

## Davis-BesseNPEm Resource

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**From:** CuadradoDeJesus, Samuel  
**Sent:** Thursday, October 06, 2011 3:27 PM  
**To:** dorts@firstenergycorp.com  
**Cc:** Davis-BesseHearingFile Resource  
**Subject:** FW: NRC-FENOC Telecon Notes -- September 29, 2011  
**Attachments:** NRC telecon 092911.pdf

Thanks

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**From:** [dorts@firstenergycorp.com](mailto:dorts@firstenergycorp.com) [<mailto:dorts@firstenergycorp.com>]  
**Sent:** Thursday, October 06, 2011 10:15 AM  
**To:** CuadradoDeJesus, Samuel  
**Cc:** [custerc@firstenergycorp.com](mailto:custerc@firstenergycorp.com)  
**Subject:** NRC-FENOC Telecon Notes -- September 29, 2011

Sam..... attached are the telephone conference call notes from our discussion on September 29, 2011, for your information.

Regarding the numbering of [potential] RAI 4.7.4-1, will this RAI be a Supplemental RAI 4.7.4-1 since RAI 4.7.4-1 has already been issued and responded to in FENOC letter dated 4/15/11, or will it be issued as new RAI 4.7.4-3 since 4.7.4-2 was also issued /responded to in the April 15 letter?

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**Received Date:** 10/6/2011 3:26:41 PM  
**From:** CuadradoDeJesus, Samuel

**Created By:** Samuel.CuadradoDeJesus@nrc.gov

**Recipients:**

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**Options**

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**Reply Requested:** No  
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**TO:** File **DATE:** September 29, 2011  
**FROM:** Larry Hinkle  
**SUBJECT:** NRC Telecon Regarding Davis-Besse License Renewal

**NRC Attendees:** Sam Cuadrado de Jesus, John Klos, Christopher Sydnor

**FENOC Attendees:** Cliff Custer, Allen McAllister, Larry Hinkle, John Hartigan

This telephone conference call was initiated by Sam Cuadrado de Jesus, NRC Project Manager for Davis-Besse License Renewal. The telecon took place at 2:30 PM on September 29, 2011. The purpose of the call was to discuss Davis-Besse License Renewal Application (LRA) topics related to previous responses to NRC requests for additional information (RAIs) and to new questions. The topics, discussion summary and action items are as follows:

**RAI 3.2.2.2.3.6-2**

In its response dated September 16, 2011, the applicant provided the following.

“Furthermore, the LRA is revised to define the moist air (internal) environment to encompass both the air-water interface and the air environment above the interface. In conclusion, the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Program manages loss of material (except for selective leaching) and cracking for all in scope components subject to a moist air environment.”

**Discussion**

The NRC reviewer noted that changes to the associated aging management review rows seemed to be as expected. However, the reviewer had a question on rows 25 and 32 of LRA Table 3.3.2-27. The rows are for the environment of air-indoor uncontrolled (internal) and the reviewer requested that FENOC confirm that these rows are not associated with an air-water interface and that no changes to these rows are needed.

Action Item: FENOC to provide a supplemental response to RAI 3.2.2.2.3.6-2. If possible, include in the next letter scheduled for submittal. Otherwise, provide in the letter due on 10/24/2011.

**RAI 4.7.3-1**

**Background**

LRA Section 4.7.3 discusses a fracture mechanics analysis for evaluating the integrity of the RV during the pressurized thermal shock (PTS) event associated with low-temperature (35 °F) water injection from the BWST following a small steam line break. LRA Section 4.7.3 states that the current licensing basis (CLB) analysis for this event is addressed in the Davis-Besse Updated Safety Analysis Report (USAR),

Section 5.2 and that the subject analysis was revised to consider the period of extended operation (52 EFPY).

#### Issue

The staff reviewed USAR Section 5.2 and could not locate the CLB analysis for evaluating RV integrity under the subject PTS conditions. Furthermore, the staff found no references in LRA Section 4.8 for reports documenting the analysis of RV integrity under these PTS conditions for the period of extended operation, based on the 52 EFPY  $RT_{PTS}$  values.

#### Request

- a. Please state the USAR section and page number where the summary of the CLB analysis of the subject PTS event is located. If a summary of the CLB analysis is not located in the USAR, please state where it can be found.
- b. Please provide the reports documenting the projected 52 EFPY analysis of RV integrity under the subject PTS conditions

#### Discussion

FENOC responded by stating that the response to RAI 4.7.3-1 will include docketing of the PTS analysis and the approved USAR change notice that updates the Section 5.2 pressurized thermal shock analysis information. The NRC found this acceptable.

Action Item: NRC to issue RAI.

### **RAI 4.7.4-1**

#### Background

By letter dated June 3, 2011, the applicant provided Amendment 8 to Davis-Besse LRA. LRA Amendment 8 revised the disposition for the analysis of the HPI/Makeup Nozzle Thermal Sleeves in LRA Section 4.7.4 from "10 CFR 54.21(c)(1)(iii)" to "Not a TLAA." As an explanation for the revised disposition, LRA Section 4.7.4, as amended, now states that "[b]ased on the [USAR Supplement] commitment [to replace the subject thermal sleeves], the HPI/Makeup nozzle thermal sleeves are short-lived (not 40-year) parts and therefore this analysis is not a TLAA." Similarly, LRA Amendment 8 revised the corresponding USAR Supplement section in LRA Section A.2.7.4 to reflect the changed disposition. LRA Section A.2.7.4, as revised by LRA Amendment 8, now states that, "[b]ased on the commitment [to replace the subject thermal sleeves], the HPI/makeup nozzle thermal sleeves are short lived (not 40-year) parts and therefore this analysis is not a TLAA." Finally, LRA Section 4.1, Table 4.1-1, was amended per LRA Amendment 8 to state that the evaluation of the subject thermal sleeves is "Not a TLAA."

#### Issue

The staff determined that aging of the subject thermal sleeves, as discussed in LRA Section 4.7.4, should be identified as a TLAA in LRA Sections 4.1, 4.7.4, and the USAR Supplement, because the aging mechanism is time dependent (i.e., it is dependent on the number of transient cycles incurred), and the staff cannot accept

future commitments to replace components as a means for disposition of the currently-installed components undergoing time-dependent aging processes, without a TLAA of the currently-installed components.

#### Request

Based on the above, the staff requests that the applicant amend LRA Sections 4.1, 4.7.4, and A.2.7.4 to identify HPI/makeup thermal sleeve aging as a TLAA. The staff also requests that the applicant select an appropriate disposition under 10 CFR 54.21(c)(1). If the applicant proposes a 10 CFR 54.21(c)(1)(iii) disposition for this analysis, then the staff requests that the applicant amend LRA Sections 4.7.4 and A.2.7.4 to propose an appropriate aging management program (AMP) for managing the effects of aging on the intended function of the thermal sleeves. Any AMP identified in LRA Sections 4.7.4 and A.2.7.4 for a 10 CFR 54.21(c)(1)(iii) disposition of this analysis should ensure that the effects of aging on the subject thermal sleeves are appropriately managed for the period of extended operation.

#### Discussion

FENOC responded by stating the request is understood. Also, FENOC stated that the TLAA is only applicable to the HPI nozzle used for makeup duty and that periodic inspection of the HPI/makeup nozzle thermal sleeve is conducted under the ISI Program. Therefore, FENOC plans to use the ISI Program to manage the effects of aging for the HPI/makeup nozzle thermal sleeve. The NRC found this to be acceptable. Also, the NRC wanted to know if this inspection requires an enhancement to the ISI Program. FENOC responded that the program description would be revised to show that the ISI Program manages the subject TLAA but did not plan to identify the inspection as an enhancement since the inspection is already included in the existing ISI Program. Relative to the enhancement issue, the NRC reviewer was not sure if the FENOC response was acceptable and would follow-up with NRC management.

#### Action Items:

- 1) NRC to determine if an ISI Program enhancement is needed to address the HPI/makeup nozzle thermal sleeve inspection.
- 2) NRC to issue RAI.

### **RAI 4.7.5.2-2**

#### Background

LRA Section 4.7.5.2 addresses the TLAA related to the Steam Generator 1-2 flaw evaluations. LRA Section 4.7.5.2 states that the subject flaws were analytically evaluated using the ASME Code, Section XI, IWB-3612 acceptance criteria. LRA Section 4.7.5.2 further states that the IWB-3612 analysis of the subject flaws determined that the steam generator shell components containing the flaws would remain acceptable for continued service during the period of extended operation, accounting for flaw growth due to fatigue based on 240 heat-up and cool-down cycles.

By letter dated March 17, 2011 (ADAMS Accession No. ML110680172) the NRC staff submitted a request for additional information (RAI) concerning the plant-specific time-limited aging analyses (TLAAs) in the Davis-Besse License Renewal Application (LRA), Sections 4.7.4, 4.7.5.1, and 4.7.5.2. RAI Question No. 4.7.5.2-1 (RAI 4.7.5.2-1) was issued to request clarification on a number of issues concerning the subject steam generator shell flaws and the ASME Code, Section XI, IWB-3612 analytical evaluations of these flaws.

In RAI 4.7.5.2-1, part (b), the staff requested that the applicant state whether the subject flaws were found to be the result of service-induced degradation or fabrication defects. In RAI 4.7.5.2-1, part (e) the staff requested that the applicant state whether the flaw dimensions have increased since discovery in 1988. The staff also requested that, if the flaw dimensions have increased, the applicant state whether the subject flaws were re-analyzed in accordance with ASME Code, Section XI, IWB-3612 requirements based on the new flaw dimensions. In RAI 4.7.5.2-1, part (g), the staff requested that the applicant provide references for all reports documenting IWB-3612 analytical evaluations of the subject flaws.

#### Issue

By letter dated April 15, 2011, the applicant submitted its responses to the staff's RAIs. In its response to RAI 4.5.2.1, part (b), the applicant stated that the subject flaws "were analyzed in accordance with IWB-3612, as required by the ASME [Code], Section XI acceptance standards, and found to be acceptable for continued operation." The staff reviewed the applicant's response to RAI 4.7.5.2-1, part (b) and noted that the applicant did not state whether the subject flaws were determined to be service-induced or caused by fabrication.

In its response to RAI 4.7.5.2-1, part (e), the applicant stated that "[t]he subject components were reexamined during Cycle 6 (year 1990) and no flaw growth was noted. The subject components, with the exception of the W axis longitudinal seam weld intersection with the shell to lower tubesheet weld, were also reexamined during Cycle 7 (year 1991) and no flaw growth was noted." The staff reviewed the applicant's response to RAI 4.7.5.2-1, part (e), and noted that the RAI response only stated that no flaw growth was noted during the ASME Code, Section IWC-2420(b)-required successive inspections performed in 1990 and the subsequent inspections performed in 1991. The staff noted that the applicant did not state whether any flaw growth was noted for the subject components as a result of any examinations performed on the flawed regions after 1991.

In its response to RAI 4.7.5.2-1, part (g), the applicant stated that the subject flaw evaluations are documented in the following Babcock & Wilcox (B&W) Reports from 1988:

1. Report No. 32-1172294-00, "Davis-Besse 1 SG Flaw Evaluation," dated June 9, 1988
2. Report No. 32-1172294-01, "Davis-Besse 1 SG Flaw Evaluation," dated July 18, 1988

3. Report No. 32-1172523-00, "DB-1 SG Flaw Evaluation," dated July 18, 1988

The above flaw evaluation reports were provided in an enclosure to the April 15, 2011 RAI response. These flaw evaluation reports reference the 1977 Edition of the ASME Code, Section XI, IWB-3612 analytical acceptance standard. The flaw evaluation report summaries state that the subject flaws were found to be acceptable, in accordance with the ASME Code, Section XI, IWB-3612 analytical acceptance standard.

In reviewing the above flaw evaluation reports, the staff determined that the subject flaw evaluations were only performed for normal conditions, and only demonstrated acceptability based on the analytical acceptance criterion for normal (including upset and test) operating conditions, as specified in the ASME Code, Section XI, IWB-3612, paragraph (a). The staff determined that the applicant had not specifically evaluated the subject flaws for emergency and faulted conditions, as required by the 1977 Edition of the ASME Code, Section XI, IWB-3612, paragraph (b).

#### Request

Based on the above, the staff requests that the applicant provide the following information concerning the subject steam generator flaws and the analytical evaluations performed for these flaws:

- 1) Taking into consideration the steam generator shell materials containing the flaws, the secondary side water and steam environment, and the secondary side thermal and pressure stresses to which these shell components are subjected, please state whether any of the surface-breaking indications were believed to have been caused by stress corrosion cracking, or any other service-induced aging effect.
- 2) For any inservice examinations performed on the flawed regions of the steam generator shell after 1991, in particular the examinations performed for the steam generator X/Y axis outlet nozzle to shell weld and the lower tubesheet to shell weld during the first and second periods of the third 10-year ISI interval, please state whether these examinations detected any increase in the flaw dimensions, relative to the 1988 flaw dimensions. (The staff notes that any measured increase in flaw dimensions would likely invalidate the analyses performed in the 1988 flaw evaluation reports.)
- 3) Please state whether the subject flaws were analyzed for emergency and faulted conditions, as required by the ASME Code, Section XI, IWB-3612, paragraph (b). If the subject flaws were analyzed for emergency and faulted conditions, as required by IWB-3612, paragraph (b), please provide the flaw analyses for these conditions, or explain how the IWB-3612, paragraph (a) analyses, as documented in the 1988 flaw evaluation reports, for normal, upset, and test conditions, would bound the flaw analyses for emergency and faulted conditions. If the subject flaws were not analyzed for emergency and faulted conditions, please provide these analyses, as required by IWB-3612, paragraph (b).



## Discussion

The NRC reviewer wanted to know whether any of the surface-breaking indications were believed to have been caused by stress corrosion cracking, or any other service-induced aging effect. After some discussion, it was agreed that in the RAI response FENOC would provide an assessment to support the position that the subject flaws were most likely caused by fabrication defects.

The NRC reviewer wanted to know whether any inservice examinations performed on the flawed regions of the steam generator shell after 1991 have increased in the flaw dimensions, relative to the 1988 flaw dimensions. FENOC responded that there has been no increased in the flaw dimensions, relative to the 1988 flaw dimensions and that the only steam generator flaw location still scheduled for examination in the current ISI interval is the SG 1-2 W/X axis outlet nozzle to shell weld; scheduled for the 17Mid cycle outage that starts on October 1, 2011.

The NRC reviewer wanted to know whether the subject flaws were analyzed for emergency and faulted conditions, as required by the ASME Code, Section XI, IWB-3612, paragraph (b). FENOC responded that the flaw analyses were conducted in accordance with the 1977 edition of the ASME Code and that this edition did not require consideration of emergency and faulted conditions. The NRC reviewer found this response acceptable but would need to verify that the 1977 edition did not require analysis of emergency and faulted conditions.

Action Items: NRC to issue RAI

There was no further discussion, and the call was concluded.