environmental Policy Act, NRC regulations and all applicable laws.

The Petitioners, both individually and organizationally/representationally, seek leave to intervene because they believe their interests, or those of their members, will not be adequately represented absent this course of action and intervention, and without the opportunity to participate as full parties in this proceeding. This proposed amendment calls for installation of new, untested steam generator equipment. The shield building at the plant will be subjected to an unprecedented fourth (4th) wall penetration to allow swapping the old generator components for the new. This raises the potential for additional aggravation of already-existing structural cracks identified in that building in 2011, and could conceivably cause failure of a critical safety component (the building itself or the steel containment structure inside it which houses the reactor). The new steam generator equipment may fail, compromising safety margins for

operation of the nuclear reactor. In short, with the opportunity for a public hearing and independent assessment of the complete plans, Davis-Besse may operate unsafely and pose an undue and unacceptable risk to the environment, and jeopardize the health, safety and welfare of the Petitioners' members who live, recreate and conduct their business in the vicinity of the nuclear power plant.

Attached to this Petition are individual declarations of persons with putative standing, along with declarations from four (4) organizations which are prepared to represent those persons, who are members respectively. Representational standing of the organizational Petitioners is established via these declarations for Beyond Nuclear, Citizens Environmental Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club, by their respective leaders or officers, who formally wish to protect the interests of those among their members who reside within 50 miles of Davis-Besse.

B. Named Intervenors

13. Beyond Nuclear (BN) is a not-for-profit organization located at 6930 Carroll Avenue, Suite 400, Takoma Park, Maryland, 20912, Tel. (301) 270-2209, www.beyondnuclear.org. BN has over 20,000 members, of whom a number reside, work and recreate within the fifty (50) mile Emergency Planning Zone for Davis-Besse. Beyond Nuclear provides the declarations of three of its members, Mark Farris, Phyllis Oster, and Joseph DeMare, all of whom live within a 50-mile radius of Davis-Besse. Beyond Nuclear seeks to intervene to protect the interests of Farris, Oster and DeMare, all of whom have safety and environmental concerns about Davis-Besse's operations. Each individual Petitioner expresses the opinion that inadequate information has been disclosed about the steam generator project and further, that lessons about the steam

generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan. These Petitioners further believe that the steam generator replacement proposal may pose unacceptable risks to the environment and public health and to their personal health and safety. Kevin Kamps represents BN in this proceeding.

The Citizens Environment Alliance (CEA) of Southwestern Ontario is a non-profit, grassroots, international, education and research organization, located at 1950 Ottawa Street, Windsor, Ontario, Canada N8Y 1P7, Tel. (519) 973-1116, www.citizensenvironmentalliance.org/index.html. CEA is committed to an ecosystem approach to environmental planning and management. A focus of CEA's work for decades has been the questions of toxins in the Great Lakes, as well as air quality throughout the U.S.-Canada boundary area, and raising citizen awareness of various issues related to preservation of the Great Lakes and favoring the increased deployment of environmentally benign energy sources. CEA has about 50 members, some of whom reside, work, and/or recreate within the fifty (50) mile Emergency Planning Zone for Davis-Besse. CEA has designated Derek and/or Richard Coronado, its coordinators, as members on behalf of which the organization seeks to intervene. Derek and Richard Coronado live within a 50-mile radius of Davis-Besse, have safety and environmental concerns about the Davis-Besse plant's operations, do not believe adequate information has been disclosed about the steam generator project and further, that lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan. They too believe the proposal may pose unacceptable risks to the environment and public health and to their personal health and safety. Derek Coronado seeks to represent CEA in this proceeding.

Don't Waste Michigan is a federation of environmental organizations with a board of

directors and a membership of around 50 researchers, educators, concerned citizens, and organizational representatives, founded in 1987 to oppose the designation of the state of Michigan as a repository for what was misleadingly termed "low-level" radioactive waste from eight states. Don't Waste Michigan's work was ultimately successful and the state of Michigan was eliminated from consideration as a repository for the wastes. Don't Waste Michigan, with the Lake Michigan Federation (now the Alliance for the Great Lakes) and support from numerous local grassroots organizations, along with Michigan Attorney General Frank Kelly, brought suit in federal court in 1993 to prevent the loading of high-level nuclear waste in casks on the shore of Lake Michigan at the Palisades plant. Don't Waste Michigan has a number of members who reside, work, and/or recreate within the fifty (50) mile Emergency Planning Zone for Davis-Besse and maintains a website, <http://dwmi.homestead.com> Don't Waste Michigan seeks to intervene on behalf of its member, Michael J. Keegan, who lives within a 50-mile radius of Davis-Besse. Keegan has safety and environmental concerns about the Davis-Besse plant's operations, does not believe adequate information has been disclosed about the steam generator project and further, that lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan. He also believes the proposal may pose unacceptable risks to the environment and public health and to his personal health and safety. Additionally, Michael J. Keegan represents Don't Waste Michigan in this proceeding as an officer of the group.

The Ohio Sierra Club is comprised of grassroots activists, environmentalists, advocates for social justice, and regular citizens. The Ohio Chapter, headquartered in Columbus, Ohio, was established 40 years ago and represents more than 16,000 members and supporters. The

Chapter advocates for energy efficiency, renewable energy, and public transit., defends Ohio's forests, state parks, and nature preserves, preserves water resources by advocating for green infrastructure, factory farm regulation, and protections for Lake Erie and watersheds throughout the state; and is working to promote Ohio's transition to a 21st-century economy through the creation of good-paying, long-lasting green jobs. Gary Majeski, Kristina Moazed and Anthony Szilagye have provided declarations as Sierra Club members, and they desire representation in this litigation by the Sierra Club. Each lives within a 50-mile radius of Davis-Besse, have expressed safety and environmental concerns about the Davis-Besse plant's operations, does not believe adequate information has been disclosed about the steam generator project and further, believes that lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan. Each individual petitioner further believes the steam generator proposal may pose unacceptable risks to the environment and public health and to his or her personal health and safety. Robert Shields, Chapter Chair, has signed a declaration indicating that the Ohio Sierra Club will represent its individual members.

II. Background

On March 19, 2013, notice was published in the Federal Register of FirstEnergy Nuclear Operating Company's (FENOC's) request to amend its operating license for Davis-Besse:

The amendment would revise DBNPS Technical Specification (TS) 3.4.17, "Steam Generator (SG) Tube Integrity"; TS 3.7.18, "Steam Generator Level"; TS 5.5.8, "Steam Generator (SG) Program"; and TS 5.6.6, "Steam Generator Tube Inspection Report." The proposed revision to these TSs is to support plant operations following the replacement of the original SGs which is scheduled to be completed in April 2014. The proposed changes to TS 3.4.17, TS 5.5.8, and TS 5.6.6 would impose requirements that reflect the analysis and tube materials of the replacement Sgs.

These changes are consistent with Technical Specifications Task Force (TSTF) traveler TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," which was approved by the U.S. Nuclear

Regulatory Commission on October 27, 2011. The proposed revision to TS 5.5.8 also includes minor editorial changes and eliminates the requirements for special visual inspections of the internal auxiliary feedwater header, since this component will not be part of the replacement Sgs.

The proposed changes to TS 3.7.18 would impose inventory limits on the secondary-side that reflect the design characteristics and dimensions of the replacement SGs. The revised limits will ensure that plant operations with the replacement SGs is bounded by the values used in the existing main steam line break analysis presented in the DBNPS updated safety analysis report.

Federal Register, Vol. 78, No. 53, p. 16883.

FENOC further provided its 10 CFR § 50.91(a) analysis of the issue of no significant hazards consideration, which was reproduced in the notice. FENOC has concluded that the technical specifications amendment will not increase the chances of a steam generator tube rupture in the proposed 2014 swapout of the originally-installed 1970's steam generator components for newly-fabricated equipment, custom designed and built by a Babcock & Wilcox subsidiary. *Id.* FENOC further has concluded that the chances of a main steam line break will not increase as a result of installation of the new equipment, nor is there a possibility of a new or different kind of accident from any accident previously evaluated. *Id.* The new steam generators would not affect any existing margin of safety, according to FENOC. *Id.*

FENOC admits at one and the same time that the steam generator changes would both comprise a design modification according to NRC regulation, but “would not affect the method of operation of the” steam generators:

Replacement of the SGs is being performed as a design modification in accordance with the provisions of 10 CFR 50.59, “Changes, tests and experiments.” The proposed changes to TS 3.4.17, TS 5.5.8 and TS 5.6.6 would implement monitoring and inspection requirements appropriate for the design and materials of the replacement SGs, and establish appropriate reporting requirements. These changes would not affect the method of operation of the SGs. The proposed changes to TS 3.7.18 would ensure that the replacement SGs will be operated in accordance with existing analyses. None of the

proposed changes would introduce any changes to the plant design. In addition, the proposed changes would not impact any other plant system or component.

Id. at 16883.

As a consequence of whatever investigation it performed, the NRC Staff concluded as follows:

The NRC staff has reviewed the licensee's analysis and, based on this review, it appears that the three standards of 10 CFR 50.92© are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

Id. at p. 16884.

Petitioners detail below their position that the analysis provided the NRC by FENOC is inadequate; that there is some possibility that significant hazards associated with the steam generator replacement project have not been adequately identified, considered or disclosed; and that the standards of 10 CFR 50.92(c) have not been satisfied.

III. Legal Standards Governing License Amendments

10 CFR §§ 50.90 to 50.92 provide the applicable process when a licensee wishes to request a license amendment. Specifically, § 50.90 authorizes applications to amend existing operating licenses; § 50.91 provides for notice and comment regarding license amendment applications, as well as consultation with the State in which the facility is located; and § 50.92 provides the standard considered by the NRC when determining whether to issue an amendment.

Section 50.59 establishes standards for a licensee to request a license amendment before it may make "changes in the facility as described in the [updated] final safety analysis report [UFSAR36], make changes in the procedures as described in the [UFSAR], and conduct tests or experiments not described in the [UFSAR]." 10 CFR § 50.59(c)(1). Section 50.59 states that a

licensee need not request a license amendment pursuant to § 50.90 if “(I) A change to the technical specifications incorporated in the license is not required, and (ii) The change, test, or experiment does not meet any of the criteria in paragraph (c)(2) of this section.” *Id.* § 50.59(c)(1)(I)-(ii).

On May 13, 2013, the Atomic Safety and Licensing Board presiding over the steam generator debacle at the San Onofre units opined:

Restated, a licensee *must* request a license amendment if the proposed action requires that existing technical specifications be changed (see 10 C.F.R. § 50.59(c)(1)(I)), or if a change, test, or experiment satisfies any of the eight criteria in section 50.59(c)(2). See *id.* § 50.59(c)(1)(ii). The section 50.59(c)(2) criteria require a licensee to seek a license amendment if the proposed change, test, or experiment would:

(I) Result in more than a minimal increase in the frequency of occurrence of any accident previously evaluated in the [UFSAR];

(ii) Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the [UFSAR];

(iii) Result in more than a minimal increase in the consequences of an accident previously evaluated in the [UFSAR];

(iv) Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the [UFSAR];

(v) Create a possibility for an accident of a different type than any previously evaluated in the [UFSAR];

(vi) Create a possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the [UFSAR];

(vii) Result in a design basis limit for a fission product barrier as described in the [UFSAR] being exceeded or altered; or

(viii) Result in a departure from a method of evaluation described in the [UFSAR] used in establishing the design bases or in the safety analyses.

Id. § 50.59(c)(2)

Finally, 10 C.F.R. § 2.105 implements the hearing opportunity provision for license amendment procedures that is mandated by section 189a of the AEA, and Subpart C of 10 C.F.R. Part 2 contains the general rules governing hearing requests and subsequent hearing-related activities.

Southern California Edison Co., (San Onofre Nuclear Generating Station, Units 2 and 3),

LBP-13-07, pp. 18-20 (May 13, 2013).

IV. Petitioners' Contention and Supporting Information

A. Statement of Contention

Significant changes to the Replacement Once Through Steam Generator (ROTSG) modification project and to the reactor containment structures, all planned by FirstEnergy Nuclear Operating Company to be made to the Davis-Besse Nuclear Power Station, require that the steam generator replacement project be deemed an "experiment" according to 10 C.F.R. § 50.59, and that an adjudicatory public hearing be convened for independent analysis of the project, before it is implemented. Moreover, FENOC has applied after the fact for a technical specifications license amendment, which comprises an additional, automatic, trigger under 10 CFR § 50.59 and necessitates adjudication of the license amendment request.

B. Brief Explanation of the Bases for the Contention

Arnold Gundersen, a nuclear engineer of 40-odd years' standing and Petitioners' expert, whose recent work has included advice to intervenors in the San Onofre steam generator debacle, has extensively reviewed documents related to the Davis-Besse steam generator replacement project and as well, the public domain maintained by the Nuclear Regulatory Commission, for evidence of FirstEnergy's plan to publicize the replacement effort. He concludes that FENOC has likely deliberately avoided characterization of the project as one which necessitates an adjudicatory hearing. Petitioners' expert reports (attached, along with Gundersen's CV) that 10 CFR § 50.59 was not closely applied to the features of the proposed generator replacement, and that despite significant changes to the original generator component design, it is not considered to be "experimental" within the scope of § 50.59. Gundersen further points to the necessity of FENOC perforating the shield building and reactor containment for an unprecedented fourth (4th) time, plus the lack of adequate uptake of lessons learned from recent shattering failures in steam generator replacement efforts at three other nuclear power plants as evidence of his overarching conclusions: (1) that FENOC is attempting to avoid the more rigorous license amendment process and (2) that the NRC Staff has accepted FENOC's

statement and documents without further independent analysis, just as it did for Southern California Edison on San Onofre's replacement steam generators, which has turned into a regulatory fiasco.

C. Concise Statement of Alleged Facts and Expert Opinion
Upon Which Petitioners Intend to Rely

In the "Expert Witness Report of Arnold Gundersen to Support the Petition for Leave to Intervene and Request for Hearing" (hereinafter Report), which is fully incorporated by reference herein as though rewritten within this Petition, engineer Gundersen articulates many facts and opinions which will comprise the basis for Petitioners' case at trial.

Gundersen states (Expert Report at 3) that "There is a dearth of technical data in the Nuclear Regulatory Commission (NRC) Public Document Room (PDR) regarding" FENOC's proposed Replacement Once Through Steam Generator (ROTSG) modification to Davis-Besse. Noting that FENOC ordered the steam generators through a subsidiary of Babcock & Wilcox in December 2007, Gundersen explains that "lack of publicly available technical analysis in the NRC PDR suggests that FENOC made a secret determination under 10 C.F.R. § 50.59 that it was not necessary to apply for a license amendment to replace the Davis-Besse steam generators." Report at 4. "The lack of a license application on file with the NRC also implies that Davis-Besse made the determination that the 'fit-form-function' of the replacement steam generators fell within the licensing parameters of the original Davis-Besse license." *Id.* at 4.

Gundersen points out that "[t]he first significant description revealing the true extent of the replacement steam generator modifications appears to be in the 74-page PowerPoint entitled *Davis-Besse Steam Generator Replacement Project: Project Overview/Public Meeting: NRC*

Region III Office: March 20, 2013,¹ that FENOC submitted to the NRC.” Report at 4. From this slide show, Gundersen extrapolated that FENOC “had performed a 10 C.F.R. § 50.59 analysis that found that the RSG is ‘similar’ to the OSG.” *Id.* Gundersen notes that “Being ‘similar’ to the original steam generators without analyzing the impact so many changes from the original D-B technical specifications is an inadequate criterion by which to determine if 10 C.F.R. § 50.59 has been assiduously applied.” *Id.* Reviewing the slide show information further, Gundersen states that the “data reviewed shows that FENOC should have applied for a license amendment with the requisite public review six years ago when the ROTSG was originally designed, ordered, and purchased.” *Id.* at 4-5.

Gundersen then delineates the significant differences between the replacement and original steam generators:

FENOC itself had acknowledged that the ROTSG design had significant modifications in comparison to the original OTSG. More specifically, slides 10 through 13 identify the following significant, experimental modifications to the original OTSG design:

1. The tube inspection lane was removed.
2. An additional tube support plate was added.
3. 150 additional tubes were added.
4. The tube alloy was changed.
5. The tube-to-tube sheet junction was modified extensively.
6. The overall design of the steam generator support structure was changed from a cylindrical skirt to a pedestal cone.
7. The thickness of the pressure retaining walls of the ROTSG is two inches thinner than the pressure retaining wall in the Original Once Through Steam Generator.
8. The 180-degree elbow design will be extensively modified.
9. The alloy of the hot leg nozzles was also changed.

Report at 5. Gundersen opines that “Each and every one of these aforementioned changes is significant individually, and when taken together prove that *the Replacement OTSG contains*

¹ML13078A249.

many experimental parameters, especially in comparison to the Original OTSG." (Emphasis supplied). Report at 5.

Petitioners' expert further observes that "the list of experimental changes identified by FENOC does not include the additional modifications applied by FENOC to cut into the Davis-Besse containment for the fourth time since it was constructed. To the best of Fairewinds' knowledge and belief, no other containment structure has been cut open more than twice, yet Davis-Besse's fourth containment perforation should have been identified by the 10 C.F.R. § 50.59 process as problematic and therefore requiring a license amendment review and application." Report at 5-6. At p. 10 of his Report, Gundersen notes: "Additionally, FENOC has failed to include the Crystal River 3 ROTSG experience in its PowerPoint presentation to the NRC. Like Davis-Besse, the Crystal River 3 steam generator replacement is a Babcock & Wilcox design. The Crystal River 3 Containment failed three times in less than one year after being cut open during its ROTSG modification. It is important to compare the upcoming Davis-Besse ROTSG modification to the Crystal River 3 RSG, because the Davis-Besse Containment will also be cut open again during this outage."

Pointing to the May 13, 2013 San Onofre ASLB ruling, engineer Gundersen asserts that "10 C.F.R. § 50.59 requires a formal license renewal application when a license amendment change is required as a result of such a modification," *Id.* at 6, because "If a licensee is unable to operate a reactor in strict accordance with its license, it must seek authorization from the NRC for a license amendment (10 C.F.R. §§ 50.59, 50.90 to 50.92), which is a process that triggers a right to request an adjudicatory hearing by persons whose interests may be affected by the proceeding." *Id.*, quoting *Southern California Edison Co.*, (San Onofre Nuclear Generating

Station, Units 2 and 3), LBP-13-07, p. 18 (May 13, 2013). Drawing from his involvement in the San Onofre licensing amendment litigation, Gundersen finds that in the Davis-Besse case, “changing technical specifications determine that the 50.59 criteria have not been met, and that a formal license amendment is required. This point is so essential that the [San Onofre] ASLB emphasized it by restating the requirement for a formal license amendment review process if a technical specification change were to be required. A review of the FENOC PowerPoint presentation submitted to the NRC contains an extensive list of changes to the D-B Technical Specifications that clearly identifies the necessity for complete technical review by the NRC via the formal 10 C.F.R. § 50.59 license amendment processes. It is evident that the formal license amendment review is required due to the numerous and unreviewed proposed changes to the D-B Technical Specifications.” Report at 6.

Gundersen then turns to recent industry experiences - mostly bad - with other steam generator replacement projects.² “In an effort to avoid the participatory public review aspect of the 50.59 license amendment process,” the expert states, “the nuclear power licensees and their parent corporations have made an alleged strategic choice to avoid the license amendment process by manipulating loopholes in the 50.59 processes.” Report at 7. Gundersen notes that “[t]he last three steam generator replacement projects orchestrated by licensees sought to avoid the 10 C.F.R. § 50.59 license amendment process. . . . By avoiding the 50.59 license amendment processes for Crystal River 3 in Florida, and San Onofre 2 and San Onofre 3 in California, the

²Gundersen points out that the FENOC slide show even admits these problems: “FENOC acknowledges these problems in its PowerPoint, *Davis-Besse Steam Generator Replacement Project: Project Overview/Public Meeting: NRC Region III Office: March 20, 2013*, slides 18 through 25. Significant problems have arisen at Oconee (slide 19), ANO (slide 20), TMI (slide 21), and San Onofre (slide 24).” Gundersen Report at 7.

owners, Progress Energy (Crystal River) and Edison (San Onofre Units 2 and 3) caused all three units to experience total mechanical failures.” *Id.* Moreover, he points out, problems “were not identified at these nuclear power plants until significant damage to both the steam generators and the plants themselves had already occurred. Ratepayers were stuck with millions of dollars in payments for flawed equipment.” *Id.* As a result, Gundersen maintains:

All five replacement steam generator equipment failures can be attributed to failure of these licensees to apply the appropriate 10 C.F.R. § 50.59 screening criteria. Evading the 10 C.F.R. § 50.59 license amendment processes allowed design errors to reach through fabrication and into plant operation before regulators even began examining these significant design and fabrication failures.

Report at 7.

Gundersen describes how the timing of the discovery of steam generator failures at San Onofre is important to review and discuss in order to determine the likelihood of failure for the Davis-Besse ROTSG project. That is, the question becomes, has FENOC taken up the lessons learned from San Onofre? From the material he reviewed, Gundersen finds, “it appears that FENOC most likely completed the new design for the D-B ROTSGs during 2008, and fabrication appears to have begun in 2009. FENOC now claims that lessons learned from the San Onofre failures have been incorporated into the D-B ROTSG design and fabrication.” This claim is “impossible,” Gundersen concludes, since “the San Onofre RSGs failed in 2012, well after the D-B ROTSGs were already in fabrication. Quite simply, the Davis-Besse ROTSG could not have been modified to reflect any lessons learned from the technical failures at San Onofre Units 2 and 3.” Gundersen Report at 8.

Gundersen then turns to the eight (8) criteria of 10 C.F.R. § 50.59. The criteria, he says, “require that the license be amended unless none of these eight criteria are triggered by any

change made by a nuclear power plant licensee like FENOC's Davis-Besse. If a single criterion is met, then the regulation requires that the licensee pursue a license amendment process."

Report at 9. He continues:

By claiming that the steam generator replacements were a *like-for-like* design and fabrication, *FENOC, like Edison at San Onofre Units 2 and 3, is attempting to avoid the more rigorous license amendment process. From the evidence reviewed, it appears that the NRC has accepted FENOC's statement and documents without further independent analysis, just as it did for Edison on San Onofre's RSGs.*

(Emphasis supplied). Report at 9.

Gundersen points out a glaring omitted detail from the information FENOC provided in its March 2013 slide presentation: that "FENOC's PowerPoint presentation does not address the fact that Davis-Besse's containment integrity issues are compounded by the damage its containment already suffered during the blizzard of 1978, allegedly resulting in all of the cracking that now compromises D-B's containment integrity." Report at 10-11. Gundersen continues:

Of all the nuclear plants in the world, the Davis-Besse containment is the only one that has such a complicated history of storm damage and being split open repeatedly. These facts alone require a thorough NRC license application review and public hearing. While FENOC acknowledges that three containment incisions have occurred, it also claims that in this fourth containment incision:

- "Laminar cracking is not expected..."
- And that if the containment were to crack, "Any deficiencies will be documented in the Corrective Action program."

Waiting for cracks to occur and then entering them into the corrective action program is the very definition of a 10 C.F.R. § 50.59-trigger for NRC licensing review. It appears that cutting the Davis-Besse containment for the fourth time will in fact be an "experiment" as defined under 10 C.F.R. § 50.59.

(Emphasis in original). Report at 11.

Gundersen's concluding opinion is that "Replacement Once Through Steam Generator modifications at Davis-Bessie require a full NRC license application under the rules of 10 C.F.R.

§ 50.59 because (1) there are extensive experimental modifications to both the ROTSGs and to the containment structures; and (2) there are extensive modifications to the Davis-Besse technical specifications. Report at 11.

V. Conclusion: Petitioners should be granted an adjudicatory hearing

It is imperative that the terms of a reactor operating license be clear and unambiguous, and also that a licensee scrupulously adhere to those terms, because section 101 of the Atomic Energy Act makes it "unlawful . . . for any person within the United States to . . . use . . . any utilization . . . facility except under and in accordance with a license issued by the Commission." 42 U.S.C. § 2131.34. Section 182a of the AEA states that a reactor operating license must include "technical specifications" that include, *inter alia*, "the specific characteristics of the facility, and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization . . . of special nuclear material . . . will provide adequate protection to the health and safety of the public." 42 U.S.C. § 2232(a).

The Commission is empowered to issue an order amending any license as it deems necessary to "effectuate the provisions of [the AEA]" (42 U.S.C. § 2233) -- that is, to "promote the common defense and security or to protect health or to minimize danger to life or property." *Id.* § 2201; see also *id.* § 2237. Additionally, the Commission "may at any time . . . before the expiration of the license, require further written statements [from the licensee] to determine whether . . . a license should be modified." *Id.* § 2232(a).

Finally, section 189a of the AEA states that "[i]n any proceeding under [the AEA], for the . . . amending of any license . . . , the Commission shall grant a hearing upon the request of any

person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding.” 42 U.S.C. § 2239(a)(1)(A).

Petitioners have demonstrated their particularized interest in the outcome of the license amendment request, and further, have provided factual details along with regulatory and legal authority as anticipated by 10 CFR § 2.309. For all these reasons, Petitioners pray the Nuclear Regulatory Commission grant them leave to intervene in the license amendment proceeding, and to schedule discovery and an adjudicatory hearing at a time and place convenient to the Commission and the parties.

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	May 20, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "PETITION TO INTERVENE AND FOR A ADJUDICATORY PUBLIC HEARING OF FENOC LICENSE AMENDMENT REQUEST" were deposited in the NRC's Electronic Information Exchange this 20th day of May, 2013.

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	June 21, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

**PETITIONERS' REPLY IN SUPPORT OF 'PETITION TO INTERVENE
AND FOR AN ADJUDICATORY PUBLIC HEARING OF FENOC
LICENSE AMENDMENT REQUEST'**

Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the "Petitioners," and hereby respond to the "NRC Staff Answer to the Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and Ohio Sierra Club Joint Request for a Hearing and Petition for Leave to Intervene" (NRC Staff Answer) and "FirstEnergy Nuclear Operating Company's Answer Opposing Petition to Intervene and Request for Hearing Regarding Technical Specification License Amendment Request" (FirstEnergy or FENOC Answer). For reasons discussed herein, the Petition should be granted and the Petitioners accorded a merits hearing.

I. STANDING

FENOC and the NRC Staff predictably conflate the concept of standing to sue, improperly, with the merits of the Petition, returning a result of nonsuit. They also misread and misapplied other commonly-understood standing principles, exaggerating the legally-required showing

which Petitioners must make.

*A. Petitioners Stated Cognizable Facts And Concerns To Establish
Proximity And Injury-in-Fact Standing*

The Petitioners used a "form" declaration to assert their standing. Each individual declaration submitted contains these allegations:

3) FirstEnergy Nuclear Operating Corporation (FENOC) has applied for an amendment to the Davis-Besse operating license technical specifications related to replacement of a steam generator at the power plant, scheduled for 2014.

4) I have safety and environmental concerns about the Davis-Besse plant's operations. I do not believe adequate information has been disclosed about the steam generator project. Also, lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan. I believe the proposal may pose unacceptable risks to the environment and public health and my personal health and safety.

In their Petition to Intervene, the Petitioners allege several bases for their concerns about safety which give dimension to their assertions of standing:

> The shield building at the plant will be subjected to an unprecedented fourth (4th) wall penetration to allow swapping the old generator components for the new. This raises the potential for additional aggravation of already-existing structural cracks identified in that building in 2011, and could conceivably cause failure of a critical safety component (the building itself or the steel containment structure inside it which houses the reactor). Petition at 4.

> The new steam generator equipment may fail, compromising safety margins for operation of the nuclear reactor. In short, without¹ the opportunity for a public hearing and independent assessment of the complete plans, Davis-Besse may operate unsafely and pose an undue and unacceptable risk to the environment, and jeopardize the health, safety and welfare of the Petitioners' members who live, recreate and conduct their business in the vicinity of the nuclear power plant. Petition at 4-5.

> Arnold Gundersen, a nuclear engineer who is Petitioners' expert, opined in his

¹Use of "with" instead of "without" in this passage as it appears in the Petition was a typographical error.

written report filed with the Petition, listed nine (9) physical differences² between the 2013 steam generators and those installed when Davis-Besse was constructed, and opined that "Each and every one of these aforementioned changes is significant individually, and when taken together prove that the Replacement OTSG contains *many experimental parameters, especially in comparison to the Original OTSG.*" (Emphasis supplied). Expert Witness Report of Arnold Gundersen (Gundersen Report) at 5, incorporated by reference into Petition, but also quoted at Petition pp. 11-12.

> Gundersen concludes in his report that "the list of experimental changes identified by FENOC does not include the additional modifications applied by FENOC to cut into the Davis-Besse containment for the fourth time since it was constructed. To the best of Fairewinds' knowledge and belief, no other containment structure has been cut open more than twice, yet Davis-Besse's fourth containment perforation should have been identified by the 10 C.F.R. § 50.59 process as problematic and therefore requiring a license amendment review and application." Gundersen Report at 5-6, quoted in Petition at p. 15.

For purposes of assessing injury-in-fact or any other aspect of standing, a hearing petitioner's factual assertions, if uncontroverted, must be accepted. *Babcock & Wilcox* (Apollo, Pennsylvania Fuel Fabrication Facility), LBP-93-4, 37 NRC 72, 82 (1993). The Atomic Safety and Licensing Board (ASLB) "must accept as true all material factual allegations of the petition, except to the extent [it] deem[s] them to be overly speculative." *Envirocare of Utah, Inc.* (By-product Material Waste Disposal License), LBP-92-8, 35 NRC 167, 173 (1992).

Petitioners' expression of concern that the lessons learned from the steam generator controversy at San Onofre, which ultimately triggered the recent permanent shuttering of the plant, are being ignored in the Davis-Besse steam generator replacement plan. The reference to

² A tenth (10th) difference appears in the 2010 Environmental Report, Appendix E, <http://www.nrc.gov/reactors/operating/licensing/renewal/applications/davis-besse/davis-besse-enviro.pdf>:

"Each of the once-through steam generators is a vertically-mounted, straight-tube and shell counter-flow heat exchanger that converts heat from the reactor coolant system into steam to drive the turbine generators and produce electricity. *The existing steam generators are each approximately 75 feet long, have a diameter of approximately 15 feet, and weigh approximately 590 tons. The replacement steam generators will be dimensionally equivalent to the original steam generators, but weigh only approximately 465 tons each.*"

San Onofre bespeaks an engineering catastrophe that posed danger to Californians of a major radiation release. In his report in support of the Petition, Arnold Gundersen compared the bungled steam generator design change process at San Onofre with the similarly-trivialized analysis of design differences between the original and replacement generators at Davis-Besse. Gundersen stated in his expert report that 'In the detailed analysis of the [Southern California] Edison RSGs, Fairewinds identified 39 separate safety issues that failed to meet the NRC 50.59 criteria.' He points out that it is literally "impossible" for FENOC to have incorporated any "lessons learned" in the replacement steam generators for Davis-Besse, "since the San Onofre RSGs failed in 2012, well after the D-B ROTSGs were already in fabrication. Quite simply, the Davis-Besse ROTSG could not have been modified to reflect any lessons learned from the technical failures at San Onofre Units 2 and 3." Gundersen report at 8.

The Atomic Safety and Licensing Board at San Onofre observed that

Steam generator tubes serve critical safety functions. For example, they are an integral part of the reactor coolant pressure boundary and thus are essential for maintaining primary system pressure and coolant inventory. They also isolate the radioactive fission products in the primary coolant from the secondary system.

Southern California Edison Co, (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-13-07 at 2 (May 13, 2013).

According to FENOC's license amendment request, ML 103018A350, the design basis accident release rate for Davis-Besse's steam generators assumes that only one tube can suffer an open-ended failure during a main steam line break accident and be adequately compensated for by system feedwater features. *Id.*, see "Evaluation of the Proposed Amendment" p. 40/49³ (of

³"The steam generator tube rupture (SGTR) accident is the limiting design basis event for SG tubes and avoiding an SGTR is the basis for this Specification. The analysis of a SGTR event assumes a

.pdf). In these circumstances, high pressure radioactive water from the primary system enters the lower pressure steam cycle that is normally not radioactive. The tube failure provides a release path out of the containment into the non-radioactive spaces and into the environment.

When the Southern California Edison Company decided to avoid the 10 C.F.R. §50.59 licensing process at San Onofre, four replacement steam generators were fabricated. In January of 2012, a single tube in the Replacement Steam Generator on San Onofre Unit 3 failed and the unit was shut down. Resulting tests showed that design errors ignored by Edison's 10 C.F.R. §50.59 process caused at least eight tubes to thin to the point where they would have failed if a main steam line break accident occurred. Should this event have occurred, resulting water losses from the primary side to the secondary side would have exceeded the ability of emergency systems to provide adequate core cooling and a meltdown would have occurred. Reactor operators are not trained to address this scenario.

The experimental changes to the design of the tubes in the Davis-Besse replacement once through steam generators (ROTSG) could cause a similar cascading tube failure of more than one tube. In the event of multiple tube failures, accident releases from Davis-Besse can exceed engineered safety limits, and safety systems cannot provide adequate makeup water. Plant operators are not trained to mitigate this accident.

bounding primary to secondary LEAKAGE rate equal to the operational LEAKAGE rate limits in LCO 3.4.13, "RCS Operational LEAKAGE," plus the LEAKAGE rate associated with a double-ended rupture of a single tube. The accident analysis of a SGTR assumes the contaminated secondary fluid is released to the atmosphere via main steam safety valves.

The analysis for design basis accidents and transients other than a SGTR assume the SG tubes retain their structural integrity (*i.e.*, they are assumed not to rupture). In these analyses, the steam discharge to the atmosphere is based on the total primary to secondary LEAKAGE from all SGs of 1 gallon per minute. DOSE EQUIVALENT I-131 is assumed to be equivalent to 1% fissioned fuel in the accident analysis. The dose consequences of these events are within the limits of GDC 19 (Ref. 2), 10 CFR 100 (Ref. 3) or the NRC approved licensing basis (*e.g.*, a small fraction of these limits)."

Hence, contrary to the assertions of the NRC Staff (Answer at 12) and FENOC (Answer at 14) in the event of steam generator failure, there is "obvious potential for radiological harm at a particular distance frequented by a petitioner."⁴ *USEC, Inc.* (American Centrifuge Plant), CLI-05-11, 61 NRC 309, 311-12 (2005). "A petitioner may base its standing upon a showing that his or her residence, or that of its members, is 'within the geographical zone that might be affected by an accidental release of fission products.'" *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-125, 6 AEC 371, 371 n.6 (1973);" *Detroit Edison Co.* (Enrico Fermi Atomic Power Plant, Unit 2), LBP-79-1, 9 NRC 73, 78 (1979). Distances of as much as 50 miles have been held to fall within this zone. *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Units 1 & 2), ALAB-413, 5 NRC 1418, 1421 n.4 (1977).

B. Staff and FENOC Conflation Confusion

Both the NRC Staff and FirstEnergy have blurred concepts of Petitioners' legal standing with the merits of the Petition. This is apparent in tenuous arguments advanced by both.⁵ The ultimate result is to elevate the requirement of standing to the expectation, at the outset of a proceeding, of proof beyond a reasonable doubt that petitioners will prevail on the merits after trial. In evaluating Petitioners' claims here, care must be taken to avoid "the familiar trap of

⁴Including, surely, those Petitioners whom, as the NRC Staff helpfully clarified, reside 23 miles or so from Davis-Besse, see NRC Staff Answer at 13 fn. 41.

⁵For example, see NRC Staff answer at 14: "Furthermore, if a SG replacement at DBNPS were to lead to the nuclear power station being permanently shutdown like Crystal River and San Onofre, it is unclear what radiological injury-in-fact could result from this speculative outcome."

Also, see FENOC Answer at 16-17: "Moreover, Petitioners' general concerns about the safety of Davis-Besse due to the new steam generators, Shield Building penetrations, or their other arguments do not support the causation prong of standing, because these concerns are not 'traceable to the proposed action,' which relates to amending four Davis-Besse Technical Specifications to account for material and dimension changes in the new steam generators. As a result, these issues are outside the scope of the LAR and cannot be used as a basis for standing in this proceeding.

confusing the standing determination with the assessment of petitioner's case on the merits."

Babcock & Wilcox (Apollo, Pennsylvania Fuel Fabrication Facility), LBP-93-4, 37 NRC 72, 82 (1993), citing *City of Los Angeles v. Nat'l Highway Traffic Safety Admin.*, 912 F.2d 478, 495 (D.C. Cir. 1990), cert. denied, 117 L.Ed. 2d 460 (1992); *Sequoyah Fuels Corp.* (Gore, Oklahoma Site Decontamination and Decommissioning Funding), LBP-94-5, 39 NRC 54, 68 (1994), *aff'd*, CLI-94-12, 40 NRC 64 (1994); *Sequoyah Fuels Corp.* (Gore, Oklahoma, Site Decommissioning), CLI-01-02, 53 NRC 2, 15 (2001).

While the Staff and FENOC would no doubt prefer to consign the Petition to the tender mercies of the Red Queen in Alice in Wonderland,⁶ Petitioners expect the ASLB to avoid conflation of standing and merits.

C. An Alleged Injury To A Purely Legal Interest Is Sufficient To Support Standing

In the individual standing declarations, the declarants "do not believe adequate information has been disclosed about the steam generator project" and that "lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan." These averments are supported within the petition by a recitation⁷ of the

⁶<http://www.literature.org/authors/carroll-lewis/alices-adventures-inwonderland/chapter-12.html>:

"'Let the jury consider their verdict,' the King said, for about the twentieth time that day.

'No, no!' said the Queen. 'Sentence first - verdict afterwards.'

'Stuff and nonsense!' said Alice loudly. 'The idea of having the sentence first!'"

⁷From Petition at 4-5: "This proposed amendment calls for installation of new, untested steam generator equipment. The shield building at the plant will be subjected to an unprecedented fourth (4th) wall penetration to allow swapping the old generator components for the new. This raises the potential for additional aggravation of already-existing structural cracks identified in that building in 2011, and could conceivably cause failure of a critical safety component (the building itself or the steel containment structure inside it which houses the reactor). The new steam generator equipment may fail, compromising safety margins for operation of the nuclear reactor. In short, without the opportunity for a public hearing and independent assessment of the complete plans, Davis-Besse may operate unsafely and pose an undue

untested nature of the new steam generators and concerns that the unprecedented fourth (4th) penetration of the shield building - which is degraded by widespread cracking - require more comprehensive scrutiny, beyond technical specification changes which are the narrow rationale FENOC considers to be the sole basis for a license amendment. These are calls for rigorous procedural scrutiny of the proposed replacement project. They are expressions of a legal interest in the proper application of regulations and in particular, of use of the Atomic Energy Act hearing right.

An alleged injury to a purely legal interest is sufficient to support standing. Thus, a petitioner derived standing by alleging that a proposed license amendment would deprive it of the right to notice and opportunity for hearing provided by § 189.a. of the AEA. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), LBP-90-15, 31 NRC 501, 506 (1990), reconsid. denied, LBP-90-25, 32 NRC 21 (1990). Standing may be based upon the alleged loss of a procedural right, as long as the procedure at issue is designed to protect against a threatened concrete injury, and the loss of rights to notice, opportunity for a hearing and opportunity for judicial review constitute a discrete injury. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 93-94 (1993).

Petitioners have, then, demonstrated standing to enforce their legal interest in the project.

**D. Prior Participation In Proceedings Involving The Same Facility
Vitiates Need For New Proofs Of Standing**

Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, and Don't Waste Michigan, of the putative intervening organizations, and Michael Keegan of the individ-

and unacceptable risk to the environment, and jeopardize the health, safety and welfare of the Petitioners' members who live, recreate and conduct their business in the vicinity of the nuclear power plant."

ually-designated intervenor representatives, all were accorded standing in the Davis-Besse Nuclear Power Station license renewal proceeding. That proceeding remains on the Commission's active docket.

The conferring of standing on these parties should occur without any further scrutiny. If an intervenor has established standing in a prior proceeding involving the same facility, there is no need for the intervenor to establish standing in a later proceeding. *U.S. Army* (Jefferson Proving Ground), LBP-04-01, 59 NRC 27, 29 (2004). Under certain circumstances, even if a current proceeding is separate from an earlier proceeding, the Commission may refuse to apply its rules of procedure in an overly formalistic manner by requiring that petitioners participating in the earlier proceeding must again identify their interests to participate in the current proceeding. *Georgia Inst. of Tech.* (Georgia Tech Research Reactor), LBP-95-14, 42 NRC 5, 7 (1995) (citing *Georgia Power Co.* (Vogtle Electric Generating Plant, Units 1 & 2) LBP-91-33, 34 NRC 138 (1991)).

**E. The Board Should Consider The Contribution Petitioners
May Make To The Proceeding**

Even if the Board believes that Petitioners have not made their case for any other form of standing, it should take into account Petitioners' contribution to the license amendment proceeding already, in the form of a report from one of the same public experts who was involved in the litigation over the San Onofre steam generator controversy, and grant leave to Petitioners to intervene on that basis.

Where a petitioner does not satisfy the judicial standards for standing, intervention could still be allowed as a matter of discretion. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-83-25, 18 NRC 327, 333 (1983); *Sacramento Mun. Util. Dist.*

(Rancho Seco Nuclear Generating Station), CLI-93-12, 37 NRC 355, 358 (1993). Licensing Boards may, as a matter of discretion, grant intervention in domestic licensing cases to petitioners who are not entitled to intervene as of right under judicial standing doctrines but who may, nevertheless, make some contribution to the proceeding. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 & 2), CLI-76-27, 4 NRC 610 (1976).

Moreover, taking into account the previous contributions that most of the petitioning organizations have made during more than three (3) years of activity in the Davis-Besse license renewal proceeding, the cognizable legal injury alleged, and the assertions respecting injury-in-fact, the ASLB may justifiably grant Petitioners the status of intervenors to ensure that the public's interest in a transparent license amendment process is respected.

II. REPLY AS TO SCOPE AND ENFORCEMENT OBJECTIONS

The NRC Staff and FENOC both complain that the Petition raises issues beyond the scope of the license amendment request, and that Petitioners seek, in effect, an enforcement action, for which the only available remedy is a 10 C.F.R. §2.206 petition. See NRC Staff Answer at 15; FENOC Answer at 22.

A. At Issue Is FENOC's Purposeful Limitation Of The Scope Of The License Amendment Request

Central to this litigation is the question of whether FENOC should have sole discretion to decide the scope of the license amendment request (a view acquiesced in by the NRC Staff). Petitioners submit that such unbridled discretion does not exist and that the supine posture of the NRC on this issue has contributed to recent disastrous results in steam generator replacements.

The argument goes as follows. "There is no requirement to individually submit 10 C.F.R.

§ 50.59 analyses to the NRC, although they are maintained onsite available for inspection.” NRC Staff Answer at 15, fn. 58. Additionally, licensees “shall update periodically . . . the [FSAR] . . . [which] shall include the effects of . . . all safety analyses and evaluations performed by the . . . licensee . . . in support of conclusions that changes did not require a license amendment in accordance with § 50.59(c)(2) . . .” 10 C.F.R. § 50.71(e). *Id.* “Furthermore, just because the NRC is not immediately scrutinizing any potential FENOC 10 C.F.R. § 50.59 analyses regarding the installation of replacement SGs at DBNPS does not mean that the NRC has relinquished oversight of this planned installation. To the contrary, the NRC has already scheduled SG replacement inspections at DBNPS in accordance with NRC inspection procedures 50001.” *Id.* Finally, according to the NRC Staff and FENOC views, the public notice dictates with finality the scope - *i.e.*, the sole topics which may be addressed - of the hearing opportunity. FENOC Answer 20.

The FENOC-NRC Staff position, then, is that the utility company is allowed to maintain, secreted away from public scrutiny, the methodology and reasoning by which it concluded that major design changes of the replacement steam generators did not contradict the “fit-form-function” licensing parameters of the original Davis-Besse license. This protected, unregulated zone also is impermeable to any outsider seeking to understand how FENOC fulfilled the “like-for-like” comparison necessitated by 10 C.F.R. § 50.59. Thus FENOC is allowed to restrict its decisions from public scrutiny. Despite disastrous results following the hide-and-seek Southern California Edison misjudgments at San Onofre, the NRC Staff has nevertheless left it to FENOC to invoke at its option whatever limitation upon the scope of public inquiry it deems best for the hearing.

**B. The AEA And Commission Interpretation Require
A Hearing On The Petition Because Petitioners' Issues Fall Within The
Scope Of The Hearing Notice**

There is no regulation that compels either disclosure or nondisclosure of the license amendment analysis to the public. There is no regulation which authorizes the utility company to dictate the scope of the license amendment proceeding and constrain it, at its whim. Unless the public has a right to seek a hearing, only the licensee would know the basis and reasoning supporting its characterization of the replacement steam generator as a like-for-like replacement satisfying the requirements of Section 50.59. The result in the San Onofre case exposes the fallacy of this view, as well as the public health and safety risks such a policy creates.

Section 182a of the Atomic Energy Act addresses what must be included in a reactor operating license. Such licenses must include "technical specifications," including "the specific characteristics of the facility, and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization . . . of special nuclear material . . . will provide adequate protection to the health and safety of the public." 42 U.S.C. § 2232(a). Further, the Commission is empowered to issue an order amending any license it deems necessary to "effectuate the provisions of [the AEA]" (42 U.S.C. § 2233) to "promote the common defense and security or to protect health or to minimize danger to life or property." *Id.* § 2201; *see also id.* § 2237. Finally, section 189a of the AEA states that "[i]n any proceeding under [the AEA], for the . . . amending of any license . . . the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding." 42 U.S.C. § 2239(a)(1)(A).

Consistently with the statutes, the Commission advises ASLBs that "the scope of any

hearing should include the proposed license amendments, and any health, safety or environmental issues *fairly raised by them.*" (Emphasis supplied). *Commonwealth Edison Co.* (Dresden Nuclear Power Station, Unit 1), CLI-81-25, 14 NRC 616, 624 (1981); *see also Wis. Elec. Power Co.* (Point Beach Nuclear Plant, Units 1 & 2), LBP-82-88, 16 NRC 1335, 1342 (1982) (holding that it is not "appropriate to permit an intervenor to question the original design of the reactor or the systems not directly involved in [the license amendment] application").

Petitioners submit that the issues raised in their pleadings fall fairly within the scope of the hearing notice, because the technical specifications for the plant comprise the parameters - *i.e.*, the outer limits - within which all of the nonpublic analysis and decision-making by FENOC have been undertaken. "Standard Technical Specifications (STS) are published for each of the five reactor types as a NUREG-series publication. Plants are required to operate within these specifications." NRC website statement.⁸

Thus Arnold Gundersen's assertions (Report at 4) that "The lack of a license application on file with the NRC also implies that Davis-Besse made the determination that the 'fit-form-function' of the replacement steam generators fell within the licensing parameters of the original Davis-Besse license" challenges an undeniable, implicit nonpublic decision *not* to seek a technical specification amendment and thus falls within the scope. His conclusion (Report at 5) that "Moreover, the data reviewed shows that FENOC should have applied for a license amendment with the requisite public review six years ago when the ROTSG was originally designed, ordered, and purchased" similarly implicates and challenges decisions that fall within the parameters of Davis-Besse's technical specifications. Gundersen's point (Report at 6) that "A

⁸Found at <http://www.nrc.gov/reactors/operating/licensing/techspecs.html>

review of the FENOC PowerPoint presentation submitted to the NRC contains an extensive list of changes to the D-B Technical Specifications that clearly identifies the necessity for complete technical review by the NRC via the formal 10 C.F.R. § 50.59 license amendment processes” has been greeted with opposition by the NRC Staff, instead of the objective warning it is. In several significant ways, Gundersen has signaled that the license amendment proceeding, while a desirable development,, covers an incomplete array of changes in specifications.

What FENOC and the NRC Staff are suggesting is that once the die is cast and a limited array of technical specifications is deemed to be affected by the steam generator project, the “scope” of any subsequent proceeding is limited to a challenge of those few changes. Petitioners counter that the notice of hearing opened the window for a public hearing to be sought based, among other grounds, upon the point that an insufficient array of technical specifications changes has been identified by FENOC. The Staff admits that it has not effectively decided the merits of the technical specifications modifications,⁹ so how can it foreclose the potential that FENOC has unduly limited the range of its engineering review and performed an incomplete analysis of the nature and technical implications of the multitude of differences between the original steam generators and the 2014 replacements?

Under the circumstances, the Licensing Board may not delegate its obligation to decide controversial issues to the Staff. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), ALAB-298, 2 NRC 730, 737 (1975); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 & 2), LBP-84-2, 19 NRC 36, 210 (1984), *rev'd on other grounds*, ALAB-

⁹At Staff Answer p. 3 fn. 9, the NRC Staff states: “The Staff is currently reviewing the January 18, 2013 license amendment request and has not reached any final determination regarding the proposed amendment or FENOC’s assertions.”

793, 20 NRC 1591, 1627 (1984), citing *Perry*, ALAB-298, 2 NRC at 737.

Strikingly, the position assumed by the NRC Staff in the instant matter directly contradicts its position in the San Onofre case. In the “NRC Staff’s Answer to Petition to Intervene and Request for Hearing by Friends of the Earth on the Restart of the San Onofre Reactors,” ML12195A330 (July 20, 2012), the NRC Staff took this position:

FOE also does not meet the timely filing requirements of 10 C.F.R § 2.309(b) because the heart of FOE's claim appears to be that the June 27, 2008, license amendment was incomplete. But the time for FOE to bring forward this concern would have been within sixty days of the Federal Register notice published on September 23, 2008. No individual or individuals submitted a hearing request. The Staff subsequently issued the requested amendments on July 14, 2009. Thus a hearing on the adequacy of the June 27, 2008 request is no longer available to FOE. FOE's challenge to the previous action must take the form of a petition under 10 C.F.R. § 2.206.

Id. at 18-19. (Emphasis supplied). In the San Onofre case, the Staff acknowledged that the heart of FOE’s claim was an allegation that the license amendment was “incomplete.” Incomplete analysis of the changes requiring a formal license amendment is similarly the crux of Petitioners’ allegations in the instant matter. In the San Onofre litigation, the Staff concurred that the proper time in which to raise averments of incompleteness would have been within 60 days of September 23, 2008, the date of the Federal Register notice, but FOE missed that deadline. *Id.*

The NRC Staff affirmed this position in a later filing in the San Onofre case. In the “NRC Staff’s Answer to Request that the NRC Decide Petition to Intervene and Application to Stay Restart Decision,” ML 12299A513, p. 6 (October 25, 2012), the Staff explained to the Commission:

FOE’s claim that there was no license amendment related to the SONGS steam generator replacement is not accurate. As discussed in Staff’s Answer to FOE’s Petition to Intervene, there was a license amendment associated with the SONGS steam generator replacement, and along with it, an opportunity to request a hearing.

Id. at 6. (Emphasis supplied). But now, in the Davis-Besse case, under very similar circumstances, the Staff stands fast in its insistence that

A licensee that does not properly perform a 10 C.F.R. § 50.59 analysis and makes a change requiring prior NRC approval without a license amendment request would be in violation of NRC regulations and thus subject to enforcement action. . . . [B]inding Commission precedent holds that challenges to a licensee's 10 C.F.R. § 50.59 analyses are outside the scope of the actions listed in AEA § 189a and may only be brought as requests for enforcement under 10 C.F.R. § 2.206.

So the Staff was right before it was wrong.

C. 10 C.F.R. § 2.206 Is A Meaningless Tail-Chase

The assertions by NRC Staff and FENOC that Petitioners must file for regulatory enforcement under 10 C.F.R. § 2.206 is disingenuous. A petitioner is not entitled to an adjudicatory hearing under § 2.206, which, as NRC regulations and precedent make clear, is a petition to the NRC to take *enforcement* action. Holding an adjudicatory hearing is critical from a due process and public participation standpoint, as it is the mechanism through which information about the changes the licensee made to the facility is tested and provided to the public.

Further, a § 2.206 petition is in fact not a viable alternative for obtaining substantive relief. In the San Onofre litigation, the ASLB determined that the number of instances in which the Staff granted a § 2.206 petition in whole was 2 out of 387, or one-half of one percent.¹⁰

As Friends of the Earth argued there, "it is clear that the vast majority of § 2.206 petitions suffer a quiet death before the Staff. Thus, the refrain in the NRC Staff's Answer to FOE's Petition – that 'the correct course of action is to file a petition under 10 C.F.R. § 2.206' – is, in

¹⁰ *Southern California Edison Company* (San Onofre Nuclear Generating Station), Docket Nos. 50-361, 50-362 (Licensing Board Memorandum and Order Directing Staff to Amend Filing on 10 C.F.R. § 2.206) (June 19, 2012) at 2.

reality, a proposal to consign Petitioner's concerns to eternal regulatory purgatory." FOE Reply, ML12195A330, p. 12. Filing a § 2.206 petition is not a viable alternative.

III. THE CONTENTION RAISES A GENUINE DISPUTE OF FACT AND LAW

Contrary to FENOC's insistence (Answer at 18), the proposed Contention does, indeed, "provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact," as required by 10 C.F.R. § 2.309(f)(1)(vi). There is a genuine dispute on the legality of the restricted scope of the license amendment and a factual dispute as to the completeness of FENOC's license amendment analysis. Restriction of the litigation to numerical changes in technical specifications in four areas related to the steam generator replacement project is specious and does not comport with customary regulatory practice.

A failure to demonstrate the existence of a genuine dispute on a material issue of fact is a failure to provide any factual evidence or supporting documents that produce some doubt about the adequacy of a specified portion of applicant's documents or that provide supporting reasons that tend to show that there is some specified omission from applicant's documents. *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), LBP-90-16, 31 NRC 509, 515, 521 & n.12 (1990), citing 10 C.F.R. §§ 2.309(f)(1)(v) and (vi). Petitioners question the adequacy of the 10 C.F.R. 50.59 analysis, and claim that there are specific omissions from FENOC's license amendment request.

The factual support necessary to show that a genuine dispute exists need not be as strong as that necessary to withstand a summary disposition motion. What is required is "a minimal showing that material facts are in dispute, thereby demonstrating that an 'inquiry in depth' is appropriate." *Gulf States Utilities Co.* (River Bend Station, Unit 1), CLI-94-10, 40 NRC 43, 51

(1994) (citing "Final Rule, Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process," 54 Fed. Reg. 33,168, 33,171 (Aug. 11, 1989), *quoting Connecticut Bankers Association v. Board of Governors*, 627 F.2d 245 (D.C. Cir. 1980).

A basis for a contention is set forth with reasonable specificity if the applicants are sufficiently put on notice so that they will know, at least generally, what they will have to defend against or oppose, and if there has been sufficient foundation assigned to warrant further exploration of the proposed contention. *Kansas Gas & Electric Co.* (Wolf Creek Generating Station, Unit 1), LBP-84-1, 19 NRC 29, 34 (1984).

IV. CONCLUSION

It is not enough that there is a nominal hearing opportunity, calculated to be void of most controversy. FENOC and the NRC Staff have eviscerated the substantive mechanism of the Atomic Energy Act, hearings on the merits which afford access to the public to participate in the regulation of inherently dangerous technologies. A hearing is of no value to the public interest if it has been censored or restricted. The Licensing Board should reject the arguments raised by FENOC and the NRC Staff, and set this matter for hearing of the issues raised by Petitioners in their May 20, 2013 filing.

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	June 21, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "PETITIONERS' REPLY IN SUPPORT OF 'PETITION TO INTERVENE AND FOR AN ADJUDICATORY PUBLIC HEARING OF FENOC LICENSE AMENDMENT REQUEST'" was deposited in the NRC's Electronic Information Exchange this 21st day of June, 2013.

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	July 8, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

PETITIONERS' REPLY IN OPPOSITION TO FENOC
'MOTION TO STRIKE'

Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the "Petitioners," and hereby respond to the "First Energy Nuclear Operating Company's Motion to Strike Portions of Petitioners' Reply" (FENOC Motion to Strike). For reasons discussed herein, the Motion should be granted in one narrow respect and denied as to all other objections raised by FENOC.

A. Permissible Scope Of Reply Arguments; 'Legitimate Amplification'

Replies should be "narrowly focused on the legal or logical arguments presented in the [answers] on a request for hearing/petition to intervene." *South Carolina Elec. and Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI 10-01, 71 NRC 1, 7 (Jan. 27, 2010) (quoting "Final Rule, Changes to Adjudicatory Process," 69 Fed. Reg. 2182, 2203 (Jan. 14, 2004)). A reply may provide "legitimate amplification" to a proffered contention. *PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 & 2), LBP-07-4, 65 NRC 281, 299-302 (2007).

A party may not use the device of a motion to strike to categorically prohibit all new

arguments. Although “principles of fairness mandate that a petitioner restrict its reply brief to addressing issues raised by the Applicant’s or the NRC Staff’s Answers,” such a limitation:

. . . [F]alls well short of prohibiting a petitioner from raising all new arguments. *As long as new statements are within the scope of the initial contention and directly flow from and are focused on the issues and arguments raised in the Answers, fairness is achieved through the consideration of these newly expressed arguments.*

(Emphasis supplied). *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 at 41 (p. 43 of .pdf) (July 6, 2011).

Although the Commission does “not allow distinctly new complaints to be added at will as litigation progresses, stretching the scope of admitted contentions beyond their reasonably inferred bounds,” *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 309 (2010), the Response did not go outside those boundaries. As illustrated below, Petitioners remained well in-bounds in their reply, amplifying facts stated in their initial Petition for Leave to Intervene. In its Answer to the initial Petition, it appears that FENOC, with its seasoned lawyers and platoons of supportive experts, somehow misplaced its abilities to draw inferences and identify nuance. Given the broad denials contained in FENOC’s Answer to the original Petition, it fell to Petitioners to amplify hitherto obvious facts asserted in support of their assertions of standing and to further fill in the gaps which FENOC oddly was not able to bridge.

B. Responses to Specific Objections

1. Page 3, Footnote 2 of Petitioners’ Response

Upon review, Petitioners concede the introduction of a dramatic difference in weight between the old and new steam generators is a new fact, and because it was not listed along with the nine (9) other major engineering differences between the 1977 version of steam generator and

the 2014 edition, Petitioners will not oppose the reference's being stricken.

2. Pages 4-5 of Petitioners' Response Addressing Design Basis Accident Potential

FENOC asserted in its "Answer Opposing Petition to Intervene" (p. 10) that "The Commission has explained that '[a] petitioner cannot seek to obtain standing in a license amendment proceeding simply by enumerating the proposed license changes and alleging without substantiation that the changes will lead to offsite radiological consequences.'" Petitioners believed that they had, indeed, substantiated via their Petition and the Gundersen Report which accompanied it that there were significant unanalyzed engineered changes between old and new steam generators which, in light of the steam generator engineering disaster at San Onofre, should prompt significantly greater regulatory scrutiny of the Davis-Besse plan, lest there be safety implications from malfunctioning or malperforming generators.

First, in the Gundersen Report which is part of the original Petition, the expert for Petitioners, Arnold Gundersen, pointed out that he had identified dozens of features at San Onofre which carried safety implications, and that he then had noticed at least 9 "triggering" aspects of the Davis-Besse steam generator replacement that could have safety implications:

In the analysis detailed of the Edison RSGs, Fairewinds identified 39 separate safety issues that failed to meet the NRC 50.59 criteria. Any one of those 39 separate safety issues should have triggered the license amendment review process by which the NRC would have been notified of the proposed significant design and fabrication changes.

Now it appears that FENOC is also attempting to skirt the 10 C.F.R. § 50.59 processes on its Davis-Besse ROTSG project. . . .

In its previous reports, Fairewinds identified at least 39 *unreviewed* modifications to the original steam generators at San Onofre. Now Fairewinds' preliminary review of the D-B ROTSG shows that FENOC made *at least nine unreviewed technical specification changes to the Systems, Structures and Components (SSC)*. These major design changes are not *like-for-like* and clearly show that FENOC should have applied for a license amendment review of the D-B ROTSG under 10 C.F.R. § 50.59.

(Emphasis in original).

Second, Petitioners observed in an non-objected-to portion of their Response (pp 3-4) that:

The reference to San Onofre bespeaks an engineering catastrophe that posed danger to Californians of a major radiation release. In his report in support of the Petition, Arnold Gundersen compared the bungled steam generator design change process at San Onofre with the similarly-trivialized analysis of design differences between the original and replacement generators at Davis-Besse. Gundersen stated in his expert report that 'In the detailed analysis of the [Southern California] Edison RSGs, Fairewinds identified 39 separate safety issues that failed to meet the NRC 50.59 criteria.' He points out that it is literally "impossible" for FENOC to have incorporated any "lessons learned" in the replacement steam generators for Davis-Besse, "since the San Onofre RSGs failed in 2012, well after the D-B ROTSGs were already in fabrication. Quite simply, the Davis-Besse ROTSG could not have been modified to reflect any lessons learned from the technical failures at San Onofre Units 2 and 3." Gundersen report at 8.

FENOC objects to the further explanation offered by Petitioners a paragraph later. That explanation, however, merely paints in additional details as to how safety could be compromised absent a hearing and prolonged investigation of the steam generator replacement plan at Davis-Besse.

Petitioners' response was "within the scope of the initial contention and directly flow[s] from and [is] focused on the issues and arguments raised in the Answers," per *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 at 41 (p.43 of .pdf) (July 6, 2011). The Board should conclude that Petitioners fairly responded to points made by FENOC in its Answer.

3. Pages 7-8 of Petitioners' Response That Procedural Damage Confers Standing

Petitioners cited in their Response wording which appears repeatedly in the submitted standing declarations signed by individual Petitioners. Specifically, the declarants each state they "do not believe adequate information has been disclosed about the steam generator project" and that "lessons about the steam generator failures at the San Onofre plant have not been adequately

explored or incorporated into the Davis-Besse plan.” These averments are supported within the petition by a recitation of the untested nature of the new steam generators and concerns that the unprecedented fourth (4th) penetration of the shield building - which is degraded by widespread cracking - require more comprehensive scrutiny, beyond narrow technical specification changes which FENOC considers to be the basis for a license amendment.

Of course the Petitioners believe they have been procedurally damaged; repeatedly throughout their petition, they call for an extended investigation and an adjudicated hearing!¹ Petitioners repeatedly call for rigorous procedural scrutiny of the proposed replacement project.

¹From Petition (emphases added where italicized), p. 1: “Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don’t Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the “Petitioners,” and hereby move to intervene in this proceeding and *to request a public hearing*.”

From Petition, p. 5: “In short, *without the opportunity for a public hearing and independent assessment of the complete plans*, Davis-Besse may operate unsafely and pose an undue and unacceptable risk to the environment, and jeopardize the health, safety and welfare of the Petitioners’ members who live, recreate and conduct their business in the vicinity of the nuclear power plant.”

From Petition, p. 12 (wording of proposed contention): “Significant changes to the Replacement Once Through Steam Generator (ROTSG) modification project and to the reactor containment structures, all planned by FirstEnergy Nuclear Operating Company to be made to the Davis-Besse Nuclear Power Station, require that the steam generator replacement project be deemed an ‘experiment’ according to 10 C.F.R. § 50.59, *and that an adjudicatory public hearing be convened for independent analysis* of the project, before it is implemented.”

From Petition, p. 12 (Petitioners’ expert) “concludes that FENOC has likely deliberately avoided characterization of the project as *one which necessitates an adjudicatory hearing*.”

From Petition, pp. 15-16: “Pointing to the May 13, 2013 San Onofre ASLB ruling, engineer Gundersen asserts that ‘10 C.F.R. § 50.59 requires a formal license renewal application when a license amendment change is required as a result of such a modification,’ *Id.* at 6, because ‘If a licensee is unable to operate a reactor in strict accordance with its license, it must seek authorization from the NRC for a license amendment (10 C.F.R. §§ 50.59, 50.90 to 50.92), *which is a process that triggers a right to request an adjudicatory hearing by persons whose interests may be affected by the proceeding.*’ *Id.*, quoting *Southern California Edison Co.*, (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-13-07, p. 18 (May 13, 2013).”

From Petition, pp. 19-20: “Finally, section 189a of the AEA states that “[i]n any proceeding under [the AEA], for the . . . amending of any license . . . , *the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding*, and shall admit any such person as a party to such proceeding.” 42 U.S.C. § 2239(a)(1)(A).

They express a legal interest in the proper application of regulations and in particular, of use of the Atomic Energy Act hearing right. *Petitioners are alleging that they will be procedurally harmed if they are not granted a hearing on the steam generator replacement plan.*

Unfortunately, FENOC seems to have thoroughly missed the cited parts of the Petition for Leave to Intervene, and so misunderstands that the entire thrust of this License Amendment proceeding is to cure ongoing procedural damage to Petitioners' interests. A petitioner derives standing by alleging that a proposed license amendment would deprive it of the right to notice and opportunity for hearing provided by § 189a of the AEA. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), LBP-90-15, 31 NRC 501, 506 (1990), *reconsid. denied*, LBP-90-25, 32 NRC 21 (1990). Standing may be based upon the alleged loss of a procedural right, as long as the procedure at issue is designed to protect against a threatened concrete injury, and the loss of rights to notice, opportunity for a hearing and opportunity for judicial review constitute a discrete injury. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 93-94 (1993).

Petitioners "legitimately amplified" in their Response their previous overt, unmistakable demands for a hearing made in their original Petition. *PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 & 2), LBP-07-4, 65 NRC 281, 299-302 (2007) (reply may provide "legitimate amplification" to a proffered contention). Accordingly, this portion of their Response may not be stricken.

4. Pages 8-9 of Petition Concerning Prior Participation in D-B License Renewal

FENOC moves to strike Petitioners' reference to the participation by most of them in the pending license renewal proceeding for Davis-Besse. The simple fact of their prior involvement

as litigants is a cumulative and indisputable point which is easily learned by the Atomic Safety and Licensing Board's taking of official notice.

Under 10 C.F.R. § 2.337(f) (formerly § 2.743(i)), official notice may be taken of any fact of which U.S. federal courts may take judicial notice. Additionally, licensing boards may take official notice of any scientific or technical fact within the knowledge of the NRC as an expert body. Pursuant to 10 C.F.R. § 2.337(f), the Commission may take official notice of publicly available documents filed in the docket of such matters as:

- > a statement in a letter from the AEC's General Manager that future releases of radioactivity from a particular reactor would not exceed the lowest limit established for all reactors at the same site. *Duquesne Light Co.* (Beaver Valley Power Station, Unit 2), LBP-74-25, 7 AEC 711, 733 (1974);

- > Commission records, letters from applicants and materials on file in the Public Document Room to establish the facts with regard to the Ginna fuel problem as that problem related to an appeal in another case. *Consol. Edison Co. of N.Y.* (Indian Point, Unit 2), ALAB-75, 5 AEC 309, 310 (1972);

- > portions of a hearing record in another Commission proceeding involving the same parties and a similar facility design. *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), LBP-74-5, 7 AEC 82, 92 (1974);

- > a statement, set forth in a pleading filed by a party in another Commission proceeding, of AEC responses to interrogatories propounded in a court case to which the agency was a party. *Catawba*, LBP-74-5, 7 AEC at 96.

Petitioners note that the fact of the prior involvement of most of their representative

organizations and some individuals in the Davis-Besse license renewal is not subject to dispute. Even if a current proceeding is separate from an earlier proceeding, the Commission may refuse to apply its rules of procedure in an overly formalistic manner by requiring that petitioners participating in the earlier proceeding must again identify their interests to participate in the current proceeding. *Georgia Inst. of Tech.* (Georgia Tech Research Reactor), LBP-95-14, 42 NRC 5, 7 (1995) (citing *Georgia Power Co.* (Vogtle Electric Generating Plant, Units 1 & 2) LBP-91-33, 34 NRC 138 (1991)).

5. Pages 9-10 of Petition Respecting Petitioners' Contribution To Proceeding

The arguments made by Petitioners on this score - that if the Board is inclined against conferring standing on any other basis, it should take into account Petitioners' contribution to the license amendment proceeding in the form of their presentation from one of the public experts who testified in the San Onofre regulatory disaster - are "legitimate amplification" of their initial Petition. Petitioners conditionally conceded that if their standing assertions are defective, as argued by FENOC in its Answer, there remains the option of discretionary intervention.

Clearly, the Commission does "not allow distinctly new complaints to be added at will as litigation progresses," *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 309 (2010). But Petitioners' argument on this score was framed to meet the arguments of FENOC against Petitioners' claims that they have standing as of right.

6. Pages 17-18 of the Petition Concerning Genuine Dispute

The objection raised by FENOC on this part of Petitioners' Response is perplexing. FENOC seeks to strike the entirety of the argument (all of Section III of the Response). In addition, FENOC contrives to argue that (Motion to Strike p. 7) that "Petitioners make a new

argument in their Reply that the scope of the January 18, 2013 LAR is incorrect and the LAR is incomplete.”

While Petitioners did not use the magic word, “incomplete,”² they surely did raise in the original Petition and Gundersen Report FENOC’s lack of public accounting and transparency respecting the license amendment process. The magical word Petitioners used was “inadequate.”

At p. 10 of their original Petition, the Petitioners summarized the core of their case this way:

Petitioners detail below their position that the analysis provided the NRC by FENOC is inadequate; that there is some possibility that significant hazards associated with the steam generator replacement project have not been adequately identified, considered or disclosed; and that the standards of 10 CFR 50.92(c) have not been satisfied.

They further contended at length that the steam generator replacement plan is “experimental” and fails to account for, discuss and resolve at least 9 engineered differences between the original once-through generators, installed circa 1976 or 1977, and the new, redesigned versions which FENOC hopes to place inside the cracked shield building in 2014. See Gundersen Report, p. 5.³

²Magical only by FENOC’s expectations .

³Specifically, 10 C.F.R. § 50.59 requires that any licensee performing an experiment at a licensed nuclear power plant must apply for a license amendment and include the requisite public review. FENOC itself had acknowledged that the ROTSG design had significant modifications in comparison to the original OTSG. More specifically, slides 10 through 13 identify the following significant, experimental modifications to the original OTSG design:

1. The tube inspection lane was removed.
2. An additional tube support plate was added.
3. 150 additional tubes were added.
4. The tube alloy was changed.
5. The tube-to-tube sheet junction was modified extensively.
6. The overall design of the steam generator support structure was changed from a cylindrical skirt to a pedestal cone.
7. The thickness of the pressure retaining walls of the ROTSG is two inches thinner than the pressure retaining wall in the Original Once Through Steam Generator.
8. The 180-degree elbow design will be extensively modified.
9. The alloy of the hot leg nozzles was also changed.

Each and every one of these aforementioned changes is significant individually, and when taken

What is at issue here is FENOC's ironclad insistence that once *it* has decided which of a limited array of technical specifications is deemed to be affected by the steam generator project, the "scope" of any subsequent proceeding is limited to the challenge of those few changes. The position of Petitioners is that the notice of hearing opened the window for a public hearing to be sought based, among other grounds, upon the point that an insufficient array of technical specifications changes has been identified and disclosed by FENOC.

FENOC's smokescreen that somehow Petitioners are raising a new contention and arguing that it is one of omission are diversionary. The genuine dispute here is over the *scope* of the license amendment proposal. FENOC cannot be allowed to dictate to the adjudicatory panel what that should be.

The Commission advises ASLBs that "the scope of any hearing should include the proposed license amendments, and any health, safety or environmental issues *fairly raised by them.*" (Emphasis supplied). *Commonwealth Edison Co.* (Dresden Nuclear Power Station, Unit 1), CLI-81-25, 14 NRC 616, 624 (1981). The scope appears to include the systems involved in the license amendment application, *see also Wis. Elec. Power Co.* (Point Beach Nuclear Plant, Units 1 & 2), LBP-82-88, 16 NRC 1335, 1342 (1982).

Petitioners submit that the issues raised in their pleadings fall fairly within the scope of the hearing notice, because the technical specifications for the plant comprise the parameters - *i.e.*, the outer limits - within which all of the private analysis which is not available to the public, and the related decision-making by FENOC, have been undertaken. "Standard Technical

together prove that the Replacement OTSG contains many experimental parameters, especially in comparison to the Original OTSG.

Specifications (STS) are published for each of the five reactor types as a NUREG-series publication. Plants are required to operate within these specifications.” NRC website statement.⁴

Thus Arnold Gundersen’s assertions (Report at 4) that “The lack of a license application on file with the NRC also implies that Davis-Besse made the determination that the ‘fit-form-function’ of the replacement steam generators fell within the licensing parameters of the original Davis-Besse license” challenges an undeniable nonpublic decision *not* to seek a technical specification amendment. And thus these assertions fall within the scope. His conclusion (Report at 5) that “Moreover, the data reviewed shows that FENOC should have applied for a license amendment with the requisite public review six years ago when the ROTSG was originally designed, ordered, and purchased” similarly implicates and challenges decisions that fall within the parameters of Davis-Besse’s technical specifications. Gundersen’s point (Report at 6) that “A review of the FENOC PowerPoint presentation submitted to the NRC contains an extensive list of changes to the D-B Technical Specifications that clearly identifies the necessity for complete technical review by the NRC via the formal 10 C.F.R. § 50.59 license amendment processes” has been greeted with opposition by the NRC Staff, instead of the objective warning it is. In several significant ways, Gundersen has signaled that the license amendment proceeding, while a desirable development, covers an incomplete array of changes in specifications.

As to the request to strike the entirety of Petitioners’ response on the “genuine dispute” point, that should be denied. Petitioners’ reply argument was “narrowly focused on the legal or logical arguments presented in the [answers] on a request for hearing/petition to intervene.”

South Carolina Elec. and Gas Co. (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI 10-

⁴Found at <http://www.nrc.gov/reactors/operating/licensing/techspecs.html>

01, 71 NRC 1, 7 (Jan. 27, 2010). Petitioners provided “legitimate amplification” to their proffered contention. *PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 & 2), LBP-07-4, 65 NRC 281, 299-302 (2007). Although “principles of fairness mandate that a petitioner restrict its reply brief to addressing issues raised by the Applicant’s or the NRC Staff’s Answers,” such a limitation:

. . . [F]alls well short of prohibiting a petitioner from raising all new arguments. *As long as new statements are within the scope of the initial contention and directly flow from and are focused on the issues and arguments raised in the Answers, fairness is achieved through the consideration of these newly expressed arguments.*

(Emphasis supplied). *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 at 41 (p. 43 of .pdf) (July 6, 2011).

Accordingly, Section III of Petitioners’ Response should not be stricken, but instead, must be duly considered by the Licensing Board in rendering a determination on the Petition.

WHEREFORE, Petitioners pray the ASLB deny FENOC’s “Motion to Strike” except as to the sole point conceded by them.

Executed in Accord with 10 C.F.R. § 2.304(d)

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	July 8, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "PETITIONERS' REPLY IN OPPOSITION TO FENOC 'MOTION TO STRIKE'" was deposited in the NRC's Electronic Information Exchange this 8th day of July, 2013.

Executed in Accord with 10 C.F.R. § 2.304(d)

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	July 11, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

**PETITIONERS' REPLY IN OPPOSITION TO NRC STAFF
'MOTION TO STRIKE'**

Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the "Petitioners," and hereby respond to the "NRC Staff Motion to Strike Portions of Joint Petitioners' Reply Or, In the Alternative, for Leave to Reply" (Staff Motion to Strike). For reasons discussed herein, the Motion should be denied as to all objections raised by the NRC Staff. Petitioners deny that they raised by reply new standing arguments not within the scope of the original petition without demonstrating good cause for filing these arguments after the deadline.

A. Permissible Scope Of Reply Arguments; 'Legitimate Amplification'

Replies should be "narrowly focused on the legal or logical arguments presented in the [answers] on a request for hearing/petition to intervene." *South Carolina Elec. and Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI 10-01, 71 NRC 1, 7 (Jan. 27, 2010) (quoting "Final Rule, Changes to Adjudicatory Process," 69 Fed. Reg. 2182, 2203 (Jan. 14, 2004)). But a reply may provide "legitimate amplification" to a proffered contention. *PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 & 2), LBP-07-4, 65 NRC 281,

299-302 (2007).

A party may not use the device of a motion to strike to categorically prohibit all new arguments. “[P]rinciples of fairness mandate that a petitioner restrict its reply brief to addressing issues raised by the Applicant’s or the NRC Staff’s Answers;” however, such a limitation:

. . . [F]alls well short of prohibiting a petitioner from raising all new arguments. *As long as new statements are within the scope of the initial contention and directly flow from and are focused on the issues and arguments raised in the Answers, fairness is achieved through the consideration of these newly expressed arguments.*

(Emphasis supplied). *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 at 41 (p. 43 of .pdf) (July 6, 2011).

B. Responses to Specific Objections

1. Strike last paragraph p. 4 through end of Section I.A. on p. 6 of Petitioners’ Reply

The NRC Staff assert that Petitioners’ discussion of the one-tube-break standard in their Reply¹ attempts to “cure the insufficient traceability showing of the Joint Petition” and is raised impermissibly late. Staff Motion to Strike at pp. 6-7.

First, Petitioners deny that they failed to establish traceable harm in their initial Petition. The Gundersen Report which accompanied the Petition delineated significant unanalyzed changes in the engineering of the old vs. new steam generators which, in light of the steam generator engineering disaster at San Onofre, should prompt significantly greater regulatory scrutiny of the Davis-Besse plan to avoid safety implications from malfunctioning or malperforming generators. In the Gundersen Report, Petitioners’ expert pointed out that he had

¹Found at pp. 4-6 of “Petitioners’ Reply in support of ‘Petition to Intervene and for an Adjudicatory Public Hearing of FENOC License Amendment Request.’”

identified dozens of features at San Onofre which carried safety implications, and that he then had noticed at least 9 “triggering” aspects of the Davis-Besse steam generator replacement that could have safety implications:

Now it appears that FENOC is also attempting to skirt the 10 C.F.R. § 50.59 processes on its Davis-Besse ROTSG project. . . .

In its previous reports, Fairewinds identified at least 39 *unreviewed* modifications to the original steam generators at San Onofre. Now Fairewinds’ preliminary review of the D-B ROTSG shows that FENOC made *at least nine unreviewed technical specification changes to the Systems, Structures and Components (SSC)*. These major design changes are not *like-for-like* and clearly show that FENOC should have applied for a license amendment review of the D-B ROTSG under 10 C.F.R. § 50.59.

(Emphasis in original). Gundersen Report p. 10.

In a portion of their Reply to which the Staff does not object, Petitioners observed (pp 3-4) that:

The reference to San Onofre bespeaks an engineering catastrophe that posed danger to Californians of a major radiation release. In his report in support of the Petition, Arnold Gundersen compared the bungled steam generator design change process at San Onofre with the similarly-trivialized analysis of design differences between the original and replacement generators at Davis-Besse. Gundersen stated in his expert report that ‘In the detailed analysis of the [Southern California] Edison RSGs, Fairewinds identified 39 separate safety issues that failed to meet the NRC 50.59 criteria.’ He points out that it is literally “impossible” for FENOC to have incorporated any “lessons learned” in the replacement steam generators for Davis-Besse, ‘since the San Onofre RSGs failed in 2012, well after the D-B ROTSGs were already in fabrication. Quite simply, the Davis-Besse ROTSG could not have been modified to reflect any lessons learned from the technical failures at San Onofre Units 2 and 3.’ Gundersen report at 8.

The argument of Petitioners to which the Staff objects merely provides additional details as to how safety could be compromised, absent a hearing and prolonged investigation of the steam generator replacement plan at Davis-Besse. Petitioners’ response was “within the scope of the initial contention and directly flow[s] from and [is] focused on the issues and arguments raised in the Answers,” per *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2

and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 at 41 (p.43 of .pdf) (July 6, 2011). The Board should conclude that Petitioners fairly expanded their argument on reply as a legitimate response to points made by FENOC and/or the NRC Staff in their respective Answers to the Petition.

2. Strike last two paragraphs on p. 8 of Reply re procedural damage

The Staff maintains (Motion to Strike p. 8) that Petitioners' allegation of injury to a purely legal interest is sufficient to support standing is outside "the scope of the original petition and is not accompanied by a demonstration of good cause for filing after the deadline."

Petitioners argued that the phraseology which recurs in the standing declarations signed by individual Petitioners, *i.e.*, that Petitioners "do not believe adequate information has been disclosed about the steam generator project" and that "lessons about the steam generator failures at the San Onofre plant have not been adequately explored or incorporated into the Davis-Besse plan" set the scope, factually speaking, for standing based on procedural harm. These averments are further supported within the Petition by a recitation of the untested, "experimental" nature of the new steam generators. Consequently, Petitioners urge, there must be much broader scrutiny of the license amendment request, extending beyond the narrow technical specification changes which FENOC enumerated as the limited basis for a license amendment.

It's clear on the very face of the Petition, Petitioners believe they have been procedurally damaged. Repeatedly throughout the Petition, they call for an extended investigation and an adjudicated hearing. They believe they will be procedurally damaged if they are denied a hearing

which encompasses the broader scope of issues raised in the Petition.²

Petitioners “legitimately amplified” in their Reply their previous assertions that the license amendment process for Davis-Besse had not properly included lessons learned from the San Onofre steam generator engineering catastrophe into the analysis of the new generator design for Davis-Besse. Petitioners further “legitimately amplified” their previous, overt demands for a hearing made in their original Petition. *Cf. PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 & 2), LBP-07-4, 65 NRC 281, 299-302 (2007) (reply may be used to provide “legitimate amplification” to a proffered contention).

²From Petition (emphases added where italicized), p. 1: “Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don’t Waste Michigan, and the Ohio Sierra Club, hereafter referred to as the “Petitioners,” and hereby move to intervene in this proceeding and to *request a public hearing*.”

From Petition, p. 5: “In short, *without the opportunity for a public hearing and independent assessment of the complete plans*, Davis-Besse may operate unsafely and pose an undue and unacceptable risk to the environment, and jeopardize the health, safety and welfare of the Petitioners’ members who live, recreate and conduct their business in the vicinity of the nuclear power plant.”

From Petition, p. 12 (wording of proposed contention): “Significant changes to the Replacement Once Through Steam Generator (ROTSG) modification project and to the reactor containment structures, all planned by FirstEnergy Nuclear Operating Company to be made to the Davis-Besse Nuclear Power Station, require that the steam generator replacement project be deemed an ‘experiment’ according to 10 C.F.R. § 50.59, *and that an adjudicatory public hearing be convened for independent analysis* of the project, before it is implemented.”

From Petition, p. 12 (Petitioners’ expert) “concludes that FENOC has likely deliberately avoided characterization of the project as *one which necessitates an adjudicatory hearing*.”

From Petition, pp. 15-16: “Pointing to the May 13, 2013 San Onofre ASLB ruling, engineer Gundersen asserts that ‘10 C.F.R. § 50.59 requires a formal license renewal application when a license amendment change is required as a result of such a modification,’ *Id.* at 6, because ‘If a licensee is unable to operate a reactor in strict accordance with its license, it must seek authorization from the NRC for a license amendment (10 C.F.R. §§ 50.59, 50.90 to 50.92), *which is a process that triggers a right to request an adjudicatory hearing by persons whose interests may be affected by the proceeding.*’ *Id.*, quoting *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-13-07, p. 18 (May 13, 2013).”

From Petition, pp. 19-20: “Finally, section 189a of the AEA states that “[i]n any proceeding under [the AEA], for the . . . amending of any license . . . , *the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding*, and shall admit any such person as a party to such proceeding.” 42 U.S.C. § 2239(a)(1)(A).

A petitioner derives standing by alleging that a proposed license amendment would deprive it of the right to notice and opportunity for hearing provided by § 189a of the AEA. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), LBP-90-15, 31 NRC 501, 506 (1990), *reconsid. denied*, LBP-90-25, 32 NRC 21 (1990). Standing may be based upon the alleged loss of a procedural right, as long as the procedure at issue is designed to protect against a threatened concrete injury. The loss of rights to notice, opportunity for a hearing and opportunity for judicial review constitute a discrete injury. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 93-94 (1993).

Accordingly, this portion of the Reply should not be stricken.

3. Strike Sect. II.B. on pp. 15-16 exposing Staff's Reversal of Position

The NRC Staff took umbrage at Petitioners' mention of its 180-degree reversal of its position taken in the San Onofre litigation. Staff Motion to Strike pp. 9, 12.

In the San Onofre case, the Staff insisted (in "NRC Staff's Answer to Petition to Intervene and Request for Hearing by Friends of the Earth on the Restart of the San Onofre Reactors," ML12195A330 (July 20, 2012)) that FOE's petition was not timely:

FOE also does not meet the timely filing requirements of 10 C.F.R § 2.309(b) because the heart of FOE's claim appears to be that the June 27, 2008, license amendment was incomplete. But the time for FOE to bring forward this concern would have been within sixty days of the Federal Register notice published on September 23, 2008. No individual or individuals submitted a hearing request. The Staff subsequently issued the requested amendments on July 14, 2009. Thus a hearing on the adequacy of the June 27, 2008 request is no longer available to FOE.

Id. at 18-19. (Emphasis supplied). The NRC Staff acknowledged that the heart of FOE's claim was an allegation that the license amendment was "incomplete," but maintained that the proper time in which to raise averments of incompleteness would have been within 60 days of

September 23, 2008, the date of the Federal Register notice, a deadline which FOE had missed.

Id. The NRC Staff even affirmed this position later, in the “NRC Staff’s Answer to Request that the NRC Decide Petition to Intervene and Application to Stay Restart Decision,” *See* ML 12299A513, p. 6 (October 25, 2012):

FOE’s claim that there was no license amendment related to the SONGS steam generator replacement is not accurate. As discussed in Staff’s Answer to FOE’s Petition to Intervene, ***there was a license amendment associated with the SONGS steam generator replacement, and along with it, an opportunity to request a hearing.***

Id. at 6. (Emphasis supplied). Petitioners’ surprise, then, is understandable, when the NRC Staff for the very first time adopted the opposite stance in the instant license amendment case:

A licensee that does not properly perform a 10 C.F.R. § 50.59 analysis and makes a change requiring prior NRC approval without a license amendment request would be in violation of NRC regulations and thus subject to enforcement action. . . . [B]inding Commission precedent holds that challenges to a licensee’s 10 C.F.R. § 50.59 analyses are outside the scope of the actions listed in AEA § 189a and may only be brought as requests for enforcement under 10 C.F.R. § 2.206.

“NRC Staff Answer to the Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don’t Waste Michigan, and Ohio Sierra Club Joint Request for a Hearing and Petition for Leave to Intervene,” p. 15.

The NRC Staff has a unique role to play in licensing and license amendment proceedings. The Staff is obliged to lay all relevant materials before the Board to enable it to adequately dispose of the issues before it. *Consolidated Edison Co.* (Indian Point Nuclear Generating Units 1, 2 & 3), CLI-77-2, 5 NRC 13 (1977); *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1091 n.18 (1983), *citing Indian Point, supra*, 5 NRC at 15. Moreover, the Staff is obligated to make every effort promptly to report newly-discovered important information or significant developments related to a proceeding to the presiding

Licensing Board and the parties.

The Petitioners reasoned, appropriately, that the NRC Staff's reversal of a significant legal policy position such as this, pertinent to two contemporaneous license amendment litigations focused on the same subject, is something that would be brought to the Licensing Board's attention by the NRC's legal counsel, and conceded the Staff that opportunity. Surprisingly, NRC counsel did not avail itself of the chance to explain its critical change of heart to the ASLB, and so now should not be allowed to divert attention from its failure to address the Board candidly. Certainly the Staff cannot now be heard to argue that its own intentional change of position between the two litigations is a "new claim" that the Staff should have been given an "opportunity to rebut."

The scenario here is analogous to impeaching a key witness' testimony with evidence of a prior inconsistent statement. As with a prior inconsistent statement, the NRC Staff was given the chance to come clean and admit its inconsistent position in the San Onofre litigation. Because that opportunity was ignored, the Staff's credibility is harmed by a self-inflicted injury. And the Staff has the temerity to divert the Board's attention via the ruse of Petitioners' supposed departure from rigid procedural regularity. This absurd objection should be rejected.

4. Strike petitioners' prior participation in D-B license renewal at pp. 8-9

The Staff moves to strike Petitioners' reference to their prior participation in the pending license renewal proceeding for Davis-Besse. The simple fact of their prior involvement as litigants is a cumulative and indisputable point which is easily attainable by means of the Atomic Safety and Licensing Board's taking of official notice.

Under 10 C.F.R. § 2.337(f) (formerly § 2.743(i)), official notice may be taken of any fact

of which U.S. federal courts may take judicial notice. Additionally, licensing boards may take official notice of any scientific or technical fact within the knowledge of the NRC as an expert body. Pursuant to 10 C.F.R. § 2.337(f), the Commission may take official notice of publicly available documents filed in the docket of such matters as:

> a statement in a letter from the AEC's General Manager that future releases of radioactivity from a particular reactor would not exceed the lowest limit established for all reactors at the same site. *Duquesne Light Co.* (Beaver Valley Power Station, Unit 2), LBP-74-25, 7 AEC 711, 733 (1974);

> Commission records, letters from applicants and materials on file in the Public Document Room to establish the facts with regard to the Ginna fuel problem as that problem related to an appeal in another case. *Consol. Edison Co. of N.Y.* (Indian Point, Unit 2), ALAB-75, 5 AEC 309, 310 (1972);

> portions of a hearing record in another Commission proceeding involving the same parties and a similar facility design. *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), LBP-74-5, 7 AEC 82, 92 (1974);

> a statement, set forth in a pleading filed by a party in another Commission proceeding, of AEC responses to interrogatories propounded in a court case to which the agency was a party. *Catawba*, LBP-74-5, 7 AEC at 96.

The fact of Petitioners' prior involvement in the Davis-Besse license renewal is not subject to dispute. Even if a current proceeding is separate from an earlier proceeding, the Commission may refuse to apply its rules of procedure in an overly formalistic manner by requiring that petitioners participating in the earlier proceeding must again identify their interests

to participate in the current proceeding. *Georgia Inst. of Tech.* (Georgia Tech Research Reactor), LBP-95-14, 42 NRC 5, 7 (1995) (*citing Georgia Power Co.* (Vogtle Electric Generating Plant, Units 1 & 2) LBP-91-33, 34 NRC 138 (1991)).

Petitioners' prior involvement in the still-pending Davis-Besse license renewal proceeding is not secret, is officially noticeable, and legitimately amplifies Petitioners' other qualifications to participate. This objection should be ignored.

5. Strike pp. 9-10 references to Petitioners' contribution to proceeding

If the Board is inclined against conferring standing on any other basis, it may still account for Petitioners' contribution to the license amendment proceeding, in particular, their expert's presentation by Arnold Gundersen. Gundersen, who is a nuclear engineer, testified substantively in the San Onofre regulatory disaster and cited many engineering concerns that require more exhaustive scrutiny of the replacement steam generators than may have taken place. As Petitioners have previously noted, FENOC is allowed to maintain, secreted away from public scrutiny, the methodology and reasoning by which it concluded that major design changes of the replacement steam generators did not contradict the "fit-form-function" licensing parameters of the original Davis-Besse license. This protection is a barrier to Petitioners' seeking to understand how FENOC fulfilled the "like-for-like" comparison necessitated by 10 C.F.R. § 50.59. So FENOC claims inordinate power to shield its decisions from public scrutiny. Despite disastrous results following the Southern California Edison misjudgments at San Onofre, the NRC Staff has nevertheless left it to FENOC to invoke this secrecy to limit the scope of public inquiry however it deems best.

Against this wall of secrecy, Petitioners have articulated a novel but substantial basis for

hearing, by contending that the steam generator replacement plan is "experimental" and fails to account for, discuss and resolve at least 9 engineered differences between the original once-through generators and the new ones which FENOC hopes to install. See Gundersen Report, p. 5.³ Petitioners' argument in favor of discretionary intervention is "legitimate amplification" of their initial Petition, and offers an alternate ground of intervention in light of the Staff objections.

C. Conclusion

The Commission has long maintained that "the Commission's objectives are to provide a fair hearing process...and to produce an informed adjudicatory record that supports agency decision-making on matters related to the NRC's responsibilities for protecting public health and safety, the common defense and security, and the environment," and that "the opportunity for hearing should be a meaningful one that focuses on genuine issues and real disputes...". Fed. Register, Vol. 63, No. 150 (August 5, 1998). Moreover, "Public participation through

³Specifically, 10 C.F.R. § 50.59 requires that any licensee performing an experiment at a licensed nuclear power plant must apply for a license amendment and include the requisite public review. FENOC itself had acknowledged that the ROTSG design had significant modifications in comparison to the original OTSG. More specifically, slides 10 through 13 identify the following significant, experimental modifications to the original OTSG design:

1. The tube inspection lane was removed.
2. An additional tube support plate was added.
3. 150 additional tubes were added.
4. The tube alloy was changed.
5. The tube-to-tube sheet junction was modified extensively.
6. The overall design of the steam generator support structure was changed from a cylindrical skirt to a pedestal cone.
7. The thickness of the pressure retaining walls of the ROTSG is two inches thinner than the pressure retaining wall in the Original Once Through Steam Generator.
8. The 180-degree elbow design will be extensively modified.
9. The alloy of the hot leg nozzles was also changed.

Each and every one of these aforementioned changes is significant individually, and when taken together prove that the Replacement OTSG contains many experimental parameters, especially in comparison to the Original OTSG.

intervention is a positive factor in the licensing process and Intervenor perform a valuable function and are to be complimented and encouraged." See, e.g., *Virginia Elec. & Power Co.* (North Anna Power Station, Units 1 & 2), ALAB- 256, 1 NRC 10, 18 n.9 (1975); *Consolidated Edison Co. of N.Y., Inc.* (Indian Point Nuclear Generating Unit 2), ALAB-243, 8 AEC 850, 853 (1974); *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-229, 8 AEC 425 (1974); *Gulf States Utils. Co.* (River Bend Station, Units 1 & 2), ALAB-183, 7 AEC 222 (1974).

Joint Petitioners trust that the NRC means what it has said, and that the Petitioners here will be permitted to perform their indisputably "valuable function" of helping to ensure that the NRC will fulfill its "responsibilities for protecting public health and safety, the common defense and security, and the environment."

WHEREFORE, Petitioners pray the ASLB deny the NRC Staff's "Motion to Strike" in all its particulars.

Executed in Accord with 10 C.F.R. § 2.304(d)

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	Docket No. 50-346-LA
FirstEnergy Nuclear Operating Company	)	July 11, 2013
Davis-Besse Nuclear Power Station, Unit 1)	
)	
Regarding the Proposed Amendment to)	
Facility Operating License)	

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "PETITIONERS' REPLY IN OPPOSITION TO NRC STAFF 'MOTION TO STRIKE'" was deposited in the NRC's Electronic Information Exchange this 11th day of July, 2013.

Executed in Accord with 10 C.F.R. § 2.304(d)

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Genesky, Donielle

From: Kevin Kamps <kevin@beyondnuclear.org>
Sent: Saturday, January 24, 2015 3:31 PM
To: Puco Docketing
Subject: OPPOSITION COMMENT UNDER CASE # 14-1297-EL-SSO: (#15) Earth Day, 2014 environmental coalition intervention contentions against Davis-Besse Shield Building wall gap, rebar damage, worsening cracking, and re: renewable alternatives
Attachments: 4 22 14 press release FINAL.pdf; 4 21 14 Motion to admit new contentio FINAL-2.pdf; 4 21 14 Exhibit 1 final.pdf; 4 21 14 Exhibit 2 final.pdf; 4 21 14 Clemons dec COMPLET.pdf; 4 21 14 Exhibit 4 final.pdf; 4 21 14 Exhibit 5 final.pdf; 4 21 14 Exhibit 6 final.pdf; 4 21 14 Exhibit 7 final.pdf; LovinsDartmouthSlides-and-notes-15April2014.pdf; PJM-30% renewables-OK-GreentechGrid-031714.pdf; pj-m-rto-metrics.pdf; 4 21 14 DEIS comment vis a vis 5th Cracking Contention Supplement dated 8 16 12.pdf; 4 21 14 DEIS comments vis a vis 2012 D-B Cracking Contention Supplements.pdf; 4 21 14 draft EIS comment vis a vis 1 10 12 cracking contention.pdf; 4 21 14 Joe DeMare DSEIS comments.pdf

OPPOSITION COMMENT UNDER CASE # 14-1297-EL-SSO: (#15) Earth Day, 2014 environmental coalition intervention contentions against Davis-Besse Shield Building wall gap, rebar damage, worsening cracking, and re: renewable alternatives

Dear Public Utilities Commission of Ohio,

This is my 15th emailed submission regarding this proceeding.

On Earth Day, 2014, an environmental coalition (Beyond Nuclear, Citizen Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and Green Party of Ohio) intervening against the 20-year license extension at Davis-Besse called for the problem-plagued atomic reactor to be shut down by Earth Day, 2017, or preferably earlier, before it melts down and its severely compromised containment releases catastrophic amounts of hazardous radioactivity downwind and downstream into the Great Lakes basin. Davis-Besse's 40-year license expires on April 22, 2017.

Citing renewable sources of electricity, such as wind power and solar photovoltaics (PV), as ready replacements, the coalition of environmental groups filed comments by the deadline for the U.S. Nuclear Regulatory Commission's (NRC) Draft Environmental Impact Statement (DEIS) regarding FirstEnergy Nuclear Operating Company's (FENOC) proposed 20-year license extension at Davis-Besse.

At the same time, a coalition of official interveners resisting the license extension launched its latest salvo in the three-and-a-half-year-long NRC Atomic Safety and Licensing Board (ASLB) proceeding. The coalition is represented by Toledo attorney Terry Lodge (photo, left). The filing deadline was also April 21st -- 60 days after a Shield Building wall gap, and rebar damage, were officially reported by NRC at Davis-Besse -- this, in addition to previously known severe cracking of the concrete containment, first reported in October, 2011. In August-September, 2013, FirstEnergy admitted the Shield Building cracking was growing worse -- something it, as well as NRC staff, had previously asserted was an impossibility.

The coalition issued a press release.

The press release is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/4%2022%2014%20press%20release%20FINAL.pdf>

It is also attached to this email.

ASLB filing:

MOTION FOR ADMISSION OF CONTENTION NO. 6 ON SHIELD BUILDING CONCRETE VOID, CRACKING AND BROKEN REBAR PROBLEMS

This motion is posted online at:

<http://www.beyondnuclear.org/storage/kk-links/4%2021%2014%20Motion%20to%20admit%20new%20contentio%20FINAL-2.pdf>

It is also attached to this email.

Exhibits: #1, NRC Preliminary Notice of Event or Occurrence (Feb. 19, 2014); #2, Toledo Blade article, "Davis-Besse Had Air Gap in Shield Building," (Feb. 15, 2014); #3, Declaration of Victoria Clemons (April 14, 2014); #4, Minutes of Internal Meeting of Davis-Besse Oversight Panel (Oct. 18, 2001); #5, Minutes of Internal Meeting of Davis-Besse Oversight Panel (Oct. 29, 2002); #6, NRC Preliminary Notice of Event or Occurrence (Sept. 20, 2013); #7, NRC Request for Additional Information (April 15, 2014); #8, Expert Witness Report of Arnold Gundersen, 50-246-LA (2013).

Seven of these exhibits are hyper-linked, respectively, above. They are also attached to this email. (Please note that Exhibit #8 was previously submitted onto this docket).

It must be emphasized that this Shield Building wall gap, and extensive rebar damage, took place from early December 2011 to early Feb. 2014 -- during more than two years of full power operations at Davis-Besse. Effectively, the atomic reactor did not have a tornado missile shield, nor did it provide a robust radiological containment, for the reactor's unimaginable quantities of hazardous radioactivity during this period of operations. Through sheer luck, or the grace of God, the containment was not called upon to perform during this two year time period, for if it had been, it could well have failed, catastrophically.

DEIS comments:

1. Amory Lovins' "Nuclear power's competitive landscape and climate opportunity cost," March 28, 2014 (TMI+35), Dartmouth College, NH

Amory Lovins on uncompetitiveness of old atomic reactors. At page 5 Lovin's writes: "Reactors are promoted as costly to build but cheap to run. Yet as Daniel Allegretti ably described, many existing, long-paid-for U.S. reactors are now starting to be shut down because just their *operating* cost can no longer compete with wholesale power prices, typically depressed by gas-fired plants or windpower."

Lovins' presentation is hyper-linked above. It is also attached to this email.

2. PJM Interconnect: 30% grid integration of renewables not a problem.

In fact, it was well known to PJM (Pennsylvania/Jersey/Maryland) Interconnect, covering 13 states and this nation's largest single electric grid, as published in this 2010 ISO/RTO Metrics Report, posted at the website of the U.S. Federal Energy Regulatory Commission, that wind power and solar PV are available in

abundance and that there is no disruption or destabilizing of "baseload grid" associated with their integration. Replacement power was available in 2010, and is available now, and certainly in 2017.

On Dec. 27, 2010, the environmental coalition -- with University of Toledo professor emeritus Al Compaan as its expert witness -- contended that wind and solar PV, combined with compressed air energy storage, could easily replace Davis-Besse's 908 megawatts of electricity during the 2017-2037 period. In 2011, the ASLB agreed to hear the contention. But on March 27, 2012, the five-member NRC Commission, responding to an appeal by FENOC, unanimously overruled the ASLB, rejecting the renewables-as-alternative-to-license-extension hearing. Interveners reassert their contention and call for the NRC Commissioners' order to be reversed, because they are simply wrong. The coalition reserves the right to appeal the rejection of its renewables contention to federal court, once the ASLB proceeding has concluded.

The two hyper-links embedded immediately above are also attached to this email.

3. Beyond Nuclear's Radioactive Waste Watchdog, Kevin Kamps, also submitted five comments to NRC: #1, Jan. 10, 2012 SB cracking contention's relevance to DEIS; #2, four 2012 cracking contention supplements' (Feb. 27; June 4; July 16; July 23) relevance to DEIS; #3, fifth cracking contention supplement's (Aug. 16, 2012) relevance to DEIS; #4, Dec., 2010 backgrounder, "Davis-Besse Atomic Reactor: 20 MORE Years of Radioactive Russian Roulette on the Great Lakes Shore?!"; #5, Aug. 2012 SB summary report, "What Humpty Dumpty Doesn't Want You to Know: Davis-Besse's Cracked Concrete Containment Snow Job".

The first three embedded hyper-links, immediately above, are also attached to this email (#4 and #5 were previously submitted to this docket, so are not attached again here).

4. Joe DeMare's comments. Joe is a local resident near Davis-Besse. He is also an official intervenor, as part of the environmental coalition, against the license extension. Joe is affiliated with the Ohio Green Party. (Joe DeMare, also a member of Beyond Nuclear, provided Beyond Nuclear with standing in the experimental steam generator replacement project intervention in 2013, as previously documented at this docket.)

The documented embedded at the hyper-link immediately above is also attached to this email.

Given the already severe, and worsening cracking of the Shield Building's concrete containment (something FirstEnergy and NRC staff had adamantly argued was impossible, until FirstEnergy admitted, in August-September 2013, was actually happening), the Shield Building air gap or wall void documented in early 2014, the extensive Shield Building structural rebar damage, and the renewable energy (such as wind power and solar PV), energy efficiency, and energy storage (including FirstEnergy's own Norton compressed air energy storage facility near Akron) alternatives to a 20-year license extension, we urge PUCO to not approve FirstEnergy's requested massive ratepayer bailouts to prop up its age-degraded, problem-plagued, catastrophically risky Davis-Besse atomic reactor.

Thank you.

Sincerely,

Kevin Kamps, Beyond Nuclear

--

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Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

News from Beyond Nuclear, For Immediate Release, April 22, 2014 (Earth Day)

Contact: Kevin Kamps, Beyond Nuclear, (240) 462-3216; Michael Keegan, Don't Waste MI, (734) 770-1441; Terry Lodge, legal counsel, (419) 255-7552

Opponents to 20 More Years at Davis-Besse Challenge New Flaws

Renewables Cited as Inevitable Replacement

Oak Harbor, OH—Citing renewable sources of electricity, such as wind power and solar photo-voltaics (PV), as ready replacements for Davis-Besse, a coalition of environmental groups and concerned citizens filed comments by last night's midnight deadline on the U.S. Nuclear Regulatory Commission's (NRC) Draft Environmental Impact Statement (DEIS) regarding FirstEnergy Nuclear Operating Company's (FENOC) proposed 20-year license extension at the problem-plagued atomic reactor. At the same time, a coalition of official interveners resisting the extension launched its latest salvo in the three and a half year old licensing proceeding. Since late 2010, they have called for Davis-Besse to be closed by Earth Day (April 22), 2017 – the expiration date for its original 40-year license – if not sooner, given the worsening breakdown risks.

Both DEIS comments, as well as the legal filing to the NRC Atomic Safety and Licensing Board (ASLB) have been posted at Beyond Nuclear's homepage, www.beyondnuclear.org.

The official interveners – Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste MI, and the Green Party of OH, represented by Toledo attorney Terry Lodge – have raised the Shield Building (SB) wall gap, first reported by the *Toledo Blade* in mid-February, to the ASLB. The interveners faced a short 60-day deadline by which to do so, after NRC's official public notice of the revelation.

The environmental coalition also cited 15 cracks, found on the SB in August/September 2013, that were not identified previously, as evidence of worsening, age-related cracking.

The coalition has also unearthed documents revealing that Davis-Besse also had SB wall gaps stemming from the 2002 replacement of its severely corroded reactor lid.

The evidence of worsening cracking contradicts FirstEnergy's root cause conclusion, published in the first half of 2012, that the Blizzard of 1978 cracked the SB over a three-day period, but hadn't gotten worse over the past 36 years. Given the revelations of worsening cracking, FENOC is now undertaking its third root cause analysis since late 2011.

The interveners have re-asserted their earlier warnings that Davis-Besse's record-breaking fourth breach of the SB has risked significant degradation of the containment structure. The coalition's (including OH Sierra Club) expert witness challenging

FirstEnergy's current, experimental steam generator replacement, nuclear engineer Arnie Gundersen of Fairewinds Associates, testified last year that he knows of no other reactor that has breached its containment more times than has Davis-Besse.

The interveners have also raised issues revealed to a concerned local resident by an NRC official, David Hills, at the March 25, 2014 DEIS public comment meeting at Camp Perry, OH. At least 26 sections of steel reinforcement (rebar) had been broken and/or cracked in the 2011 (and 2014) construction opening area, each break or crack apparently located close to the mechanical splice coupling used to reconnect the rebar during the reactor head replacement outage in 2011.

The interveners cited evidence previously entered into the record that a Jan. 31, 2012 NRC inspection report revealed FirstEnergy was cited for attempting to use sub-standard rebar in its repair to the 2011 SB access opening. They questioned whether the installation of bad rebar contributed to the damage revealed last month.

NRC's Hills also confided that FirstEnergy "had decided to leave the forms on the inside wall because they knew they would have to cut through them again in 2 years." He further explained that "The rebar was damaged during the cutting of this opening [in 2014]" and, "The hydro saw damaged the rebar." He said to the concerned local resident that "The reason seems to be that there is a problem at the area of the splice of the rebar from the last [2011] cut," conceding that the rebar is crimped and clamped and that there appears to have been stress on the rebar splice, and that it is a problem "unseen" before.

Even FirstEnergy's expert witness, Dr. Darwin, involved in analyzing the root cause of cracking in 2011-2012 conceded that cracking in the region of spliced rebar would represent a significant structural problem.

Intervenors pointed out that a single Impulse Response or other acoustic test could have revealed the SB wall gap in late 2011. Also, if metal forms had not blocked the view, the gap would have been visible by visual examination. Instead, Davis-Besse was allowed to operate for over two years, at full power, with a severely compromised containment. The environmental coalition has called for a significant expansion of the 2017-2037 Aging Management Plan (AMP), to monitor for cracking, gaps, and damage in both the concrete and rebar of the SB.

On April 15, in a "Request for Additional Information," the NRC itself asked FirstEnergy how the worsening cracking, as well as the rebar damage, will change its SB AMP during the proposed license extension.

"From the massive corrosion hole in the reactor lid in 2002, to recurring Shield Building wall gaps in 2002 and 2011, Davis-Besse has a deep and concerning history of quality assurance failures," said Terry Lodge, Toledo-based legal counsel for the environmental interveners. "FirstEnergy has elevated QA itself to an aging management problem at Davis-Besse."

"The nuclear industry paradigm is in collapse," said Michael Keegan of Don't Waste MI in Monroe. "The good news is that renewables are ready to go."

Public comments to NRC on the DEIS included a recent report by PJM Interconnect (Pennsylvania-(New) Jersey-Maryland), the country's largest electric grid, serving 13 states, reporting that wind power and solar PV are readily integrated onto transmission lines and available in abundance.

Comments also included a recent report by Amory Lovins of Rocky Mountain Institute, presented at a Three Mile Island+35 forum, in which he stated: "Reactors are promoted as costly to build but cheap to run. Yet as Daniel Allegretti ably described, many existing, long-paid-for U.S. reactors are now starting to be shut down because just their *operating* cost can no longer compete with wholesale power prices, typically depressed by gas-fired plants or windpower."

(Davis-Besse and Three Mile Island (TMI) Unit 2, which experienced a 50% core meltdown on March 28, 1979, are twin reactors. In fact, Davis-Besse experienced a "TMI precursor incident," narrowly averting disaster itself. The "lesson learned" was never communicated, leading inevitably to the TMI meltdown 18 months later.)

"Davis-Besse has been identified as one of the top reactors at risk of near-term shutdown, even before its license expires in three years," said Kevin Kamps of Beyond Nuclear, based in Takoma Park, Maryland. "The question remains, will it be shutdown before, God forbid, it melts down, breaching its crumbling Shield Building, and releasing catastrophic amounts of hazardous radioactivity into the environment?"

Two weeks ago, energy economist Mark Cooper at the Vermont Law School warned that nuclear utilities should be prepared to replace atomic reactors that succumb to economic, operational, and safety risks. Otherwise, electric grids will be thrown into chaos when, someday, the inevitable happens and reactors are permanently closed. Last summer, Cooper listed Davis-Besse as among the dozen reactors in the U.S. at highest risk of near-term shutdown, even before their licenses expire. The past year has seen a record number of reactor shutdowns (Gentilly-2, Quebec; Crystal River, FL; Kewaunee, WI; San Onofre 2 & 3, CA; and the announced shutdown of Vermont Yankee before the end of 2014).

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:)	Docket No. 50-346-LR
FirstEnergy Nuclear Operating Company	)	April 21, 2014
Davis-Besse Nuclear Power Station, Unit 1)	
)	
)	

**MOTION FOR ADMISSION OF CONTENTION NO. 6
ON SHIELD BUILDING CONCRETE VOID, CRACKING AND
BROKEN REBAR PROBLEMS**

Now come Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario (CEA), Don't Waste Michigan, and the Green Party of Ohio (collectively, Intervenors), by and through counsel, and move for the admission of a new Contention No. 6 concerning recent plant-specific problems with the reactor shield building at the Davis-Besse Nuclear Power Station, Unit 1 ("Davis-Besse").

Specifically, in February 2014 there was a large concrete void discovered within the concrete-and-rebar wall of the Davis-Besse shield building. In August and September 2013, about 15 cracks were found on the shield building that were not identified previously, and FirstEnergy Nuclear Operating Company ("FENOC"), owner and operator of Davis-Besse, is sampling and conducting further evaluations and testing to determine, for a third time, the root cause of the cracks and their apparent progression in the walls of the shield building.

Additionally, in February 2014, during hydro-demolition activities for creation of a construction opening in the shield building to support a scheduled steam generator replacement outage, FENOC learned that at least 26 sections of steel reinforcement (rebar) had been broken

and/or cracked in the 2011 (and 2014) construction opening area, each break or crack apparently located close to the mechanical splice coupling used to reconnect the rebar during the reactor head replacement outage in 2011.

Intervenors demonstrate below that a deep and concerning history of quality assurance ("QA") failures at Davis-Besse have elevated QA to an aging management problem at the plant. They will also show that shield building cracking is continuing and that it is not reasonable to assume that cracks are strictly a current management problem, but are likely to increase and recur throughout the 20-year license renewal period. FENOC has previously been required to compile AMPs related to shield building cracking. Accordingly, Intervenors move for admission of Contention 6 in order to determine the adequacy of, and if need be, to challenge the sufficiency of, modifications to the Shield Building Monitoring Program and the Structures Monitoring Program Aging Management Plans ("AMPS") credited for the shield building in the Davis-Besse License Renewal Application ("LRA").

These recent events signify the latest evidence of serious and recurring departures from quality assurance standards at Davis-Besse even as proof of FENOC's continuing misunderstanding of the source and causation of shield building cracking has emerged. The Atomic Safety and Licensing Board ("ASLB") must finally accept the proposition that FENOC may be incapable of managing Davis-Besse safely and successfully through the proposed license extension period of 2017-2037. Intervenors seek to litigate the adequacy of FENOC's anticipated modifications to Davis-Besse's Shield Building Monitoring Program and the Structures Monitoring Program AMPs.

I. BACKGROUND

A. Recent New Information And Historical Context

On or about February 13, 2014, FENOC discovered an extensive air pocket or void of concrete in the Davis-Besse shield building's inner wall. The "Preliminary Notice of Event or Occurrence" ("PNO") which first appeared in the NRC's public-access ADAMS library on February 19, 2014 says this about the discovery:

On 02/14/2014, an unfilled area was discovered in the concrete along the top of the shield building construction opening on the annulus side. The condition was discovered during the current steam generator replacement outage, and is likely due to not completely repouring the shield building wall opening in 2011. Analysis shows this condition is bounded by previous calculations that demonstrate the containment function is maintained such that the protection of the health and safety of the public was not in question. Further analysis is planned to reconfirm previous calculations.

The NRC Resident Inspector has been notified.

PNO, Exhibit 1 hereto. According to an account in the Toledo Blade newspaper, after cutting a hole through the shield building to move the new steam generators in and take the old ones out, workers noticed a large void on the building's inner wall. The flaw runs the 25-foot length of a cut made through the building's wall in fall 2011, when a new reactor head was brought in and the old one was removed. "Davis-Besse Had Air Gap in Shield Building," February 15, 2014 (Exhibit 2). The void varies in width from six to 12 inches. The depth of it is something less than the 2.5-foot thickness of the concrete-and-steel structure; there is no evidence of the flaw on the structure's exterior. *Id.*

According to statements by an NRC staff member at an NRC-sponsored public comment session about the Davis-Besse Draft Supplement Environmental Impact Statement on March 25, 2014, the void was caused by FENOC workers or contractors having left forming devices in the concrete in 2011. The forms are used to shape the concrete pour inside the rebar skeleton of the

shield building when a temporary access opening is blasted through the shield building. In 2011, a perforation was made in the shield building for purposes of replacement of a corroded head on the reactor within the building. The NRC's David Hills told Victoria Clemons, a member of the public, that FirstEnergy "had decided to leave the forms on the inside wall because they knew they would have to cut through them again in 2 years." See Exhibit 3, Declaration of Victoria Clemons, ¶ 4. He further explained that "The rebar was damaged during the cutting of this opening [in 2014]" and, "The hydro saw damaged the rebar." Mr. Hills explained further, "The reason seems to be that there is a problem at the area of the splice of the rebar from the last [2011] cut." He explained that the rebar is crimped and clamped and that there appears to have been stress on the rebar splice, and that it is a problem "unseen" before. Id. ¶ 8.

Unfortunately, this is not the first time that concrete forms have been left in place within the shield building wall and have caused or masked voids in the pouring of concrete. It happened after a shield building through-wall cut in 2002 to replace the corroded reactor lid. In the October 18, 2002 "Minutes of Internal Meeting of Davis-Besse Oversight Panel" (Exhibit 4 attached), at p. 4/14 of .pdf, the oversight panel stated:

The containment vessel re-weld has been reviewed and accepted by the licensee and the ANI. . . . These items are being addressed after being called to the licensee's attention. The concrete pour to restore the shield building *revealed at least two surface voids when the forms were stripped. One void measured about 5" by 5" by 12" - information on the size of the other was not available.*

(Emphasis supplied).

And in the October 29, 2002 "Minutes of Internal Meeting of Davis-Besse Oversight Panel" (Exhibit 5 attached), at p. 4/13 of .pdf, this *ad hoc* committee noted that "*Surface voids occurred in the concrete pour to restore the shield building* which had not been resolved at the

conclusion of the inspection. Overall, there were no “findings” identified, but several observations were made” (Emphasis supplied).

The reactor shield building has not just a troubling history, but evidently faces a disquieting future, of multiple laminar and other concrete cracks. Intervenor in 2012 proffered six (6) filings totaling hundreds of pages following the observation of cracking in the shield building concrete in 2011 during the reactor head replacement project at Davis-Besse. They meticulously documented concerns that the proliferation of different types of cracks may have commenced in the 1970's before the plant had opened, and that their spreading and frequency of occurrence may be increasing with the passage of time. *See, generally*, “Intervenors’ Motion for Admission of Contention No. 5 on Shield Building Cracking,” and successive amendments and supplements: “Intervenors’ Motion to Amend ‘Motion for Admission of Contention No. 5’” (Feb. 27, 2012) ([hereinafter First Motion to Amend]; “Intervenors’ Motion to Amend and Supplement Proposed Contention No. 5 (Shield Building Cracking)” (June 4, 2012) (hereinafter Second Motion to Amend); “Intervenors’ Third Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking)” (July 16, 2012) (hereinafter Third Motion to Amend); “Intervenors’ Motion to Amend and Supplement Proposed Contention No. 5 (Shield Building Cracking)” (July 23, 2012) (hereinafter Fourth Motion to Amend); “Intervenors’ Fifth Motion To Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking)” (Aug. 16, 2012) (hereinafter Fifth Motion to Amend). Intervenor incorporates these filings and their accompanying exhibits fully herein as though rewritten.

The ASLB flatly rejected Intervenor’s Contention No. 5. “Memorandum and Order (Denying Motions to Admit, to Amend, and to Supplement Proposed Contention 5),”

LBP-12-27 (December 28, 2012). But in September 2013, additional concrete cracking which had not hitherto been identified was discovered in the shield building. On September 20, 2013, a Preliminary Notification of Event appeared in the NRC's ADAMS cache which stated as follows:

On August 26, 2013, the licensee was performing examinations of core bores in the shield building in accordance with the commitments First Energy Nuclear Operating Company (FENOC) made to the NRC. The commitment is for long term monitoring of the shield building which was documented in the NRC's Confirmatory Action Letter dated December 2, 2011 (ADAMS ML11336A355). The examinations performed in 2011 and 2012 showed no additional cracks. This year, using new instrumentation with enhanced capabilities, plant workers identified a *crack that had not been seen before. To date, the core bore examinations revealed seven previously unidentified cracks. FENOC has taken steps to reevaluate 43 core bores and will be looking at the remaining 39 going forward.*

(Emphasis supplied). PNO, Exhibit 6.

In a formal Request for Additional Information ("RAI") dated April 15, 2014 (ADAMS No. ML14097A454, Exhibit 7 hereto), the NRC Staff said that "during a subsequent routine baseline inspection in August/September 2013, FENOC discovered several (about 15) cracks on the Davis-Besse shield building that were not identified previously." The Staff continued:

Further, the NRC staff understands that in the ongoing February 2014 refueling outage, during hydro-demolition activities for creation of a construction opening in the Davis-Besse shield building to support the scheduled steam generator replacement, FENOC learned that several (at least 26) sections of steel reinforcement (rebar) had been broken and/or cracked in the construction opening area. Each section was apparently broken very close to the mechanical splice coupling used to splice the rebar during the head replacement outage in 2011.

Using enormous understatement, the NRC Staff thus admitted in the RAI that when the shield building was sealed shut following reactor head replacement in 2011, a stretch of the shield building wall which was 26-rebar-sections in length was not anchored to the rest of the rebar skeleton. The splices which joined the iron rebar rods together in the area of the shield building

where the skeletal structure of the building was patched shut were cracked or broken at the time the concrete was poured to complete the re-closure. After the 2011 resealing of the shield building, Davis-Besse operated at full power for over two years. While the information on the concrete voids is sparse and a bit unclear so far, it is legitimate to wonder if there is any relationship between the void, which apparently was located along the top of the 2011 construction opening, and the cracked and broken rebar, also located inside the perimeter of the 2011 construction opening.

According to the April 2014 RAI, FENOC has taken additional core samples of shield building concrete and is performing evaluations and testing to determine the root cause of the cracks and their apparent progression. An initial root cause analysis was performed in February 2012; a second report -- based on another round of assessments and analyses -- was completed in April 2012. The 2014 analysis, then, is the *third* root cause analysis.

One of the great historic QA and management failings at Davis-Besse (though by no means the only one) occurred in 2002 when a jagged corrosion hole the size of a loaf of bread was discovered in the reactor head. Of that discovery, NRC's Office of Inspector General reported that NRC itself -- not only FENOC -- had placed profits over safety, allowing the reactor pressure vessel lid to come within weeks, or even days, of rupturing due to deep corrosion. Had the lid breached, a "Loss-of-Coolant-Accident" or "LOCA" would have resulted, very possibly followed by a core meltdown, and potentially a catastrophic radioactivity release into the environment. The Government Accountability Office later called it "the most serious safety issue confronting the nation's commercial nuclear power industry since Three Mile Island." The Department of Justice said that FirstEnergy admitted it "knowingly had made false

representations to the Nuclear Regulatory Commission (NRC) in the course of attempting to persuade the NRC that its Davis-Besse Nuclear Power Station was safe to operate beyond December 31, 2001.” <http://kucinich.house.gov/News/DocumentSingle.aspx?DocumentID=272516>. In an editorial published on October 12, 2011 – just two days after Bechtel and Sargent & Lundy subcontractors discovered shield building cracking, but still before it had been revealed to the public and the media – the Toledo Blade ran an editorial entitled “Nuclear watchdog needed.” They wrote: “The 2002 reactor-head event cost FirstEnergy a record \$33.5 million in fines for lying to the government. The former head of the U.S. Department of Justice’s environmental crimes unit declared FirstEnergy showed ‘brazen arrogance’ and ‘breached the public trust.’” <http://www.toledoblade.com/Editorials/2011/10/12/Nuclear-watchdogneeded.html>.

B. Intervenor’s Prescient Prior Efforts To Raise The Issues of This Motion

Intervenors alleged in 2012, when they filed Contention 5 over concerns about shield building cracking, that FENOC must describe how it will manage the cracking during the license renewal term. In support of their six (6) Contention 5 filings, Intervenor moved into evidence considerable documentation, such as the internal NRC calculations of two engineers who had determined that a minor earthquake or reactor thermal event could cause the collapse of very significant portions of the shield building walls, up to 90%. But it all came to naught; the contention was summarily rejected.

1. The ASLB’s Rejection of Contention 5 as ‘Speculation’

In 2012, FENOC argued (noted by the ASLB at p. 20, fn 99 of LBP-12-27) that Intervenor’s claim that the shield building cracking must be addressed in the then-anticipated Draft

Supplemental Environmental Impact Statement (DSEIS) did not cure the alleged untimeliness of Intervenor's Contention 5 motion. Review of the 2014 DSEIS since then shows zero mention of the shield cracking phenomena at all, not even as a subject for Severe Accident Mitigation Analysis ("SAMA"). Despite the NRC Staff's DSEIS explanation that the "purpose of [SAMA analysis] is to ensure that plant changes (*i.e.*, hardware, procedures, and training) with the potential for improving severe accident safety performance are identified and evaluated" (DSEIS p. 5-3), there is no mention of the changes which have befallen the Davis-Besse shield building, although it is surely a "hardware" structure within the purview of SAMA evaluations.¹

In 2012, the ASLB flayed the Intervenor's for their "speculation" about the incipient and growing problem of cracking of the shield building:

... Contention 5 is based, in large part, on *pure speculation*. For example, Intervenor's state that "there is a likelihood that the risks presented by the current cracks will only increase in the next few years." Intervenor's note that Davis-Besse will undergo a steam generator replacement in 2014, and argue that this fact supports their claim regarding increased risk. Intervenor's provide no support for their argument that the 2014 steam generator replacement will increase the risk of cracking, and as such, their argument is *mere speculation*. In addition, Intervenor's state that "it is conceivable that FENOC very well may need to replace its steam generators yet again after 2014 ... risking further contributions to the cracking." Whether FENOC will need to perform another steam generator replacement after 2014 is *mere speculation, on top of the mere speculation* that such a procedure might contribute to the cracking.

¹The Davis-Besse reactor shield building constitutes a "system [or] structure ... as delineated in [10 C.F.R.] §54.4 ... subject to an aging management review" because it "perform[s] an intended function ... without moving parts ... [and includes] the containment [and] containment liner. . ." 10 C.F.R. §54.21(a)(1). The shield building and the steel liner within it are among those "[p]lant systems, structures, and components" which are "[s]afety-related systems [and] structures ... which are . . . relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions - (i) The integrity of the reactor coolant pressure boundary; (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable." 10 C.F.R. §54.4(a)(1).

(Emphasis supplied). LBP-12-27 at pp. 34-35 (35-36 of .pdf). Intervenors maintain that they did not engage in mere speculation: they cited to the hydro-demolition firms, Bechtel and Sargent & Lundy's, own conceit that the cut-through process could have damaged the shield building.² And sometimes, even "mere speculation" has a way of coming home to roost. After Contention 5 was unceremoniously dismissed, FENOC unexpectedly acknowledged in September 2013, as stated in the introductory section of this Motion, that there is worsening shield building cracking. And the public now also knows of damage done to rebar in the breach area by hydro-demolition associated with the 2011 re-sealing of that building, and of the 2011 concrete void which may be related in some fashion to causing cracking or other shield building damage. Intervenors submit that it's time to stop accusing them of "mere speculation," and to examine, instead, the repression of public information by the NRC Staff and FENOC.³ The problem is not so much Intervenors' "mere speculation" as it is the NRC Staff's and FENOC's "sheer denial."

2. Intervenors' 2012 Report of Substandard Rebar

In Intervenors' First Motion to Amend, filed in February 2012, they asserted that a January 31, 2012 NRC Inspection Report confirmed the interception of rebar intended by FENOC for installation in the 2011 access opening repair. MLI2032A119 at p. 6⁴ (10/93 of .pdf).

²Intervenors' FOIA response B/4, submitted with the motion. B/4 may be retrieved online at <http://www.beyondnuclear.org/relicensing/2012/8/11/nrc-foia-documents-regarding-davis-besse-shield-building-cra.html>

³Intervenors' pending 2014 FOIA request filed February 20, 2014 remains thwarted by an unprecedented dispute over Beyond Nuclear being charged for the records, and the public's understanding of the precise current status of the shield building is further confounded by the NRC Staff's opaque verbiage in the RAI of April 15, 2014.

⁴A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" were identified by the inspectors for the licensee's failure to control weld rod oven temperature in accordance with procedure WFMC-1 during a rebar

Although NRC Staff claimed to have prevented that flawed rebar installation from being made, the fact that there was substandard rebar associated with the 2011 wall patch inspires questions in 2014 about the 2011 cracked and broken rebar uncovered by the hydro-demolition for the 2014 access opening.

Notably, at p. 6 of their 2012 Third Motion to Amend (July 16, 2012), Intervenors chided the NRC Staff about its proposal to reduce, not increase, rebar inspection:

At the suggestion of the NRC Staff, the RRCA [Revised Root Cause Analysis] was revised at one point by deleting a statement from Section 3.3.9 - Failure Modes Analysis (pp. 50-51), which had stated that further investigation was needed regarding high-density reinforcing steel and small reinforcing steel spacing failure modes. Even FENOC had agreed that more investigation was needed; that statement was included in the February RCA.

Indisputably, the presence of high-density rebar, and small rebar spacing, causes cracking.

Implicit in this truism is that all the areas of the shield building surface and subsurface which have such rebar are vulnerable to cracking and should be extensively checked for status, which

splice weld completed for restoration of the shield building access opening. As a corrective action, the licensee removed the welder's certification to weld rebar and documented this issue in CR 2011-05536. To ensure that the horizontal rebar splice weld 2H-03R was not affected by delayed hydrogen cracking, the licensee's vendor examined the weld splice 48 hours after fabrication and did not identify cracks.

The finding was determined to be more than minor because the finding was associated with the Barrier Integrity Cornerstone attribute of Configuration Control and adversely affected the cornerstone objective to provide reasonable assurance that the physical design barriers (e.g., containment) protect the public from radionuclide releases caused by accidents or events. The shield building is part of the containment system. Absent NRC identification, rebar welds would have been fabricated with electrodes exposed to ambient temperatures for excessive periods of time creating a condition that results in hydrogen-induced weld cracking. Rebar splice material with cracks returned to service would increase risk for shield building failure during design basis events such as wind-driven missile impact or earthquake-induced loads. The inspectors completed a significance determination, in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Containment Barrier. Because the issue was corrected promptly, prior to introduction of weld material with hydrogen-induced cracks, the inspectors answered "no" to each of the four Phase 1 screening questions. Therefore, the finding screened as having very low safety significance.

was neither planned as part of the AMP, and for which the justification has since been deleted.

3. *Intervenors Foretold Potential Significance In 2012*
Of Micro-Cracking and Radial Cracking

In their July 16, 2012 Third Motion to Amend, Intervenors argued (p. 2) that “[t]he scope of the admitted cracking is far narrower than the identified cracking, and the potential for further concrete and rebar problems in the Davis-Besse shield building may include the loss of up to 90% of the shield building walls with the collapse of outer layers of concrete and rebar. . . .” In an extensive argument entitled “Micro-cracking Present in Core-Bore Samples” (*id.* pp. 3-5) which should have been taken seriously, FENOC’s laboratory contractor, CTL Group, had detected and reported shield building micro-cracking to FENOC. Intervenors argued (*id.* pp. 4-5):

There is indisputably a connection between micro-cracking and age-related degradation. FENOC’s consultant, Performance Improvement International, tacitly admitted such in its report, ‘Root Cause Assessment: Davis-Besse Shield Building Laminar Cracking, Vol. 1’ The AMP, however, contains literally no reference to micro-cracking. FENOC neither explains why the micro-cracking is present, nor why it is not significant, nor how it is not a sign of age-related degradation cracking.

In a section of the Third Motion to Amend entitled “Radial Cracking” (pp. 5-6), Intervenors cited NRC Staff criticism that FENOC had also ignored evidence of radial cracking in core bore samples. Intervenors urged that “In effect, FENOC admits to multiple forms of cracking from multiple root causes.” But FENOC ignored the findings and asserted that the cracking had not grown worse in 2011 and 2012.

However, since August/September 2013, FENOC has had to admit that the old cracking has grown worse, and new cracking has appeared. Nonetheless, FENOC continues to downplay the significance of the newly-identified micro-cracks of 2013. The NRC Staff’s RAIs seem to suggest, however, that the 2013 micro-cracking “discovery” has serious implications for the

2017-2037 Shield Building cracking AMP. FENOC remains fixated on sub-surface laminar cracking as the only cracking problem, and consequently has taken inadequate corrective actions based upon poorly-conceived aging management plans. Even in regards to the sub-surface laminar cracking it is so focused on, FENOC has not done adequate AMPs, nor even root cause analyses, extents of conditions, safety significance determinations, nor corrective actions.

4. Intervenor Sought AMP Modifications In 2012 Contention 5 Litigation

Intervenors unsuccessfully sought far more aggressive investigation of the 2012 AMP for the shield building, including widespread deployment of impulse response tests, and other testing methods (which might have picked up the presence of the concrete void), hundreds more core samples than were promised by FENOC, and investigation across the full height and circumference of the structure. Only in 2013 did FENOC expand the technology with which it is investigating the cracking and in so doing, the additional cracking was detected. The original AMP for shield building cracking, FENOC Letter L-12-028 (April 5, 2012) (ADAMS ML12116A028) was confined to sensitivity analyses in areas of dense rebar spacing, and to development of plans as to the frequency and number of core bores, laboratory analyses and specification of areas of the shield building which would be investigated - in effect, a plan to have a plan. Intervenors objected particularly in their "Second Motion to Amend" (June 4, 2012). The Shield Building Monitoring Program, known as "B.2.43," consists of "inspections, testing or chemical analyses of the Shield Building concrete and reinforcing steel (rebar)," in which "[v]isual inspections will be performed on rebar (when exposed), core bore and core bore sample (concrete core) surfaces using plant-specific procedures implemented by inspectors qualified through plant-specific procedures." Chemical analyses, such as for carbonation and chloride degradation, were slated

by FENOC to be few and far between. The precise commitments to core bores, visual inspections, and chemical analyses are obscure; while AMPs are mentioned in the Appendix to the September 2013 SER, they are hidden from easy public access and not found in a single location.

It is, consequently, unclear whether or not the August/September 2013 revelations of new cracking initiation, and the growth of old cracking, has had any impact whatsoever on the number of sites on the shield building to be core bore tested, or the frequency with which these tests will be undertaken (annually, every other year, or once every five years).

As Intervenors pointed out at pp. 6-7 of their Third Motion to Amend (July 16, 2012) entitled "Laminar Cracking in Main Steam Line Room" (pages 6-7), "The NRC Staff pointed out (RRCA at 6) that 'The root cause report has insufficient Impulse Response documentation to conclude that laminar cracking initiated in the shoulder regions and propagated to areas of high density reinforcement, specifically in the areas of the Main Steam Line Penetrations.' "

As mentioned above, Intervenors in 2012 called for more Impulse Response testing across the Shield Building, especially at strategic locations, such as those of high-density rebar, the Inner Face, and the access openings subjected to multiple rounds of piercing (which would have clearly revealed the gap). The status of the Inner Face rebar mat, as mentioned below, is of high significance to the structural integrity of the entire Shield Building wall, given the degradation of the Outer Face rebar mat functionality due to severe concrete cracking. As mentioned, the Inner Face rebar mat's exposure to the elements for years on end calls its structural integrity into question.

5. Intervenors in 2012 and 2013 Predicted Structural Risks
From Future Cut-Throughs of the Shield Building

At ¶ 20 of "Intervenors' Motion for Admission of Contention No. 5 on Shield Building

Cracking” (January 10, 2012), Intervenor brought to the ASLB’s attention the high number of past and future maintenance-related perforations of the shield building:

Those patches are, of course, weak spots themselves, both the welded area on the inner steel containment, a mere 1.5 inches thick, as well as the “patched” area on the concrete shield building/secondary reactor containment structure, a mere 2.5 feet thick. As explained below, on January 4, 2012, David Lochbaum of UCS questioned whether the multiple holes cut in containment, and thus the multiple “patches” applied afterwards, overlapped, and how so. The “welds” on the inner steel container, and “repours” of concrete on the outer shield/secondary containment building, are themselves weak spots – perhaps repeatedly so in spots that have been involved in more than one cut-through and repair. This is a safety-significant issue that will grow all the more so with age-related degradation, and the prospect for yet one more cut-through and “repair” (patch) for the 2014 steam generator replacement project. In fact, FENOC has answered Lochbaum’s question about the overlap of the breaches. In its January 5, 2012 Camp Perry power point presentation cited previously, on Slide #18 (page 9 of the hardcopy handout), FENOC documents that indeed all of the first three breaches – 1970, 2002, and 2011 – have already overlapped, specifically in the top left-hand quadrant.

Id. pp. 21-22.

In 2013, Intervenor requested a hearing on proposed amendments to the Davis-Besse license as a precursor to swapping out the plant’s two aged steam generators. *FirstEnergy Nuclear Operating Company* (Davis-Besse Nuclear Power Station, Unit 1), 50-346-LA. In that litigation, Intervenor filed the “Expert Witness Report of Arnold Gundersen,” a declaration by an experienced nuclear power engineer who critiqued the plan (Exhibit 8 hereto). At pp. 6-7 of Gundersen’s report, he commented that with four (4) historical breaches of the shield building, Davis-Besse will surpass the entire domestic nuclear plant industry:

Conveniently, the list of experimental changes identified by FENOC does not include additional modifications applied by FENOC to cut into the Davis-Besse containment for the fourth time since it was constructed. To the best of Fairewinds’ knowledge and belief, no other containment structure has been cut open more than twice, yet Davis-Besse’s fourth containment perforation should have been identified by the 10 C.F.R. §50.59 process as problematic and therefore requiring a license amendment review and application.

6. Unexplored Inner Rebar Mat

Another deficiency in existing AMP arrangements is that they wholly neglect the shield building's inner face exposure to the elements. For several years in the 1970s, before the dome was put in place, and before the initial construction opening was closed, the inner face rebar mat and concrete were exposed to all seasons of weathering. This neglected facet of shield building history calls into question the structural integrity of the inner face rebar mat, as well. As a part of Intervenor's years-long call for more frequent testing, in more locations, using diverse testing methodologies, they have demanded comprehensive testing of the shield building's interior, its inner face.

II. The Shield Structure Is A Physical Asset Requiring Aging-Management; Review Of The Concrete Pouring/Void Problem, Recurring Cracking And Rebar Damage Must Be Addressed As Part Of GALL In Rendering The License Extension Determination

The Davis-Besse reactor shield building constitutes a "system [or] structure . . . as delineated in [10 C.F.R.] §54.4. . . subject to an aging management review" because it "perform[s] an intended function . . . without moving parts . . . [and includes] the containment [and] containment liner. . . ." 10 C.F.R. §54.21(a)(1). The shield building and the steel liner within it are among those "[p]lant systems, structures, and components" which are "[s]afety-related systems [and] structures . . . which are . . . relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions - (i) The integrity of the reactor coolant pressure boundary; (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §50.34(a)(1), §50.67(b) (2), or §100.11 of this chapter, as

applicable.” 10 C.F.R. §54.4(a)(1).

The aging of materials is important during the period of extended operation, since certain components may have been designed considering an assumed service life of forty years. *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-01-17, 54 NRC 3, 7 (2001); *Entergy Nuclear Generation Co. And Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-06-24, 64 NRC 257, 276 (2006). Part 54 requires license renewal applicants to demonstrate how they will manage the effects of aging during the period of extended operation. *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-01-17, 54 NRC 3, 8 (2001). Applicants must demonstrate how their programs will manage the effects of aging in a detailed manner with respect to specific components and structures, rather than at a more generalized system level. *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc., supra* at 64 NRC 275.

Sections 54.21 and 54.29 require that license renewal applications demonstrate by a preponderance of the evidence that aging management programs provide reasonable assurance that SSCs will continue to perform their intended functions consistent with the current licensing basis during the period of extended operation. Whether the reasonable assurance is met will be determined on a case-by-case basis using sound technical judgment. Reasonable assurance “is not susceptible to formalistic quantification (*i.e.*, 95% confidence) or mechanistic application.” *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), LBP-07-17, 66 NRC 327, 340 (2007), *aff’d* CLI-09-07, 69 NRC 235 (2009).

III. Implications Of FENOC’s Repeated Management Failings Must Be Analyzed Within the Supplemental Environmental Impact Statement

The National Environmental Policy Act (NEPA) requires disclosure of environmental

impact assumptions and the basis for agency decisions in license renewal requests. In an attempt to fulfill its NEPA obligations, the NRC has recently published a Draft Supplemental Environmental Impact Statement (hereafter DSEIS) based in part on FENOC's Environmental Report, which does not identify incremental QA failings related to the shield building, nor expanded cracking, recurring concrete voids, and substandard and/or damaged rebar as a problem. Identifying such negative events should implicate Severe Accident Mitigation Alternatives (SAMA) consideration within the DSEIS.

Under NEPA, agencies are to adequately identify and study the environmental issues which are engendered by the undertaking. *Crounse Corp. v. Interstate Commerce Comm'n*, 781 F.2d 1176 (6th Cir. 1986). The harm is complete when an agency makes a decision without sufficiently considering information NEPA requires be placed before the decision-maker and public. *Sierra Club v. Marsh*, 872 F.2d 497, 500 (1st Cir. 1989). The injury of an increased risk of harm due to an agency's uninformed decision is precisely the type of injury [NEPA] was designed to prevent." *Comm. to Save the Rio Hondo v. Lucero*, 102 F.3d 445, 448-49 (10th Cir. 1996).

The scope of the environmental review is defined by 10 C.F.R. Part 51, the NRC's "Generic Environmental Impact Statement [GEIS] for License Renewal of Nuclear Plants" (NUREG 1437 (May 1996)), and the initial hearing notice and order. *See, e.g., Vermont Yankee*, 2006 NRC Lexis 201 (ASLB 9/22/2006). The GEIS may, *prima facie*, place some environmental issues that might otherwise be germane in a license renewal proceeding "beyond the scope of a license renewal hearing." *Matter of Florida Power & Light Co. (Turkey Point Nuclear Power Plant)*, CLI-01-17, 54 NRC 3, 15 (7/19/2001). These "Category 1" issues, which are classified in

10 C.F.R. Part 51, Subpart A, Appendix B, may nonetheless be raised when a petitioner demonstrates that "there is new and significant information subsequent to the preparation of the GEIS regarding the environmental impacts of license renewal." *See Turkey Point*, 54 NRC at 10-12; *see also* 10 C.F.R. § 51.53(c)(3)(iv) (new and significant information).

NEPA imposes continuing obligations on the NRC following completion of an environmental analysis. An agency that receives new and significant information casting doubt upon a previous environmental analysis must reevaluate the prior analysis. *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989). This requirement is codified in NRC regulations at 10 C.F.R. §51.92(a). The NRC's license renewal application regulations also contain this obligation. 10 C.F.R. §51.53(c)(3)(iv) (ER must contain "any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware"). The Commission has concluded that this applicant obligation extends to new and significant information even when such information pertains to a Category 1 issue. *See Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-14, 55 NRC 278, 290 (2002). In *Vermont Yankee*, 50-271-LR (9/22/2006) at 17-27, the Commission recognized:

... that even generic findings sometimes need revisiting in particular contexts. Our rules thus provide a number of opportunities for individuals to alert the Commission to new and significant information that might render a generic finding invalid, either with respect to all nuclear power plants or for one plant in particular. In the hearing process, for example, petitioners with new information showing that a generic rule would not serve its purpose at a particular plant may seek a waiver of the rule. *See* 10 C.F.R. § 2.758; *see also* note 3, *supra*, and accompanying text. Petitioners with evidence that a generic finding is incorrect for all plants may petition the Commission to initiate a fresh rulemaking. *See* 10 C.F.R. §2.802. Such petitioners may also use the Supplemental Environmental Impact Study (SEIS) notice-and-comment process to ask the NRC to forgo use of the suspect generic finding and to suspend license renewal proceedings, pending a rulemaking or updating of the GEIS. *See* 61 Fed. Reg. at 28,470; GEIS at 1-10

to 1-11.

With respect to the issues in Appendix B, Category 2 issues, (1) the applicant must make a plant-specific analysis of environmental impacts in its Environmental Report, 10 C.F.R. §51.53(c)(3)(ii), and (2) NRC Staff must prepare a Supplemental Environmental Impact Statement (SEIS), id. §51.95(c). Contentions implicating Category 2 issues ordinarily are deemed to be within the scope of license renewal proceedings. *See Turkey Point*, 54 NRC at 11-13; *Matter of Amergen Energy Co. (Oyster Creek)*, 50-0219-LP, 2006 NRC Lexis 195 (Feb. 27, 2006).

Despite the “small” significance assigned to Category 1 “Postulated Accidents” at 10 C.F.R. Part 51, Subpart A, Appendix B, Intervenor contend that the poor quality assurance management of the structural integrity of the shield building, from concrete voids, to defective rebar, to a continuing misunderstanding of the scope and extent of the unique cracking phenomenon, should negate the generic finding in this license renewal case. Lousy QA at Davis-Besse has, itself, become an aging management problem. The potential for a severe accident might be implicated were the recurring concrete voids, or use of below-grade and/or damaged rebar allowed to be repeated in the closure of the shield building during this current steam generator swapout and any future, as-yet unanticipated, needs to perforate the shield building. A severe accident might follow upon expanded cracking and a minor earthquake or thermal/pressure event within the shield building. The analysis in the GEIS for Category 2 “Severe Accidents” requires a showing “that one or more of the criteria of Category 1 cannot be met, and therefore additional plant-specific review is required.” This review must include the taking into account of the possible effects that the 2011 concrete honeycombing may have had upon initiating or worsening

cracking in the structure.

NEPA obligates the NRC to make reasonable forecasts of the future. *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 & 2), ALAB-455, 7 NRC 41, 48, 49 (1978); *Hydro Res., Inc.*, LBP-04-23, 60 NRC 441, 447 (2004), *review declined*, CLI-04-39, 60 NRC 657 (2004). It is no longer reasonable to expect competent QA oversight from FENOC, and the 2011 concrete pour event suggests, further, that the NRC Staff cannot escape scrutiny for grossly inadequate regulatory supervision.

IV. Contention Admissibility Standards

10 C.F.R. §2.309(f)(2) factors

The presiding ALSB in this case stated at p. 12 of the Initial Scheduling Order, ASLBP No. 11-907-01-LR-BD01 (June 15, 2011) that “The Board directs that a motion and proposed new contention shall be deemed timely under 10 C.F.R. § 2.309(f)(2)(iii) if it is filed within sixty (60) days of the date when the material information on which it is based first becomes available to the moving party through service, publication, or any other means. If filed thereafter, the motion and proposed contention shall be deemed nontimely under 10 C.F.R. §2.309(c). If the movant is uncertain, it may file pursuant to both sections.”

The requirements for determining the timeliness of a new Contention 6 are set forth in 10 C.F.R. §2.309(f)(2), but 10 C.F.R. §2.309(c) is also potentially relevant, given that it provides criteria for boards to apply in deciding whether to admit “nontimely filings.” Section 2.309(f)(2) allows a new contention to be filed, following the initial docketing of a case, with leave of the presiding officer upon a showing that (i) The information upon which the amended or new contention is based was not previously available; (ii) The information upon which the amended

or new contention is based is materially different than information previously available; and (iii) The amended or new contention has been submitted in a timely fashion based on the availability of the subsequent information.

The NRC's announcement of the discovery of a new concrete void with the 2014 hydro-demolition was posted at its website on February 19, 2014. It materially differs from the previously-available information as to the 2011 resealing of the shield building, because the assumption was that the integrity of the structure (such as it was) was not compromised.

Intervenors first learned of the discovery of shield building rebar failure on March 25, 2014, from Victoria Clemons, whose Declaration accompanies this filing. They learned further details from the April 15, 2014 Request for Additional Information sent by the NRC Staff to FENOC. That correspondence was also the first time that Intervenors learned that the Staff was requesting FENOC to incorporate modifications into Davis-Besse's Shield Building Monitoring Program and the Structures Monitoring Program Aging Management Plans from the August/September 2013 discovery of expanded shield building cracking and the February 2014 discovery of broken and cracked rebar. Hence this Motion is timely brought.

Discussion of 10 C.F.R. §2.309(c) factors

If a contention based on new information fails to satisfy the three-part test of §2.309(f)(2)(i)–(iii), it may be evaluated under §2.309(c). Section 2.309(c)(1) includes eight factors that boards must balance in evaluating nontimely intervention petitions, hearing requests, and contentions. The factors are: (i) Good cause, if any, for the failure to file on time; (ii) The nature of the [petitioner's] right under the Act to be made a party to the proceeding; (iii) The nature and extent of petitioner's property, financial or other interest in the proceeding; (iv) The

possible effect of any order that may be entered in the proceeding on the [petitioner's] interest; (v) The availability of other means whereby the [petitioner's] interest will be protected; (vi) The extent to which the [petitioner's] interests will be represented by existing parties; (vii) The extent to which the [petitioner's] participation will broaden the issues or delay the proceeding; and (viii) The extent to which the [petitioner's] participation may reasonably be expected to assist in developing a sound record.

While Intervenors assert that they have filed on time, if the ASLB for some reason does not agree, then alternatively they state that they have "good cause" for late filing per §2.309(c) (1)(i). Their contention alleges serial failure of reconstruction of the shield building in a manner which would allow the structure to perform its intended purposes, a continuing and uncapped shield building concrete cracking phenomenon, an unsolved rebar breakage and cracking problem, insufficient NEPA disclosure and the associated and repeated failures of QA which have either failed to find and avert these problems, or which have fostered them (i). Intervenors have a right to raise the contention, because they are already parties to this continuing license renewal proceeding (ii).⁵ Intervenors' interest in the proceeding has been adjudicated and recognized by the ASLB previously in this case (iii). The possible effect of an order approving the Final SEIS without a much more serious and stringent SAMA which reflects the valid assumption of competent QA management of the shield building, will affect Intervenors' procedural rights under NEPA. The failure of the shield building could compromise public health and safety absent demonstration within the SER that there are Generic Aging Lessons Learned

⁵Intervenors were accorded representational standing by the Atomic Safety and Licensing Board in a Memorandum and Order issued earlier in this case. *FirstEnergy Nuclear Operating Company* (Davis-Besse Nuclear Power Station, Unit 1) LBP-11-13 at 30 (slip op.).

(GALL) from the recidivistic failure to reconstruct the shield building properly, and from the cracking, all of which must be addressed in pertinent AMPs (iv). Intervenors have no recourse to have aging-related problems at Davis-Besse mandatorily addressed outside of the pending LRA proceeding, in which they can also obtain a more comprehensive SAMA analysis, get a genuine, meaningfully recast QA program via revisions to the Davis-Besse SER, and see that the most comprehensive and sophisticated monitoring possible of the shield building cracking is installed. No alternative means of attainment of these goals exist (v). The other parties to this proceeding - FENOC and the NRC Staff - are both malefactors in the concrete void discovery - surely a major QA failing; in the formulation and implementation of the previous, inadequate AMPs; and in thorough preparation of NEPA documents (ER and DSEIS); consequently, there is no other party in the proceeding besides Intervenors who can represent Intervenors' interests (vi).

While the issues of this proceeding will be broadened by admission of Contention 6, "[t]o the extent there will be any delay, it is the price for affording the public the opportunity to litigate questions arising from an applicant's failure to comply with QA requirements;"⁶ this proceeding remains open and pending because of the ongoing revisions to the Commission's "waste confidence" determination and the NRC's regulatory activity on the latest concrete void may remain an open item for some time (vii). Finally, Intervenors' advancement of Contention 6 may reasonably be expected to assist in developing a sound record, because in the litigation of other contentions, Intervenors have capably presented evidence and argument of very complicated issues; finally the issue posed by Contention 6 raise important questions with direct implications for the safe operation of Davis-Besse during the conjectured 20-year extension period (viii).

⁶ *Detroit Edison Company* (Fermi Nuclear Power Plant, Unit 3), LBP-10-09 at 14.

In *Crow Butte Res., Inc.* (North Trend Expansion Area), CLI-09-12, 69 NRC 535, 549 (2009), the Commission upheld the Licensing Board's finding that the petitioner demonstrated "good cause" for its late filing and affirmed that "'[g]ood cause' is the most significant of the late-filing factors set out at 10 C.F.R. § 2.309(c).” *Id.* at 549 n.61. If good cause is not shown, the board may still permit the late filing, but the petitioner must make a strong showing on the other factors. *See Pac. Gas and Elec. Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 NRC 1, 5–8 (2008). Intervenors maintain that they have demonstrated ample “good cause” for Contention 6 to be admitted to this case, but if the Board disagrees, there still is a strong showing on the other §2.309(c) factors.

10 C.F.R. §2.309(f)(1) factors

Finally, the ordinary contention admissibility criteria of §2.309(f)(1) are satisfied here. An admissible contention under 10 C.F.R. §2.309(f)(1)(i)-(vi) must: (i) provide a specific statement of the issue of law or fact to be raised; (ii) provide a brief explanation of the basis for the contention; (iii) demonstrate that the issue raised is within the proceeding’s scope; (iv) demonstrate that the issue raised is material to the findings the NRC must make to support the action that is involved in the proceeding; (v) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents, that support the petitioner’s position and upon which the petitioner intends to rely at hearing; and (vi) show that a genuine dispute exists on a material issue.

§2.309(f)(1)(i) Statement of the Contention

The improper concrete pour in 2011, discovered in the form of a 25' long void, or air space in the reconstructed area of the Davis-Besse shield building where a 2011 maintenance

access had been hydrologically cut is at least the second known concrete void at the plant. This “honeycombing” problem is complicated by the contemporaneous February 2014 discovery of broken and damaged rebar in the vicinity of the void. These shield building reconstruction problems coincide with the identification of continued and expanding concrete laminar and other cracking within the walls of the plant’s shield building, which was verified by a FENOC investigation during August/September 2013. These problems represent ongoing aging problems compounded and intertwined with management failures; they are unmentioned and undocumented within the DSEIS for Davis-Besse; they may be interrelated or synergistic; they each are preceded at Davis-Besse; and they must be more intensely subjected to Aging Management Plans (AMPs) than has heretofore happened. The Draft and Final SEIS documents must be reconfigured in recognition of the lax management and QA failings, and the failings of the physical components of the shield building so that the true nature of these historic problems can be revealed and analyzed in the NEPA documents and in the severe accident mitigation alternatives analysis (SAMA). Relevant AMPs must be redrawn to anticipate and account for the implications or insufficient and irregular aging management of the shield building. Also, the Safety Evaluation review and overall SE Report must be rewritten to articulate modified AMPs and QA procedures which will reasonably assure that the plant can operate safely between now and April 22, 2017, and during the extended operating license period from 2017 until 2037.

§2.309((f)(1)(ii) Brief Explanation of the Contention Basis

The shield building is a critical physical asset which ensures safe, unimpeded functioning of the Davis-Besse nuclear reactor. It is subject to aging management review. The recurring concrete void problem, cracking problem and rebar problem have or may compromise important

structures and safety features at the plant and have not been properly disclosed to the public under NEPA. The cracking problem has proven not to be susceptible of management under AMP commitments in place since 2012. FENOC has a history of major QA management disappointments, such as the 2002 corrosion hole in the reactor lid. There is no evidence in the Safety Evaluation Report (SER) nor the Severe Accident Mitigation Analysis within the DSEIS which document the serial QA and management failings at Davis-Besse and the continuing and unresolved cracking of the shield building or which account for them in a conscious effort to enhance the margins of safety at the plant and reduce the potential for accidents. There is no Generic Aging Lessons Learned discussion of the concrete void recurrence in the SER, nor in the DSEIS. The NRC Staff has called upon FENOC to modify its aging management plans for the shield building.

§2.309(f)(1)(iii) Explanation of How Contention Falls Within Scope of Proceeding

The physical deterioration and related poor management oversight of the shield building by FENOC fall well within the scope of this license renewal case. This issue “focuses on ‘the potential impacts of an additional 20 years of nuclear power plant operation,’ not on everyday operational issues.” *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 & 3), CLI-06-4, 63 NRC 32, 37 (2006) (quoting *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 & 3), CLI-04-36, 60 NRC 631, 637-38 (2004)); *see also Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-08-22, 68 NRC 590, 598-600 (2008).

The scope of a safety review for license renewal is limited to (1) managing the effects of aging of certain systems, structures, and components; (2) review of time-limited aging evalua-

tions; and (3) any matters for which the Commission itself has waived the application of these rules. *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-08-22, 68 NRC 590, 598-600 (2008); *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), LBP-01-6, 53 NRC 138, 152 (2001). *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-06-24, 64 NRC 257, 276, 277 (2006). The NRC Staff has required AMP arrangements for the Davis-Besse shield building since 2012, and is now requesting modifications to conform to apparent further deterioration and mismanagement of reconstruction after maintenance openings in its walls and worsened cracking as revealed in August/September 2013.

Three general categories of SSCs “fall within the ‘initial focus’” of license renewal review as outlined in 10 C.F.R. § 54.4. *Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC __ (June 17, 2010) (slip op. at 7). Section 54.21 provides standards for license renewal applicants to determine which of the components within the three general categories defined in § 54.4 require aging management review. *Id.* Only those SSCs that perform “an intended function” as defined by § 54.4 require aging management review. *Id.* With respect to each structure, system, or component requiring aging management review, “a license renewal applicant must demonstrate that the ‘effects of aging will be adequately managed so that the *intended function(s)* [as defined in § 54.4] will be maintained consistent with the CLB for the period of extended operation.’” *Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC __ (June 17, 2010) (slip op. at 8) (quoting 10 C.F.R. 54.21(a)(3)) (emphasis in original). While some SSCs perform more than one function, the license renewal application is only required to

provide reasonable assurance that SSCs “will perform such that the *intended functions*, as delineated in §54.4, are maintained consistent with the CLB.” *Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC __ (June 17, 2010) (slip op. at 17) (quoting License Renewal Rule, 60 Fed. Reg. 22,461, 22,479 (May 8, 1995)) (emphasis in original).

§2.309((f)(1)(iv) How the Issues Raised Are Material to the Findings the NRC Must Make

The concrete void, flawed rebar and cracking problems at Davis-Besse have occurred before. FENOC has previously assembled AMPs related to management of the cracking issue. There was a concrete void construction error in 2002. Taken with other major QA failings during FENOC’s aegis, QA management has become a feature which requires aging management. The expanding multiplicity of shield building cracks and the potential for damaged rebar throughout the structure also necessitate AMP commitments. Until there are thorough understandings between FENOC and the NRC Staff of the sources and causations of the shield building cracks coupled with a realistic commitment to handle the likelihood of continued deterioration of the structure, it will prompt safety concerns.

The ASLB also must approve a competently-written SAMA analysis under NEPA. A complete, forthcoming Supplemental Environmental Impact Statement is legally pertinent and material to the license renewal findings sought by FENOC in this proceeding.

§2.309((f)(1)(v) Concise Statement of Alleged Facts Supporting Motion

On February 14, 2014, FirstEnergy notified the Nuclear Regulatory Commission that the utility had discovered an extensive air pocket or gap of concrete in the Davis-Besse shield building’s inner wall on February 13.

The "Preliminary Notice of Event or Occurrence" ("PNO") which first appeared in the NRC's public-access ADAMS library on February 19, 2014 says this about the discovery:

On 02/14/2014, an unfilled area was discovered in the concrete along the top of the shield building construction opening on the annulus side. The condition was discovered during the current steam generator replacement outage, and is likely due to not completely repouring the shield building wall opening in 2011. Analysis shows this condition is bounded by previous calculations that demonstrate the containment function is maintained such that the protection of the health and safety of the public was not in question. Further analysis is planned to reconfirm previous calculations.

The NRC Resident Inspector has been notified.

PNO, Exhibit 1 hereto. According to an account in the Toledo Blade newspaper, after cutting a hole through the shield building to move the new steam generators in and take the old ones out, workers noticed a large void on the building's inner wall. The flaw runs the 25-foot length of a cut made through the building's wall in fall 2011, when a new reactor head was brought in and the old one was removed. "Davis-Besse Had Air Gap in Shield Building," February 15, 2014 (Exhibit 2). The void varies in width from six to 12 inches. The depth of it is something less than the 2.5-foot thickness of the concrete-and-steel structure; there is no evidence of the flaw on the structure's exterior. *Id.*

According to statements by an NRC staff member at an NRC-sponsored public comment session about the Davis-Besse Draft Supplement Environmental Impact Statement on March 25, 2014, the void was caused by FENOC workers or contractors having left forming devices in the concrete in 2011. The forms are used to shape the concrete pour inside the rebar skeleton of the shield building when a temporary access opening is blasted through the shield building. In 2011, a perforation was made in the shield building for purposes of replacement of a corroded head on the reactor within the building. The NRC's David Hills told Victoria Clemons, a member of the public, that FirstEnergy "had decided to leave the forms on the inside wall because they knew

they would have to cut through them again in 2 years.” See Exhibit 3, Declaration of Victoria Clemons, ¶ 4. He further explained that “The rebar was damaged during the cutting of this opening [2014]” and, “The hydro saw damaged the rebar.” Mr. Hills explained further, “The reason seems to be that there is a problem at the area of the splice of the rebar from the last [2011] cut.” He explained that the rebar is crimped and clamped and that there appears to have been stress on the rebar splice, and that it is a problem “unseen” before. *Id.* ¶ 8.

Unfortunately, this is not the first time that concrete forms have been left in place within the shield building wall and have caused voids in the pouring of concrete. It happened after a shield building through-wall cut in 2002 to replace the terribly-corroded reactor lid. In the October 18, 2002 “Minutes of Internal Meeting of Davis-Besse Oversight Panel” (Exhibit 4 attached), at p. 4/14 of .pdf, the oversight panel stated:

The containment vessel re-weld has been reviewed and accepted by the licensee and the ANI. . . .

These items are being addressed after being called to the licensee’s attention. The concrete pour to restore the shield building revealed *at least two surface voids when the forms were stripped. One void measured about 5" by 5" by 12"* - information on the size of the other was not available.

(Emphasis supplied).

And in the October 29, 2002 “Minutes of Internal Meeting of Davis-Besse Oversight Panel” (Exhibit 5 attached), at p. 4/13 of .pdf, this *ad hoc* committee noted:

Surface voids occurred in the concrete pour to restore the shield building which had not been resolved at the conclusion of the inspection. Overall, there were no “findings” identified, but several observations were made.

(Emphasis supplied).

The reactor shield building has not just a troubling history, but evidently a disquieting future, of multiple laminar and other concrete cracks. Intervenors in 2012 proffered multiple

filings following the observation of cracking in the shield building concrete in 2011 during the reactor head replacement project at Davis-Besse. They meticulously documented concerns that the proliferation of different types of cracks may have commenced in the 1970's before the plant had opened, and that their spreading and frequency of occurrence may be increasing with the passage of time. *See, generally*, "Intervenors' Motion for Admission of Contention No. 5 on Shield Building Cracking," and successive amendments and supplements: "Intervenors' Motion to Amend 'Motion for Admission of Contention No. 5'" (Feb. 27, 2012) ([hereinafter First Motion to Amend]; "Intervenors' Motion to Amend and Supplement Proposed Contention No. 5 (Shield Building Cracking)" (June 4, 2012) (hereinafter Second Motion to Amend); "Intervenors' Third Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking)" (July 16, 2012) (hereinafter Third Motion to Amend); "Intervenors' Motion to Amend and Supplement Proposed Contention No. 5 (Shield Building Cracking)" (July 23, 2012) (hereinafter Fourth Motion to Amend); "Intervenors' Fifth Motion To Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking)" (Aug. 16, 2012) (hereinafter Fifth Motion to Amend). Intervenors incorporate these filings and their accompanying exhibits fully herein as though rewritten.

The ASLB flatly rejected Intervenors' Contention No. 5. Memorandum and Order (Denying Motions to Admit, to Amend, and to Supplement Proposed Contention 5), LBP-12-27.

But in September 2013, additional concrete cracking which had not hitherto been identified was discovered in the shield building. On September 20, 2013, a Preliminary Notification of Event appeared in the NRC's ADAMS cache which stated as follows:

On August 26, 2013, the licensee was performing examinations of core bores in the shield building in accordance with the commitments First Energy Nuclear Operating

Company (FENOC) made to the NRC. The commitment is for long term monitoring of the shield building which was documented in the NRC's Confirmatory Action Letter dated December 2, 2011 (ADAMS ML11336A355). The examinations performed in 2011 and 2012 showed no additional cracks. *This year, using new instrumentation with enhanced capabilities, plant workers identified a crack that had not been seen before. To date, the core bore examinations revealed seven previously unidentified cracks.* FENOC has taken steps to reevaluate 43 core bores and will be looking at the remaining 39 going forward.

(Emphasis supplied). PNO, Exhibit 6.

In a formal Request for Additional Information ("RAI") dated April 15, 2014 (ADAMS No. ML14097A454), the NRC Staff said that "during a subsequent routine baseline inspection in August/September 2013, FENOC discovered several (about 15) cracks on the Davis-Besse shield building that were not identified previously." The Staff continued:

Further, the NRC staff understands that in the ongoing February 2014 refueling outage, during hydro-demolition activities for creation of a construction opening in the Davis-Besse shield building to support the scheduled steam generator replacement, FENOC learned that several (at least 26) sections of steel reinforcement (rebar) had been broken and/or cracked in the construction opening area. Each section was apparently broken very close to the mechanical splice coupling used to splice the rebar during the head replacement outage in 2011.

Using characteristic understatement, the NRC Staff thus establishes that when the shield building was sealed shut following reactor head replacement in 2011, a stretch of the shield building wall which was 26-rebar-sections in length was not anchored. The splices which joined the iron rebar rods together in the area of the shield building where the skeletal structure of the building was reconstructed were cracked or broken at the time the concrete was poured to complete the re-closure. After the 2011 resealing of the shield building, Davis-Besse operated at full power for over two years. While the information on the concrete voids is sparse and a bit unclear, it is legitimate to wonder if there is any relationship between the concrete void found along the top of the 2011 construction opening, and the cracked and broken rebar, also located within the

perimeter of the 2011 construction opening.

According to the April 15, 2014 RAI, FENOC has taken additional core samples of concrete and is performing evaluations and testing to determine the root cause of the cracks and their apparent progression. A root cause analysis was performed in February 2012; a second, revised analysis was completed in April 2012. The 2014 analysis is the third.

One of the great historic QA failings at Davis-Besse (though by no means the only one) occurred in 2002 when a jagged corrosion hole the size of a loaf of bread was discovered in the reactor head. Of that discovery, NRC's Office of Inspector General reported that NRC itself – not only FENOC – had placed profits over safety, allowing the reactor pressure vessel lid to come within weeks, or even days, of rupturing due to deep corrosion. Had the lid breached, a “Loss-of-Coolant-Accident” or “LOCA” would have resulted, very possibly followed by a core melt-down, and potentially a catastrophic radioactivity release into the environment. The Government Accountability Office later called it “the most serious safety issue confronting the nation's commercial nuclear power industry since Three Mile Island.” The Department of Justice said that FirstEnergy admitted having “knowingly made false representations to the Nuclear Regulatory Commission (NRC) in the course of attempting to persuade the NRC that its Davis-Besse Nuclear Power Station was safe to operate beyond December 31, 2001.” <http://kucinich.house.gov/News/DocumentSingle.aspx?DocumentID=272516>. In an editorial published on October 12, 2011 – just two days after Bechtel and Sargent & Lundy subcontractors discovered shield building cracking, but still before it had been revealed to the public and the media – the *Toledo Blade* ran an editorial entitled “Nuclear watchdog needed.” They wrote: “The 2002 reactor-head event cost FirstEnergy a record \$33.5 million in fines for lying to the government. The former

head of the U.S. Department of Justice's environmental crimes unit declared FirstEnergy showed 'brazen arrogance' and 'breached the public trust.'" <http://www.toledoblade.com/Editorials/2011/10/12/Nuclear-watchdogneeded.html>.

CONCLUSION

The generic aging lesson learned (GALL) by the public respecting the shield building and management of its reconstruction when patching must be performed is that FENOC appears incapable of learning lessons. Considerable public interest was aroused in 2011 when shield building cracking was found. Although the controversial February 2012 root cause analysis was still months away from completion in Fall 2011, FENOC proceeded to order the hasty resealing of the shield building in November. At ¶ 23 of Intervenors' Motion for Admission of Contention No. 5 on Shield Building Cracking, at p.24, Intervenors stated:

Of additional concern is that the pour of new concrete to re-seal the shield building foreclosed significant investigatory options for examination and further analysis of the cause, extent, and significance of the cracks, such as direct visual examination, direct measurement, direct sampling, etc. In effect, evidence of the cracking has been buried under inches or feet of concrete, due to FENOC's rush to re-start, and NRC's letting them get away with it.

In fact, in February 2014 the public has learned that, by leaving in place metal forms in late 2011, FENOC had concealed a 25-foot-long, 6 to 12 inch wide, air space or gap of yet-unknown depth through the 30-inch-thick Shield Building wall. The metal forms prevented visual examination of the gap. Thus, not only did the rushed resealing of the access opening involve an incomplete concrete pour – it also prevented visual examination and discovery of the very gap resulting from the rush-job. Thus, Davis-Besse operated at full power for over two years – from early December 2011 to Feb. 1, 2014 – with a significant void space in its shield building wall. Any effects on containment safety margins have yet to be adequately determined.

The public's faith in NRC regulation of FENOC's categorically lax QA management has been misplaced, and any presumption of intense regulatory scrutiny because of the cracking has, so far, been wrong. The February 2014 concrete void was the result of terrible oversight of sloppy workmanship in 2011. QA mismanagement in the form of the repeated honeycombing of the shield building, the lack of a comprehensive understanding of causation of shield building cracking, and serially cracked and broken rebar join other sensational events in Davis-Besse's operational history. These events point to the conclusion that QA mismanagement is, itself, an aging-related feature at Davis-Besse which must be addressed as a pernicious problem because of its potential to cause further difficulties and operational dangers. Strict and explicit plans for remediation of the QA management problem must be drawn up and analyzed both within the Safety Evaluation Report and the DSEIS discussion of severe accident mitigation alternatives (SAMA) for the plant. Much more intensive modifications to the Shield Building Monitoring Program and the Structures Monitoring Program Aging Management Plans (AMPS) are unquestionably also obligatory now.

At ¶ 25 of *Intervenors' Motion for Admission of Contention No. 5* (p.26), *Intervenors* noted:

If the shield building loses its ability to perform its safety- and security-related functions, Davis-Besse should be immediately shut down, of course. But this very risk, the potential loss of shield building safety and security function over time, is exactly the kind of analysis that should be included in FENOC SAMA analyses regarding the Davis-Besse license extension. Such analyses have not been done. Similarly, the potential for Davis-Besse's cracked shield building to cause its early retirement, before its current license expiration in 2017, or before its extended 2037 license expiration proposed by FENOC, should be addressed by FENOC's reliability analyses, and its energy alternatives analyses. For, if Davis-Besse's days are numbered, due to its cracked shield building, then *Intervenors'* wind, solar, and compressed air energy storage contentions increase in merit. FENOC, and the Region of Interest as a whole, should be preparing now to replace Davis-Besse and the NRC should reflect such a reality through its own independent

analysis in the Draft Environmental Impact Statement on the license extension proposal. FENOC's SAMA analyses assume a safe, sound shield building capable of fulfilling its containment function. But the severe cracking known since October 2011, combined with wall gaps in the repeatedly sealed access openings in 2002 and 2011, critically undermines all optimistic assumptions.

As Intervenors have maintained throughout this license extension proceeding, Davis-Besse's future, from AMPs to SAMA analyses, requires fundamental re-evaluation.

Mark Cooper, an energy economist at Vermont Law School, warned on April 10, 2014 that nuclear utilities must plan for replacement power – as from efficiency upgrades and development of renewable sources of electricity – in advance of the inevitability that atomic reactors will one day close, lest the stability of our electric grid lurches from crisis to crisis. In July 2013, Cooper identified Davis-Besse as one of a dozen reactors at high risk of near-term shut down, due to such factors as economics (cost, old age, stand alone status, and a 25-years-or-less future even if it gets an extension), operational factors (lack of reliability, long-term outages), and as well, multiple safety factors.⁷

A petitioner does not have to prove contentions at the admissibility stage. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004). The factual support required is “a minimal showing that material facts are in dispute.” All that is needed at this juncture is “alleged facts” and the factual support “need not be in affidavit or formal evidentiary form and need not be of the quality necessary to withstand a

⁷See Exhibit ES-1: Retirement Risk Factors of the Nuclear Fleet, page iv, posted online at <http://216.30.191.148/071713%20VLS%20Cooper%20at%20risk%20reactor%20report%20FINAL1.pdf>.

summary disposition motion.” *First Energy Nuclear Operating Company* (Davis-Besse Nuclear Power Station, Unit 1), ASLBP No. 11-907-01-LR-BD01, LBP-11-13 at 17 (April 26, 2011).

Here, the evidence in support of admission of Contention 6 is considerable, and easily surpasses the threshold to be accepted for adjudication.

WHEREFORE, Petitioners pray the Atomic Safety and Licensing Board admit Contention 6 for full adjudication.

Executed in Accord with 10 C.F.R. § 2.304(d)

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CONSULTATION PURSUANT TO 10 C.F.R. § 2.323(b)

Undersigned counsel hereby certifies that he made a sincere attempt to consult with opposing counsel in an effort to resolve the concerns raised in the foregoing Motion. Counsel for the NRC Staff and FirstEnergy Nuclear Operating Company both indicated during a meet-and-confer phone conference on April 14, 2014 that they did not have sufficient information to determine whether to support the Motion, or not, and so each stated that they would oppose it.

Executed in Accord with 10 C.F.R. § 2.304(d)

Terry J. Lodge

Counsel for Intervenors

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of	)	Docket No. 50-346-LR
FirstEnergy Nuclear Operating Company	)	April 21, 2014
Davis-Besse Nuclear Power Station, Unit 1)	
)	
)	

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "MOTION FOR ADMISSION OF CONTENTION NO. 6 (SHIELD BUILDING CONCRETE VOID, CRACKING AND BROKEN REBAR DISCOVERIES)" was deposited in the NRC's Electronic Information Exchange this 21st day of April, 2014.

Executed in Accord with 10 C.F.R. § 2.304(d)

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Exhibit 1

**Preliminary Notice of Event or Occurrence,
February 19, 2014**

PRELIMINARY NOTIFICATION – REGION III

February 19, 2014

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE – PN-III-14-003

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region III staff on this date.

Facility

Davis-Besse Nuclear Power Station
FirstEnergy Nuclear Operating Company
Oak Harbor, OH
Docket: 50-346
License: NPF-3

Licensee Emergency Classification

☐ Notification of Unusual Event
☐ Alert
☐ Site Area Emergency
☐ General Emergency
☒ Not Applicable

SUBJECT: DAVIS-BESSE SHIELD BUILDING VOIDS

On February 14, 2014, the licensee informed the NRC that an unfilled area was discovered in the concrete along the top of the Davis-Besse shield building construction opening on the internal building side. The condition was discovered during the current steam generator replacement outage. This issue does not represent an immediate safety concern. The plant is currently shutdown and the reactor vessel is defueled. The licensee will have to resolve this issue before the plant can return to service.

The unfilled space was found in the 2.5 foot thick free-standing, reinforced concrete shield building. It is separate from the 1.5 inch thick steel containment vessel. The containment vessel and shield building are separated by a 4.5 foot annulus/hollow space. The shield building protects the containment vessel and the reactor from impact by external objects during extreme weather events such as tornadoes.

An opening was cut in the shield building and the containment vessel in 2011 for the replacement of the reactor vessel head. At the completion of those activities, the openings in the containment vessel and in the shield building were closed and the walls restored. Restoration of the wall of the shield building involved replacing reinforcement steel bars (rebar) and pouring concrete that encased the rebar. The NRC will review the licensee's analysis of the implications of discovering the unfilled space near the top of the shield building opening.

NRC inspectors were immediately notified of this issue on February 14, 2014, and will closely monitor the plant's actions and analyses. Currently, NRC inspectors are on-site reviewing and conducting their own independent inspection activities associated with the licensee's replacement of the plant's steam generators. The NRC will supplement these inspectors as necessary to evaluate the licensee's current and planned analyses and corrective actions. The NRC will make sure the licensee corrects the issue and will thoroughly examine the licensee's repairs prior to restart of the plant.

This preliminary notification is issued for information only. State officials have been informed. The information presented herein has been discussed with the licensee and is current as of February 19, 2014, 6:25 a.m. (EDT).

ADAMS Accession Number: ML14050A026

CONTACT: David Hills, DRS
630/829-9733

Jamnes Cameron, DRP
630/829-9833

Exhibit 2

**Toledo Blade article, "Davis-Besse Had Air
Gap in Shield Building," February 15, 2014**

THE BLADE

One of America's Great Newspapers

Davis-Besse had air gap in shield building

FirstEnergy found flaw while replacing 2 steam generators

BY TOM HENRY
BLADE STAFF WRITER



The Nuclear Regulatory Commission is reviewing how FirstEnergy responds to the air pocket in Davis-Besse's shield building.

THE BLADE

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OAK HARBOR, Ohio — Nobody knows why, but there apparently was a problem sealing up Davis-Besse nuclear power plant's shield building after the plant's worn-out reactor head was replaced in fall 2011.

FirstEnergy Corp. notified the Nuclear Regulatory Commission at 11:14 a.m. Friday that the utility discovered an extensive air pocket or gap of concrete in the shield building's inner wall late Thursday night. The discovery was made while the nuclear plant was offline and in the early stages of a \$600 million project to replace the plant's two original steam generators — major pieces of equipment that create steam so the plant's turbine generator can spin and, thus, make electricity.

After cutting a hole through the shield building to move the new generators in and take the old ones out, workers noticed a large void on the building's inner wall.

The flaw runs the 25-foot length of a cut made in fall 2011 when the new reactor head was brought in and the old one was removed, said Jennifer Young, a spokesman for FirstEnergy Nuclear Operating Co.

The void varies in width from six to 12 inches. The depth of it is something less than the 2.5-foot thickness of that mostly concrete-and-steel structure, because there is no evidence of the flaw on the structure's exterior, Ms. Young said.

"It's probably an air pocket that got in there when the concrete was [last] poured," Ms. Young said.

In its notification to the NRC — scheduled to be made public on the agency's Web site (nrc.gov) on Tuesday — the utility characterized the structural defect as an "unfilled area" that "is likely due to not completely repouring the shield building wall opening in 2011."

The gap did not affect plant operations.

FirstEnergy engineers are of the belief the gap was not big enough to have compromised the structural integrity of the shield building, which is supposed to protect Davis-Besse — especially from outside threats ranging from tornadoes to plane crashes.

"We believe it did not impact the building's ability to meet its function," Ms. Young said.

The NRC is not ready to go that far.

"This is something we have certainly not formed any conclusions about, the 'as-is' conditions of the shield building," Viktoria Mitlyng, NRC spokesman, said of the building's strength. "That is the question we expect the company to provide us an answer with, and we will assess it before making a determination."

The federal agency now plans to send more inspectors to the site, to augment its team already assembled there for the steam generator replacement project. Additional manpower will include engineers who specialize in nuclear materials and structures, Ms. Mitlyng said.

She said the investigation is more than anecdotal: FirstEnergy will be sealing up the same structure again once the new steam generators are installed.

FirstEnergy does not want a repeat of what happened, Ms. Young agreed.

The NRC "will be reviewing how the plant responds to this," Ms. Mitlyng said.

"They will have to address this void before they start up. We will be evaluating how they handle the concrete pouring and the conditions to make sure these conditions do not recur," she said. "We need to understand what happened and why and what possible implications there might have been."

Ms. Mitlyng said she was not sure if NRC inspectors were on hand when the concrete was poured in 2011.

Davis-Besse's planned restart in fall 2011 was delayed until early 2012 because of cracks in the same structure.

FirstEnergy believes those are unrelated to the large void in concrete that was just discovered. Utility engineers previously attributed them to weather impacts from the Blizzard of '78.

The NRC has no reason to believe they're related.

"It doesn't appear to have anything to do with it," Ms. Mitlyng said.

FirstEnergy is having engineers pore over data to see how it occurred to avoid a repeat when the structure is sealed back, Ms. Young said.

The utility will move forward with replacing the plant's two original steam generators in tandem with its investigation into the missing concrete.

Steam generators are like heat exchangers, and are among the biggest — and among the most important — pieces of plant equipment. They create super-intense steam that spins the turbine generator that makes electricity.

The original steam generators still work, but needed to be replaced to keep the plant viable. The utility hopes to get a 20-year extension and keep Davis-Besse operating through April, 2037.

FirstEnergy cut within the same footprint to begin the process of replacing the steam generators, Ms. Young said.

Some of the shield building's rebar needs to be replaced. It appears to have been damaged by the cut made through the wall, she said.

"There's a high level of confidence [the rebar damage] was a direct result of the hydro cut," Ms. Young said.

The concrete and steel are cut with a high-pressure water drill to minimize damage. A quarter-inch steel form was left in place as backing to further help minimize damage from the cut, Ms. Young said.

There is a 4-foot gap of air space between the reactor's primary containment — a solid, 1.5-inch-thick canister of carbon steel — and the outer shell.

Davis-Besse is one of two Ohio nuclear plants. It is located in Ottawa County, 35 miles east of Toledo and along the Lake Erie shoreline. The other plant is the Perry station east of Cleveland, also along Lake Erie.

Both are owned and operated by Akron-based First-Energy.

Contact Tom Henry at: thenry@theblade.com or 419-724-6079.

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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of:)	Docket No. 50-346-LR
FirstEnergy Nuclear Operating Company	)	April 14, 2014
Davis-Besse Nuclear Power Station, Unit 1)	

DECLARATION OF VICTORIA CLEMONS

Under penalty of perjury, I, Victoria Clemons, declare as follows:

1. I am a citizen of the State of Ohio, am over eighteen (18) years of age and am not under a disability.
2. On March 25, 2014, I attended the afternoon session of a Nuclear Regulatory Commission-sponsored public comment session on the draft Supplemental Environmental Impact Statement for the renewal of the operating license for the Davis-Besse Nuclear Power Station, Unit 1. This took place at Camp Perry, a military base near Davis-Besse.
3. Prior to commencement of the comment session, I approached NRC Staff person David Hills, who was present as part of the Staff for the session, and asked if I could speak with him about the concrete void or "honeycomb" discovered in February 2014 in the Davis-Besse shield building wall. Mr. Hills was identifiable by me from a tag he was wearing. I was interested in having the NRC hold a public meeting on the honeycombing just as the agency had done in 2012 after discovery of laminar cracking of the shield building.
4. After explaining the procedure and the cutting of the wall, Mr. Hills said that "Two years ago, in 2011, when the concrete molds or forms were removed they (FirstEnergy) found

gaps on the outer wall of the shield building” He then explained “that the hole/gap on the outside of the wall was filled and repaired,” and that, “they (FE) had decided to leave the forms on the inside wall because they knew they would have to cut through them again in 2 years.”

5. I was surprised to hear this. I asked him, “Wasn’t that a red flag?” and “Shouldn’t they have checked the inside wall then?” I asked, “Who inspected the wall?” and whether the NRC had inspected it.

6. Mr. Hills responded “Yes, it should have been a red flag. We are looking at that as well in the root cause and the procedures that followed. Who and how it was inspected.” Mr. Hills said that “We (NRC) are asking why they did not check the inside wall after finding the outside void.”

7. I remember him then qualifying or justifying his statement by saying, “Maybe they determined it was safe ... because they did determine it to be safe now,” or words to that effect.

8. Mr. Hills went on to explain the problems with the rebar: “The rebar was damaged during the cutting of this opening [2014]” and, “The hydro saw damaged the rebar.” Mr. Hills explained further, “The reason seems to be that there is a problem at the area of the splice of the rebar from the last cut.” He explained that the rebar is crimped and clamped and that there appears to have been a stress on the rebar splice, and that it is a problem “unseen” before. He said that the NRC “would be deciding on how to proceed in the future and before closure [of the shield building].”

Victoria A. Clemons
Victoria Clemons

4/14/2014
Date

Exhibit 4

**Minutes of Internal Meeting of Davis-Besse Oversight Panel,
October 18, 2001**

October 18, 2002

MEMORANDUM TO: Davis-Besse Nuclear Power Station IMC 0350 Panel

FROM: John A. Grobe, Chairman, Davis-Besse Oversight Panel */RA/*

SUBJECT: MINUTES OF INTERNAL MEETING OF THE DAVIS-BESSE
OVERSIGHT PANEL

The implementation of the IMC 0350 process for the Davis-Besse Nuclear Power Station was announced on April 29, 2002. An internal panel meeting was held October 1, 2002. Attached for your information are the minutes from the internal meeting of the Davis-Besse Oversight Panel and the Action Items List.

Attachments: As stated

cc w/att: S. Rosenberg, OEDO
W. Dean, NRR
A. Mendiola, NRR
D. Pickett, NRR
S. Bloom, NRR
J. Dyer, RIII
J. Caldwell, RIII
G. Grant, RIII
S. Reynolds, RIII
C. Lipa, RIII
D. Hills, RIII
L. Collins, RIII
D. Passehl, RIII
D. Simpkins, RIII
J. Jacobson, RIII
S. Burgess, RIII
R. Lickus, RIII
S. Thomas, RIII
M. Holmberg, RIII
J. Collins, RIII
DB0350

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C. Lipa, RIII
D. Hills, RIII
L. Collins, RIII
D. Simpkins, RIII
J. Jacobson, RIII
K. Riemer
S. Burgess, RIII
R. Lickus, RIII
S. Thomas, RIII
M. Holmberg, RIII
J. Collins, RIII
DB0350

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OFFICE	RIII	RIII	RIII	
NAME	Bjorgensen/kg/RA/ <i>Passehl Acting for/</i>	CLipa	JGrobe	
DATE	10/14/02	10/14/02	10/14/02	

OFFICIAL RECORD COPY

MEETING MINUTES: Internal IMC 0350 Oversight Panel Meeting
Davis-Besse Nuclear Power Station

DATE: October 1, 2002

TIME: 1:00 p.m. Central

ATTENDEES:

J. Grobe	K. O'Brien
W. Dean	K. Riemer
S. Thomas	M. Holmberg
T. Mendiola	J. Hopkins
B. Jorgensen	D. Passehl
J. Jacobson	

Agenda Items:

1. Reports from Staff

Report by Ken Riemer on Special Inspection to Assess Occupational Dose

A special inspection was chartered under MC 8.3 on Sept. 27 to assess a credible potential for an occupational over-exposure. This occurred during the February 2002 steam generator work, and involved the same (contractor) individuals who were involved in the spread of discrete radioactive particles from Davis-Besse into numerous unrestricted areas, which was the subject of a previous special inspection. The concern is the apparent internal uptake of discrete particles which contained transuranic isotopes of americium, curium and plutonium. Dose consequences can be high from small quantities of inhaled or ingested material. The previously recognized failure to provide job controls which were commensurate with known conditions appears to have contributed to the potential over-exposure, and the response by licensee management (*reactive and narrowly focused*) was similar. Several licensee actions came only with some NRC prompting. The inspection team arrived onsite and held its "entrance" meeting on September 30. The team is expected to be on-site for two weeks, with a tentative "exit" meeting date of October 16. This will be a public meeting.

The Davis-Besse Oversight Panel discussed whether and how to incorporate an assessment of the radiation protection program into Panel oversight activities. Options ranged from looking at the R-P program as one aspect of Ken O'Brien's Program Compliance inspection, to bringing the entire R-P program under the 0350 process. The Panel deferred a final decision until after the licensee has developed its action plan and after the receipt and review of the report of the special inspection team. The licensee will be informed of the Panel's view that corrective actions on this issue belong on the re-start checklist.

In a related matter, the Panel discussed a request from the State of Ohio, received earlier on October 1, to be permitted to accompany and observe the Special Inspection. Ken Riemer was assigned to follow up with Roland Lickus and the State to make appropriate arrangements.

Report by Ken O'Brien on the "Program Compliance" Inspection

The licensee's "discovery" phase (to be followed by an "implementation" phase) has fallen behind schedule, with only the Boric Acid Control Program and the Corrective Action Program elements through "discovery." The inspectors have reviewed both of the completed segments and have identified some deficiencies relating to the licensee not performing its activities as described in the "building block" program. Further, the management review of the completed activities appeared superficial, with the outputs both accepted and "closed" after a few minutes of discussion. Work on additional program areas (operating experience, ISI and plant modifications) remains to be reviewed. The team will be back on-site the week of October 7 and again (projected) the week of November 18.

Report by Mel Holmberg and John Jacobson on Containment Restoration

The containment vessel re-weld has been reviewed and accepted by the licensee and the ANI. John Jacobson has examined the radiographs and reported the welds were of good overall quality and the interpretations generally conservative, but some indications were found on the radiographs which the licensee had neither noted nor evaluated. These items are being addressed after being called to the licensee's attention.

The concrete pour to restore the shield building revealed at least two surface voids when the forms were stripped. One void measured about 5" by 5" by 12" - information on the size of the other was not available. The Panel decided to set up a conference call among RIII, NRR and the licensee once the licensee has determined an appropriate path forward. Mel Holmberg will coordinate the call.

Site activities (RIO)

Scott Thomas briefed the Davis-Besse Oversight Panel on current site activities noting the following:

- The licensee's activity and re-start schedule continues to appear to be slipping, but there has been no public announcement by the licensee regarding new target dates.
- The special inspection team to review the potential occupational over-exposure due to inhalation/ingestion of transuranic isotopes is on-site and active.
- John Jacobson is on-site working on both his team inspection assignments and looking at the containment weld NDE.
- Both emergency diesel-generators remain "inoperable" but available. The modification of the exhaust system to eliminate the vulnerability to tornado missiles is targeted to be complete by October 23.
- Startup transformer No. 2 (which had been O.O.S. since the hole in containment was cut) is being restored.

- The "old" service structure is being welded on the "new" reactor vessel head. Welding is the only option, since the bolting alignments do not match.
- The motor on high pressure injection pump No. 1 has been replaced, with electric terminal connections in progress. This is viewed as a life-extension activity; the motor had not failed.
- The licensee's "Event Clock" had to be re-set again due to a tagging error involving the generator end bell cooling water supply.

Review of action items (panel)

The panel reviewed the list of "open" action items, which was provided for this meeting in a form which displayed only items still open and none of the items previously closed. Nearly all of the items were discussed in more or less detail; the following address some specific actions, decisions or changes in status on items:

Item 24a was discussed. Three steps were designated for closure of this item: 1) an NRC staff survey will be done via e-mail to identify any potential reservations about releasing the quarantine on the "old" head - due 10/7; 2) a memo will be prepared in NRR to indicate program office concurrence in the release - due 10/11; 3) Region III will issue the letter to the licensee - due 10/25.

Item 26 was discussed. The licensee's re-start checklist is sufficiently developed to proceed with issuing an inspection schedule - due 10/4.

Item 54a was discussed. DRS is coordinating with NRR in reviewing the Davis-Besse specific action and calculations on the item.

Item 54b was discussed. The generic issue will be forwarded to Bill Bateman's group with a requested target review completion date of 10/18.

Item 71 was discussed. The licensee's Revision 1 to the Technical Root Cause has been submitted and is under review.

Items 72, 73 and 74 were discussed; no change in status on these items, although the LLTF report is pending review and extraction of observations needing specific Panel action. In addition, Scott Thomas mentioned that he believes the LLTF is looking to schedule public meetings at or near the plant on October 24 - 25.

Item 82 is similar to Item 74, in that the status is now that the LLTF report is being evaluated for the purpose of determining impact on Oversight Panel activities and what the path forward should be, and Jack Grobe will "circle back" with the LLTF as necessary to ensure mutual understanding of issues impacting the Panel.

Item 88 was discussed. A draft significance determination has been received and reviewed and comments provided back to Sonia Burgess. She is working on revisions to the proposal.

Item 91 was discussed. Jack Grobe will determine next steps.

Item 95 was discussed. The "hold" for "re-start" will be before control rods are pulled to achieve initial criticality. Dave Passehl has the action to draft an update to the Confirmatory Action Letter which will include this clarification of specific plant conditions requiring NRC approval for "re-start," will close any CAL actions which are entirely complete, and will factor in appropriate information in the licensee's re-start action matrix - due date is 10/18.

Item 98 will be addressed during a single-topic meeting/telephone conference call (set for October 4) focusing on the current contents and status of the Process Plan and needed revisions.

Item 99 was discussed. Christine Lipa will discuss assembly of applicable items for the list with John Jacobson - due 10/11.

Item 102 was discussed. The evaluation of plant specific and generic TSP calculations under Items 54a and 54b address this concern.

Item 105 was **CLOSED**. The appropriate changes in report distribution have been accomplished.

Item 106 was **CLOSED**. The issue has been placed on the restart checklist.

Item 107 was discussed. The AIT follow-up inspection report should be issued 10/1 or 10/2; this item will then be re-examined during a Panel meeting in two weeks' time - due 10/15.

Item 108 was **CLOSED**. OI issues will not be added to the re-start checklist.

Item 110 was discussed. Revision 1 to the Technical Root Cause report has been issued and is under review, with the safety analysis expected to be delivered 10/15.

Item 112 was discussed. Monthly public meeting dates are set for October 16, November 13 and December 10 or 11. Christine Lipa now has the action to pursue the scheduling of dates for possible additional meetings in January, February and March 2003.

Item 113 was discussed. Assigned to Tony Mendiola to provide NRR tracking.

Item 114 was discussed. An update on a potential site visit by Brian Sheron will be provided by Jon Hopkins - due 10/8.

Item 115 was **CLOSED**. Action was completed on 9/25.

Item 116 was discussed. A decision on adding "completeness and accuracy of records" to the re-start checklist will be deferred pending issuance of the AIT follow-up report.

Item 117 was discussed. Several licensing actions were completed 9/30 relating to some code relief requests. Jon Hopkins will report on the status of remaining licensing actions - due 10/11.

Item 118 was discussed. Bruce Jorgensen has arranged for DRMA (Donna Pechous) support and is receiving digital photos from various sources (none so far show before-and-after corrective maintenance) to be placed on the RIII internal web page in the form of a "picture album" - due 10/11.

One new item (**Item 119**) was identified relating to performance of a specific review of the AIT follow-up inspection report to identify examples of incomplete or inaccurate information from the licensee, leading to a discussion with OI regarding their view of a need to bring such examples to an ARB. Dave Passehl is assigned the item with a due date of 10/15.

Licensing Issues/Actions (DLPM) - status sheet

The status of Davis-Besse licensing activities and ticket tracking was presented by Tony Mendiola and Jon Hopkins:

- A "package" of relief requests was approved 9/30, removing two items from the re-start checklist; three "relief" items remain (A-26, A-27 and A-02) as constraints to final approval of the "new" vessel head... except for A-2, for which we are awaiting a contractor's report, actions on these items appear ready to go.
- A licensee submittal is needed to address potential T/S changes in selected parameters relating to the new vessel head - items like pressure and temperature curves, etc.
- The Tauzin/Gillmor congressional committee terminated its review of Davis-Besse related issues unexpectedly, with NRC still "owing" some information to the committee. NRR will complete assembly of the requested information and will provide it to the committee investigator.
- Actions are complete on FOIA 2002-229 (Gunther original) and three boxes of materials have been provided.
- The response letter to Peter Skinner (N.Y. Att'y General) is in NRR management review/concurrence.
- The extension request on FSAR update response, was denied. The response is still due in mid-October.

2. IMC 0350 Panel Business

Inspection Schedule

The status of on-going inspection activities was briefly discussed; the licensee's schedule will "drive" some inspections, and that schedule is somewhat in flux. Team leaders will continue to coordinate with licensee counterparts to minimize scheduling problems.

Process Plan

The proposal to update the Process Plan, merging in the proposed Project Management Summary, was briefly discussed. The decision was made to have a separate, single-topic telephone conference call with NRR representatives later in the week to discuss the Process Plan. Dave Passehl was assigned to coordinate the call for 10/4.

Restart Checklist - Investigations

No new information provided.

Licensee Return to Service Plan

No new discussions.

Allegations

Dave Passehl reported that his analysis of the nature and number of allegations at Davis-Besse suggested both had changed. The potential for a safety-conscious work environment issue was discussed. The discussions also addressed the licensee's internal survey results seeming to show some staff may feel schedule pressure and have issues of trust with the new management team. The decision was made to request that the licensee address, at the next public meeting (10/16) their views relating to the issue of a safety-conscious work environment, including specific results and actions, if needed, to address this problem. Jack Grobe will address this request to Lew Myers.

3. *NRC/Licensee weekly calls*

Next call 10/2.

4. *Utilization of the Web Page*

No new items were discussed

5. *Future Activities/Plans/Meetings*

Six-week look ahead schedule

Discussion was held on possible site visits by NRC management. The Jim Dyer/Sam Collins visit is scheduled for 10/9. The LLTF is tentatively scheduling public meetings at or near the site on 10/24-25 for discussion of their findings and conclusions. A visit by Brian Sheron has not been targeted; Jon Hopkins will provide any new information during a future Panel meeting.

Next panel meetings: Tuesdays thru 10/29 2:00 - 5:00 EDT, 1:00 - 4:00 CDT

Monthly allegations briefing to be added to agenda.

6. *Discuss how to handle public or staff comments, questions, allegations, and concerns received by phone, fax, letter, email, or at public meetings.*

No new issues were discussed.

IMC 0350 Panel Action Items

Item Number	Action Item (Date generated)	Assigned to	Comments
24a	Discuss making information related to HQ/licensee calls publicly available	Panel	Discuss by June 30, after safety significance assessment complete. 6/27 - Invite Bateman to panel mtg. To discuss what else is needed to closeout the CAL (i.e. quarantine plan). 7/2 - NRR not yet ready to discuss. 7/16 - See if procedures have changed on CAL closeout - does JD need to send letter? 7/18 - Discussed - is there an applicable regional procedure? 8/6 - Discussed. Need to determine the final approach on the core removed from the head and the final approach on the head before the quarantine can be lifted. 8/22 - Revisit action item after letter sent to licensee confirming plans with old vessel head (head may be onsite longer than originally anticipated) 8/29 - Memo to be sent to Region, with a letter to go out next week. 10/01- Discussed. 1) Conduct NRC staff survey-due 10/7 2)Memo to NRR - due 10/11 3) Region to issue letter
26	Provide licensee with inspection schedule	Panel	7/16 - pending 7/18 - J. Jacobson working - will follow issuance of restart checklist. Est due date 8/2 to include scheduled and TBD inspections. 8/22 - System health dates now set - will likely send out schedule next week. 8/27 - Discussed - on track to send out next week. 8/29 - discussed, on track. 10/1 - Discussed. Issue schedule

Item Number	Action Item (Date generated)	Assigned to	Comments
54a	Review TSP amendment and advise the panel on the need for a TIA on Davis-Besse (7/2)	D. Pickett	7/9 - Discussed. Will wait for response from licensee. 7/16 - Discussed - added action item 54b. 8/6 - Sent to the licensee on 7/22 and a response is due by 8/22. 8/22 - Discussed - need to check if response has been received. 8/27 - Received response - DRS is reviewing - will fax to NRR for 54b. 8/29 - Discussed, DRS report of response to be issued to panel prior to item 54b. 10/1 - Discussed. DRS coordinating with NRR
54b	Initiate correspondence w/NRR to evaluate generic implications (7/16)	T. Mendiola	7/18 - Memo will be sent to Hannon's group. 8/6 - Discussed - not yet issued. 8/13 - Discussed - need info from 54a first. 10/1 - Discussed. Forward to B. Bateman - due 10/18.
71	Discuss review and documentation of the Technical Root Cause and determine if the action is in NRR's work management system. (8/6)	Sands Dean Panel Lipa	8/6 - Invite to 8/13 mtg. 8/13 - Discussed. S. Coffin to provide feeder to Lipa regarding conclusions due 8/30 draft. 8/22 - Discussed - NRR will email draft for review/ need to determine how final input should be sent from NRR to RIII. 8/27 - Discussed draft input and process for formal transmittal from NRR to RIII. 8/29 - Deferred to 9/5 meeting. 9/18 - On hold due to crack 10/1 - Discussed. Rec'd and under review
72	Review LLTF observations and determine appropriate closeout. (8/6) Review for safety issue/ AMS/OI/new items.	Lipa/Collins	8/13 - Discussed. Items reviewed for allegations. No new allegations identified. Info related to ongoing investigations will be forwarded to OI. 8/22 - Discussed - need to keep this item open as a reminder to consider outstanding LLTF items. 8/29 - Discussed - leave open. 10/1 - Discussed.

Item Number	Action Item (Date generated)	Assigned to	Comments
73	Send feedback form on IMC 0350 procedure to IIPB (8/6)	Lipa Mendiola	8/6 - Generate feedback after panel meetings reduced to once per week. 8/29 - Discussed - no change. 10/1 - Discussed.
74	Matrix strategy for UCS and other requests. (8/8)	Lipa	8/13 - Discussed. 8/22 - Discussed - matrix is being developed will send out for review when ready. 8/29 - Discussed - matrix has been started. 10/1 - Discussed.
82	Circle back with LLTF to put their observations into context (8/8)	Grobe	10/1 - Discussed.
83	Verify results of ongoing research related to the technical root cause evaluation has not changed NRC/DE conclusions (8/13)	Panel Coffin	
85	Send letter/action plan to the licensee regarding actions required to be completed to close CAL item related to quarantine (8/20)	Dean (DE) Hopkins	8/22 - Discussed - NRR will send draft to RIII by 8/30. 8/27 - Discussed - letter being drafted and should be ready next week. 9/19- On hold due to crack - get letter out to licensee re: from Mode 3 to Mode 2
88	Develop draft proposal on how to assess significance/respond to TIA (8/20)	Burgess	8/27 - Working to a due date of 8/30 to present to the panel next week. 10/1 - Discussed.
89	Provide report input on Framatome inspection of records for the new vessel head (8/27)	R. McIntyre M. Holmberg	Will be feeder to Mel's need for 9/17 public mtg. 9/17 - Plan to send this week to Mel. 9/24 - Report expected out next week.
90	Response to feedback form from 8/20 Public Meeting (8/29)	J. Strasma	
91	Call McClosky to discuss docketing Return to Service Plans (9/3)	Lipa	9/17 - Called - need to check back. 10/1 - Discussed. Jack to discuss with L. Myers

Item Number	Action Item (Date generated)	Assigned to	Comments
95	Interpret CAL & TS and define which mode change needs approved (9/5)	Lipa Thomas	10/1 - Discussed.
96	Ongoing phase 3 observations of management and human performance following restart (9/5)	Lipa	
97	Bulletins 2002-01 and 2002-02 response and acceptance (9/5)	NRR	
98	Poll staff for differing opinions (9/5)	Panel	Incorporate into Process Plan 10/1 - Discussed.
99	Bring to panel all 95002/95003 attributes (9/5)	Jacobson/ Lipa	9/24 - Decision for C. Lipa to discuss item with J. Jacobson. 10/1 - Discussed. Due 10/11
102	NRR Approval of Concern 3 for Licensee Investigation Report for Allegation No. RIII-02-A-0110 (9/12)	Mendiola	10/1 - Discussed. TSP calculations under 54a and 54b address this concern.
103	Issue 3 memos to staff - forward emails to DB0350/RES/NRR/RIII (9/17)	Dean/Grobe	
104	Add UCS to service lists in RIII and NRR (9/17)	Lipa/ Mendiola	
105	Call Lochbaum and ask if adding him suffices (9/17)	Macon	9/24 - Add Lochbaum to service distribution lists. Once this action is complete, Item 104 will close as well. 10/1 Closed.
106	Risk-significance on containment sump past operability - consider for checklist (9/17)	S. Burgess	9/24 - Add this item to restart checklist as item 2.c.1. 10/1 Closed

Item Number	Action Item (Date generated)	Assigned to	Comments
107	When AIT F/U IR is issued, consider item on records& communication accuracy (9/17)	Panel	10/1 Discussed
108	Resolution of OI issues, consider adding to restart checklist (9/17)	Panel	10/1 Closed
109	Assure proper inspection code charges are used for current teams (9/19)		9/24 - closed
110	Determine when licensee will docket technical root cause and determine when the safety analysis will be delivered to the NRC (9/19)	J. Hopkins	10/1 Discussed
111	Coordinate with LLTF to brief state and county officials (9/19)	R. Lickus	
112	Contact Nora (Myers secretary) to explain feedback and establish future ROP dates(9/19)	C. Lipa	10/1 Discussed
113	Remove UCS representative from service lists 90 days after DD is issued (9/24)	C. Lipa/ A.Mendiola	10/1 Discussed
114	Details of expected visit to site (9/24)	Hopkins/ Sheron	10/1 Discussed
115	Notify licensee that health physics issue may be added to restart checklist (9/24)	Grobe	10/1 Closed
116	Inform licensee that completeness and accuracy of records issue may be added to restart checklist (9/24)	Grobe	10/1 Discussed

Item Number	Action Item (Date generated)	Assigned to	Comments
117	Provide a report on all licensing actions for DB to the DB Oversight Panel (9/24)	Hopkins	10/1 Discussed
118	Produce a photo view book that would have before and after photos of <i>corrective maintenance</i> items. (9/24)	Jorgensen	10/1 Discussed
119	Discuss with OI, need to bring to ARB (10/01)	Passehl	Due 10/15

Exhibit 5

**Minutes of Internal Meeting of Davis-Besse Oversight Panel,
October 29, 2002**

October 29, 2002

MEMORANDUM TO: Davis-Besse Nuclear Power Station IMC 0350 Panel

FROM: John A. Grobe, Chairman, Davis-Besse Oversight Panel /RA/

SUBJECT: MINUTES OF INTERNAL MEETING OF THE DAVIS-BESSE
OVERSIGHT PANEL

The implementation of the IMC 0350 process for the Davis-Besse Nuclear Power Station was announced on April 29, 2002. An internal panel meeting was held October 8, 2002. Attached for your information are the minutes from the internal meeting of the Davis-Besse Oversight Panel and the "Open" Action Items List.

Attachments: As stated

cc w/att: S. Rosenberg, OEDO
W. Dean, NRR
A. Mendiola, NRR
D. Pickett, NRR
S. Bloom, NRR
J. Dyer, RIII
J. Caldwell, RIII
G. Grant, RIII
S. Reynolds, RIII
C. Lipa, RIII
D. Hills, RIII
L. Collins, RIII
D. Passehl, RIII
D. Simpkins, RIII
J. Jacobson, RIII
S. Burgess, RIII
R. Lickus, RIII
S. Thomas, RIII
M. Holmberg, RIII
J. Collins, RIII
DB0350

MEMORANDUM TO: Davis-Besse Nuclear Power Station IMC 0350 Panel

FROM: John A. Grobe, Chairman, Davis-Besse Oversight Panel

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 C. Lipa, RIII
 D. Hills, RIII
 L. Collins, RIII
 D. Simpkins, RIII
 J. Jacobson, RIII
 K. Riemer
 S. Burgess, RIII
 R. Lickus, RIII
 S. Thomas, RIII
 M. Holmberg, RIII
 J. Collins, RIII
 DB0350

DOCUMENT NAME: G:\Davis-Besse 0350\internalmtgminutes\internalmtgminutes1008.wpd
 To receive a copy of this document, indicate in the box: "C" = Copy without enclosure "E" = Copy with enclosure "N" = No copy

OFFICE	RIII	RIII	RIII	
NAME	DPassehl/kg	CLipa/dp for/	JGrobe	
DATE	10/16/02	10/16/02	10/29/02	

OFFICIAL RECORD COPY

MEETING MINUTES: Internal IMC 0350 Oversight Panel Meeting
Davis-Besse Nuclear Power Station

DATE: October 8, 2002

TIME: 1:00 p.m. Central

ATTENDEES:

C. Lipa	T. Mendiola
W. Dean	S. Thomas
M. Farber	K. O'Brien
J. Hopkins	B. Bartlett
G. Wright	D. Passehl
B. Jorgensen	M. Holmberg

Agenda Items:

1. Reports from Staff

Report by Mel Holmberg on Vessel Head and Containment Inspections

The inspection of head resolution (IR#007) is complete and the report is being assembled. Several parts are involved: Don Jones looked at NDE on the head welds, done at the Midland site, and no deficiencies were identified. Richard McIntyre of NRR did code data-package review and determined the licensee had established that the Midland head meets the code (with defined exceptions being evaluated by NRR) and the "N" stamp remains "valid." The containment cutting and restoration were inspected by Mel and John Jacobson, including work requests and work in progress. Surface voids occurred in the concrete pour to restore the shield building which had not been resolved at the conclusion of the inspection. Overall, there were no "findings" identified, but several observations were made.

The (second) inspection of the "containment extent of condition" (IR#012) is also complete and the report is being assembled. The report of the first inspection (IR#009) has been issued - it showed the licensee had not succeeded in its objectives and reported findings in: 1) lack of acceptance criteria or requirements to follow inspection plans, and 2) training and qualification of personnel performing the reviews. The licensee re-performed the inspections under the "containment health" building block. Mel's second inspection did not identify any "findings." There were some items for which too little information was available to permit final conclusions. The sample size regarding corrective actions was small, and the inspection of electrical components was limited to a few motor-operated valves. Also, the cause and consequences of boric acid and rust streaks at the bottom of the reactor vessel had not been established. The report will contain an "action item" to evaluate licensee results in following up on these issues.

A formal "exit" on both of Mel's inspections is tentatively set for 10/24 at the site.

Marty Farber reported on the status of his activities under the "System Health" building block. He indicated that two weeks of work remain and the licensee's progress in preparing packages has been slow, so his inspection cannot be completed by 11/8. Thus far, only two "packages" have been completed for inspection, which is a too-small sample. The volume of items in the licensee's corrective action program has continued to grow; development of corrective actions has not kept pace with identification of issues. The Panel discussed the potential need for Marty to return his Inspection Plan to the Panel for re-evaluation. Marty has arranged his schedule to continue to support the Oversight Panel through November.

Bruce Bartlett reported on the status of his team inspection of design/engineering of three systems, in support of the "System Health" building block. The three systems have been identified (service water, high pressure injection, and 4160 V a.c.) and the licensee has provided information as it became available, such that this inspection should finish on 10/11. Issues were identified in all three systems, including "operability" issues in the service water system. All the issues are in the licensee's corrective action system. A formal "exit" will be scheduled in about two weeks.

Geoff Wright reported on the status of his inspection activities in the "Management and Human Performance" building block. He said the team had some difficulties in some of the cases examined, due to unclear connections between cause and corrective action. In addition, the "Operations," "Quality Assurance" and "Offsite Review" arenas were examined outside the MORT technique which was used for the other areas, and they are incomplete or (in the case of "Operations") have been withdrawn and will be re-done. Geoff's inspection activities were characterized as being "at a standstill" pending licensee development of additional information. Geoff will evaluate the status of the licensee's schedule later in the week when he is on-site; he may choose to terminate the inspection and document it, with the remainder of the work to be done in a second inspection at a later date, or he may suspend the inspection temporarily and resume later.

Ken O'Brien reported on the status of his team's inspection in the "Program Compliance" building block. His schedule has been significantly impacted by delays in licensee completion of several program reviews and upgrades - he will not finish by 10/11 as originally planned. The licensee appears unlikely to complete more programs to the point we need for our reviews until about 11/1. Ken estimated sufficient progress may be made to justify resumption of inspection activities in late November, with work continuing into or through December.

Site activities (RIO)

Scott Thomas briefed the Davis-Besse Oversight Panel on current site activities noting the following:

- There were four separate "building-block" inspections in process at the site during the week, in addition to the resident inspectors' activities.
- The special inspection team to review the potential occupational over-exposure due to inhalation/ingestion of transuranic isotopes was on-site and active. A site debrief was set for 10/10.

- Jim Dyer and Sam Collins were visiting the site on 10/8 and 10/9, planning to tour and to meet with managers and (separately) with licensed operators.
- Both emergency diesel-generators remain "inoperable" but available with exhaust system upgrades to provide tornado missile protection targeted to be complete by 10/23.
- The "old" service structure was welded on the "new" reactor vessel head. Welding was the only option, since the bolting alignments didn't match.

Review of action items (panel)

The panel reviewed the list of "open" action items, with discussions and actions as follows:

Item 26 was discussed. The item remains on "hold" awaiting developments in the licensee's schedule - licensee schedule slippage is impacting the ability of the Oversight Panel to marshal inspection resources effectively and efficiently.

Item 71 was discussed. NRR will forward to RIII (C. Lipa) the report of its review of the licensee's Revision 1 to the Technical Root Cause.

Item 72 was discussed. The LLTF report will be available for review and extraction of observations needing specific Panel action on 10/9. The LLTF is looking to schedule public meetings at or near the plant on November 6.

Item 85 was discussed. The memo from NRR to RIII concurring in release of the "quarantine" by RIII was with Tony Mendiola, at the start of the concurrence review.

Item 89 was discussed. The "feeder" report had been received. The item is expected to be closed after some follow up by Tony Mendiola to verify nothing additional is due.

Item 103 was discussed. The actions were believed to be complete, but Bill Dean took the action to verify RES was included in the inquiry.

Item 104 was discussed and **closed**; action was completed.

Item 111 was discussed and **closed**; action was completed.

Item 112 was discussed. Monthly public meeting dates are set for October 16, November 13. December date (10 or 11) being finalized. Christine Lipa now has the action to pursue the scheduling of dates for possible additional meetings in January, February and March 2003.

Item 114 was discussed. A potential site visit by Brian Sheron remains to be scheduled - Jon Hopkins will follow up - due 10/15.

Licensing Issues/Actions (DLPM) - status sheet

The status of Davis-Besse licensing activities and ticket tracking was presented by Tony Mendiola and Jon Hopkins:

- The EDO has requested a "package" of information regarding the follow up "special" inspections on the contamination events and the potential internal exposures.
- The Tauzin/Gillmor congressional committee terminated its review of Davis-Besse related issues unexpectedly, with NRC still "owing" some information to the committee. NRR finished assembling the requested information and the information package was in concurrence.
- The 2.206 petition response letter is in management concurrence.
- The EDO has requested that a "frequently asked questions" package be prepared and put on the NRC website. NRR is assembling the requested package.
- Work on the code relief and license amendments relating to use of the Midland reactor vessel head has continued with no significant issues identified so far.

2. IMC 0350 Panel Business

Inspection Schedule

The Panel had extensive discussions of inspection scheduling as part of the receipt of reports of inspection activities discussed above. The schedules for several inspections remain unsettled. The date(s) when the licensee will have sufficient information assembled to justify further inspection activities are not clear. The Oversight Panel expects the inspection team leaders to work diligently with their licensee counterparts to acquire best estimates, and to report the information to the Panel. A higher-level discussion with more senior licensee management is under consideration.

Process Plan

Dave Passehl is updating the Process Plan, based on detailed discussions at a separate meeting on 10/4. Among other things, the revised Plan will merge in the proposed Project Management Summary, as discussed at the Panel meeting of 10/1.

Restart Checklist - Investigations

No new information provided.

Licensee Return to Service Plan

No new discussions.

3. NRC/Licensee weekly calls

Next call on Thursday, 10/10 due to J. Dyer/S. Collins visit on Wednesday, 10/9.

4. *Utilization of the Web Page*

No new items were discussed

5. *Future Activities/Plans/Meetings*

Next panel meeting: Tuesday 10/15 at 11:30 EDT, 10:30 CDT

Monthly allegations briefing to be added to agenda.

6. Discuss how to handle public or staff comments, questions, allegations, and concerns received by phone, fax, letter, email, or at public meetings.

No new issues were discussed.

IMC 0350 Panel Action Items

Item Number	Action Item (Date generated)	Assigned to	Comments
24a	Discuss making information related to HQ/licensee calls publicly available	Panel	Discuss by June 30, after safety significance assessment complete. 6/27 - Invite Bateman to panel mtg. To discuss what else is needed to closeout the CAL (i.e. quarantine plan). 7/2 - NRR not yet ready to discuss. 7/16 - See if procedures have changed on CAL closeout - does JD need to send letter? 7/18 - Discussed - is there an applicable regional procedure? 8/6 - Discussed. Need to determine the final approach on the core removed from the head and the final approach on the head before the quarantine can be lifted. 8/22 - Revisit action item after letter sent to licensee confirming plans with old vessel head (head may be onsite longer than originally anticipated) 8/29 - Memo to be sent to Region, with a letter to go out next week. 10/01- Discussed. 1) Conduct NRC staff survey-due 10/7 2)Memo to NRR - due 10/11 3) Region to issue letter
26	Provide licensee with inspection schedule	Panel	7/16 - pending 7/18 - J. Jacobson working - will follow issuance of restart checklist. Est due date 8/2 to include scheduled and TBD inspections. 8/22 - System health dates now set - will likely send out schedule next week. 8/27 - Discussed - on track to send out next week. 8/29 - discussed, on track. 10/1 - Discussed. Issue schedule

Item Number	Action Item (Date generated)	Assigned to	Comments
54a	Review TSP amendment and advise the panel on the need for a TIA on Davis-Besse (7/2)	D. Pickett	7/9 - Discussed. Will wait for response from licensee. 7/16 - Discussed - added action item 54b. 8/6 - Sent to the licensee on 7/22 and a response is due by 8/22. 8/22 - Discussed - need to check if response has been received. 8/27 - Received response - DRS is reviewing - will fax to NRR for 54b. 8/29 - Discussed, DRS report of response to be issued to panel prior to item 54b. 10/1-Discussed. DRS coordinating with NRR
54b	Initiate correspondence w/NRR to evaluate generic implications (7/16)	T. Mendiola	7/18 - Memo will be sent to Hannon's group. 8/6 - Discussed - not yet issued. 8/13 - Discussed - need info from 54a first. 10/1 - Discussed. Forward to B. Bateman - due 10/18.
71	Discuss review and documentation of the Technical Root Cause and determine if the action is in NRR's work management system. (8/6)	Sands Dean Panel Lipa	8/6 - Invite to 8/13 mtg. 8/13 - Discussed. S. Coffin to provide feeder to Lipa regarding conclusions due 8/30 draft. 8/22 - Discussed - NRR will email draft for review/ need to determine how final input should be sent from NRR to RIII. 8/27 - Discussed draft input and process for formal transmittal from NRR to RIII. 8/29 - Deferred to 9/5 meeting. 9/18 - On hold due to crack 10/1 - Discussed. Rec'd and under review 10/8 - NRR to forward Revision 1 to Region III

Item Number	Action Item (Date generated)	Assigned to	Comments
72	Review LLTF observations and determine appropriate closeout. (8/6) Review for safety issue/ AMS/OI/new items.	Lipa/Collins	8/13 - Discussed. Items reviewed for allegations. No new allegations identified. Info related to ongoing investigations will be forwarded to OI. 8/22 - Discussed - need to keep this item open as a reminder to consider outstanding LLTF items. 8/29 - Discussed - leave open. 10/1 - Discussed. 10/8 - Discussed. Report to be discussed 10/9, schedule public meeting 11/6
73	Send feedback form on IMC 0350 procedure to IIPB (8/6)	Lipa Mendiola	8/6 - Generate feedback after panel meetings reduced to once per week. 8/29 - Discussed - no change. 10/1 - Discussed.
74	Matrix strategy for UCS and other requests. (8/8)	Lipa	8/13 - Discussed. 8/22 - Discussed - matrix is being developed will send out for review when ready. 8/29 - Discussed - matrix has been started. 10/1 - Discussed.
82	Circle back with LLTF to put their observations into context (8/8)	Grobe	10/1 - Discussed.
83	Verify results of ongoing research related to the technical root cause evaluation has not changed NRC/DE conclusions (8/13)	Panel Coffin	
85	Send letter/action plan to the licensee regarding actions required to be completed to close CAL item related to quarantine (8/20)	Dean (DE) Hopkins	8/22 - Discussed - NRR will send draft to RIII by 8/30. 8/27 - Discussed - letter being drafted and should be ready next week. 9/19- On hold due to crack - get letter out to licensee re: from Mode 3 to Mode 2. 10/8 - Discussed. Memo is with Mendiola at the start of concurrence review.

Item Number	Action Item (Date generated)	Assigned to	Comments
88	Develop draft proposal on how to assess significance/respond to TIA (8/20)	Burgess	8/27 - Working to a due date of 8/30 to present to the panel next week. 10/1 - Discussed.
89	Provide report input on Framatome inspection of records for the new vessel head (8/27)	R. McIntyre M. Holmberg	Will be feeder to Mel's need for 9/17 public mtg. 9/17 - Plan to send this week to Mel. 9/24 - Report expected out next week. 10/8 - Discussed. "Feeder" report had been received, Mendiola to review.
90	Response to feedback form from 8/20 Public Meeting (8/29)	J. Strasma	
91	Call McClosky to discuss docketing Return to Service Plans (9/3)	Lipa	9/17 - Called - need to check back. 10/1 - Discussed. Jack to discuss with L. Myers
95	Interpret CAL & TS and define which mode change needs approved (9/5)	Lipa Thomas	10/1 - Discussed.
96	Ongoing phase 3 observations of management and human performance following restart (9/5)	Lipa	
97	Bulletins 2002-01 and 2002-02 response and acceptance (9/5)	NRR	
98	Poll staff for differing opinions (9/5)	Panel	Incorporate into Process Plan 10/1 - Discussed.
99	Bring to panel all 95002/95003 attributes (9/5)	Jacobson/ Lipa	9/24 - Decision for C. Lipa to discuss item with J. Jacobson. 10/1 - Discussed. Due 10/11
102	NRR Approval of Concern 3 for Licensee Investigation Report for Allegation No. RIII-02-A-0110 (9/12)	Mendiola	10/1 - Discussed. TSP calculations under 54a and 54b address this concern.

Item Number	Action Item (Date generated)	Assigned to	Comments
103	Issue 3 memos to staff - forward emails to DB0350/RES/NRR/RIII (9/17)	Dean/Grobe	10/8 - B. Dean has action to verify RES included in the inquiry
104	Add UCS to service lists in RIII and NRR (9/17)	Lipa/ Mendiola	10/8 -Complete
107	When AIT F/U IR is issued, consider item on records& communication accuracy (9/17)	Panel	10/1-Discussed
110	Determine when licensee will docket technical root cause and determine when the safety analysis will be delivered to the NRC (9/19)	J. Hopkins	10/1- Discussed
111	Coordinate with LLTF to brief state and county officials (9/19)	R. Lickus	10/8 - Complete
112	Contact Nora (Myers secretary) to explain feedback and establish future ROP dates(9/19)	C. Lipa	10/1- Discussed. 10/8 - Dates for Oct. 16 & Nov. 13, working on December, January, February & March
113	Remove UCS representative from service lists 90 days after DD is issued (9/24)	C. Lipa/ A.Mendiola	10/1- Discussed
114	Details of expected visit to site (9/24)	Hopkins/ Sheron	10/1 - Discussed. 10/8 - Discussed, Due 10/15
116	Inform licensee that completeness and accuracy of records issue may be added to restart checklist (9/24)	Grobe	10/1- Discussed
117	Provide a report on all licensing actions for DB to the DB Oversight Panel (9/24)	Hopkins	10/1- Discussed

Item Number	Action Item (Date generated)	Assigned to	Comments
118	Produce a photo view book that would have before and after photos of corrective maintenance items. (9/24)	Jorgensen	10/1 Discussed
119	Discuss with OI, need to bring to ARB (10/01)	Passehl	Due 10/15

Exhibit 6

**Preliminary Notice of Event or Occurrence,
September 20, 2013**

PRELIMINARY NOTIFICATION – REGION III

September 20, 2013

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE - PNO-III-13-007

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. Some of the information may not yet be fully verified or evaluated and is basically all that is known by the Region III staff on this date.

Facility

Davis-Besse Nuclear Power Station
First Energy Nuclear Operating Company
Oak Harbor, Ohio
Docket: 50-346

Licensee Emergency Classification

☐ Notification of Unusual Event
☐ Alert
☐ Site Area Emergency
☐ General Emergency
☒ Not Applicable

SUBJECT: DAVIS-BESSE SHIELD BUILDING LAMINAR CRACKS

On August 26, 2013, the licensee was performing examinations of core bores in the shield building in accordance with the commitments First Energy Nuclear Operating Company (FENOC) made to the NRC. The commitment is for long term monitoring of the shield building which was documented in the NRC's Confirmatory Action Letter dated December 2, 2011 (ADAMS ML11336A355). The examinations performed in 2011 and 2012 showed no additional cracks. This year, using new instrumentation with enhanced capabilities, plant workers identified a crack that had not been seen before. To date, the core bore examinations revealed seven previously unidentified cracks. FENOC has taken steps to reevaluate 43 core bores and will be looking at the remaining 39 going forward.

It's important to emphasize that the shield building at Davis-Besse is not the reactor containment vessel. That vessel is made of one-inch thick welded steel and sits inside of the shield building separated by about four and a half feet of hollow space. The shield building's primary function is to protect the containment building against external hazards. The steel vessel is designed to keep the radiation inside the reactor from reaching the environment.

Based on the current information, this issue does not compromise the safety of the plant or the public. The NRC continues to conclude that the additional cracks identified during the current inspection remain bounded by the licensee's previous quantitative operability evaluation and the shield building is structurally sound and can continue to fulfill its safety function.

The NRC has been closely following this issue and independently reviewing the licensee's actions. After the current cracks were identified, the NRC sent a structural inspector to the plant to observe and evaluate the licensee's examination results, the current impact on the shield building, and the licensee's extent of condition and evaluation plan.

The NRC will continue to monitor and independently verify FENOC's ongoing reviews and conclusions about the nature of these cracks and document the agency's assessment in a publicly available inspection report.

Background information regarding the Davis-Besse shield building cracking issue can be found in NRC Inspection Reports 05000346/2012007 and 05000346/2012009 (ADAMS ML12128A443 and ML12173A023).

The State of Ohio has been informed.

This preliminary notification is issued for information only.

The information presented herein has been discussed with the licensee, and is current as of 3:00 p.m. Central Daylight Savings Time, September 20, 2013.

ADAMS Accession Number: ML13263A410

Contact: David Hills
630-829-9733
David.Hills@nrc.gov

Exhibit 7

**Request for Additional Information (RAI),
*April 15, 2014***



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 15, 2014

Mr. Raymond A. Lieb, Vice President
Davis-Besse Nuclear Power Station
FirstEnergy Nuclear Operating Company
5501 North State Route 2
Oak Harbor, OH 43449

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
DAVIS-BESSE NUCLEAR POWER STATION LICENSE RENEWAL
APPLICATION (TAC NO. ME4640)

Dear Mr. Lieb:

By letter dated August 27, 2010, FirstEnergy Nuclear Operating Company (FENOC or the applicant) submitted an application pursuant to Title 10 of the *Code of Federal Regulations*, Part 54 for renewal of Operating License NPF-3 for the Davis-Besse Nuclear Power Station. The staff of the U.S. Nuclear Regulatory Commission (NRC or the staff) is reviewing this application in accordance with the guidance in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants." During its review, the staff has identified areas where additional information is needed to complete the review. The staff's request for additional information are included in the enclosure. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Cliff Custer, of your staff, and a mutually agreeable date for the response is July 1, 2014. If you have any questions, please contact me by telephone at 301-415-3809 or by e-mail at Juan.Uribe@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Juan Uribe", is written over a horizontal line.

Juan Uribe, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
As stated

cc w/encl: Listserv

April 15, 2014

Mr. Raymond A. Lieb, Vice President
Davis-Besse Nuclear Power Station
FirstEnergy Nuclear Operating Company
5501 North State Route 2
Oak Harbor, OH 43449

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
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Sincerely,

/RA/

Juan Uribe, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
As stated

cc w/encl: Listserv

DISTRIBUTION:
See next page

ADAMS Accession No.: ML14097A454

*concurring via email

OFFICE	LA:DLR/RPB2*	PM:DLR/RPB1	BC:DLR/RPB1	PM:DLR/RPB1
NAME	YEdmonds	JUribe	YDiaz-Sanabria	JUribe
DATE	4/11/14	4/14/14	4/15/14	4/15/14

OFFICIAL RECORD COPY

DAVIS-BESSE NUCLEAR POWER STATION
LICENSE RENEWAL APPLICATION
SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION

RAI B.2.43-4

Recent Plant-Specific Operating Experience-Shield Building Monitoring Program

Background:

In October 2011, during hydro-demolition operations to create a construction opening to support the scheduled reactor head replacement, FirstEnergy Nuclear Operating Company (FENOC or the applicant) discovered laminar cracking in the concrete of the shield building at Davis-Besse Nuclear Power Station (Davis-Besse). While investigating the extent of the cracking using the impulse response technique and confirmatory core bores, the applicant identified additional laminar cracking around the shield building. Although the root cause analysis determined that the initial laminar cracking was event driven (the blizzard of 1978), the staff was concerned that without an adequate aging management program (AMP) the cracks could grow and affect the safety function of the shield building during the period of extended operation. In response to the staff's concern, the applicant submitted a plant-specific AMP "Shield Building Monitoring Program" described in license renewal application (LRA) Sections A.1.43 and B.2.43 to address the cracking in the shield building. The Shield Building Monitoring Program is a prevention and condition-monitoring program that supplemented the Structures Monitoring Program (LRA Sections A.1.39 and B.2.39) for shield building concrete components exposed to an air-outdoor environment. The applicant proposed to apply a waterproof coating to the shield building and to monitor existing core bores for indications of changes in the cracking. The applicant also stated that rebar will be monitored for corrosion on an opportunistic basis when exposed. Following review of the Shield Building Monitoring Program, responses to several rounds of follow-up requests for additional information (RAIs), and an updated Shield Building Monitoring Program, the NRC staff found the updated Shield Building Monitoring Program to be acceptable, as documented in Section 3.0.3.3.9 in the NRC staff's September 3, 2013, Safety Evaluation Report related to the License Renewal of Davis-Besse Nuclear Power Station (ADAMS Accession No. ML13248A267).

Issue:

- 1) The NRC staff understands that during a subsequent routine baseline inspection in August/September 2013, FENOC discovered several (about 15) cracks on the Davis-Besse shield building that were not identified previously. FENOC subsequently inspected and removed additional core samples and conducted further evaluations and testing to determine the root cause of the cracks and their apparent progression.
- 2) Further, the NRC staff understands that in the ongoing February 2014 refueling outage, during hydro-demolition activities for creation of a construction opening in the Davis-Besse shield building to support the scheduled steam generator replacement, FENOC learned that several (at least 26) sections of steel reinforcement (rebar) had been broken and/or cracked in the construction opening area. Each section was apparently broken very close to the mechanical splice coupling used to splice the rebar during the head replacement outage in 2011. Samples of the broken rebar were sent to a laboratory for examination and assessment.

ENCLOSURE

It is not clear to the NRC staff how this recent plant-specific operating experience will be incorporated, as applicable, into the Shield Building Monitoring Program and the Structures Monitoring Program AMPs credited for the shield building in the Davis-Besse LRA.

Request:

1. Explain, with sufficient technical detail, any modifications or enhancements that will be made to the Shield Building Monitoring Program; the Structures Monitoring Program; or other applicable AMP to account for this recent plant-specific operating experience described as Issue items 1 and 2 above.
2. If FENOC determines that no modifications or enhancements to the Shield Building Monitoring Program; the Structures Monitoring Program; or other applicable AMP are necessary based on the operating experience described as Issue items 1 and 2, explain, with sufficient technical detail, the basis for that determination.

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
DAVIS-BESSE NUCLEAR POWER STATION LICENSE RENEWAL
APPLICATION (TAC NO. ME4640)

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Nuclear power's competitive landscape and climate opportunity cost



Amory B. Lovins, Cofounder and Chief Scientist
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Three Mile Island 35th Anniversary Symposium: The Past, Present, and Future of Nuclear Energy

Thayer School of Engineering, Dartmouth College, Hanover NH, 28 March 2014

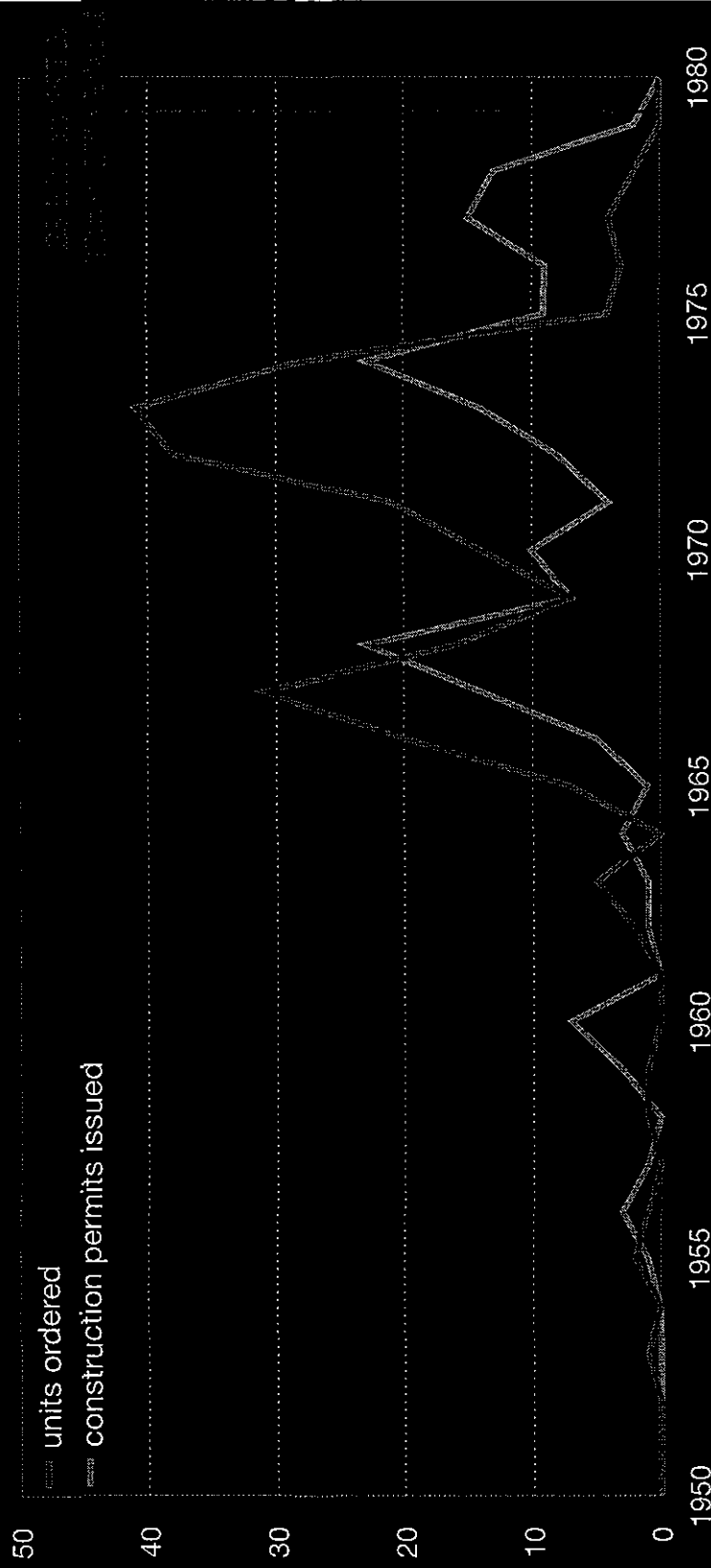
This research was supported by a generous grant from Fred and Alice Stanback.

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I'll try to fill the main gap in our conversation so far—economics and competition—and thus to explain why new nuclear build is uncompetitive, isn't needed to back up or to outpace the growth of far cheaper alternatives, and isn't an effective way to protect the climate, so we don't even reach such questions as whether it's safe and nonproliferative.

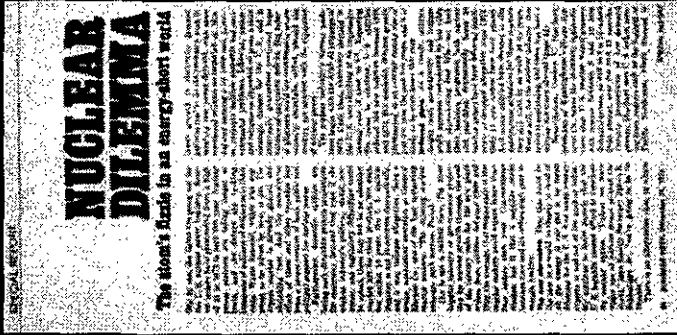
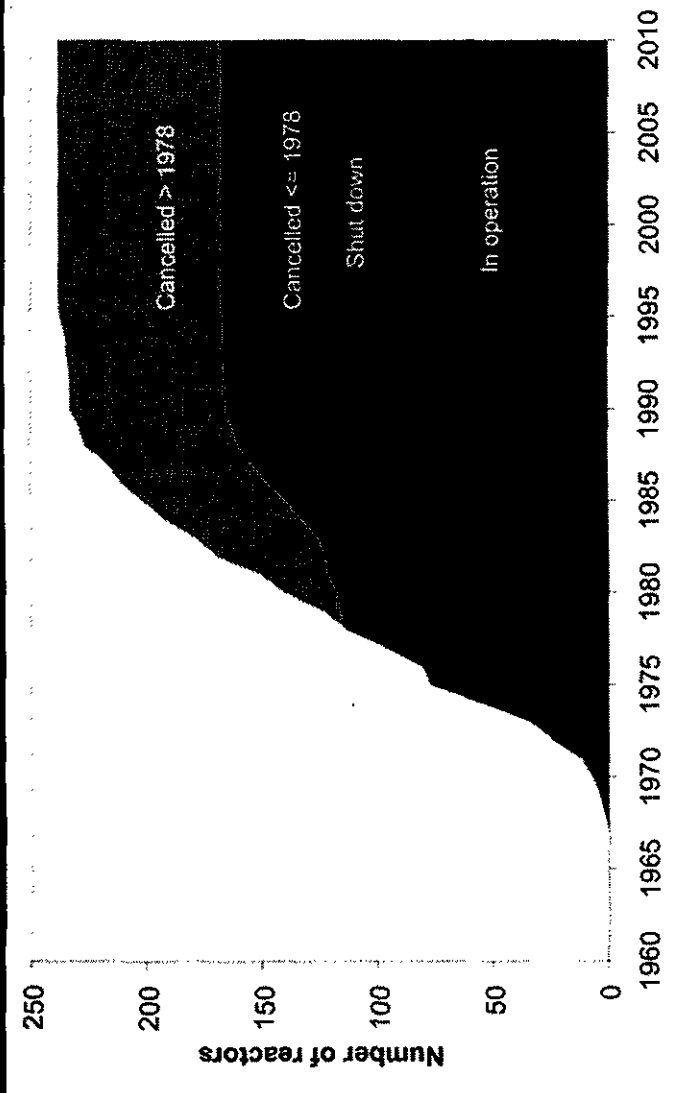
U.S. nuclear power orders collapsed before Three Mile Island

Units ordered and construction permits issued, 1950-1980



Peter Bradford referred to the prevalent myth that nuclear power was flourishing until the Three Mile Island accident. Actually, 4-5 years *before* that accident, U.S. nuclear orders fell tenfold and never recovered. *

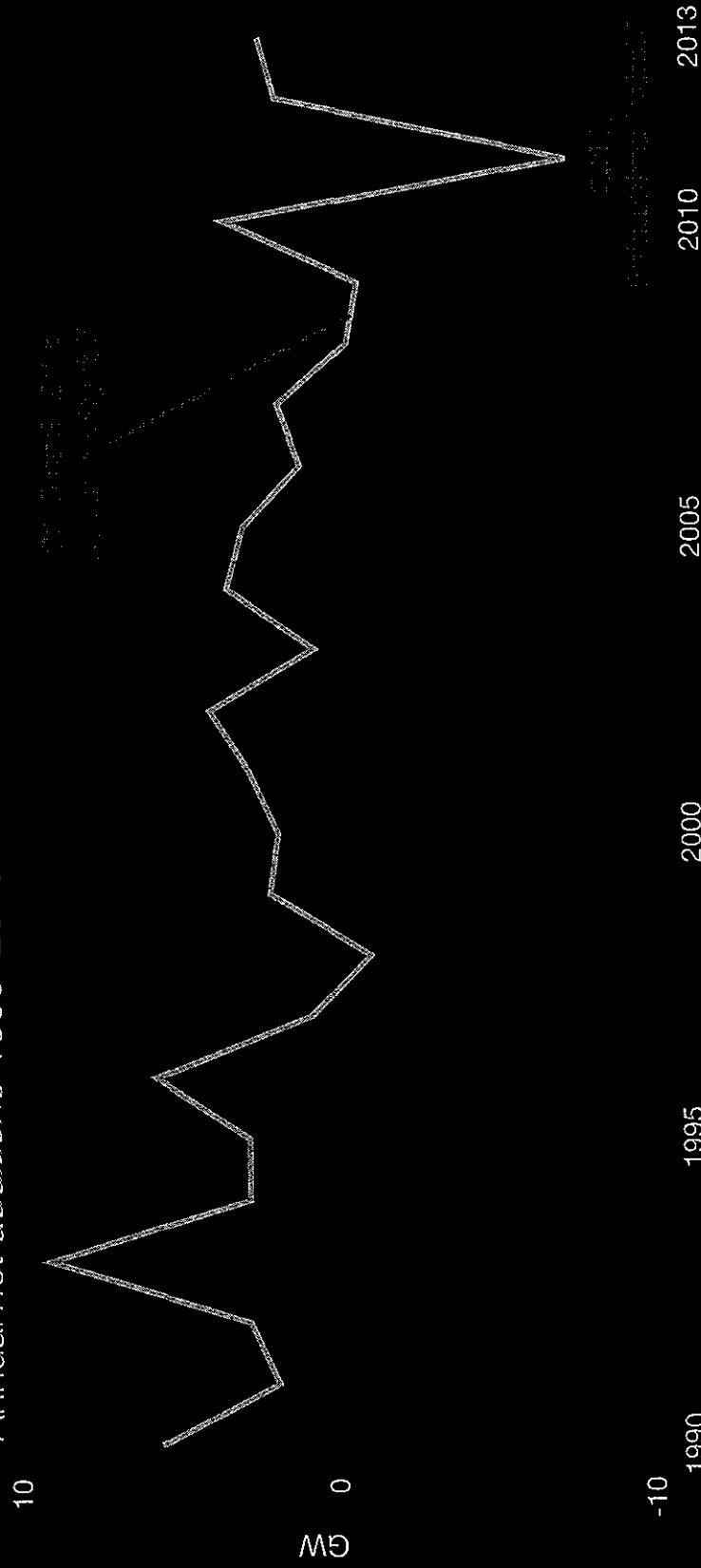
40% of U.S. nuclear-unit cancellations occurred before 1979, due to those pre-Three-Mile-Island economic challenges



Copyright Jonathan Koomey 2011, reproduced by kind permission. J.G. Koomey & N. Hultman, "Was the Three Mile Island accident in 1979 the main cause of US nuclear power's woes?," 24 June 2011, www.koomey.com/post/6868835852

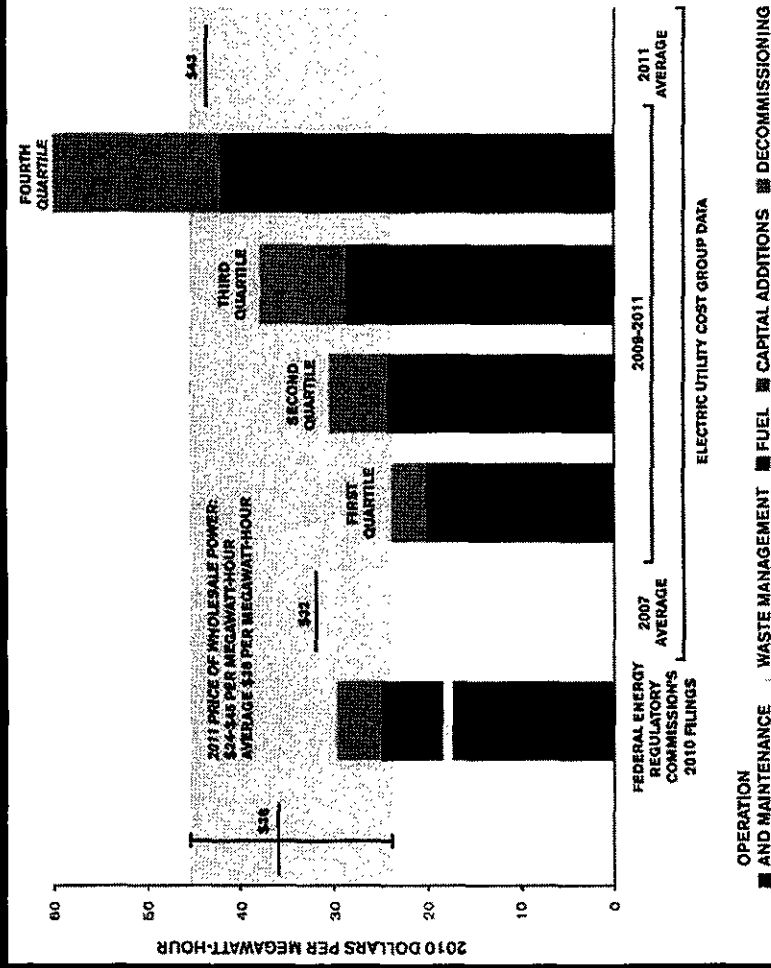
Koomey and Hultman's definitive causal analysis showed with this graph that two-fifths of the nuclear cancellations occurred *before* 1979, leaving many other units teetering on the brink and soon to be cancelled as well. The bad economics that had already made nuclear power fizzle are also explained in * *Business Week's* scathing ten-page cover story on Christmas 1978, three months before TMI. It began: "One by one, the lights are going out for the U.S. nuclear power industry. Reactor orders have plummeted from a high of 41 in 1973 to zero this year." (Actually the nation's last two orders came a few days later.) And it found that for lack of a business case, "the U.S. nuclear industry is apt to contract dramatically, and it may collapse altogether." That's exactly what happened.

Global nuclear power capacity fell before the Fukushima Daiichi Annual net additions 1990-2013



A new myth that a vibrant global nuclear renaissance was cut short by the Fukushima Daiichi accident is equally widespread and equally false. * Global nuclear retirements had already exceeded additions for two of the three years before Fukushima, again due to bad economics. So let's look at those economics. *

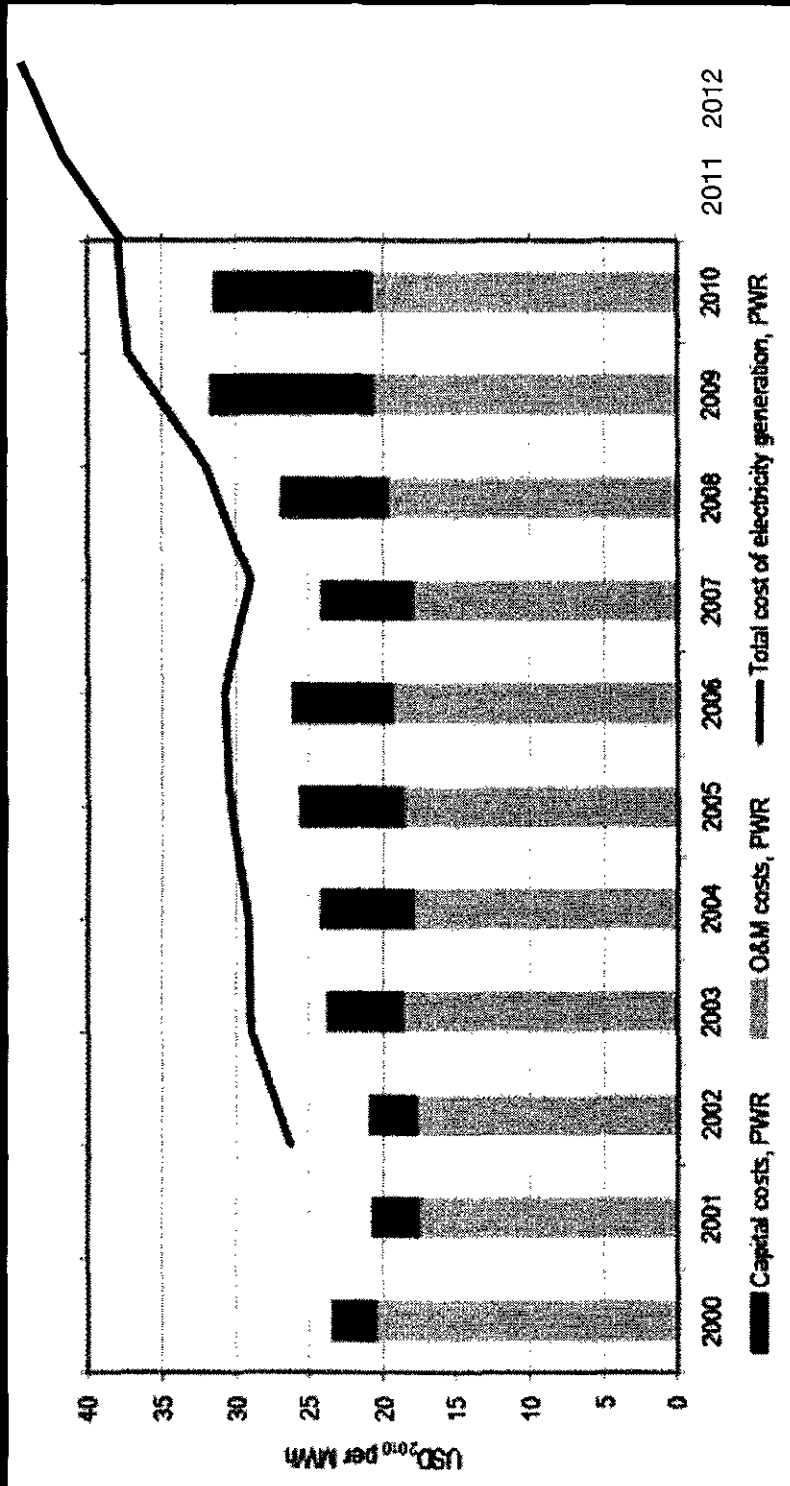
Many existing U.S. reactors are now uneconomic just to operate



Source: A.B. Lovins, "The economics of a U.S. civilian nuclear phase-out," *Bull. atom. Scient.* 69(2):44-65, April 2013, doi: 10.1177/0096340213478000, www.rmi.org/Knowledge-Center/Library/2013-09_BulletinAtomicScientists. In EUCG data, fuel includes waste mgt.

Reactors are promoted as costly to build but cheap to run. Yet as Daniel Allegretti ably described, many existing, long- paid-for U.S. reactors are now starting to be shut down because just their *operating* cost can no longer compete with wholesale power prices, typically depressed by gas-fired plants or windpower. This graph from my *Bulletin of the Atomic Scientists* article a year ago summarizes nuclear-industry data on the operating costs of all U.S. PWRs. Both within and between the four quartiles, each with 25 reactors, the operating costs vary widely, especially for major repairs or renovations — called "net capital additions" because they're capitalized rather than expensed. These expenditures may fix failing old components, or may invest to increase the unit's output or lifetime, or both, but the industry hasn't publicly stated the mix of these causes. Suspicions are growing, though, that like an old car, some reactors are no longer worth fixing, or fixing them is too risky a bet that nothing else expensive will break for a long time. Last year, U.S. utilities bit that bullet and terminated 14 operating or planned units. Many more are reportedly at risk of closure this year.

Latest data show continuing rise in PWR opex (BWRs similar)



EUCG data: 2000–10 from OECD/NEA, The Economics of Long-Term Operation of Nuclear Power Plants (2012), p 92, <http://www.oecd-nea.org/ndd/reports/2012/7054-long-term-operation-npps.pdf>; 2011: EUCG, pers. comm.; 2012: NEI.

This rise in real operating costs, chiefly for net capital additions (blue), steepened in 2008 and again in 2011, despite major improvements in the industry's operating prowess and institutional learning. That seems consistent with age-related deterioration. And of course since the *operating* costs driving the shutdowns are a small fraction of the *capital* cost of building *new* reactors, *their* economic case is even weaker...*