

SUBJECT: STATUS OF THE STAFF'S REVIEW OF FIRSTENERGY NUCLEAR OPERATING COMPANY'S (FENOC'S) BULLETIN 2001-01 RESPONSE FOR DAVIS-BESSE

The staff hosted a public meeting on November 28, 2001, with FENOC (licensee) representatives as part of its ongoing efforts associated with review of the licensee's Bulletin 2001-01, "Reactor Pressure Vessel Head Penetration Nozzle Cracking," responses. The licensee provided additional information including its revised probabilistic safety assessment. To address the potential safety concerns and to justify operation beyond December 31, 2001, the licensee also committed to (1) shut down Davis-Besse on February, 16, 2002, for the commencement of the refueling outage, (2) perform the vessel head penetration (VHP) nozzle inspections as recommended in the Bulletin, (3) characterize any cracks that are identified in VHP nozzles (as required by the ASME Code), (4) operate the plant at a lower reactor coolant system hot leg temperature to reduce the vessel head temperature effects on crack initiation and growth, (5) maximize the availability of the plant's redundant critical safety systems until shutdown, and (6) ensure more reliable operator response to the potential consequences of an event by providing enhanced operator training related to SBLOCA.

As the basis for evaluating the licensee's probabilistic safety assessment, the staff utilized the guidance contained in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." In the November 28, 2001, meeting, the licensee presented a range of possible initiating event frequencies and associated changes in core damage frequencies (Δ CDF) and incremental core damage probabilities (ICDP) for a loss-of-coolant accident (LOCA) resulting from outside diameter-initiated primary water stress corrosion cracking of a VHP nozzle based on assumptions regarding the efficacy of previously conducted inspections as well as the VHP nozzle material susceptibility to this cracking mechanism. The resultant Δ CDFs and ICDPs (for the approximately 75 days that the facility would operate), including credit for conservative configuration risk management, ranged from values that risk-informed decisionmaking guidance considers acceptable with increased management attention to a value that would not normally be permitted. The corresponding values for the changes in large early release frequencies (Δ LERF) and incremental large early release probabilities (ILERP) were generally below the guideline thresholds due to the relatively large, dry containment at Davis-Besse.

The staff recognizes the uncertainties associated with this issue including those associated with the crack initiation and growth models. Based on the available information, the staff believes that the actual initiating event frequency and resultant Δ CDF, ICDP, Δ LERF, and ILERP of a LOCA resulting from a failure of a VHP nozzle due to this cracking mechanism is between the bounding values.

After considerable deliberation and increased management attention, it is the staff's judgment that sufficient information is available to justify operation of the Davis-Besse facility until February 16, 2002. Although operation in this condition could result in Δ CDF and ICDP values that are above the normally acceptable guidelines of RG 1.174 and RG 1.182, the analyses also indicate that the consequences of such an event would not constitute undue risk to the health and safety of the public.

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As the basis for evaluating the licensee's probabilistic safety assessment, the staff utilized the guidance contained in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." In the November 28, 2001, meeting, the licensee presented a range of possible initiating event frequencies and associated changes in core damage frequencies (Δ CDF) and core damage probabilities (ICDP) for a small loss-of-coolant accident (LOCA) resulting from outside diameter-initiated primary water stress corrosion cracking of a VHP nozzle based on assumptions regarding the efficacy of previously conducted inspections as well as the VHP nozzle material susceptibility to this cracking mechanism. The resultant Δ CDFs and ICDPs (for the approximately 75 days from today that the facility would operate), including credit for conservative configuration risk management, ranged from values that risk-informed decisionmaking guidance considers acceptable with increased management attention to a value that would not normally be permitted. It should be noted that the corresponding values for the changes in large early release frequency (LERF) and large early release probability (ILERP) were, in almost all cases, below the guideline thresholds due to the relatively large, dry containment at Davis-Besse.

The staff recognizes the uncertainties associated with this issue including those associated with the crack initiation and growth models. Based on the available information, the staff believes that the actual initiating event frequency and resultant Δ CDF, ICDP, LERF, and ILERP of a LOCA resulting from a failure of a VHP nozzle due to this cracking mechanism is between the bounding values, and the appropriate way to deal with this issue for Davis-Besse is to evaluate the information with increased involvement by NRR senior management.

After considerable deliberation and increased NRR management attention, it is the staff's judgment that FENOC has provided sufficient information to justify operation of the Davis-Besse facility until February 16, 2002. This finding is based on the information provided by the licensee (including commitments referred to above and relayed to the staff in the November 28, 2001, meeting), the information and experience gained from the results of previous inspections, the knowledge and expertise of the staff and its contractors, and NRR senior management input.