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May 27, 2011
L-11-156

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Davis-Besse Nuclear Power Station, Unit No. 1
Docket No. 50-346, License No. NPF-3
Response to Request for Additional Information – 2010 Steam Generator Tube Inspection Report (ME5261)

By letter dated December 17, 2010 (Accession No. ML103610313), FirstEnergy Nuclear Operating Company (FENOC) submitted a report that summarized the results of the Davis-Besse Nuclear Power Station, Unit No. 1 steam generator tube inspections performed during the March 2010 refueling outage. By correspondence dated April 19, 2011 (Accession No. ML111050380), the Nuclear Regulatory Commission (NRC) requested additional information in order to complete its review of the inspection results. The FENOC response to the NRC request is attached.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 761-6071.

Sincerely,

KW Byrne for B. Allen

Barry S. Allen

Attachment:
Response to April 19, 2011 NRC Request for Additional Information

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Utility Radiological Safety Board

ATTACHMENT
L-11-156

Response to April 19, 2011 NRC Request for Additional Information

By correspondence dated April 19, 2011 (Accession No. ML111050380), the Nuclear Regulatory Commission (NRC) staff requested additional information regarding the FirstEnergy Nuclear Operating Company (FENOC) Davis-Besse Nuclear Power Station, 2010 steam generator tube inspection report summarized in letter dated December 17, 2010 (Accession No. ML103610313). The NRC's request is provided below in bold text followed by the FENOC response.

1. **Please discuss the results of your auxiliary feedwater header to tube gap analysis, including both visual and eddy current examinations performed on the internal auxiliary feedwater header, header-to-shroud attachment welds, and the external header thermal sleeves.**

Response:

In the steam generator (SG) 2-A auxiliary feedwater header to tube gap analysis, a total of 366 tubes were examined. Results of these eddy current examinations identified fifteen tubes with auxiliary feedwater header (AFH) calls, all of which were diagnosed with greater than 0.250 inch gap measurements. In the SG 1-B auxiliary feedwater header to tube gap analysis, a total of 396 tubes were examined. Results of these eddy current examinations identified eight tubes with AFH calls, all of which were diagnosed with greater than 0.250 inch gap measurements. There were a total of twenty-four weld spatter (WSP) calls, one in SG 2-A and twenty-three in SG 1-B. These WSP calls were identified in previous outages and are tracked to ensure they are not changing. Based on the above examination results, there is no evidence of auxiliary feedwater header movement.

The visual examinations of equipment and components followed the requirements of VT-3 and were performed via all eight auxiliary feedwater penetrations and the upper secondary manway of SG 1-B. The internal auxiliary feedwater header inspections identified no recordable indications. The header-to-shroud attachment weld inspections identified no evidence of degradation to the original bracket and welds. The external header thermal sleeve inspections of all eight sleeves identified no recordable indications.

2. There appears to be an increase in the number of crack-like indications identified in 2010 when compared to 2008. Please discuss whether the severity of the indications found has been increasing with time.

Response:

A comparison of the indications from the 2008 refueling outage (15RFO) with those from the 2010 refueling outage (16RFO) indicate a slight increase in the average analyzed severity of all crack-like degradation mechanisms. However, this is to be expected due to the progressive nature of the types of degradation observed. The relevant eddy current non-destructive examination (NDE) parameters include NDE voltage and NDE length.

	Indications		Average	
	Axial	Circumferential	NDE Voltage	NDE Length [in]
Freespan ODSCC / Groove IGA				
15RFO	42		0.18	0.58
16RFO	102		0.22	0.69
Upper Tubesheet Original Roll Expansion Transition PWSCC				
15RFO	5		0.6	0.16
16RFO	6		0.67	0.18
Upper Tubesheet Repair Roll Expansion Transition PWSCC				
15RFO	23		0.91	0.25
16RFO	25		1.38	0.26
Upper Tube End Cracking				
15RFO	57		1.31	N/A
16RFO	146		1.57	N/A
Lower Tubesheet Roll Expansion Transition PWSCC				
15RFO	1		0.79	0.18
16RFO	5		0.73	0.23
Upper Tubesheet Rolled Region PWSCC				
15RFO		1	0.78	0.21
16RFO		1	1.71	0.28

ODSCC – Outside Diameter Stress Corrosion Cracking
IGA – Intergranular Attack
PWSCC – Primary Water Stress Corrosion Cracking

Even with this expected growth in NDE voltage and NDE length, all indications observed during the sixteenth refueling outage meet condition monitoring structural and leakage integrity requirements. Furthermore, the expected severity of tubing degradation was factored into the analysis used to make operational assessment predictions. The operational assessment predicts that at the end of the operating cycle, the required structural and leakage integrity margins will continue to be satisfied.

3. **Two tubes (one in each SG) were identified with volumetric indications inside the pressure boundary. The volumetric indication in SG 2A is located within the tubesheet and the volumetric indication in SG 1B is located in the freespan. The table in Section 5 of the December 17, 2010 submittal, however, shows one tube in SG 2A was plugged for a freespan volumetric indication. Is this correct? If so, please discuss how the freespan volumetric indication in SG 1B was dispositioned.**

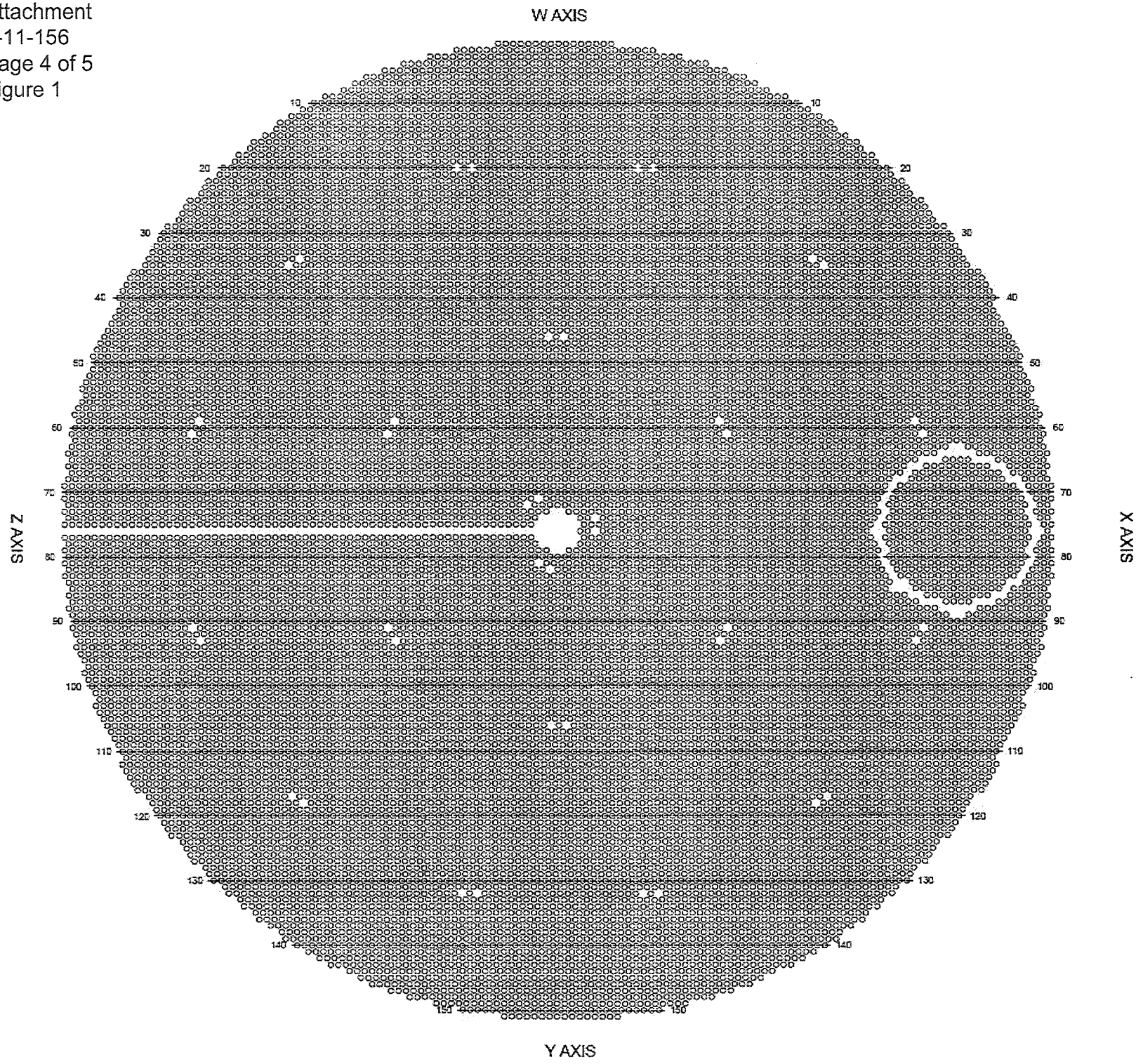
Response:

The entry for a freespan volumetric degradation (indication) in the Section 5 table, "Response to Technical Specification 5.6.6.e, Number of Tubes Plugged or Repaired During the Inspection Outage for Each Active Degradation Mechanism," of the December 17, 2010 submittal was incorrectly included under the SG 2-A column when it should have been included under the SG 1-B column. The Freespan Volumetric Degradation entry in the SG 2-A column should be null and the entry in the SG 1-B column should be 1.

4. **Please provide a copy of a tubesheet map depicting the row and tube numbering scheme.**

Response:

Copies of tubesheet maps are provided below. Figure 1 depicts the tubesheet map for the inlet of both SGs with row 1 at the top and 151 at the bottom. Figure 2 depicts the tubesheet map for the outlet of both SGs with row 151 at the top and row 1 at the bottom. In both figures, the tubes are numbered sequentially without skipping values for tube support plate tie rod locations or other no-tube locations. The only exception is row 76; the first tube in this row, near the center of the SG, is numbered as 64.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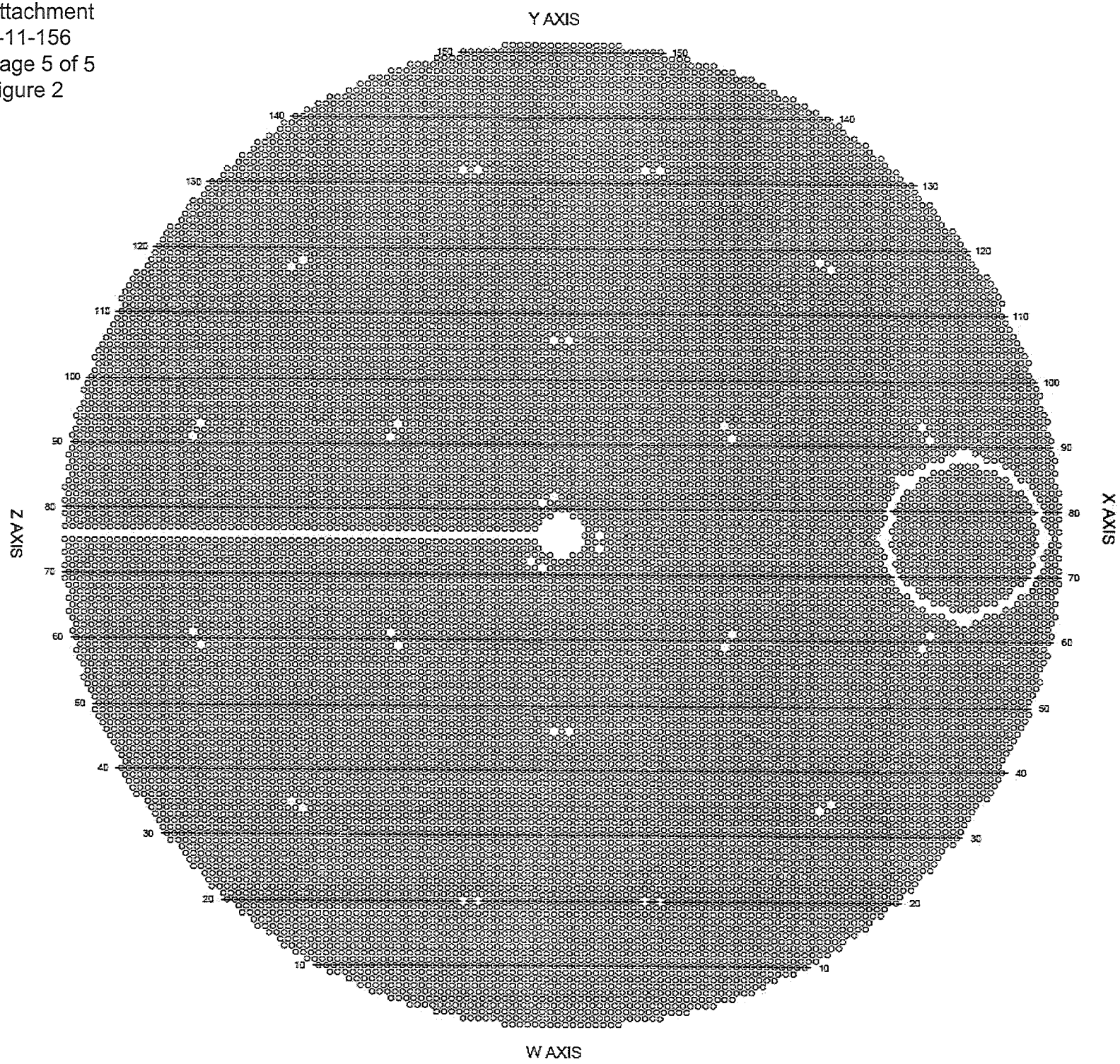
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