UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 28, 2014

Mr. Raymond A. Lieb
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-DB-3080
5501 North State, Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1- CORRECTION LETTER FOR RELIEF REQUESTS RR-A1, RR-B1, RP-1, RP-1A, RP-3, RR-A36

Dear Mr. Lieb:

In letters dated January 27, February 5 and 10, and May 5, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14003A266, ML14002A444, ML14030A592, and ML14087A429, respectively), the U.S. Nuclear Regulatory Commission (NRC) issued safety evaluations (SEs) related to requests for relief (RP-1, RP-1A, RP-3, RR-A1, RR-B1, and RR-A36) made by First Energy Nuclear Operating Company (FENOC).

It has been brought to the NRC staff's attention that the inservice inspection (ISI) and inservice test (IST) 10-year intervals were incorrectly cited on the cover pages of the SEs issued on January 27, and February 5 and 10, 2014. The cover pages should reflect a fourth 10-year ISI/IST interval beginning on September 21, 2012, and scheduled to end on September 20, 2022.

In the January 27, 2014, SE (RP-1 and RP-1A), on page 6, the fourth 10-year interval should be corrected as indicated above.

In the February 5, 2014, SE (RP-3), on page 6 the first sentence of the second full paragraph should be revised to correctly cite the affected technical specification surveillance requirement by adding a ".7" to the current citation of "3.8.1."

In the February 10, 2014, SE (RR-A1 and RR-B1), the first sentence of the second paragraph, the word "pumps" should be replaced with "the equipment." On pages 4 and 5, the fourth 10-year interval should be corrected as indicated above.

In the May 5, 2014, SE (RR-A36), on page 3 the first sentence in the fourth paragraph under the heading "Impracticality of Compliance," the parenthetical component references should be as follows "(RC-RPV-WR-54/55-W-IR and RC-RPV-WR-54/55)". On page 4, the first sentence of the second full paragraph should be similarly revised. On page 6, the third 10-year interval should be corrected to reflect the interval beginning on September 21, 2000, and ending on September 20, 2012.

The enclosures reflect the corrected change pages.

Should you have any questions, please feel free to contact Ms. Eva Brown at (301) 415-2315.

Sincerely,

Travis L. Tate

Travis L. Tate, Chief
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosures: As stated

cc: Listserv

ENCLOSURE 1

Relief Request RP-1 and RP-1A – January 27, 2014

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ADAMS Accession No. ML14003A266

At DBNPS, the licensee indicated that plant process computer points or temporary digital instruments may be used for pump testing. The computer points use permanent plant instrumentation as input, and by design, the ranges are selected to account for all expected operating and testing conditions. Surveillance tests are written such that the temporary digital instrumentation is not over-ranged. In addition, digital instrumentation is significantly less susceptible to damage from over-ranging, and the digital instrument is accurate throughout its full calibrated range.

The proposed alternative to ISTB-3510(b)(2) requires that the digital instruments used be selected such that the reference value shall not exceed 94 percent of the calibrated range. The requirement for not exceeding 94 percent of the calibrated range is based on the maximum required action range of 106 percent as required in the approved Alternative Request RP-6 for modified Group A tests using the provisions of ASME OM Code Case OMN-18. In lieu of Group A and compressive tests, ASME OM Code Case OMN-18 allows modified Group A tests be performed within ±20% of pump design flow rate, and with instrumentation meeting the requirements of Table ISTB-3510-1 for the comprehensive and preservice tests.

For the OMN-18 modified Group A test, a maximum of 106 percent of reference flow or differential pressure will be applied as the high end of the acceptable range, and values above 1.06 would be considered to be in the required action range. Therefore, the selection of reference value of 94 percent ensures that when the digital instrument used during performance of Code Case OMN-18 pump testing is reading the maximum required action level of 106 percent of the reference value, the reading is not exceeding the calibrated range of the instrument, and is therefore acceptable.

On the basis of the above evaluation, the NRC staff finds the licensee's proposed alternative for testing pumps P14-1, P14-2, P56-1, P56-2, P42-1 and P42-2, provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff determined that the proposed alternatives described in RP-1 and RP-1A provide an acceptable level of quality and safety for pumps listed in the above requests. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i) for requests RP-1 and RP-1A and is in compliance with the ASME OM Code requirements. Therefore, the NRC staff authorizes the proposed alternative in requests RP-1 and RP-1A for the DBNPS, Unit 1, fourth 10-year IST program interval, which began on September 21, 2012, and is currently scheduled to end on September 20, 2022.

All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

Principle Contributor: J. Huang

Date of issuance: January 27, 2014

ENCLOSURE 2

Relief Request RP-3 – February 5, 2014

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ADAMS Accession No. ML14002A444

code-required instrumentation would require relocation of the pumps themselves, and does not appear warranted given the system's significance due to the system design. There are no installed flow or pressure instrumentation or recirculation lines available to perform the ASME OM Code-required testing. Therefore, it is impractical to perform flow rate and differential pressure tests or to take vibration measurements on these pumps.

The DBNPS EDG fuel oil storage tank configuration consists of a safety-related 40,000 gallon, seven-day capacity underground storage tank for each EDG. Each of the underground storage tanks has an internally mounted submerged EDG fuel oil transfer pump normally supplying the corresponding 6,000 gallon gross capacity day tank. There is sufficient fuel oil in each day tank to operate its associated EDG for more than 20 hours at the continuous rated load. In addition, the supply lines from the EDG day tanks can be cross-connected, which permits either EDG to be supplied with fuel oil from either fuel oil storage tank in an emergency. Each EDG day tank also has a safety-related fill connection and the capability of emergency fill from the nonsafety-related 100,000 gallon diesel fuel oil storage tank using a flexible hose. Because of the large capacity of the day tanks, and the three diverse methods of replenishing the day tanks during EDG operation (100,000 gallon non-safety-related storage tank, 40,000 gallon safety-related storage tanks, and safety-related fill connection), the DBNPS EDG fuel oil transfer pumps are of lower safety significance than in a fuel oil transfer system with relatively small day tanks.

The alternative testing proposed by the licensee includes fuel oil transfer system functional testing every 92 days as required by DBPNS TS SR 3.8.1.7; pump flow rate tests at each cycle based on a flow of approximately 150 gallons; and a periodic pump flow rate test of approximately 1,000 gallons, performed when the EDG fuel oil storage tanks are drained and cleaned every 48 months and when the EDG fuel oil day tanks are drained and cleaned every 10 years. The pump flow rate tests will be performed under preset and repeatable conditions. The pump flow rates will be analyzed and trended for indications of degradation. A minimum flow rate of 6 gpm will be established for test acceptance criteria in lieu of the acceptance criteria in Table ISTB-5121-1 for corrective action by the licensee. The proposed value of 6 gpm for the lower end of the acceptable range, is acceptable as the pump is still capable of providing rated flow to the EDG during maxium power output. The NRC staff finds that the proposed alternative testing provides an adequate means of monitoring these pumps for degradation.

In the September 25, 2013, supplement, the licensee stated that in the past 10 years, EDG fuel oil transfer pump P195-1 was replaced in September 2005 due to low electrical resistance in the motor. This was a motor issue, not a pump degradation issue. There is no other record of corrective maintenance for this pump. The licensee stated that there is no record of corrective maintenance for EDG fuel oil transfer pump P195-2 in the past 10 years. The licensee also stated that there is no record of failed starts for the EDG fuel oil transfer pumps in the past 10 years.

The licensee also provided a summary of inservice test results for each EDG fuel oil transfer test performed over the past 10 years. The flow rate for EDG fuel oil transfer pump P195-1 ranged from 11.9 gpm to 14.4 gpm. The flow rate for EDG fuel oil transfer pump P195-2 ranged from 12.5 gpm to 16.2 gpm. These flow rates are well above the licensee's minimum flow rate value of 6 gpm.

Based on the proposed alternative providing an adequate means for monitoring pump degradation and the lack of instrumentation to support testing during operation, the NRC staff

ENCLOSURE 3

Relief Request RR-A1 and RR-B1 – February 10, 2014

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ADAMS Accession No. ML14030A592

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 10, 2014

Mr. Raymond A. Lieb
Site Vice President
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SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 - SAFETY EVALUATION FOR RELIEF REQUESTS RR-A1 AND RR-B1 (TAC NOS. MF0751 AND MF0753) (L-13-076)

Dear Mr. Lieb:

By letter dated February 27, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13059A321), FirstEnergy Nuclear Operating Company, (the licensee), submitted Relief Requests RR-A1 and RR-B1 pursuant to Section 50.55a(a)(3)(i) of Title 10 to the *Code of Federal Regulations* (10 CFR) for the Davis-Besse Nuclear Power Station (DBNPS), Unit No. 1. The licensee supplemented Relief Request RR-B1 in a letter dated September 25, 2013 (ADAMS Accession No. ML13269A095). Specifically, the licensee requested in RR-A1 to use Code Case N-532-5 to Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), which contains revised requirements for preparation and submittal of the inservice inspection (ISI) summary report, including Forms NIS-1 and NIS-2. Relief Request RR-B1, requested the use of alternative examination requirements for Class 2 welds in Examination Categories C-F-1 and C-F-2.

The U.S. Nuclear Regulatory Commission (NRC) staff determined that the proposed alternatives described in Relief Requests RR-A1 and RR-B1 provide an acceptable level of quality and safety for the equipment listed in the above requests. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i) for Relief Requests RR-A1 and RR-B1 and is in compliance with the ASME Code requirements. Therefore, the NRC staff authorizes the proposed alternative in requests RR-A1 and RR-B1 for the DBNPS, Unit No. 1, fourth 10-year ISI program interval, which began on September 21, 2013, and is currently scheduled to end on September 20, 2023.

Based on the above, the NRC staff finds that the licensee's proposed alternative will provide an acceptable level of quality and safety.

3.1.5 RR-A1 Conclusion

As set forth above, the NRC staff concludes that the licensee's proposed alternative Relief Request RR-A1 provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and is in compliance with the ASME Code's requirements. Therefore, the NRC staff authorizes use of Relief Request RR-A1 for the fourth 10-year ISI interval at DBNPS which began on September 21, 2012 and is currently scheduled to end on September 20, 2022. All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in the subject request for relief remain applicable, including third-party review by the authorized Nuclear Inservice Inspector.

3.2 Licensee Alternative Relief Request RR-B1

3.2.1 Applicable Code Edition and Addenda

The applicable ASME Code, Section XI, edition and addenda for DBNPS is the 2007 Edition through the 2008 Addenda.

3.2.2 Components for Which Relief is Being Requested

The licensee proposed an alternative for various Class 2, Examination Categories C-F-1 and C-F-2, piping welds on pages 5 and 6 of the proposed alternative RR-B1 in the submittal.

3.2.3 Licensee's Basis and Proposed Alternative

Table IWC-2500-1, "Examination Category C-F-1 and Category C-F-2," of ASME Section XI, 2007 Edition through the 2008 Addenda require surface and volumetric examination for piping circumferential welds greater than or equal to 3/8 inch nominal thickness for piping greater than a 4-inch nominal pipe size. For high-pressure safety injection and auxiliary feedwater systems, a surface and volumetric examination is required for piping welds greater than 1/5 inch nominal wall thickness for piping greater than or equal to a 2-inch nominal pipe size and less than or equal to a 4-inch nominal pipe size.

Per Note 2 of Table IWC-2500-1, the welds selected for examination shall include 7.5 percent, but not less than 28 welds of those not exempted by paragraph IWC-1220, "Components Exempt From Examination." The note also states some welds not exempted by Paragraph IWC-1220, which do not meet the above criteria, do not require nondestructive examination (NDE), but are required to be included in the total weld count to which the 7.5 percent sampling rate is applied. Note 2(a) requires the welds to be distributed among the Class 2 systems based on the number of welds in each system.

The licensee proposes, that in lieu of the ASME Code requirements, all welds in the containment spray (CS), decay heat (DH), high-pressure injection (HPI), or main steam systems (MSSs), except those exempted by Paragraph IWC-1220, will be subjected to the 7.5 percent sampling rate. The welds selected for examination with wall thickness greater than 1/5 inch will receive a surface and volumetric examination. The welds selected for examination with wall thickness less than or equal to 1/5 inch will receive an augmented surface examination.

The DBNPS CS, DH, HPI, and MSSs are designed such that many portions of these systems do not require any NDE under the Table IWC-2500-1 requirements based on the nominal wall thickness of the piping. This requires the welds selected for examination in accordance with the Category C-F-1 and Category C-F-2 requirements in these systems to be concentrated in small portions of the systems and the distribution requirements of Note 2 cannot be met. Using the proposed alternative NDEs will be performed throughout the entirety of these Class 2 systems, rather than only a portion of those systems.

3.2.4 NRC Staff Evaluation

Section XI to the ASME Code does not require examination of a 4-inch nominal pipe size or greater pipe with a wall thickness less than 3/8 inch or piping between a 2- and 4-inch nominal pipe size with a wall thickness less than 1/5 inch. The licensee has proposed to apply the 7.5 percent sampling rate to all welds not exempted by Paragraph IWC-1220. The licensee's proposed alternative as described will require surface and volumetric examination of 28 welds in piping with a pipe size greater than four inches and wall thickness between 1/5 inch and 3/8 inch. Additionally, the alternative will require surface examination of 26 welds in piping with wall thickness less than 1/5 inch. These 54 total welds in Class 2 systems important to safety would have been unavailable for selection based on the Table IWC-2500-1 requirements. The licensee's proposed alternative does not reduce the number of examinations required. It does provide a broader distribution of the examinations within these Class 2 piping systems.

Based on the above, the NRC staff has determined that the licensee's proposed alternative will allow the examinations to be performed throughout these important Class 2 systems and not limited to certain portions based on pipe wall thickness. Therefore, the NRC staff finds that the licensee's proposed alternative will provide an acceptable level of quality and safety.

3.2.5 Relief Request RR-B1 Conclusion

As set forth above, the NRC staff concludes that the licensee's proposed alternative Relief Request RR-B1 provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and is in compliance with the ASME Code's requirements. Therefore, the NRC staff authorizes use of Relief Request RR-B1 for the fourth 10-year ISI interval at DBNPS, which began on September 21, 2013, and is currently scheduled to end on September 20, 2023. All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in the subject request remain applicable, including third-party review by the authorized Nuclear Inservice Inspector.

Principle Contributor: K. Hoffman

Date of issuance: February 10, 2014

ENCLOSURE 4

Relief Request RR-A36 – May 5, 2014

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ADAMS Accession No. ML14087A429

> Table IWB-2500-1, Examination Category B-D, Item B3.100, for reactor vessel nozzle inside radius sections, requires a volumetric examination of essentially 100 percent of the area of Interest, as defined by Figure IWB-2500-7. As an approved alternative to the Item B3.100 requirements, ASME Code Case N-648-1, with conditions defined in Regulatory Guide 1.147, allows a visual examination with enhanced magnification of the external surfaces of the examination volume to be performed in lieu of the volumetric examination requirements. [ASME] Code Case N-460 states that a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10 percent.

Impracticality of Compliance

Examining essentially 100 percent of the weld volume or areas of interest for the affected components, as required by the ASME Code, is impractical due to reactor pressure vessel (RPV) internal obstructions inherent to the Babcock & Wilcox reactor design.

For the reactor vessel lower shell to bottom head circumferential weld, (RC-RPV-WR-34), ultrasonic interrogation of greater than 90 percent of this volume cannot be obtained due to interferences caused by the core guide lugs. The core guide lugs are welded to the reactor vessel shell just above the lower shell to bottom head weld and extend approximately two inches below the centerline of the weld. These lugs restrict the ultrasonic search unit manipulator's ability to move to areas necessary to fully examine the required volume.

For the reactor vessel bottom head circumferential weld (RC-RPV-WR-35), ultrasonic interrogation of greater than 90 percent of this volume cannot be obtained due to interferences caused by reactor vessel incore instrument nozzles and core guide lugs. These instrument nozzles protrude through the bottom head of the reactor vessel to a height of approximately one foot from the inside surface of the bottom head.

For core flood nozzle inner radius sections (RC-RPV-WR-54/55-W-IR and RC-RPV-WR-54/55-Y-IR), flow restrictors located inside the bores of the core flood nozzles prevent ultrasonic testing (UT) and the VT-1 examinations from achieving the required examination coverage of greater than 90 percent. Because these flow restrictors are welded into the nozzles, their removal is not practical. The flow restrictors prohibit all UT examinations from the nozzle inside diameter.

Basis for Relief

For reactor vessel lower shell to bottom head circumferential weld (RC-RPV-WR-34), the licensee indicated:

> The accessible areas of the weld have been examined using the TWS and ACCUSONEX system from the inside surface of the reactor vessel by scanning the weld and adjacent base material areas above and below the weld. Examinations were conducted via scanning both parallel and perpendicular to the weld axis. The combined examination coverage of the weld and base metal areas was approximately 58 percent of the required examination volume.

> In addition, a VT-3 visual examination of the reactor vessel interior was performed in accordance with the requirements of Examination Category B-N-1, Item B13.10. This VT-3 examination confirmed the lack of relevant conditions for the core guide lug welds, which would have indicated if the area of the lower shell to bottom head weld had been subjected to any excessive loads.
>
> There have been no indications identified in this weld that exceed the acceptance criteria of ASME Section XI.

For reactor vessel bottom head circumferential weld (RC-RPV-WR-35), the licensee indicated:

> The accessible areas of the weld have been examined using the TWS and ACCUSONEX system. These examinations have been performed from the inside surface of the reactor vessel by scanning the weld and adjacent base material areas above and below the weld. Examination scanning directions were both parallel and perpendicular to the weld axis. The combined examination coverage of the weld and base metal areas was approximately 46 percent of the required examination volume.
>
> In addition, a VT -3 visual examination of the reactor vessel interior was performed in accordance with the requirements of Examination Category B-N-1, Item B13.10.
>
> There have been no indications identified in this weld that exceed the acceptance criteria of ASME Section XI.

For core flood nozzle inner radius sections (RC-RPV-WR-54/55-W-IR and RC-RPV-WR-54/55-Y-IR), the licensee indicated:

> The accessible areas of the examination surfaces have been visually examined utilizing the VT-1 technique. The coverage obtained was 360 degrees around the nozzle, from the nozzle to vessel weld, to a distance approximately 3 inches deep inside each nozzle's bore. For each nozzle weld, this resulted in approximately 25 percent of the inside radius area of interest, as defined by the condition in Regulatory Guide 1.147, being examined.
>
> As a result, a limited VT-1 visual examination was performed in lieu of the UT examination. The coverage obtained by the VT-1 examination was 360 degrees around the nozzle, from the nozzle to vessel weld, to a distance approximately 3 inches deep inside each nozzle's bore. For each nozzle this resulted in approximately 25 percent of the inside radius area of interest receiving a visual examination.

3.2 NRC Staff Evaluation

For the vessel welds and nozzle welds covered in RR-A36, ASME Code requires essentially 100 percent volumetric examination of pressure retaining welds in the RPV and the nozzle inner radius examinations require essentially 100 percent visual inspection using VT-1. The design configuration of the reactor vessel incore instrument nozzles and core guide lugs prevent complete examinations of the vessel welds. The nozzle inner radius examinations are limited by the presence of flow restrictors in the nozzles. In order to effectively increase the

4.0 CONCLUSION

Based on the above, the NRC staff has reviewed the licensee's submittals and concludes that ASME Code examination coverage requirements are impractical for the subject weld and nozzle inner radius examinations listed in RR-A36. The NRC staff has concluded that based on the volumetric and visual examination coverage obtained, evidence of significant service-induced degradation would have been detected by the examinations that were performed. Furthermore, the staff concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(5). The staff has further determined that granting RR-A36 is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, in accordance with 10 CFR 50.55a(g)(6)(i), the NRC staff grants relief for the subject examinations of the components contained in RR-A36 for the third 10-year ISI interval at DBPNS, which began on September 21, 2000, and ended on September 21, 2012.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Contributors: S. Cumblidge, NRR
C. Sydnor, NRR

Date of issuance: May 5, 2014