



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

June 22, 2012

Mr. Ken Langdon
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 1 RE: RELIEF FROM THE
REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL
ENGINEERS (ASME) CODE, SECTION XI, INSERVICE INSPECTION
PROGRAM - REQUEST NUMBER RR-PTRR-02 (TAC NO. ME8534)

Dear Mr. Langdon:

By letter dated April 27, 2012 (ADAMS Accession No. ML121220300), as supplemented by letter dated May 18, 2012 (ADAMS Accession No. ML12151A440), Nine Mile Point Nuclear Station, LLC (NMPNS, the licensee) proposed an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2004 Edition, Subsection IWB-5221(a) for Nine Mile Point Unit 1 (NMP1).

Specifically, pursuant to 50.55a(a)(3)(ii) NMPNS requested NRC approval of proposed Alternative RR-PTRR-02, Revision 1, to perform the VT-2 visual examination during a system leakage test of Class 1 components with mechanical joint connections at a pressure lower than the ASME Code-required pressure following repair and replacement activities on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

On May 29, 2012, pursuant to Title 10, *Code of Federal Regulations*, Part 50, Section 50.55a(a)(3)(ii), the NRC staff verbally authorized the use of Relief Request RR-PTRR-02, Revision 1 (ADAMS Accession Number ML121630027).

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii), the proposed alternative provides reasonable assurance of structural integrity and leak tightness of the subject components and that complying with the specified requirement would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii). Therefore, the NRC authorizes the proposed alternative for repair/replacement activities related to mechanical joint connections at Nine Mile Point Unit 1 for the remainder of the fourth 10-year inspection interval.

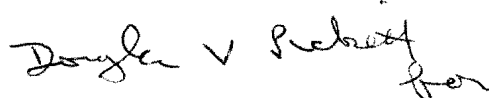
All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

K. Langdon

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Please contact me at (301) 415-1711, or the Project Manager, Bhalchandra K. Vaidya at (301) 415-3308, if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "George Wilson". The signature is written in a cursive style with a large "G" and "W".

George Wilson, Branch Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-220

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST RR-PTRR-02, REVISION 1

REGARDING PRESSURE TESTING OF MECHANICAL JOINTS – FOURTH 10-YEAR INTERVAL

NINE MILE POINT NUCLEAR STATION, LLC

NINE MILE POINT UNIT 1

DOCKET NO. 50-220

1.0 INTRODUCTION

By letter dated April 27, 2012 (ADAMS Accession No. ML121220300), as supplemented by letter dated May 18, 2012 (ADAMS Accession No. ML12151A440), Nine Mile Point Nuclear Station, LLC (NMPNS, the licensee) proposed an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2004 Edition, Subsection IWB-5221(a) for Nine Mile Point Unit 1 (NMP1).

Specifically, pursuant to 50.55a(a)(3)(ii) NMPNS requested NRC approval of proposed Alternative RR-PTRR-02, Revision 1, to perform the VT-2 visual examination during a system leakage test of Class 1 components with mechanical joint connections at a pressure lower than the ASME Code-required pressure following repair and replacement activities on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

On May 29, 2012, the NRC staff verbally authorized the use of Relief Request RR-PTRR-02, Revision 1 (ADAMS Accession Number ML121630027).

2.0 REGULATORY EVALUATION

In its application, the licensee requests authorization of an alternative to the requirements ASME Code, Section XI, Article IWB-5221(a) pursuant to 10 CFR 50.55a(a)(3)(ii).

The regulation in Title 10, *Code of Federal Regulations*, Part 50 (10 CFR 50), Section 50.55a(g)(4), states that ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components and system pressure tests conducted during the first 10-year interval and subsequent intervals

Enclosure

comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein.

The regulation in 50.55a(b)(2)(xxvi) *Pressure Testing Class 1, 2 and 3 Mechanical Joints*, places a condition on licensees using the ASME Code, Section XI, 2001 Edition and later editions and addenda. This limitation requires that the repair replacement activity provisions of ASME Code, Section XI, IWA-4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints be applied. ASME Code, Section XI, IWA-4540(c) of the 1998 Edition requires that mechanical joints made in the installation of pressure-retaining items shall be pressure tested in accordance with ASME Code, Section XI, IWA-5211(a).

ASME Code, Section XI, IWA-5211(a) provides the description of a system leakage test to be performed while the system is in operation, during a system operability test, or while the system is at test conditions using an external pressurization source. Further, ASME Code, Section XI, IWB-5221(a) requires that the test shall be conducted at a pressure not less than the pressure corresponding to 100% rated reactor power.

The regulation in 10 CFR 50.55a(a)(3) states, in part, that alternatives to the requirements of 10 CFR 50.55a(g) may be used, when authorized by the NRC, if the licensee demonstrates (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above discussion, the NRC staff finds that the NRC has the regulatory authority to authorize an alternative to the ASME Code requirement.

3.0 TECHNICAL EVALUATION

3.1 Applicable Code Edition and Addenda

The applicable ASME Code, Section XI of record for the fourth 10-year ISI interval at NMP1 is the 2004 Edition.

3.2 Reason for Request

In its May 18, 2012 letter, the licensee describes two methods by which the pressure required by IWB-5221(a) could be attained to allow the VT-2 leakage examination to be performed. The licensee described that the pressure testing and examination could be performed: 1) during plant startup when the systems were at full operating pressure but low power levels or 2) during a cold pressure test done without using nuclear heat such as that required following a refueling outage. As described below the licensee proposed that both of these methods constitute a hardship without a compensating increase in the level of quality and safety:

- (A) The licensee proposes that conducting the test at full pressure and low power levels is a hardship because:

- a) Nominal operating pressure will not be achieved until a minimum of 12 hours after reaching the pressure proposed in the alternative allowing the ambient temperature and the temperature of the components to become elevated such that additional safety measures are required.
- b) Entry into the dry well at low power levels requires a high radiation dose to be experienced by the examination personnel.

(B) The licensee proposes that performance of a cold pressure test is a hardship because:

- a) Performing a cold leakage test would add 2 days to the shutdown duration.
- b) Main Steam Lines are required to be flooded with the Main Steam Isolation Valves closed.
- c) The reactor pressure vessel is required to be virtually water solid.
- d) Extensive valve manipulations, system lineups, and procedural controls are required in order to heat up and pressurize the reactor coolant system to establish the necessary test pressure.
- e) The valve lineups and system reconfigurations described above will impose an additional challenge to the affected systems.

3.3 Licensee's Proposed Alternative

As an alternative to the IWB-5221(a) leakage test requirement the licensee proposes:

- a) For repair/replacement activities of mechanical joint connections NMP1 will perform the required VT-2 leakage examination at a minimum reactor pressure of 900 psig and the corresponding saturation temperature.
- b) NMP1 will perform the 900 psig VT-2 after a one-hour hold time for un-insulated joints, or an eight-hour hold time for insulated components.
- c) Disposition of any observed leakage will consider the marginal increase in leakage rates that might occur at the nominal operating pressure of 1035 psig associated with 100% rated reactor power and the actual pressure when the examination was performed.

3.4 NRC Staff Evaluation

The NRC staff evaluated the technical aspects of proposed Alternative RR-PTRR-02, Revision 1 against the criteria contained in 10 CFR 50.55a(3)(ii), the existence of a hardship or unusual difficulty without a compensating increase in quality or safety. The NRC staff finds the first criterion, hardship or unusual difficulty to be self explanatory, and the second criterion can be met if the proposed alternative provides reasonable assurance of structural integrity and leak tightness of the subject components.

ASME Code, Section XI, IWA-4540(c) provides the pressure testing requirements for repair/replacement activities of Class 1, 2 and 3 items. The code of record for NMP1, ASME Code, Section XI of record for the fourth 10-year ISI interval at NMP1 is the 2004 Edition, specifies leakage or hydrostatic testing is required for repair/replacement activities performed by welding or brazing on a pressure-retaining boundary. This would not require mechanical joints to be leakage tested.

However, when incorporating by reference the 2001 Edition through the 2003 Addenda of ASME, Section XI into the regulations and incorporating paragraph 50.55a(b)(2)(xxvi) into the regulations, the NRC staff has determined that pressure testing of mechanical joints after repair and replacement activities is still warranted.

In the *Federal Register Notice* (FRN) (ADAMS Accession Number ML041200758), incorporating paragraph 50.55a(b)(2)(xxvi), the NRC staff explained the reasoning for this requirement. The requirements to pressure test Class 1, 2 and 3 mechanical joints undergoing repair and replacement activities were deleted in the 1999 Addenda of Section XI. There was no justification for eliminating the requirements for pressure testing Class 1, 2 and 3 mechanical joints and the staff believed the pressure testing was necessary to ensure and verify the integrity of the pressure boundary. The FRN never discussed specific test pressures for the test to be performed but focused on the need to perform a post repair and replacement pressure test and VT-2 examination to verify the integrity of the pressure boundary. The NRC staff finds that the licensee's proposed alternative will verify the leak tightness and structural integrity of the mechanical joints involved.

The environmental conditions for the VT-2 examination at the ASME Code-required pressure of 1035 psig during low power level reactor operations would require consideration of higher radiation levels, serious heat stress and valid burn hazard concerns. These conditions could also require additional special safety precautions such as ice vests and cool air supply lines. These adverse conditions and the additional burden of the safety precautions could impact the quality of the leakage examination due to the hardship imposed on the examination personnel. Performing the leakage test at 1035 psig during low power operations would also present operational challenges such as altering normal steam pressure controls, possible SRV seating issues and Control Rod Drive withdrawal limitations. Therefore, the NRC staff finds that performance of the VT-2 examination at the ASME Code-required pressure of 1035 psig during low power level reactor operations versus 900 psig would involve hardship from a personnel safety standpoint.

Performing a cold leakage test (non-nuclear heatup), such as that required following a refueling outage would require filling the main steam lines and the reactor vessel solid with water. Establishing the necessary test conditions would require performing extensive temporary hanger modifications, valve lineups and system manipulations. All of these activities would require personnel radiation exposure in addition to normal startup activities. Therefore, the NRC staff also finds that performance of a cold leakage test (non-nuclear heatup), such as that required following a refueling outage would involve hardship.

Based on the above discussion, the NRC staff finds that performing the alternative, a visual examination (VT-2) for leakage during a system leakage test at the pressure equal to or greater

than 900 psig, with hold times of one hour for non-insulated components and eight hours for insulated components provides reasonable assurance of the leakage tightness and structural integrity of the items, and that compliance with the ASME Code-specified requirements would result in hardship without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides reasonable assurance of structural integrity and leak tightness of the subject components and that complying with the specified requirement would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii). Therefore, the NRC authorizes the proposed alternative for repair/replacement activities related to mechanical joint connections at Nine Mile Point Unit 1 for the remainder of the fourth 10-year inspection interval.

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

Principal Contributor: K. Hoffman, NRRR/EPNB

Date: June 22, 2012

K. Langdon

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Please contact me at (301) 415-1711, or the Project Manager, Bhalchandra K. Vaidya at (301) 415-3308, if you have any questions.

Sincerely,

/RA by Douglas V. Pickett for/

George Wilson, Branch Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-220

Enclosure:
Safety Evaluation

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ADAMS Accession No.: ML12166A269 (*) No substantial change from SE Input Memo

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