



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

July 7, 2011

Mr. Mark B. Bezilla
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-PY-A290
P.O. Box 97, 10 Center Road
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 – CORRECTION TO SAFETY
EVALUATION FOR RELIEF REQUEST VR-7, ONE-TIME REPLACEMENT
FREQUENCY EXTENSION (TAC NO. ME6612)

Dear Mr. Bezilla:

By letter dated November 19, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML103200668), the U.S. Nuclear Regulatory Commission (NRC) staff issued a safety evaluation (SE) related to the NRC's authorization of a proposed alternative in lieu of American Society of Mechanical Engineers Operations and Maintenance of Nuclear Plants Code requirements for testing of Class 2 and 3 thermal relief valves for the third 10-year inservice testing program interval for the Perry Nuclear Power Plant, Unit No. 1 (PNPP). The NRC's SE was in response to FirstEnergy Nuclear Operating Company's (FENOC's) request VR-7 dated June 13, 2010 (ADAMS Accession No. ML102020259) for PNPP.

Subsequently, FENOC notified the NRC of a statement in the SE that required clarification. Request VR-7 was authorized for the 2011 PNPP refueling outage (beginning April 19, 2011); however, the SE indicated authorization through April 2011. A corrected SE is enclosed. A marginal line indicates the area of change.

The corrections do not change the conclusions reached by the associated SE.

If you have any questions, please contact the PNPP Project Manager, Michael Mahoney at 301-415-3967.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacob I. Zimmerman".

Jacob I. Zimmerman, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:
Corrected Safety Evaluation

cc w/enclosure: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF ALTERNATIVE REQUEST VR-7

RELATED TO THE INSERVICE TESTING PROGRAM, THIRD 10-YEAR INTERVAL

FIRSTENERGY NUCLEAR OPERATING COMPANY

PERRY NUCLEAR POWER PLANT

DOCKET NO. 50-440

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (NRC), dated July 13, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102020259), FirstEnergy Nuclear Operating Company (FENOC), the licensee, submitted Relief Request (RR) VR-7 applicable to the third 10-year inservice testing (IST) program interval at the Perry Nuclear Power Plant, Unit 1 (PNPP). The PNPP third 10-year IST program interval began on May 18, 2009, and ends on May 17, 2019. The licensee requested authorization to use an alternative test/replacement interval other than the one required by the American Society of Mechanical Engineers (ASME), Code for Operation and Maintenance of Nuclear Power Plants (OM Code). The licensee requested authorization to extend the test/replacement interval for PNPP relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B, beyond 10 years, on a one-time basis, until the April 2011 refueling outage.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii), the licensee requested to use the proposed alternative in VR-7 since complying with the current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

"Inservice Testing Requirements," 10 CFR 50.55a(f) requires, in part, that ASME Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, except where alternatives have been authorized pursuant to paragraphs (a)(3)(i) or (a)(3)(ii).

In proposing alternatives, a licensee must demonstrate that the proposed alternative provides an acceptable level of quality and safety, or compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section 50.55a

of 10 CFR Part 50 allows the NRC to authorize alternatives to ASME OM Code requirements upon making necessary findings. The NRC's findings with respect to authorizing the alternative to the ASME OM Code are given below.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request VR-7

The applicable ASME OM Code edition and addenda for PNPP is the 2001 Edition through the 2003 Addenda.

ISTC-5240, "Safety and Relief Valves," states that, "Safety and relief valves shall meet the inservice test requirements of Mandatory Appendix I."

Mandatory Appendix I, I-1390, "Test Frequency, Class 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application," states that, "Tests shall be performed on all Class 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests, the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

Alternative testing was requested for the following components:

Thermal Relief Valves	Class Code
1E12-F0005 - Residual Heat Removal (RHR) Shutdown Cooling Suction Relief	2
1E12-F0025C - RHR Loop C Injection Line Relief	2
1E21-F0031 - Low Pressure Core Spray Pump Suction Line Relief	2
1E22-F0014 - High Pressure Core Spray (HPCS) Waterleg Pump Suction Line Relief	2
1P45-F0517 - HPCS Room Cooler Emergency Service Water (ESW) Relief	3
1P45-F0543A - ESW Loop A Line Relief	3
1P45-F0543B - ESW Loop B Line Relief	3

The licensee is requesting authorization to extend the test interval for PNPP relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B beyond 10 years on a one-time basis (approximately 3 months) until the April 2011 refueling outage.

The start of the PNPP 2011 refueling outage, originally scheduled to begin on February 21, 2011, was rescheduled and now will commence on April 18, 2011. As a result, seven thermal relief valves (1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B) scheduled for replacement during the outage, will exceed their Code mandated 10-year replacement frequency dates ranging from February 28 through March 12, 2011.

The licensee's justification for extending the test/replacement interval for relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B beyond 10 years is stated below:

There are no planned plant shutdowns or system specific outages of sufficient duration prior to the start of the rescheduled 2011 refueling outage to complete the necessary thermal relief valve replacements. Requiring a plant shutdown or system specific outage of sufficient duration solely to replace these valves within their Code mandated 10-year replacement frequency results in an adverse impact on plant operation (unplanned plant shutdown) or requires entry into multiple Technical Specifications limiting conditions of operation.

In lieu of the 10-year replacement frequency requirements of I-1390, FENOC proposes the replacement frequency of the listed valves to be extended one time to account for the rescheduled start of PNPP's refueling outage. The short duration extension through the end of the refueling outage would allow PNPP to avoid implementing an unplanned plant shutdown or system specific outage of sufficient duration solely to replace these valves within their Code mandated 10-year replacement frequency.

Upon NRC approval of the 10 CFR 50.55a alternative request VR-11 on May 16, 2003 (ADAMS Accession No. ML031150313), PNPP re-categorized these valves from pressure relief valves to thermal relief valves and extended their replacement intervals to 10 years. Since re-categorization of these valves in 2003, more frequent replacement frequencies (less than 10 years) has not been necessary. Prior to re-categorization of these valves, starting from initial plant operation in 1987, 28 of 29 as-found set pressure tests were satisfactory within the as-found set pressures of ASME Code Section III (1974 Edition through 1975 Addenda), Subsections NC/ND-3612.3, "Allowance for Variations from Design Conditions," criteria for their respective systems. As such, based on past performance, the short duration replacement frequency extensions for these valves do not significantly impact acceptable levels of quality and safety.

3.2 NRC Staff Evaluation

The licensee has proposed an alternative in lieu of the requirements found in 2001 Edition through 2003 Addenda of the ASME OM Code Section ISTC-5240 and Appendix I, Section I-1390. Specifically, the licensee proposes to extend the 10-year test and/or replacement interval for a period not to exceed 3 months on a one-time basis for thermal relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B. This will allow these valves to be tested and/or replaced during the next PNPP refueling outage scheduled to begin on April 18, 2011.

Relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B are being used in a thermal relief application which is defined as a relief device whose only overpressure protection function is to protect isolated components, systems, or portions of systems from fluid expansion caused by changes in fluid temperature. The relief valves at PNPP have had a favorable maintenance history with minimal performance

issues. After nearly 23 years of service, only one set pressure test was found to exceed recommended ASME piping system allowable design values. Industry experience indicates that the failure rates of thermal relief valves are low and additional degradation of these components would not be expected to occur during the additional test interval extension period. Therefore, the NRC staff finds that PNPP's proposed alternative provides reasonable assurance of operational readiness.

Based on the review of the information provided by the licensee and industry experience with these types of valves, the NRC staff finds that allowing approximately 3 months extension to the OM Code 10-year test interval requirement for thermal relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B still provides reasonable assurance of the operational readiness of these valves. Compliance with the specified ASME OM Code requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

Based on the above evaluation, the NRC staff has concluded that the licensee's proposed alternative in request VR-7 provides reasonable assurance that thermal relief valves 1E12-F0005, 1E12-F0025C, 1E21-F0031, 1E22-F0014, 1P45-F0517, 1P45-F0543A, and 1P45-F0543B are operationally ready. The RR is authorized for the third 10-year IST interval, which commenced on May 12, 2009 and ends on May 17, 2019.

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)(ii), and is in compliance with the ASME OM Code's requirements. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes the use of VR-7 at PNPP for the 2011 refueling outage, scheduled to begin on April 18, 2011.

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

Principal Contributor: Michael Farnan

Date of issuance: November 19, 2010

Revised by letter dated
July 7, 2011

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Mr. Mark B. Bezilla
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-PY-A290
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Sincerely,
/RA by J. S. Wiebe for/
Jacob I. Zimmerman, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:

Corrected Safety Evaluation

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