

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**Before the Atomic Safety and Licensing Board**

In the Matter of	)	Docket No. 50-346-LR
First Energy Nuclear Operating Company	)	
(Davis-Besse Nuclear Power Station, Unit 1)	)	August 17, 2012
.	)	

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

*APPENDIX VI: NRC FOIA RESPONSES (B-39  
THROUGH B-43)*

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**CuadradoDeJesus, Samuel**

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**From:** Lehman, Bryce *mlr*  
**Sent:** Monday, December 05, 2011 4:46 PM  
**To:** Sakai, Stacie; Sheikh, Abdul; Morey, Dennis  
**Cc:** Erickson, Alice; CuadradoDeJesus, Samuel  
**Subject:** Davis-Besse Presentation for Briefing Tomorrow (12/6)  
**Attachments:** Davis-Besse Shiled Building Brief - Lehman.pptx

All,

I have made some changes to reflect recent developments and Abdul's insight. The major changes occurred on the last two slides. Please review and provide feedback by noon tomorrow if you want the changes made in time for the brief.

Thanks,  
*Bryce Lehman*  
O-11F10  
(301) 415-1626  
[Bryce.Lehman@nrc.gov](mailto:Bryce.Lehman@nrc.gov)

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**CuadradoDeJesus, Samuel**

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**From:** Lehman, Bryce *mlr*  
**Sent:** Tuesday, December 06, 2011 2:14 PM  
**To:** CuadradoDeJesus, Samuel  
**Cc:** Sheikh, Abdul; Sakai, Stacie; Davis-BesseHearingFile Resource  
**Subject:** Shield Building RAI

Sam,

Can you please forward the most recent version of the Davis-Besse shield building RAI to Abdul and myself so we can finalize it based on recent developments?

Thanks,

*Bryce Lehman*  
O-11F10  
(301) 415-1626  
[Bryce.Lehman@nrc.gov](mailto:Bryce.Lehman@nrc.gov)

## DAVIS-BESSE SHIELD BUILDING CRACK

BRYCE LEHMAN  
ALICE ERICKSON

*mm*

December 6, 2011

## Agenda

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- ☐ Initial Condition
- ☐ Condition Assessment
- ☐ Licensee's Position
- ☐ NRC's Position
- ☐ Impact on License Renewal

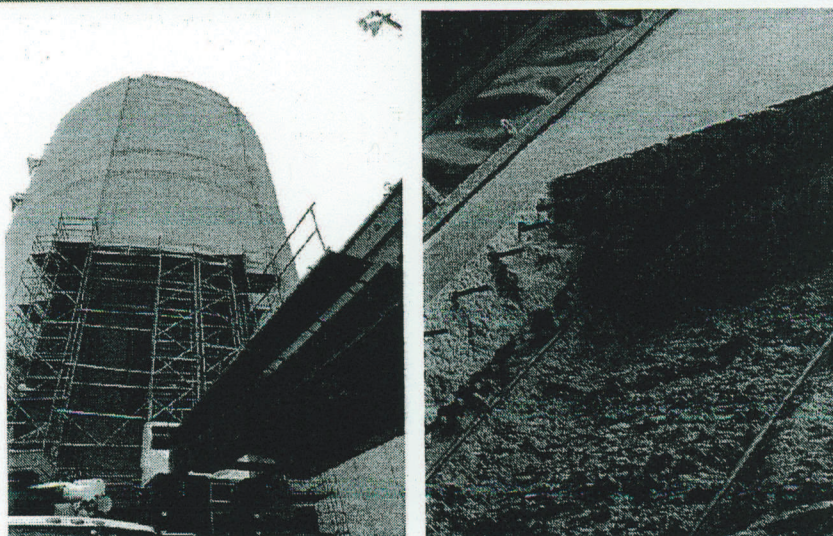
## Initial Condition

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- Laminar crack identified in architectural flute shoulder area during hydro-demolition for replacement of reactor vessel closure head (October 10<sup>th</sup>)
- Crack found on the vertical side of the opening (left side, looking from the outside), generally along main reinforcing steel, and extends ~6' across the top and ~4' across the bottom

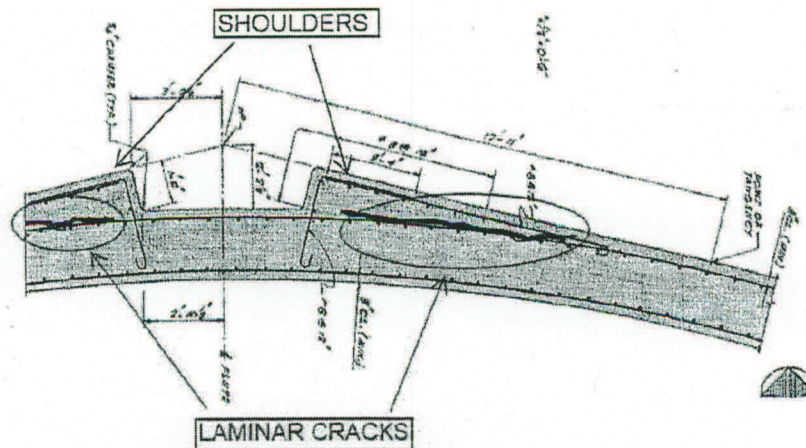
## Construction Opening

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## Flute/Shoulder Geometry

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## Condition Assessment

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### Initial Investigation

- "Chipping back" along cracked areas revealed crack extended beyond construction opening
- Impulse Response (IR) methodology employed to investigate extent of crack
- IR testing indicated crack extended ~38' above construction opening
- (4) core bores taken to validate IR results
  - ▣ Indicated crack existed near outer reinforcement mat

### Flute Shoulders

- IR testing performed on 15 of 16 flute shoulders
- Core bores taken on 12 shoulders to confirm crack boundaries
- Core bores inspected using boroscope to identify crack depths and widths
  - ▣ Very tight, less than 0.01"

## Condition Assessment

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### Flute Areas

- IR testing performed on 4 of 8 flute areas
- Core Bores taken from 6 of 8 flute areas
- IR testing and core bores confirmed laminar cracking not present in flute areas
  - ▣ One flute did have a vertical crack, but determined to be isolated condition

### Main Shell Areas

- IR testing performed in 7 of 8 areas between flute shoulders
- Two small regions adjacent to Main Steam Line penetration blockouts are cracked
  - ▣ Extent of cracking unique to penetrations
- Cracking regions exist at top 20' of Shield Building wall outside shoulder area
- Spring line area appears to have little or no cracking (top 5')

## Condition Assessment Summary

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- Cracking is generic to all flute shoulder regions
- Cracks are confined to flute shoulder regions with exception of top 20' of Shield Building wall and two small regions near MSL penetrations
- Cracking exists at top 20' of Shield Building wall outside shoulder region (investigation ongoing)
- Cracks are very tight,  $<0.01''$ , and located near the outer reinforcing mat

## Licensee's Position

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- Believe sampling method of IR testing and core bores has characterized the extent of cracking in the structure
- Primary concern is ability of outside rebar to perform its intended function. Observations of construction opening and testing indicate concrete is firmly attached to rebar mat
- Based on structural evaluation, cracking does not impact ability of structure to perform its intended safety function
- Root cause is underway

## NRC's Position

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- NRC informed licensee they could restart (12/2)
  - Licensee developed a model with reasonable assumptions which demonstrated adequate margin for *operability*
  - Staff continues to evaluate whether the shield building conforms to the design code requirements in the CLB
- NRC issued CAL which included commitments to:
  - Determine root cause and develop a long-term monitoring program (due 2/28/12)
  - Select multiple un-cracked areas to investigate to verify the cracking is not spreading (due 90 days)
  - Analyze known cracked areas to verify the cracks are not growing

## License Renewal Impact

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- The degraded shield building is a Part 50 issue affecting license renewal
- DLR needs to understand if the degradation is age-related, and if so how it will be managed
- DLR has prepared a draft RAI asking the applicant to explain how the unique OE will be addressed by its AMPs
  - Currently finalizing RAI based on last week's developments and will be prepared to issue shortly
  - This will be tracked as an Open Item in the SER

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**From:** Murphy, Martin *nmr*  
**To:** Jessup, William; Hoang, Dan; Thomas, George; Manoly, Kamal  
**Subject:** FW: ET Significant Topic: Containment Delamination  
**Date:** Thursday, December 08, 2011 7:24:06 AM

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FYI – date of the Containment delam sig topics brief

**From:** Sakai, Stacie *nmr*  
**Sent:** Wednesday, December 07, 2011 2:34 PM  
**To:** Murphy, Martin  
**Cc:** Jessup, William; Hoang, Dan; Manoly, Kamal  
**Subject:** RE: ET Significant Topic: Containment Delamination

Marty,

This was originally scheduled for December 17 and has been rescheduled for December 22.

If it was further rescheduled, then I am not aware of that date.

Stacie

**From:** Murphy, Martin *nmr*  
**Sent:** Wednesday, December 07, 2011 1:48 PM  
**To:** Sakai, Stacie  
**Cc:** Jessup, William; Hoang, Dan; Manoly, Kamal  
**Subject:** RE: ET Significant Topic: Containment Delamination

I was just told this was rescheduled. Any ideas on new date?

**From:** Sakai, Stacie  
**Sent:** Wednesday, December 07, 2011 10:33 AM  
**To:** Murphy, Martin  
**Cc:** Lehman, Bryce; Auluck, Rajender; Erickson, Alice  
**Subject:** RE: ET Significant Topic: Containment Delamination

Marty,

DLR currently has the lead on putting the presentation together.

Stacie

**From:** Murphy, Martin  
**Sent:** Wednesday, December 07, 2011 10:15 AM  
**To:** Sakai, Stacie  
**Subject:** RE: ET Significant Topic: Containment Delamination

Who is putting together the package?

**From:** Sakai, Stacie  
**Sent:** Tuesday, November 29, 2011 2:06 PM  
**To:** Murphy, Martin

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**Subject:** ET Significant Topic: Containment Delamination

Hi Marty,

I am acting for Rajender Auluck, Chief of the Aging Management of Structures, Electrical, and Systems Branch, while he is out the office. Raj returns on December 12. There is an ET significant topic brief on December 15. Based on the LT SharePoint site, the title of the brief is Containment Delamination and the objective of the meeting is to discuss containment delamination at Crystal River and Davis Besse.

I wanted to ensure you were aware of this and your Branch is able to support the discussion from a Part 50 perspective.

Please call me at 301-415-1884, or we can meet to discuss further.

Thank you  
Stacie

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**Murphy, Martin**

**From:** Murphy, Martin *MR*  
**Sent:** Tuesday, December 13, 2011 8:55 AM  
**To:** Roquecruz, Carla  
**Subject:** RE: G20110823 - "Cracks in the Concrete Wall of the Shield Building of the Davis-Besse Power Plant"

I didn't know about the GT – I would think that RIII has the lead. I have not seen anything where they requested our review but I am seriously behind on emails. I'm trying to catch up on the emails right now. Perhaps today?

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**From:** Roquecruz, Carla *MR*  
**Sent:** Friday, December 09, 2011 11:30 AM  
**To:** Murphy, Martin; Farzam, Farhad  
**Cc:** Farzam, Farhad  
**Subject:** G20110823 - "Cracks in the Concrete Wall of the Shield Building of the Davis-Besse Power Plant"

*Gentlemen,*

*Are we supporting this GT? It is an EDO's ticket and I am just wondering if the EDO requested our input. Do you know?*