June 20, 2008

Mr. Barry S. Allen
Site Vice President
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
Mail Stop A-DB-3080
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 - REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE SUMMARY OF DESIGN AND ANALYSES OF WELD OVERLAYS FOR PRESSURIZER AND HOT LEG NOZZLE LARGE BORE DISSIMILAR METAL WELDS FOR ALLOY 600 MITIGATION (MD8105)

Dear Mr. Allen:

By letter to the Nuclear Regulatory Commission (NRC) dated February 8, 2008, FirstEnergy Nuclear Operating Company submitted a summary of design and analyses of the weld overlays for pressurizer and hot leg large bore dissimilar metal welds for Alloy 600 mitigation to satisfy commitments provided in the February 15, 2007, letter which requested NRC approval of a proposed alternative to American Society of Mechanical Engineers Code Section XI requirements in support of weld overlay repairs, for the Davis-Besse Nuclear Power Station, Unit No. 1.

The NRC staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with your staff on June 16, 2008, it was agreed that you would provide a response within 30 days from the date of this letter.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-4037.

Sincerely,

/RA/

Thomas J. Wengert, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

By letter dated February 8, 2008, FirstEnergy Nuclear Operating Company (FENOC) submitted a summary of design and analyses of the weld overlays for pressurizer and hot leg dissimilar metal welds. The submittal is part of the licensee's commitment provided in its Relief Request, RR-A30, Revision 2, which was submitted by letters dated February 15, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071020195), June 28, 2007 (ADAMS Accession No. ML071840039), September 28, 2007 (ADAMS Accession No. ML072750034), and November 19, 2007 (ADAMS Accession No. ML073180505), for the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS). The NRC staff has determined that the following information is needed in order to complete its review:

1. In Table 2-3, the licensee shows that the time for a postulated circumferential flaw to reach the design basis flaw size for the hot leg surge nozzle weld and hot leg decay heat nozzle weld are 2.58 years (31 months) and 6 years, respectively. The postulated flaw is 75 percent through wall and the design basis flaw is 100 percent through wall of the original alloy 82/182 weld. RR-A30, Revision 2, requires that the overlaid dissimilar metal welds be inspected during the first or second refueling outage after the overlay installation. If no indication is detected, the weld will be included in a sample population. Twenty-five percent of the sample population will be inspected every 10 years. The NRC staff notes that once the weld overlay is installed, the current ultrasonic examination is not qualified to inspect the inner 75 percent of the wall thickness of the dissimilar metal weld.

    (a) The NRC staff is concerned that the 10-year inspection interval may be inadequate (i.e., too long) to monitor the structural integrity of the hot leg surge nozzle weld and hot leg decay heat nozzle weld. If an actual flaw exists, it may grow to the design basis flaw size (i.e, 100 percent through wall of the weld) in less time than the inspection interval. If the actual flaw is caused by fatigue, the 100 percent through wall flaw may grow into the weld overlays of the subject welds. If the flaw is caused by primary stress corrosion cracking, it may be blunt by the weld overlays. If not blunted, it may grow into the weld overlays also. Discuss the adequacy/effectiveness of the 10-year inservice inspection frequency for these two welds.

    (b) Because the postulated circumferential flaw is predicted to reach the design basis flaw size in less time than the inspection interval, discuss whether an analysis was performed to predict how far that flaw would grow into the weld overlay at the end of the 10 year inspection period. If not, provide the technical basis to support the structural integrity of the subject welds.

    (c) Table 2-3 shows that the time for the postulated circumferential flaw and axial flaw to reach the design basis flaw size for the two pressurizer relief nozzles (i.e.,

the 3-inch nozzle and 2.5-inch nozzle) is the same (> 60 years). However, for other nozzles (e.g., pressurizer surge and spray nozzles, hot leg surge and decay heat nozzles) the time for the circumferential flaw and axial flaw to reach the design basis flaw size is much different. Discuss why for the pressurizer 2.5 and 3-inch relief nozzles the time period is the same.

(d) Discuss the analytical input parameters and degradation mechanisms that cause the circumferential flaw to reach the design basis flaw size for the pressurizer surge nozzle, pressurizer spray nozzle, hot leg surge nozzle, and hot leg decay heat nozzle. Discuss why the time for the circumferential flaw to reach the design basis flaw size is a much shorter time than the axial flaw in the hot leg surge nozzle, hot leg decay heat nozzle, pressurizer surge nozzle, and pressurizer spray nozzles.

(e) In a letter dated February 5, 2008, the licensee reported an axial flaw that caused leakage in the hot leg decay heat nozzle during welding of the overlay. Discuss whether this flaw was used in the stress analysis. If not, provide the reason for not modeling the actual flaw in the analysis.