



Richard B. Abbott
Vice President
Nuclear Engineering

Phone: 315.349.1812
Fax: 315.349.4417

April 7, 2000
NMP1L 1504

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
 Docket No. 50-220
 DPR-63

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

Subject: *Use of 1998 Edition of ASME Code Section XI for Containment Inspections
(TAC Nos. MA7116, MA7117, and MA7118)*

Gentlemen:

By letter dated October 28, 1999, Niagara Mohawk Power Corporation (NMPC) requested authorization to use the 1998 Edition of the ASME Boiler and Pressure Vessel Code in lieu of the 1992 Edition of the Code with 1992 Addenda, as currently specified by 10CFR50.55a(g)(6)(ii)(B) for containment inspections. By letter dated January 13, 2000, NMPC provided additional information requested by the NRC Staff.

In a letter dated March 24, 2000, the Staff requested further information regarding specific areas. This information is provided in the Attachment and was previously discussed with the Staff in a telephone conference on March 13, 2000.

Very truly yours,

Richard B. Abbott
Vice President Nuclear Engineering

RBA/IAA/tmk
Attachment

xc: Mr. H. J. Miller, NRC Regional Administrator, Region I
 Ms. M. K. Gamberoni, Acting Section Chief PD-1, Section 1, NRR
 Mr. G. K. Hunegs, NRC Senior Resident Inspector
 Mr. P. S. Tam, Senior Project Manager, NRR
 Records Management

A047

ATTACHMENT
RAI RESPONSE

ATTACHMENT

RAI RESPONSE

NOTE: As used in the responses below, the “1992 Edition” of the ASME Boiler and Pressure Vessel Code (ASME Code) refers to the 1992 Edition and the 1992 Addenda of the ASME Code.

QUESTION 1

The 1998 Edition of the ASME Code Section XI invokes IWA-2000, *Examination and Inspection*, when defining the general requirements for examinations to be performed, and for the qualification of examination personnel. The licensee's proposed alternative removes the IWA-2300 requirement to certify NDE personnel to CP-189. In addition, new 1998 Code examinations (General Visual and Detailed Visual) have been introduced. The definition of the new Code examinations has been left up to individual licensees, and a licensee would be allowed to define how personnel performing these examinations are to be qualified. It is presently unclear how owner-defined visual examination programs, including items such as illumination and resolution requirements, acceptance criteria, and minimum personnel qualifications, may be individually developed and the necessary level of consistency maintained industry-wide. To establish that the proposed alternative provides an acceptable level of quality and safety, details of the NMP General and Detailed Visual examination program, addressing both IWE and IWL components, must be evaluated. Please describe the visual examination program, including attributes such as:

1. The owner-defined acceptance criteria that will be used with the Detailed visual examination.
2. The qualification requirements for personnel performing containment visual and ultrasonic examinations including a technical discussion comparing the qualification requirements being used at NMP to the qualification requirements contained in CP-189.

RESPONSE 1

The following sections address items (1) and (2) of Question 1.

1. Acceptance Criteria

Acceptance criteria (Document Numbers NMP1-IWE-003 and NMP2-CISI-001) have been prepared to define the visual acceptance and recording criteria used for the IWE and IWL visual examinations. These documents provide criteria for defining acceptable conditions, conditions to be recorded for future monitoring, and conditions requiring Detailed visual examinations.

For IWE, acceptance criteria were developed from the requirements for VT-1 and VT-3.

Examples of acceptance criteria are given in Table 1.

TABLE 1 (IWE EXAMINATION ACCEPTANCE CRITERIA)

Condition	Acceptance Criteria
Nicks gouges with depth > 10% of the metal thickness shall require evaluation.	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Arc strikes (all)	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Metal cracking (all)	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Rust (medium) Note: Pitting may exist from original fabrication and construction and may be accepted provided there is no evidence of ongoing pitting activity and it does not exceed 10% of the base metal thickness.	Record the condition and any supplemental information necessary to identify the location of the area for future monitoring.
Rust (major)	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.

For IWL, acceptance criteria were developed using the guidance in ACI standards 201.1-R92 and 349.3-R96. The acceptance criteria for concrete were based on the second tier criteria contained in ACI-349.3R-96. Also used were criteria from other utilities who have approved programs, and the EPRI draft white paper for concrete containment examinations. Examples are given in Table 2.

TABLE 2 (IWL EXAMINATION ACCEPTANCE CRITERIA)

Condition	Acceptance Criteria
Erosion/abrasion (significantly exposed or loose coarse aggregate (gravel) from the concrete surface).	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Popouts/voids ≥ 2 " in diameter or having equivalent surface area with any other indications of degradation, such as rust staining or exposed reinforcing steel.	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Scaling ($\geq 3/4$ " in depth) with any other indications of degradation, such as rust staining or exposed reinforcing steel.	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Spalling ($\geq 3/4$ " in depth or ≥ 6 " in surface dimension) with any other indications of degradation, such as rust staining or exposed reinforcing steel.	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.
Cracks ≥ 0.04 " (other than localized widening at the surface of the concrete) with evidence of corrosion emerging from the crack, active changes in width or length (compared to baseline examinations), or other degradation mechanisms at the crack (e.g., bulging by corrosion buildup).	Perform Detailed visual examination to determine the magnitude and extent of the suspect condition and record results.

RESPONSE 1 (Cont'd)

2. Qualification Requirements

The 1998 Edition of ASME Code Section XI invokes IWA-2000, *Examination and Inspection*, when defining the general requirements for the examinations to be performed and for the qualification of examination personnel. Niagara Mohawk Power Corporation (NMPC) proposes as an alternative to these requirements to continue to use the current programs in place for Inservice Inspection (ISI) for visual examination and personnel qualification. The 1998 Code, Subsections IWE and IWL introduce requirements for performing General and Detailed visual examinations, but do not provide specific guidance as to the conduct of the examinations or how personnel are to be qualified in the specific techniques. IWE-2310 does not provide specific or unique information for qualification of visual examination personnel. It is left to the Owner to define the criteria to be used. Since the Code is not explicit, NMPC visual examination personnel are qualified to a program meeting SNT-TC-1A (1984). Personnel are certified to a corresponding level as a VT-1 and/or VT-3 examiner. This is the same process used for certification of ISI visual examination personnel. It is NMPC's position that VT-3 qualified personnel are certified to perform the General examination and VT-1 personnel will perform the Detailed examination required by Subsections IWE and IWL. Additionally, personnel performing examinations required by IWL have received additional training such as that offered by the Electric Power Research Institute (EPRI) NDE Center or their training can be substantiated and documented in the training record that the individual has prior experience in performing concrete inspection. Developing a parallel program for qualification of examination personnel places an undue hardship on NMPC in administering a redundant process without offering any commensurate increase in the level of quality or safety.

General and Detailed visual examinations are performed using Nine Mile Point Units 1 and 2 procedure, NDEP 2.05, "ASME Section XI IWE/IWL Visual Examination." This procedure was developed to an equivalent level of VT-1 and VT-3 for performing both direct and remote examinations using essentially the same criteria. The procedure was qualified in accordance with NMPC procedure QAP-SPC-9.01, "Nondestructive Examination Program" by General and Detailed examination personnel to the satisfaction of the Authorized Nuclear Inservice Inspector. The procedure meets the requirements of Article 9, ASME Section V and ACI 349.3R-96.

QUESTION 2

The licensee stated that resolution and illumination requirements for General and Detailed visual examination procedures will be qualified similar to VT-1 and VT-3 procedure qualifications. In addition, the licensee stated that for applications where remote visual examination systems are to be used, those systems will be demonstrated to have a resolution capability at least equivalent to that attainable by direct visual examination, and that the procedure will be "...demonstrated to the authorized nuclear inservice inspector for capability to detect flaws and degradation levels defined within the procedure". However, it is not clear how procedures will be demonstrated. 10 CFR 50.55a(b)(2)(x)(B) requires the qualification of remote visual examinations. Describe the requirements for qualifying the IWE visual examination procedures and how illumination and resolution requirements will be established and implemented.

RESPONSE 2

Resolution and illumination requirements for performing direct and remote General and Detailed visual examinations and used by NMPC are equivalent to those specified for VT-1 and VT-3. Actual field demonstrations were conducted under conditions similar to those encountered by inspectors during the course of conducting normal examinations. Various flaw sizes were demonstrated to be detectable under varying illuminations to the satisfaction of the Authorized Nuclear Inservice Inspector.

QUESTION 3

The IWE-2500(b) requirement to examine paint or coatings prior to removal has been eliminated from the 1998 Edition. Alternatively, the licensee referred to their maintenance rule program to address degradation of paint and coatings. However, it is not clear how the maintenance rule program compares to inservice inspection related visual examinations (i.e., examiner qualifications, frequency of examinations, etc.). This alternative may be considered acceptable if comparable to Code requirements and/or when adequate provisions exist to examine the base metal for surface anomalies that may indicate underlying conditions which could challenge the structural integrity of containment. These examinations should be performed prior to re-application of the coating, and should invoke detailed visual examinations and/or augmented ultrasonic examination, as necessary. Provide specific information addressing the maintenance rule program or how the integrity of the base metal is confirmed prior to paint or coating application.

RESPONSE 3

A General visual examination used for both IWE and IWL will be performed on accessible surfaces (including coated surfaces) of the containment pressure retaining boundary. The acceptance criteria used for the IWE and IWL visual examinations include criteria for the examination of coated surfaces. In summary, coated surface conditions (i.e., blistering, chalking, checking, chipping, cracking, delamination, discoloration, undercutting, etc.) which could be an indication of pressure boundary degradation will be evaluated. If coating is removed to perform visual examinations, the coatings will be reapplied under the appropriate plant coatings requirements. In addition, steps have been added to the maintenance rule manual to notify the Containment Inservice Inspection (CISI) program owner when degradation of the containment liner or coating is observed. This provides assurance that examinations of the containment pressure boundary are performed prior to removal of coatings by mechanical means (i.e., power tools) that could remove evidence of surface degradation and prior to reapplication of the coating as necessary.

QUESTION 4

Examination Category E-G, Pressure Retaining Bolting, has been removed from Table IWE-2500-1 in the 1998 Edition. The 1992 Edition required VT-1 visual examination of bolting when a connection was disassembled. The 1998 Edition requires a General visual examination, performed in place, with no requirement for visual examination when the joint is disassembled. It is not clear what, if any, examinations will be performed on disassembled bolted connections. Provide a technical justification describing why not performing VT-1 visual examination of the bolting, when disassembled, provides an acceptable (equivalent) level of quality and safety.

RESPONSE 4

While it is true that Table IWE-2500-1 Examination Category E-G was removed in the 1998 Edition, the bolted connection requirements were rolled up under Examination Category E-A of the 1998 Edition. NMPC disagrees with the interpretation that the 1992 Edition required VT-1 examination of bolting when connections are disassembled, and that the 1998 Edition requires a General visual examination performed in place, with no requirement for visual examination when the connection is disassembled.

NMPC has conducted a comparison between the 1992 Edition and the 1998 Edition of the ASME Code for bolted connections. The results of this comparison are provided in Table 3.

TABLE 3 (COMPARISON OF ASME CODE 1992 EDITION AND 1998 EDITION)

AREAS COMPARED	1992 EDITION	1998 EDITION	REMARKS/COMMENTS
Exam. Category	E-G Pressure Retaining Bolting	E-A Containment Surfaces	Exam. Category E-G was rolled up under Exam. Cat. E-A.
Exam. Item	E8.10 Bolted Connections Footnote 1	E1.11 Accessible Surface Areas Footnote 1,2,3,5	Essentially no difference, other than description.
Exam. Requirements	Surface	IWE-2310	1998 Edition is more detailed, but essentially covers Surfaces.
Exam. Method	VT-1	General Visual Footnote 7	The General visual is based on the VT-3 exam requirements, and the detailed visual is based on the VT-1 exam. requirements. Essentially equivalent.
Acceptance Standards	IWE-3515	IWE-3510	Essentially the same.
Extent and Frequency	100% of each Bolted Connection Footnotes 2 and 4	100% During each Inspection Period	1998 Edition is more prescriptive, bolted connections examined three times in the interval versus one time per interval under the 1992 Edition.
Deferral	Permissible Footnote 3	N/A Footnote 9	1998 Edition more prescriptive, no deferral.
Footnote 1	Examination shall include bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between threaded stud holes	(d) pressure-retaining bolted connections, including bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between fastener holes.	Same.
Footnote 2	Examination of bushings, threads, and ligaments in base material of flanges is required only when the connection is disassembled	See (d) Bolted connections need not be disassembled for performance of examinations.	It is understood that examination of bushings, threads, and ligaments in base material of flanges can only be performed when the connection is disassembled. Only those bolted connections disassembled during a scheduled exam will be performed.
Footnote 3	Examination shall not be deferred when the connection is disassembled or when the bolting is removed	N/A	Deferral is not applicable in the 1998 Edition, therefore, more prescriptive.
Footnote 4	All visible surfaces shall be examined. Bolting may remain in place under tension when disassembly is not otherwise required.	See (d) Bolted connections need not be disassembled for performance of examinations, and bolting may remain in place under tension.	Essentially the same as 1998 Edition.

RESPONSE 4 (Cont'd)

Based on a comparison of the 1992 Edition versus the 1998 Edition of the ASME Code, NMPC has concluded that (1) both Editions of Section XI require a visual (VT-1 or General/Detailed) examination of bolted connections either in place under tension or when the connection is disassembled, and (2) both Editions are essentially the same (see Table 3 above for comparison). Therefore, the level of quality and safety between both Editions are equivalent, and in most cases the 1998 Edition is more prescriptive than the 1992 Edition.

NMPC will perform General visual examinations of all bolted connections in each inspection period. The General visual examinations will be performed in accordance with an inspection period schedule. Each scheduled bolted connection, within each period, will be examined in place under tension, or when the bolted connection is disassembled. Visual examination of disassembled bolted connections at other than a scheduled period examination is not required. Therefore, in conclusion, only those bolted connections disassembled at the time of the scheduled period examinations will be examined.