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# Niagara Mohawk

Richard B. Abbott  
Vice President  
Nuclear Engineering

NMP2L 1796

JUNE 29, 1998

Office: (315) 349-1812  
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U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

RE: Nine Mile Point Unit 2  
Docket No. 50-410  
NPF-69

**Subject:** *Requests for Authorization to Use Alternatives to ASME Code Section XI Examination Requirements*

Gentlemen:

In telephone discussions with the NRC staff on June 26, 1998, and June 28, 1998, Niagara Mohawk Power Corporation (NMPC) discussed proposed alternatives to the examination requirements of ASME Code Section XI (1989 edition) for Nine Mile Point Unit 2 (NMP2). Specifically, these alternatives relate to the pressure testing acceptance criteria for flanged, bolted connections. The flanged connections are located at three main steam line safety relief valves (SRVs) and one local power range monitor (LPRM).

NMPC requested urgent NRC authorization of the alternative examination acceptance criteria pursuant to 10CFR50.55a(a)(3), to support the restart of NMP2 on schedule following its present refueling outage. The NRC staff provided verbal authorization for use of the proposed alternatives subject to NMPC's expedited submittal of written requests for authorization. Attachments 1 and 2 to this letter contain written requests for authorization for the flanged connections associated with the SRVs and the LPRM, respectively.

Very truly yours,



Richard B. Abbott  
Vice President - Nuclear Engineering

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RBA/IAA/sc  
Attachments

xc: Mr. H. J. Miller, Regional Administrator, Region I  
Mr. S. S. Bajwa, Director, Project Directorate I-1, NRR  
Mr. B. S. Norris, Senior Resident Inspector  
Mr. D. S. Hood, Senior Project Manager, NRR  
Records Management



# ATTACHMENT 1



**ATTACHMENT 1**  
**Request For Authorization To Use Alternative**  
**To ASME Code Section XI Requirements For Nine Mile Point Unit 2**

**Components: Main Steam Line Safety Relief Valves (SRVs)**

2MSS\*PSV125

2MSS\*PSV128

2MSS\*PSV137

**Code Class: ASME CLASS 1**

**Examination Requirements:**

ASME Boiler & Pressure Vessel Code, Section XI, 1989 Edition, Article IWA-5250(a)(2), Corrective Measures, states:

*"If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100."*

**Requested Authorization:**

Niagara Mohawk Power Corporation (NMPC) requests authorization to perform an alternative to the Code-required removal and VT-3 visual examination of pressure-retaining bolting for leakage detected on three main steam line safety relief valves (SRVs) during the reactor pressure vessel (RPV) system leakage test. The RPV system leakage test was performed following closure of the ASME Class 1 boundary during the sixth refueling outage (RFO6) in June 1998, as required by the Code.

**Basis for Requesting Authorization:**

NMPC is proposing an alternative in accordance with 10CFR50.55a(a)(3), on the basis that the proposed alternative provides an acceptable level of quality and safety, and that compliance with the Code requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

During the RFO5 RPV system leakage test (performed in October, 1996, under the 1983 Code), these three SRVs exhibited a small amount of leakage at the pressure-retaining inlet flange. During the subsequent startup, these three SRVs were re-inspected at approximately 900 psi saturation conditions, and there was no leakage. The RFO6 RPV system leakage test was the first RPV system leakage test performed during the second ten-year interval, which began on April 5, 1998. The three subject SRVs were installed with new bolting during RFO5, which ended in November 1996. These three SRVs have again exhibited a small amount of leakage during the RFO6 RPV system leakage test.

The present bolting has been in service during the period that began with the startup that ended RFO5 and ended with the shutdown that began RFO6 (approximately 1½ years of service). Prior to installation, the flange surfaces were inspected for corrosion and damage during the performance of the mechanical maintenance procedure that tests and refurbishes the SRVs.

As documented on individual NIS-2 (Owner's Report for Repairs or Replacements) forms, the bolting on the three subject SRVs was replaced in 1996. This replacement was for the convenience of maintenance, and not due to service-induced failure. The replacement bolting was procured by NMPC purchase order and inspected to the requirements of a procurement requirements evaluation form (PREF). Samples of the batch were subjected to destructive





examination, and every part was examined by either magnetic particle or dye penetrant. The manufacturer certified that the requirements of ASME Section III and the PREF were met, and NMPC performed a source surveillance to provide additional assurance that the conditions of the Code and the PREF were fulfilled.

The subject SRVs had a small observable leakage during the RFO5 RPV system leakage test in October, 1996. During the subsequent startup, this leakage had stopped by the time the plant reached saturation conditions at approximately 900 psi. This further demonstrates that the leakage was not due to a problem with the pressure-retaining bolting.

Removing the bolting on an SRV requires removal of the SRV. The removal and installation of these three SRVs results in an estimated occupational exposure of approximately 3.5 person-rem. This dose is not justified, since removal and inspection of the bolting does not provide any assurance of improved quality in the bolted connection.

In summary, the basis for the alternative examinations proposed below is that:

1. The small leakage observed during the RFO5 system leakage test self-corrected when the piping system was heated at saturated steam conditions. It is expected that this self-correction will occur again during the heatup following RFO6.
2. The small leakage observed during the RPV system leakage test is not indicative of corrosion or other degradation of the bolted connection.
3. Removal and inspection of the bolting provides no additional assurance or improvement in the quality of the bolted connection.
4. The occupational exposure of 3.5 person-rem is not justified by a commensurate increase in safety, quality, or reliability.

#### **Alternative Examinations:**

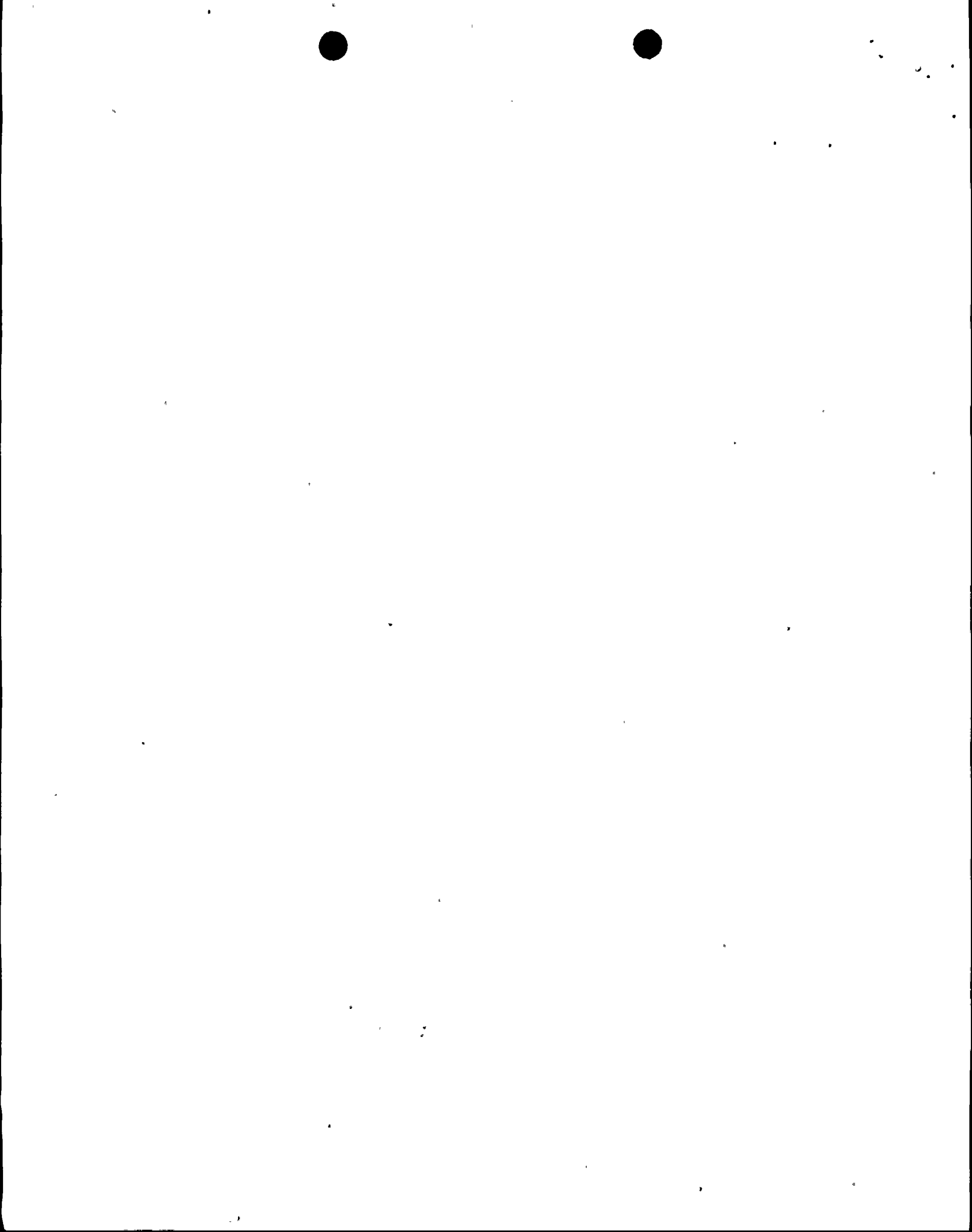
The alternative examinations apply only to the requirements for corrective measures specified in IWA-5250(a)(2). The performance of the RPV system leakage test and the acceptance criteria for that test are unaffected by this alternative.

NMPC will perform the following alternative examinations for the three SRVs identified above that exhibit detectable leakage at the pressure-retaining flange:

1. A VT-3 visual examination shall be performed in accordance with the Inservice Pressure Testing (ISPT) Acceptance Criteria on the visible portions of the flange and its bolting on each affected SRV.
2. During the startup following the RPV system leakage test, each of the three subject SRVs that exhibited detectable leakage during the RPV system leakage test shall be VT-2 examined with the reactor coolant system at saturation temperature and pressure  $\geq 900$  psig to confirm that the bolted connection is acceptable.



# **ATTACHMENT 2**



**ATTACHMENT 2**  
**Request For Authorization To Use Alternative**  
**To ASME Code Section XI Requirements For Nine Mile Point Unit 2**

**Component:** LPRM 56-33

**Code Class:** ASME Class 1

**Examination Requirements:**

ASME Boiler & Pressure Vessel Code, Section XI, 1989 Edition, Article IWA-5250(a)(2), Corrective Measures, states:

*"If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100."*

**Requested Authorization:**

Niagara Mohawk Power Corporation (NMPC) requests authorization to perform an alternative to the Code-required removal and VT-3 visual examination of pressure-retaining bolting for leakage detected on the pressure-retaining flange of LPRM 56-33 during the reactor pressure vessel (RPV) system leakage test. The RPV system leakage test was performed following closure of the ASME Class 1 boundary during the sixth refueling outage (RFO6) in June 1998, as required by the Code. NMPC requests authorization to perform the corrective measures specified in the 1992 Edition of Section XI, IWA-5250(a)(2).

**Basis for Requesting Authorization:**

NMPC is proposing an alternative in accordance with 10CFR50.55a(a)(3), on the basis that the proposed alternative provides an acceptable level of quality and safety, and that compliance with the Code requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

Nine Mile Point Unit Two has 43 local power range monitor (LPRM) assemblies. Each LPRM assembly bolts to the bottom of the reactor pressure vessel (RPV) using a flanged connection. The flange has four bolts (actually hex-head cap screws) that secure the LPRM flange to the RPV flange. The RPV bottom head penetration for an LPRM assembly is approximately 1 3/8 inches in diameter.

The subject flange exhibited a very small detectable leakage (6 drops per minute) during the RPV system leakage test. During RFO5, four LPRMs (not 56-33) exhibited this small leakage during the RPV system leakage test and zero leakage during the 900 psi inspection performed during the subsequent startup that completed RFO5. The RFO6 RPV system leakage test is the first RPV system leakage test performed during the second ten-year interval, which began April 5, 1998. The four LPRMs that exhibited small detectable leakage during the RFO5 RPV system leakage test did not exhibit any detectable leakage during the RFO6 system leakage test.



The bolt nearest the source of the leakage on LPRM 56-33 was removed and VT-3 inspected on June 26, 1998; an adjacent bolt was removed and VT-3 inspected on June 28, 1998. Neither bolt showed evidence of corrosion, damage, or degradation. The two inspected bolts were re-torqued after they were re-installed. Also on June 28, 1998, the bolt opposite the source of the leakage was scheduled to be removed and VT-3 inspected. When this third bolt was loosened, an unacceptable leakage from the flange resulted. The bolt was re-tightened to its required torque, and the leakage stopped. The fourth bolt was verified at that time to be torqued to the required value.

To remove the remaining two bolts from the LPRM 56-33 flange requires inserting a plug into the LPRM penetration from the inside of the reactor vessel. Removal of the remaining two bolts in the LPRM 56-33 flange constitutes an undue hazard to personnel if performed without a plug in the LPRM tube. Furthermore, it is an undue hardship without a compensating increase in safety to disassemble the reactor vessel head, remove the steam separator and dryer and other internals, remove at least four fuel bundles, and install a plug to permit removing the two remaining LPRM flange bolts for VT-3 examination.

Removal of all bolting when leakage occurs at a bolted connection does not provide an increase in the level of quality or safety because evidence of degradation can be determined by removing the one bolt closest to the source of leakage. If the removed bolt has evidence of degradation, then all remaining bolts would be removed, VT-3 examined, and evaluated in accordance with IWA-3100. Immediate removal of all bolting would require significant additional time, resources, and radiation dose.

The NRC's Safety Evaluation of Code Case N-416-1 for Nine Mile Point Nuclear Station, Unit Nos. 1 and 2, dated October 18, 1994, states that, "The corrective actions with respect to removal of bolts from leaking bolted connections has been relaxed in the 1992 Edition, but use of this change has been accepted by the staff in previous Safety Evaluations."

In summary, the basis for the alternative examination proposed below is that:

1. A VT-3 examination was performed on the bolt nearest the source of the identified leakage and an adjacent bolt. No evidence of corrosion or degradation was found. This examination exceeds the requirements of the 1992 Code.
2. The subject LPRM flange is exposed to high purity demineralized water at high temperature and pressure. This is not a corrosive environment for the materials in the flange and its bolting.
3. Compliance with the 1989 Code requirement to remove and inspect the remaining two bolts in the subject LPRM flange would impose an undue hardship without a compensating increase in the level of safety.
4. In the highly unlikely event that an LPRM flange should completely fail during power operation, the resulting coolant loss through the 1 3/8 inch hole is bounded by the small-break LOCA analysis (USAR Section 6.3.3.7.6).



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**Alternative Examinations:**

1. In lieu of ASME Section XI, IWA-5250(a)(2), 1989 Edition, the 1992 Edition of ASME Section XI, IWA-5250(a)(2) shall be used. For the subject LPRM flange, the bolt nearest the source of leakage and an adjacent bolt were removed and VT-3 examined. No evidence was found of corrosion or degradation.
2. During the startup following the RPV system leakage test, the subject LPRM (56-33) flange shall be VT-2 examined with the reactor coolant system at saturation temperature and pressure  $\geq 900$  psig to confirm that the bolted connection is acceptable.

