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

March 30, 2010

Mr. Samuel L. Belcher
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. 2 - ISSUANCE OF AMENDMENT RE: EXTENSION OF PRIMARY CONTAINMENT INTEGRATED LEAKAGE RATE TESTING INTERVAL (TAC NO. ME1650)

Dear Mr. Belcher:

The Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 134 to Renewed Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit No. 2 (NMP2), in response to your application dated June 29, 2009, (Agencywide Documents Access Management System (ADAMS) Accession No. ML091830310), as supplemented by letters dated August 13, 2009 (ADAMS Accession No. ML092260629) and February 3, 2010 (ADAMS Accession No. ML100430366).

The amendment revises Technical Specification (TS) 5.5.12, "10 CFR 50 Appendix J Testing Program Plan," by replacing the reference to Regulatory Guide 1.163 with a reference to Nuclear Energy Institute (NEI) Topical Report NEI 94-01, Revision 2-A, as the implementation document used by NMPNS to develop the NMP2 performance-based leakage testing program in accordance with Option B of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix J. In addition, the amendment allows NMPNS to extend the current interval for the NMP2 primary containment integrated leak rate test (ILRT) from 10 years to 15 years, and would allow successive ILRTs to be performed at 15-year intervals.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosures:
1. Amendment No. 134 to NPF-69
2. Safety Evaluation

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

NINE MILE POINT NUCLEAR STATION, LLC (NMPNS)

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 134
Renewed License No. NPF-69

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nine Mile Point Nuclear Station, LLC (the licensee) dated June 29, 2009, as supplemented by letters dated August 13, 2009, and February 3, 2010, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-69 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 134, are hereby incorporated into this license. Nine Mile Point Nuclear Station, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado

Nancy L. Salgado, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the License and Technical Specifications

Date of Issuance: March 30, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 134

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page	Insert Page
4	4

Replace the following page of Appendix A, Technical Specifications, with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page	Insert Page
5.5-11	5.5-11

(1) Maximum Power Level

Nine Mile Point Nuclear Station, LLC is authorized to operate the facility at reactor core power levels not in excess of 3467 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 134 are hereby incorporated into this license. Nine Mile Point Nuclear Station, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Fuel Storage and Handling (Section 9.1, SSER 4)*

a. Fuel assemblies, when stored in their shipping containers, shall be stacked no more than three containers high.

b. When not in the reactor vessel, no more than three fuel assemblies shall be allowed outside of their shipping containers or storage racks in the New Fuel Vault or Spent Fuel Storage Facility.

c. The above three fuel assemblies shall maintain a minimum edge-to-edge spacing of twelve (12) inches from the shipping container array and approved storage rack locations.

d. The New Fuel Storage Vault shall have no more than ten fresh fuel assemblies uncovered at any one time.

(4) Turbine System Maintenance Program (Section 3.5.1.3.10, SER)

The operating licensee shall submit for NRC approval by October 31, 1989, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities. (Submitted by NMPC letter dated October 30, 1989 from C.D. Terry and approved by NRC letter dated March 15, 1990 from Robert Martin to Mr. Lawrence Burkhardt, III).

* The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report (SER) and/or its supplements wherein the license condition is discussed.

5.5 Programs and Manuals

5.5.12 10 CFR 50 Appendix J Testing Program Plan (continued)

Section 2.D(ii) of the Operating License. This program shall be in accordance with the guidelines contained in NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated October 2008, with the following exceptions:

1. The measured leakage of main steam isolation valves (MSIVs) is excluded from the combined leakage rate of 0.6 L_a.

2. Primary containment air lock door seals are tested prior to re-establishing primary containment OPERABILITY when something has been done that would bring into question the validity of the previous air lock door seal test.

b. The peak calculated containment internal pressure (P_a) for the design basis loss of coolant accident is 39.75 psig.

c. The maximum allowable primary containment leakage rate (L_a) at P_a shall be 1.1% of primary containment air weight per day.

d. Leakage Rate acceptance criteria are:

1. Primary Containment leakage rate acceptance criterion is < 1.0 L_a. The combined leakage rate for Type B and C tests on a minimum pathway basis, except for main steam line isolation valves and Primary Containment isolation valves which are hydrostatically tested, is < 0.6 L_a.

During the first unit startup following testing in accordance with this program, the as-left combined leakage rate acceptance criteria are < 0.6 L_a for the Type B and C tests on a maximum pathway basis, except for main steam line isolation valves and Primary Containment isolation valves which are hydrostatically tested, and ≤ 0.75 L_a for Type A tests.

2. Air lock testing acceptance criteria are:

(a) Overall air lock leakage rate is ≤ 0.05 L_a when tested at greater than or equal to P_a; and

(continued)

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 134 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-69

NINE MILE POINT NUCLEAR STATION, LLC

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated June 29, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091830310), as supplemented by letters dated August 13, 2009 (ADAMS Accession No. ML092260629) and February 3, 2010 (ADAMS Accession No. ML100430366), Nine Mile Point Nuclear Station, LLC (NMPNS or the licensee) submitted a license amendment request (LAR) for Nine Mile Point, Unit No. 2 (NMP2). The proposed amendment would revise the NMP2 Technical Specification (TS) Section 5.5.12, "10 CFR 50 Appendix J Testing Program Plan," by replacing the reference to Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, with a reference to Nuclear Energy Institute (NEI) Topical Report NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 2-A, dated October 2008, as the implementation document used by NMPNS to develop the NMP2 performance-based leakage testing program in accordance with Option B of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. The proposed amendment would allow the next primary containment integrated leak rate test (ILRT) to be performed within 15 years from the last ILRT as opposed to the current 10-year interval, and would allow successive ILRTs to be performed at 15-year intervals.

The supplemental letters dated August 13, 2009, and February 3, 2010, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's initial proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on October 20, 2009 (74 FR 53779).

2.0 REGULATORY EVALUATION

10 CFR 50.54(o) requires that the primary reactor containments for water cooled power reactors shall be subject to the requirements set forth in Appendix J to 10 CFR Part 50 - Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors. Appendix J includes two options: (1) Option A - Prescriptive Requirements and (2) Option B - Performance-Based Requirements. Either of the two options can be selected for meeting the requirements of the Appendix. The testing requirements in Appendix J ensure that (1) leakage through these containments or systems and components penetrating these containments does not exceed allowable leakage rates specified in the TSs; and (2) integrity of the containment structure is

maintained during its service life. NMPNS has voluntarily adopted Option B and has been implementing Option B for meeting the requirements of Appendix J.

Option B of Appendix J specifies the performance-based requirements and criteria for preoperational and subsequent leakage-rate testing. These requirements are met by the performance of (1) Type A tests to measure the containment system overall integrated leakage rate; (2) Type B pneumatic tests to detect and measure local leakage rates across pressure-retaining leakage-limiting boundaries such as penetrations; and (3) Type C pneumatic tests to measure containment isolation valve leakage rates. After the preoperational tests, these tests are required to be conducted at periodic intervals based on the historical performance of the overall containment system (for Type A tests), and based on the safety significance and historical performance of each boundary and isolation valve (for Type B and C tests). These tests ensure integrity of the overall containment system as a barrier to fission product release. The leakage rate test results must not exceed the allowable leakage rate (L_a) with margin, as specified in the TSs. Option B also requires that a general visual inspection of the accessible interior and exterior surfaces of the containment system for structural deterioration, which may affect the containment leak-tight integrity, must be conducted (1) prior to each Type A test and (2) at a periodic interval between tests based on the performance of the containment system.

Section V.B.3 of 10 CFR 50 Appendix J, Option B, requires that the regulatory guide or other implementation document used by a licensee to develop a performance-based leakage-testing program must be included, by general reference, in the plant TSs. Further, the submittal for TS revisions must contain justification, including supporting analyses, if the licensee chooses to deviate from methods approved by the Commission and endorsed in a regulatory guide.

The implementation document that is currently referenced in the NMP2 TS 5.5.12, "10 CFR 50 Appendix J Testing Program Plan," is RG 1.163, "Performance-Based Containment Leak-Test Program," with two exceptions. RG 1.163, dated September 1995, endorses NEI 94-01, Revision 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, as a document that provides methods acceptable to the NRC staff for complying with the provisions of Option B to Appendix J to 10 CFR Part 50, subject to four regulatory positions delineated in Section C of the RG.

NEI 94-01, Revision 0, includes provisions that allow the performance-based Type A test interval to be extended to up to 10 years, based upon two consecutive successful tests. The most recent two Type A tests at NMP2 were successfully completed in 1991 and 2000. Based on RG 1.163 as the implementing document, NMP2 is currently on a 10-year interval for Type A tests, and currently the next 10-year Type A test is due by April 11, 2010.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Proposed Changes

The licensee's proposed change would revise TS 5.5.12.a to change the implementation document for complying with the provisions of Option B to Appendix J in 10 CFR Part 50, from RG 1.163 (September 1995) to Topical Report (TR) NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated October 2008. The proposed change would also revise the first listed exception by deleting the

portion of the sentence regarding as-found testing of the main steam isolation valves (MSIVs). In addition, the change would extend the ILRT interval from 10 years to 15 years.

The proposed TS 5.5.12 would read as follows:

5.5.12 10 CFR 50 Appendix J Testing Program Plan

a. A program shall establish the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B with the exemptions stated in Section 2.D(ii) of the Operating License. This program shall be in accordance with the guidelines contained in NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated October 2008, with the following exceptions:

1. The measured leakage of main steam isolation valves (MSIVs) is excluded from the combined leakage rate of 0.6 L_a.

2. Primary containment air lock door seals are tested prior to re-establishing primary containment OPERABILITY when something has been done that would bring into question the validity of the previous air lock door seal test.

3.2 NEI 94-01, Revision 2-A

NEI 94-01, Revision 2-A, is the NRC-accepted version of Revision 2 of the TR. By letter dated June 25, 2008, the NRC issued its final safety evaluation (SE) for NEI 94-01, Revision 2-A, "Final Safety Evaluation for Nuclear Energy Institute Topical Report 94-01, Revision 2, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," and Electric Power Research Report No. 1009325, Revision 2, August 2007, "Risk Impact Assessment of Extended Integrated Leak Rate Testing Intervals," (ADAMS Accession No. ML081140105).

NEI 94-01, Revision 2-A, describes an approach for implementing the optional performance-based requirements of Option B to 10 CFR 50, Appendix J. It incorporates the regulatory positions stated in RG 1.163, and includes provisions for extending Type A test (ILRT) intervals for up to 15 years. NEI 94-01, Revision 2-A, delineates a performance-based approach for determining Type A, Type B, and Type C containment leakage rate surveillance testing frequencies. This method uses industry performance data, plant-specific performance data, and risk insights in determining the appropriate testing frequency. The guideline discusses the performance factors that licensees must consider in determining test intervals. While it does not provide the details on how to perform the tests, it instead, references the national standard ANSI/ANS 56.8-2002 as detailed guidance for performing the tests.

In the June 25, 2008, SE, the NRC staff concluded that NEI 94-01, Revision 2-A, describes an acceptable approach for implementing the optional performance-based requirements of Option B of 10 CFR 50, Appendix J, and is acceptable for referencing by licensees proposing to amend their TS in regards to containment leakage rate testing, subject to the specific limitations and

conditions listed in Section 4.1 of the SE. Section 3.1 of the June 25, 2008, SE, provides the NRC staff position on the adequacy of NEI 94-01, Revision 2-A, in addressing the performance-based Type A, Type B and Type C test frequencies. It also addresses the adequacy of pre-test inspections, procedures to be used after major modifications to the containment structure, deferral of tests beyond 15 years interval, and the relation of containment inservice inspection (ISI) requirements mandated by 10 CFR 50.55a to the containment leak rate testing requirement.

NEI 94-01, Revision 2-A, also requires that a plant-specific risk impact assessment be performed using the approach and methodology described in TR-1009325, Revision 2-A, "Risk Impact Assessment of Extended Integrated Leak Rate Testing Intervals," subject to conditions in Section 4.2 of the June 25, 2008, SE, for a proposed extension of the ILRT interval to 15 years.

The licensee submitted the proposed TS change in accordance with 10 CFR 50 Appendix J, Option B, Section V.B.3, in order to change the implementation document referenced in TS 5.5.12, "10 CFR 50 Appendix J Testing Program Plan." The proposed TS change does not involve any other changes to the licensing commitments or acceptance criteria. The NMP2 10 CFR 50 Appendix J Program Plan would continue to comply with the requirements of 10 CFR 50, Appendix J. In accordance with the June 25, 2008, SE, the licensee addressed the six limitations and conditions listed in Section 4.1 of the SE to show the acceptability of its use of NEI 94-01, Revision 2-A. The NRC staff evaluated whether the licensee adequately addressed and satisfied these conditions in its submittals.

In accordance with the guidance in NEI 94-01, Revision 2-A, the licensee also proposes to extend the current primary containment Type A test interval from 10 years to 15 years, based on acceptable performance. This would allow the next Type A test for NMP2 to be performed within 15 years from the last test (i.e., by April 11, 2015), as opposed to the current 10-year interval date of April 11, 2010, and would allow successive Type A tests to be performed at 15-year intervals provided acceptable performance history is maintained.

3.3 Adoption of NEI 94-01, Revision 2-A

In the June 25, 2008, SE, the NRC staff concluded that the guidance in TR NEI 94-01, Revision 2-A, is acceptable for referencing by licensees proposing to amend their TS in regards to containment leakage rate testing, subject to the six limitations and conditions noted in Section 4.1 of the NRC SE for NEI 94-01, Revision 2-A. The NRC staff evaluated whether the licensee adequately addressed and satisfied these conditions in the LAR submittals, as discussed below.

3.3.1 NRC Condition 1

NRC Condition 1 states: "For calculating the Type A leakage rate, the licensee should use the definition in the NEI TR 94-01, Revision 2-A, in lieu of that in ANSI/ANS-56.8-2002. (Refer to SE Section 3.1.1.1)."

The licensee stated in Section 3.1 of its LAR that, following NRC approval of the proposed changes, NMP2 will use the definition in Section 5.0 of NEI 94-01, Revision 2-A, for calculating the Type A leakage rate when future NMP2 Type A tests are performed. Since the licensee has

committed to comply with the definition in NEI 94-01, Revision 2-A, for calculating the Type A test leakage rate, the NRC staff finds that the licensee has adequately addressed Condition 1 in its LAR.

3.3.2 NRC Condition 2

NRC Condition 2 states: "The licensee submits a schedule of containment inspections to be performed prior to and between Type A tests. (Refer to SE Section 3.1.1.3)."

The licensee provided a schedule of containment inspections in Section 3.2.2 of its LAR. The licensee stated that prior to initiating a Type A test, a general visual examination of the accessible interior and exterior surfaces of the containment system for structural problems that may affect either the containment structure leakage integrity or the performance of the Type A test is performed. This inspection is typically conducted in accordance with the NMP2 Containment ISI Plan and Schedule (referred to as the IWE/IWL ISI program), which implements the requirements of the ASME Code, Section XI, Subsections IWE and IWL, as required by 10 CFR 50.55a(g)(4). The code of record for the second (current) IWE/IWL ISI interval at NMP-2 is the ASME Code, Section XI, 2001 Edition with the 2003 Addenda. The licensee stated that in the event that either a Subsection IWE or IWL examination is not scheduled to be performed during the same outage as the Type A test, a separate general visual inspection will be performed prior to the test during the outage in which the test is scheduled.

The licensee stated that the containment IWE/IWL ISI program, in accordance with 10 CFR 50.55a(g)(4), satisfies the general visual examination requirements specified in 10 CFR 50, Appendix J – Option B. In the Subsection IWE ISI program, each 10-year ISI interval is divided into three approximately equal-duration inspection periods, and the examinations are conducted during refueling outages within these inspection periods. A general visual inspection of 100 percent of accessible surfaces of the metallic components of the containment pressure boundary is required during each IWE inspection period. Since a 15-year ILRT interval spans at least four IWE inspection periods, the performance of examinations in accordance with Subsection IWE assures that at least three general visual examinations of containment pressure boundary metallic components will be conducted during refueling outages between the Type A tests if the Type A test interval is extended to 15 years. Thus, the licensee concluded that the frequency of the examinations performed in accordance with Subsection IWE satisfies the requirement of NEI 94-01, Revision 2-A, Section 9.2.3.2, to perform the general visual examinations during at least three other outages before the next Type A test if the Type A test interval is to be extended to 15 years.

The licensee included in its LAR, an illustration of their inspection schedule which provided the IWE inspection periods for the NMP2 first and second 10-year IWE/IWL ISI intervals, as shown in Table 1 below.

Table 1
NMP2 Containment Inservice Inspection Schedule
for IWE/IWL ISI Intervals 1 & 2

Inspection Interval	Inspection Period (IWE)	Period Start Date	Period End Date	Refuel Outage	Refuel Outage Year
1	1	April 5, 1998	April 4, 2001	RFO-07	2000
1	2	April 5, 2001	April 5, 2005	RFO-08 RFO-09	2002 2004
1	3	April 5, 2005	April 4, 2008	RFO-10 RFO-11	2006 2008
2	1	April 5, 2008	April 4, 2011	RFO-12	2010
2	2	April 5, 2011	April 4, 2015	RFO-13 RFO-14	2012 2014
2	3	April 5, 2015	April 4, 2018	RFO-15 RFO-16	2016 2018

The last NMP2 Type A test was completed in April 2000 during refueling outage RFO-07. Based on a 15-year Type A test interval, the next NMP2 Type A test would be scheduled for RFO-14 in 2014 (during Inspection Interval 2, Period 2). Thus, based on the schedule provided in Table 1, three containment general visual examinations performed in accordance with the IWE ISI program would take place prior to the 2014 Type A test (i.e., during Inspection Interval 1, Periods 2 and 3, and during Inspection Interval 2, Period 1).

Although, the inspection periods shown in Table 1 are based on Subsection IWE inspection requirements, the IWL inspections are typically scheduled in two of the three inspection periods of a 10-year ISI interval, as shown in Table 1 above. In its response dated February 3, 2010, to the staff's request for additional information (RAI) letter dated January 6, 2010 (ADAMS Accession No. ML100040156) for RAI-3, the licensee stated that visual examinations of accessible concrete containment surfaces in accordance with ASME Section XI, Subsection IWL, are performed every 5 years, resulting in at least two IWL examinations being performed during a 15-year Type A test interval. The licensee stated that in addition to the IWL examinations, NMP2 conducts general visual inspections, in accordance with approved plant procedures to satisfy TS Surveillance Requirement SR 3.6.1.1.1 and the requirements of the Appendix J Testing Program Plan, to identify potential degradation of containment components on the following schedule: accessible exterior concrete surfaces of the Suppression Chamber every 24 months (i.e. each refueling outage) and those of the Drywell, at least three times in a 10-year period. The licensee provided the scope and attributes included in these visual inspections and stated that these inspections are coordinated with IWL inspections to the extent practical. The licensee concluded that these inspections and the IWL examinations, together, assure that at least three general visual examinations of the concrete containment components will be conducted between the Type A tests if the test interval is extended to 15 years, in addition to one performed prior to the test, thereby meeting the requirement in Section 9.2.3.2 of TR NEI 94-01, Revision 2-A, and Condition 2 in Section 4.1 of the NRC SE for NEI-94-01, Revision 2-A.

The licensee's inspection schedule plan described above for NMP2, in accordance with ASME Section XI, Subsections IWE and IWL and other approved plant procedures, ensure that a general visual examination of accessible interior and exterior containment surfaces of the NMP2 containment system for structural deterioration, which could affect containment leak-tight integrity, will be conducted prior to each Type A test and during at least three other refueling outages before the next Type A test, if the Type A test interval is extended to 15 years. Therefore, the NRC staff finds that the licensee's inspection schedule plan in the LAR meets the general visual examination requirements in NEI 94-01, Revision 2-A, and 10 CFR 50 Appendix J, Option B, and satisfies Condition 2 in the NRC SE for NEI 94-01, Revision 2-A.

3.3.3 NRC Condition 3

NRC Condition 3 states: "The licensee addresses the areas of the containment structure potentially subjected to degradation. (Refer to SE Section 3.1.3)."

In Section 3.1 of its LAR, the licensee stated that general visual examinations of accessible interior and exterior surfaces of the containment system for structural problems are typically conducted in accordance with the NMP2 Containment ISI Plan and Schedule, which implements the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL, as required by 10 CFR 50.55a(g). The NMP2 containment system does not employ any moisture barriers and is not equipped with a sand cushion. There are no primary containment surface areas that currently require an augmented examination in accordance with ASME Section XI, IWE-1240.

In its response dated February 3, 2010, to the staff's RAI-8, the licensee stated that the only areas of the containment that the NMP2 IWE/IWL ISI program identifies as inaccessible for examination are the drywell floor steel liner, the suppression chamber floor steel liner, and those portions of the drywell and suppression chamber wall liners that are behind the insulating concrete layer covering the floor liners. The licensee further indicated that the containment examinations performed to date have not identified any conditions in the accessible areas that could indicate the presence or result in degradation of these inaccessible areas and require evaluation in accordance with 10 CFR 50.55a(b)(2)(ix)(A) and 10 CFR 10.55a(b)(2)(viii)(E). Thus, to date, NMP2 has not had a need to implement any new technologies to inspect the inaccessible areas.

The licensee added that it actively participates with NEI in various nuclear utility owner groups and ASME Code committees, to maintain cognizance of ongoing developments within the nuclear industry. Industry operating experience is also continuously reviewed to determine its applicability to NMP2. Adjustments to inspection plans and the availability of new, commercially available technologies for examination of the inaccessible areas of the containment would be explored and considered as part of these activities.

Section 3.1.3 of the June 25, 2008, SE, in part, states that licensees referencing NEI 94-01, Revision 2-A, in support of a request to amend their TS should also explore/consider such inaccessible degradation-susceptible areas in plant-specific inspections, using viable, commercially available non-destructive examination (NDE) methods such as boroscopes, guided wave techniques, etc. (see Report ORNL/NRC/LTR-02/02, "Inspection of Inaccessible Regions of Nuclear Power Plant Containment Metallic Pressure Boundaries," June 2002

(ADAMS Accession No. ML061230425), for recommendations to support plant-specific evaluations.) The NRC staff's intent of this statement in the NRC SE for NEI 94-01, Revision 2-A, is that licensees should explore and consider NDE techniques such as those discussed in the reference or other methods for inspections of inaccessible degradation-susceptible areas of the containment pressure boundary to support plant-specific evaluations of inaccessible areas, as these advanced technologies become commercially available and viable for implementation in practice in the future, while recognizing that these techniques may not be commercially viable at the present time.

The information provided by the licensee identifies areas in the NMP2 containment that are inaccessible, which are limited to the drywell and suppression chamber floor liners that are covered by a layer of insulating concrete, and indicated that the NMP2 operating experience, to date, has not identified any conditions that would indicate the presence or result in degradation of these inaccessible areas. However, the licensee acknowledged that, as an active participant of tracking ongoing technology developments and industry operating experience, adjustments to inspection plans and the availability of new, commercially-available technologies for examination of the inaccessible areas of the containment would be explored and considered as part of these activities. Therefore, the NRC staff finds that the licensee has adequately addressed the intent of Condition 3 in its LAR.

3.3.4 NRC Condition 4

NRC Condition 4 states: "The licensee addresses any tests and inspections performed following major modifications to the containment structure, as applicable. (Refer to SE Section 3.1.4)."

The licensee stated in Section 3.1 of its LAR that there are currently no planned or anticipated major modifications to the NMP2 containment structure and the station design change process would address testing requirements for any future containment modifications. In its response dated February 3, 2010, to the staff's RAI-9, the licensee clarified that repair/replacement activities are implemented at NMP2 based on the Repair/Replacement Program (in accordance with ASME Section XI - Subsections IWE and IWL for containment) in conjunction with the station design change process. The licensee stated that testing and inspections to be performed on containment following repair or modification is dependent on the nature of the repair or modification (whether major or minor) and is established based on the Repair/Replacement Program in accordance with ASME Section XI and the station design change process. The licensee clarified in its response that it understands the distinction between major and minor containment repairs and modifications, as described in Section 3.1.4 of the NRC SE for NEI 94-01, Revision 2-A. The licensee confirmed that, based on the discussion in the NRC's SE and in Section 9.2.4 of NEI 94-01, Revision 2-A, testing will be performed following containment repairs or modifications at NMP2 as follows:

- For major repairs or modifications (e.g., cutting of large openings for equipment removal/replacement, replacement of large penetrations): either a Type A test (ILRT) or a short duration structural test (as defined in Section 3.1.4 of NRC SER on NEI 94-01, Revision 2-A).

- For minor repairs or modifications (e.g., items defined in IWE-5220): a local leak rate test.

The licensee also stated that any proposed testing that involves alternatives to or relief from ASME Code testing requirements would be submitted for NRC review and acceptance, pursuant to 10 CFR 50.55a.

Based on the information above, the NRC staff finds that the licensee has committed to the staff's position with regard to testing following major and minor containment repairs and modifications, as explained in Section 3.1.4 of the June 25, 2008, SE for NEI 94-10, Revision 2-A. Therefore, the NRC staff finds that the licensee has adequately addressed Condition 4 in its LAR.

3.3.5 NRC Condition 5

NRC Condition 5 states: "The normal Type A test interval should be less than 15 years. If a licensee has to utilize the provision of Section 9.1 of NEI TR 94-01, Revision 2, related to extending the ILRT interval beyond 15 years, the licensee must demonstrate to the NRC staff that it is an unforeseen emergent condition. (Refer to SE Section 3.1.1.2)."

The licensee stated in Section 3.1 of its LAR that it acknowledges and accepts the NRC staff position in Condition 5, as communicated to the nuclear industry in Regulatory Issue Summary (RIS) 2008-27, dated December 8, 2008.

The licensee has acknowledged and accepted the NRC staff position, with regard to extending the Type A test intervals beyond the approved upper bound limit of 15 years, in Condition 5 and clarified in RIS 2008-27, "Staff Position on Extension of the Containment Type A Test Interval Beyond 15 Years Under Option B of Appendix J to 10 CFR Part 50." By this, the NRC staff finds that the licensee has confirmed its understanding that any extension of the Type A test interval beyond the upper-bound performance-based limit of 15 years should be infrequent and should be requested only for compelling reasons, and that the NRC staff will implement the position in RIS 2008-27 in reviewing such license amendment requests. Therefore, the NRC staff finds that the licensee has adequately addressed Condition 5 in its LAR.

3.3.6 NRC Condtion 6

NRC Condition 6 states: "For plants licensed under 10 CFR Part 52, applications requesting a permanent extension of the ILRT surveillance interval to 15 years should be deferred until after the construction and testing of containments for that design have been completed and applicants have confirmed the applicability of NEI TR 94-01, Revision 2-A, and EPRI Report No. 1009325, Revision 2-A, including the use of past containment ILRT data."

The licensee stated in Section 3.1 of its LAR that this condition is not applicable to NMP2 since NMP2 is not licensed to 10 CFR Part 52. The NRC staff finds that NMP2 is currently an operating reactor licensed to 10 CFR Part 50, and therefore, Condition 6 does not apply.

3.3.7 Conclusion of Licensee's Adoption of NEI 94-01 Revision 2-A

Based on the above evaluation, the NRC staff finds that the licensee has adequately addressed and satisfied the six conditions in Section 4.1 of the NRC SE for NEI 94-01, Revision 2-A, in its submittals. Therefore, the NRC staff finds it acceptable for NMP2 to adopt NEI 94-01, Revision 2-A, as the implementation document in the NMP2 TS 5.5.12, "10 CFR 50 Appendix J Testing Program Plan."

3.4 Extension of Current Type A Test Interval from 10 to 15 Years

3.4.1 Description of the NMP2 Primary Containment System

The NMP2 primary containment is a Mark II pressure suppression containment system. The primary containment is a reinforced concrete structure, supported on a 10-ft thick mat, that consists of a drywell chamber located above a pressure suppression chamber, and a 4-ft thick drywell floor which separates the drywell chamber from the suppression chamber. The primary containment structure houses the reactor vessel, the reactor recirculation system, and other branch connections of the reactor coolant pressure boundary.

The drywell is a steel-lined reinforced concrete vessel in the shape of a frustum of two cones, closed by a dome with a torispherical head. The steel liner is attached to the inside face of the wall and functions primarily as a leak-tight membrane. The steel liner on the top surface of the drywell floor functions as a positive gas-tight membrane between the drywell and the suppression chamber to ensure that steam can enter the suppression chamber only through the downcomer vent lines or the safety/relief valve (SRV) discharge lines.

The pressure suppression chamber is a stainless steel clad, steel-lined, reinforced concrete cylindrical shell located below the drywell. The 10-ft thick foundation mat is lined with steel plates within the inside diameter of the cylinder. The suppression chamber contains a large reservoir of water, which is the suppression pool, that serves as a heat sink to absorb energy released into the suppression pool as a result of SRV blowdown or a local loss-of-coolant accident (LOCA). The suppression pool is composed of an inner and outer pool, connected by six vent openings located in the reactor pedestal wall.

The primary containment wall contains penetrations for process piping, instrument piping, and electrical conductors. Five access hatches and one airlock penetrate the containment wall and provide for personnel and equipment egress. The leak-tight integrity of the penetrations and isolation valves are verified through Type B and Type C local leak rate tests (LLRTs) and the overall leak-tight integrity and structural integrity of the primary containment is verified through a Type A ILRT, as required by 10 CFR 50, Appendix J. These tests are performed at the peak calculated design basis accident (DBA) pressure, P_a, which is 39.75 pounds-per-square-inch-gauge (psig) for NMP2. The leakage rate testing requirements of 10 CFR 50 Appendix J Option B (Type A, Type B and Type C Tests) and the Containment In-service Inspection (CISI) requirements mandated by 10 CFR 50.55a, together, ensure the continued leak-tight and structural integrity of the containment during its service life.

Under Option B, NMP2 is currently on an ILRT interval of 10 years, based on RG 1.163 (September 1995) as the implementation document. By the current LAR, the licensee proposes

to extend the current Type A test interval from 10 years to 15 years by adopting TR NEI 94-01, Revision 2-A, as the implementation document in the TS (note that this change was evaluated in Section 3.3 of this SE). This change would allow NMP2 to conduct the next Type A test by April 11, 2015, in lieu of the current due date of April 11, 2010. The licensee further justifies the proposed change by demonstrating adequate performance of the NMP2 containment based on historical plant-specific containment leakage testing program results and containment in-service inspection program (CISI) results and supported by a plant-specific risk assessment, consistent with the guidance in NEI 94-01, Revision 2-A.

The information presented in support of the change in the licensee's LAR submittals were reviewed and evaluated below from the point of deterministic considerations with regard to containment structural and leak-tight integrity if the current ILRT interval is extended from 10 years to 15 years.

3.4.2 NMP2 Type A Test Performance History

The licensee stated that as defined in NEI 94-01, Revision 2-A, the performance leakage rate for a Type A test is calculated at NMP2 as the sum of the Type A upper confidence limit (UCL) and as-left minimum pathway leakage rate (MNPLR) for all Type B and Type C pathways that were in service, isolated, or not lined up in their test position (i.e., drained and vented to containment atmosphere) prior to performing the Type A test. In addition, leakage pathways that were isolated during performance of the test because of excessive leakage must be factored into the performance determination. The performance criterion for Type A tests is a performance leak rate of less than 1.0 L_a. The Type A tests are performed at the peak calculated containment pressure for the design basis LOCA, P_a, of 39.75 psig at NMP2. For NMP2, the maximum allowable containment leakage rate, L_a, is 1.1% containment air weight per day at P_a = 39.75 psig. The NRC staff finds that the definition used at NMP2 for calculating the Type A test leakage rate satisfies Condition 1 in Section 4.1 of the June 25, 2008, SE for TR NEI 94-01, Revision 2-A, and therefore, acceptable.

The results of the two most recent Type A tests conducted at NMP2 in 1991 and 2000, at a test pressure of P_a = 39.75 psig, are as follows.

For the 1991 periodic Type A test, the total time UCL leakage rate was 0.2880 weight percent per day, excluding the minimum pathway leakage for isolated pathways. The minimum pathway leakage rate for Type B and C pathways not in service was 0.017 weight percent per day. During the test, a leakage pathway through a containment pressure transmitter was isolated. Although no local leakage rate for this pathway was available, a maximum leakage through this pathway of 0.312 weight percent per day was calculated. Therefore, the performance leakage rate was 0.2880 + 0.017 + 0.312 = 0.617 weight percent per day.

For the 2000 periodic Type A test, the total time UCL leakage rate was 0.2131 weight percent per day, excluding the minimum pathway leakage for isolated pathways. The minimum pathway leakage rate for Type B and C pathways not in service was 0.0686 weight percent per day. There were no leakage pathways isolated during the performance of the test. Therefore, the performance leakage rate was 0.2131 + 0.0686 = 0.2817 weight percent per day.
The licensee also reported that the corresponding performance leakage rate for the 1986 preoperational Type A test was 0.2815 + 0.0087 + 0 = 0.2902 weight percent per day.

The results show that all the previous Type A tests at NMP2, including the two most recent tests, were successful with containment performance leakage rate less than the maximum allowable containment leakage rate (L_a at P_a) of 1.1% containment air weight per day, at a pressure of 39.75 psig. The NRC staff finds that, consistent with the guidance in NEI 94-01, Revision 2-A, this performance history for Type A tests supports extending the current ILRT interval to 15 years.

3.4.3 NMP2 Type B and Type C Tests

The licensee described its Type B and Type C Testing Program in Section 3.2.5.1 of the LAR and in its supplemental letter dated February 3, 2010. The licensee stated that the NMP2 combined Type B and Type C leakage acceptance criterion (0.6 L_a) is 494.6 standard cubic-feet per hour (scfh). The maximum and minimum pathway leak rate summary total results (provided by the licensee in response to RAI-1(c)) for each refueling outage, since the last NMP2 Type A test in 2000, and shown in the following Table 2, indicate that the combined leakage from the Type B and Type C tests has been maintained significantly below the acceptance criteria for both minimum and maximum pathway totals. A review of the as-found minimum pathway totals for each of these outages determined that there were no penetrations where both isolation valves experienced gross test failures.

Table 2:
Type B and Type C Test Leak Rate Summary for Recent Outages

Refueling Outage	Maximum Pathway		Minimum Pathway	
	Leakage (scfh)	% of 0.6 L_a (494.6 scfh)	Leakage (scfh)	% of 0.6L_a (494.6 scfh)
RFO11 - 2008	132.47	26.8%	82.3	16.6%
RFO10 - 2006	102.97	20.8%	85.9	17.4%
RFO9 - 2004	148.65	30.0%	61.53	12.4%
RFO8 - 2002	147.27	29.8%	56.53	11.4%
RFO7 - 2000	140.25	28.4%	71.92	14.5%

The licensee stated that industry experience has shown that the Type B and C tests can identify the vast majority (over 95%) of all potential primary containment leakage paths. The licensee stated that this LAR adopts the guidance in NEI 94-01, Revision 2-A, in place of NEI 94-01, Revision 0, but otherwise does not affect the scope, performance, or scheduling of Type B or Type C tests, and that Type B and Type C testing will continue to provide a high degree of assurance that primary containment integrity is maintained.

The licensee stated that frequently disassembled Type B penetrations (those with seals, gaskets, and bolted connections) are typically tested on a 30-month interval, whereas the test interval for infrequently disassembled Type B penetrations is typically 120 months (performance-based). Type C test intervals are performance-based (except for those valves on a fixed interval; e.g., MSIVs and feed water isolation valves). Type C penetrations have had generally good performance and are typically tested on a 60-month interval. The Type B and Type C tests are scheduled such that approximately equal numbers of components are tested during each refueling outage, to levelize resource requirements.

In its response dated February 3, 2010, to the staff's RAI-1, the licensee provided two comprehensive tables (Tables 1 and 2) that identified all of the NMP2 penetrations subject to Type B and Type C testing, respectively. The tables also provided the current test frequencies that were established under Option B based on performance, the last test date, and the refueling outage/date for the next test. The table provided by the licensee for Type B tests indicates that, of the total 76 penetrations subject to Type B testing, 63 are on the 120-month performance-based interval, 8 are on a 30-month fixed interval, and the remaining 5 are subject to an IST required test performed every 24 months (every outage). This information indicates that 100% of the penetrations, subject to performance-based Type B test intervals, are on the maximum allowed performance-based interval of 120 months, which demonstrates excellent performance of Type B penetrations at NMP2. The table provided by the licensee for Type C tests indicates that of the total (approximate) 178 penetrations subject to Type C testing, 131 are on the maximum 60-month performance-based interval, 9 are on the minimum 30-month performance-based interval, 10 are on a 30-month fixed interval, 8 on quarterly TS-required testing, and the remaining 20 are subject to required inservice testing every 24 months (every outage). This information indicates that, of the 140 penetrations eligible to be tested on a performance-based Type C test schedule, 131 (93%) are on the maximum allowed performance-based interval of 120 months, and the remaining 9 (7%) are on the minimum performance-based schedule, which in combination with the combined Type B and Type C leak rate summary totals being well below the acceptance criteria, demonstrates generally good performance of the Type C penetrations at NMP2.

The licensee also provided in its February 3, 2010, letter, a summary table (Table 3) of containment penetration components at NMP2 that have experienced leak rate test failures (all of which are Type C test failures) and their test schedules since the 2000 refueling outage when the last ILRT was performed. The licensee stated that a test failure represents leakage rate that exceeds the administrative criteria established in accordance with 10 CFR 50, Appendix J, Option B. When the administrative leakage limit is exceeded during as-found tests, the test failure is captured in the site corrective action program. If the component is on an extended test interval, the test interval is returned to 30 months. The licensee also summarized the cause and corrective actions taken for each test failure. Based on the information provided, the NRC staff finds that the licensee has appropriately addressed the corrective actions and has adjusted test schedules consistent with its Appendix J, Option B program, for cases of as-found test failures.

With reference to the NRC Information Notice 92-20, "Inadequate Local Leak Rate Testing," on the subject of inadequate local leak rate testing of two-ply stainless steel bellows used on penetrations at some plants, the licensee stated that the utilization of bellows as containment pressure retaining boundaries at NMP2 is limited to containment penetrations 2NMT*Z31A, B, C, D and E, all of which use single-ply bellows. The licensee stated that Type B leak rate tests are applicable to these five bellows penetrations and a makeup pressure test is utilized to determine primary containment penetration leak rates. The licensee provided test results of these bellows penetrations for each refueling outage since the last ILRT, performed in 2000, in Table 5 of the February 3, 2010, letter. For all five penetrations, the measured leak rates have been significantly below the established administrative leakage limits. In addition, the licensee stated that an aging management inspection of these bellows was performed during the 2008 refueling outage, with no indications identified. The licensee also stated that the NMP2 plant-specific risk assessment, included in the LAR, takes into consideration the potential failure of

containment bellows assemblies. Based on the above information, the NRC staff finds that the licensee has adequately addressed the testing of penetration bellows at NMP2.

Given that NMP2 is on a 24-month operating cycle, the NRC staff requested in RAI-2(a), that the licensee provide an explanation as to how a 60-month interval was implemented in the current 10 CFR Appendix J Testing Program Plan using RG 1.163 (September 1995) as the implementing document; and also discuss how a 60-month interval will be implemented using NEI 94-01, Revision 2-A, as the implementing document for its Appendix J program.

In its response dated February 3, 2010, the licensee stated that, as discussed in Section 11.3 of NEI 94-01, Revision 0, performance factors were evaluated when establishing test intervals greater than 30 months. Type C tested components that are on a performance-based 60-month test schedule are actually scheduled and tested approximately every 48 months (i.e., every other refueling outage). The test interval for these components is entered into the surveillance tracking database as 1825 days (60 months), with no interval extension (grace period) allowed, so that the test interval will not exceed 60 months. The licensee stated that this is consistent with the guidance provided in Regulatory Position C.2 of RG 1.163 and that NMP2 is not using the 25 percent grace period (not to exceed 15 months), as stated in NEI 94-01, Revision 0, as a permanent interval extension to allow testing every third refueling outage. The licensee further stated that adoption of NEI 94-01, Revision 2-A, as the implementation document for the 10 CFR 50 Appendix J Testing Program Plan will not alter scheduling and testing of the Type C tested components that are on a performance-based 60-month test schedule. As with the current program, these components will continue to be scheduled and tested approximately every 48 months, with the scheduled test interval not to exceed 60 months.

In addition to the licensee's response above, the last and next test schedule dates provided for Type B and Type C tests, as shown in Tables 1 and 2 in the licensee's letter dated February 3, 2010, further indicate that the penetrations on a 120-month performance-based interval, are being tested every fourth outage (approximately every 96 months) in a staggered manner; those on the 60-month performance-based interval are being performed every second outage (approximately every 48 months) in a staggered manner; and those on the 30-month performance-based interval are being tested every outage (approximately every 24 months). The NRC staff's position with regard to grace periods for required Type B and C test frequency, in the last paragraph of the NRC SE for NEI 94-01, Revision 2-A, Section 3.1.2.2, "Extending Type B and C Test Intervals," which has been incorporated into NEI 94-01, Revision 2-A, states that "intervals of up to 60 months for the recommended surveillance frequency for Type B and Type C testing may be extended by up to 25 percent of the test interval, not to exceed 9 months." Based on the information provided by the licensee, as discussed above, the NRC staff finds that the licensee's implementation schedule for Type B and Type C testing are such that the tests are conducted within the performance-based interval without generally resorting to grace periods. Therefore, the NRC staff finds that the licensee's past and proposed scheduling of Type B and Type C tests are consistent with the provisions of NEI 94-01, Revision 2-A. Based on the information discussed above, the NRC staff finds that the licensee is effectively implementing its Type B and Type C Testing program under Option B, in a rational and systematic manner that is consistent with the implementation document in the TS, and will continue to do so, in accordance with NEI 94-01, Revision 2-A, if the current ILRT interval is extended to 15 years. Thus, the NRC staff finds that the integrity of the containment pressure boundary penetrations (including access hatches and airlocks) and isolation valves are

effectively monitored through Type B and Type C testing, as required by 10 CFR 50 Appendix J and the implementation document referenced in the NMP2 TSs.

3.4.4 Containment In-Service Inspection Program

In Section 3.2.2 of its LAR submittal, the licensee stated that the in-service inspection of the NMP2 containment is conducted in accordance with the NMP2 Containment ISI Plan and Schedule (referred to as the IWE/IWL ISI Plan) which implements the requirements of ASME Code, Section XI, Subsections IWE and IWL, in accordance with 10 CFR 50.55a(g)(4). The IWE/IWL inspections and supplemental inspections, in accordance with other approved plant procedures, are used to satisfy the general visual examination requirements of Appendix J, Option B and to monitor and manage the age-related degradations of the primary containment to ensure that containment structural and leak-tight integrity is maintained through its service life. This inspection program and schedule for the first and second IWE/IWL ISI intervals have been discussed in Section 3.3.2 of this SE and will not be repeated here again. Since 2008, the licensee has been implementing the inspections in the second 10-year IWE/IWL ISI interval for NMP2. There are no primary containment surface areas that require augmented examination in accordance with ASME Section XI, IWE-1240. The licensee stated that, consistent with the guidance in Section 9.2.3.3 of NEI 94-01, Revision 2-A, abnormal degradation of the primary containment structure, identified during the conduct of the IWE/IWL ISI program examinations or other inspections, are entered into the corrective action program for evaluation, to determine the cause of the degradation and to initiate corrective action.

The licensee stated that, in addition to the inspections performed in accordance with the IWE/IWL ISI program, the monitoring of the drywell interior coating on accessible interior surfaces are performed every refueling outage to identify evidence of loose, flaking, or degraded painted surfaces. These inspections provide another opportunity to identify structural deterioration of the drywell surfaces.

In RAI-4, the NRC staff requested the licensee to discuss historic highlights of important findings from the IWE and IWL examinations and the drywell coatings inspection program performed on the NMP2 containment structure since the last ILRT in 2000, and the actions taken to disposition the findings.

In its response dated February 3, 2010, to RAI-4, the licensee stated that, to date, there have been no findings identified from the IWL examinations of the concrete containment structure. The licensee stated that the only significant finding identified during the IWE examinations was areas of blistered coatings with evidence of ongoing rust behind the blistered coatings on the containment wall liner plate near the drywell floor. These areas of degraded coatings were identified during the 2000 refueling outage and were entered into the corrective action program. Areas of the degraded coatings were scraped to bare metal and ultrasonic (UT) thickness readings were taken at several locations around the circumference of the liner. All thickness readings confirmed that the liner had experienced negligible, if any, reduction in thickness, as all readings were equal to or greater than the nominal liner thickness of 1-1/4" at these areas. The degraded coatings identified on the containment liner near the drywell floor were stabilized (scraped to bare metal) under the Drywell Coatings Program during the 2000 refueling outage, and the areas were re-coated using qualified coatings during the 2002 refueling outage.

The licensee further stated that examinations of containment penetrations with seals, gaskets, and bolted connections have been performed, as directed by the IWE program plan, when these types of connections are disassembled or when the bolting is removed. The vent system, consisting of the stainless steel downcomers and the vacuum breakers in the drywell, has also been inspected in accordance with the IWE program plan. To date, these examinations have not identified any issues or findings.

The licensee stated that the only containment penetrations with bellows are the traversing in-core probe (TIP) drive guide tube penetrations. The licensee stated that these bellows were inspected during the 2008 refueling outage as an aging management inspection, with no indications identified. In addition, the results of the Type B leak rate tests for these penetrations have been acceptable.

The licensee stated that the NMP2 drywell coatings inspections are performed every refueling outage to identify evidence of degraded coatings throughout the drywell. The purpose of the coating inspection is to identify and quantify the total amount of degraded coatings because they are a potential debris source for the emergency core cooling system (ECCS) suction strainers, following a LOCA. Newly identified areas of degraded coatings are evaluated and scheduled for repair, replacement, or removal, as needed. These activities are tracked under the corrective action program. Inspections performed during the 2008 refueling outage characterized the condition of the coatings on the drywell liner as generally good to very good. Small isolated areas of degraded coatings have been identified during these inspections, but the only time that indications of ongoing corrosion have been noted was in the 2000 refueling outage, as discussed previously.

Based on the above response to RAI-4, the NRC staff finds that there has not been evidence, to date, of any significant degradation of the NMP2 primary containment, and the degradations noted have been appropriately managed and effectively corrected.

In its response dated February 3, 2010, to RAI-5, with regard to inaccessible areas of containment, the licensee stated that only areas of the containment that the NMP2 IWE/IWL ISI program identifies as inaccessible for examination are the steel drywell floor liner, the steel suppression chamber floor liner, and those portions of the drywell and suppression chamber wall liners that are behind the insulating concrete layer covering the floor liners. The licensee stated that to date, there have been no instances under either the IWE or IWL examinations where conditions were identified in accessible areas that could indicate the presence of or result in degradation in these inaccessible areas of the containment. The licensee stated that the NMP2 IWE/IWL in-service inspection program contains requirements to evaluate the acceptability of the inaccessible areas if such conditions were identified, in accordance with 10 CFR 50.55a(b)(2)(ix)(A) and 10 CFR 50.55a(b)(2)(viii)(E), and no such evaluations were necessary to date.

The licensee stated in its LAR that the NMP2 containment system does not employ any moisture barriers. In the absence of a moisture barrier, in RAI-6, the NRC staff requested the licensee to discuss the operating experience and evaluation results, if any, of the potential for or presence of corrosive conditions on the inaccessible drywell floor and suppression pool floor liner.

In its response to RAI-6 dated February 3, 2010, the licensee stated that the drywell floor is covered with a carbon steel liner which is then covered with 5 to 9 inches of insulating concrete. The insulating concrete thickness varies because it slopes away from the liner on the drywell wall and towards the drywell floor drains, to keep water from collecting in the corner where the drywell wall liner and the floor insulating concrete layer meet. The licensee stated that no moisture barrier was ever installed at this interface, and no standing water has been noted on the drywell floor. Inspections of this area, as part of the evaluation of the degraded coating conditions identified during the 2000 refueling outage, confirmed that the concrete remained tightly adhered to the drywell wall. The evaluation performed, at the time of discovery of the degraded coating conditions in 2000, concluded that the identified conditions were not indicative of the presence of degradation in the inaccessible drywell floor liner and would not result in degradation of the drywell floor liner. The licensee stated that the steel suppression pool floor liner is covered with 12 inches of insulating concrete. A welded stainless steel liner is installed over the insulating concrete, to serve as a waterproof membrane for that concrete layer, with all seams and corners seal-welded. Thus, the NRC staff agrees that there is no need for a moisture barrier at the suppression pool floor.

Further, the licensee indicated in its response to RAI-11, that its plant-specific risk analysis to estimate the likelihood and risk implications of corrosion-induced leakage of the steel liners going undetected, in inaccessible areas, during the extended test interval, was based on the methodology developed by Calvert Cliffs Nuclear Power Plant (ADAMS Accession No. ML020920100). The increase in large early release frequency (LERF) associated with corrosion events was estimated to be insignificant, and is discussed in Section 3.5 of this SE. Therefore, the NRC staff finds that any potential issue, with regard to degradation of inaccessible areas of the NMP2 containment liners, has been adequately addressed in the LAR.

Based on the above evaluation, the NRC staff finds that the licensee has adequate ISI programs in place to monitor and manage age-related degradation of the NMP2 containment structure. The results of the inspections, to date, indicate that the structural and and leak-tight integrity of the containment have been effectively monitored and managed and will continue to be managed, if the current ILRT interval is extended from 10 years to 15 years, in accordance with NEI 94-01, Revision 2-A.

3.4.5 Conclusion of Licensee's Extension of Type A Test Interval from 10 to 15 Years

Based on the evaluation above, the NRC staff finds that the licensee has effectively implemented adequate Containment Leakage Rate Testing (ILRT & LLRT), containment inservice inspection (CISI) and drywell coatings inspection programs to periodically examine, monitor, and manage age-related and environmental degradation of the NMP2 primary containment. The results of the past ILRTs, LLRTs and the CISI programs demonstrate acceptable performance of the NMP2 primary containment and demonstrate that the structural and leak-tight integrity of the primary containment structure is adequately managed. The structural and leak-tight integrity of the NMP2 primary containment will continue to be periodically monitored and managed by the LLRT and CISI programs, if the current ILRT interval is extended from 10 years to 15 years. Thus, the NRC staff finds that there is reasonable assurance that the containment structural and leak-tight integrity will continue to be maintained, without undue risk to safety, if the current ILRT interval at NMP2 is extended to 15 years. Therefore, the NRC staff finds it acceptable to extend the current ILRT interval at NMP2

from 10 years to 15 years as proposed by the licensee, in accordance with NEI 94-01, Revision 2-A. The next Type A test may therefore be conducted by April 11, 2015, in lieu of the current due date of April 11, 2010.

3.5 Risk Analysis

Section 9.2.3.1 of NEI 94-01, Revision 2-A, states that plant-specific confirmatory analyses of the risk associated with ILRT interval extensions are required when extending the interval beyond 10 years. Section 9.2.3.4 of NEI 94-01 states that the assessment should be performed using the approach and methodology described in Electric Power Research Institute (EPRI) Technical Report (TR) 1009325, Revision 2-A (October 2008), "Risk Impact Assessment of Extended Integrated Leak Rate Testing Intervals." The analysis is to be performed by the licensee and retained in the plant documentation and records as part of the basis for extending the ILRT interval.

As documented in the NRC SE for NEI 94-01, Revision 2-A, dated June 25, 2008, the NRC staff found the methodology in EPRI TR-1009325, Revision 2, acceptable for referencing by licensees proposing to amend their TSs to permanently extend the ILRT interval to 15 years, provided certain conditions are satisfied. These conditions, set forth in Section 4.2 of the NRC SE for NEI 94-01, Revision 2-A, stipulate that:

1. The licensee submit documentation indicating that the technical adequacy of their Probabilistic Risk Assessment (PRA) is consistent with the requirements of RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," relevant to the ILRT extension application.

2. The licensee submit documentation indicating that the estimated risk increase associated with permanently extending the ILRT interval to 15 years is small, and is consistent with the clarification provided in Section 3.2.4.6 of the NRC SE for NEI 94-01, Revision 2-A. (Note that the SE indicates that the clarification regarding small increases is provided in Section 3.2.4.5, but this clarification is actually provided in Section 3.2.4.6).

3. The methodology in EPRI TR-1009325, Revision 2, is acceptable provided the average leak rate for the pre-existing containment large leak rate accident case (i.e., accident case 3b) used by the licensees is assigned a value of 100 times the maximum allowable leakage rate (L_a) instead of 35 times L_a.

4. A traditional LAR is required in instances where containment over-pressure is relied upon for ECCS performance.

EPRI subsequently incorporated the changes outlined in the SE into Revision 2-A to EPRI TR-1009325, and published the document with a new report number 1018243 (accessible via the EPRI public website at http://my.epri.com).

3.5.1 Plant-Specific Risk Evaluation

The licensee has performed a risk impact assessment of extending the NMP2 containment ILRT interval to 15 years. The risk assessment was provided in the June 29, 2009, LAR, and resubmitted in an August 13, 2009, LAR supplement. Additional information was provided by the licensee in its supplemental letter dated February 3, 2010.

The licensee states that the plant-specific risk assessment followed the guidance in NEI 94-01, Revision 2-A; the methodology described in EPRI TR-1009325, Revision 2-A; the NRC regulatory guidance outlined in RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and the methodology used for Calvert Cliffs Nuclear Power Plant to assess the risk from undetected leaks due to corrosion.

The licensee addressed each of the four limitations and conditions for the use of EPRI TR-1009325, Revision 2 listed in Section 4.2 of the NRC SE. The NRC staff has reviewed this information and concluded that each of the limitations and conditions have been met for NMP2. A summary of the manner in which each limitation and condition has been met is provided in the sections below.

3.5.2 Technical Adequacy of the PRA

The first limitation and condition stipulates that the licensee submit documentation indicating that the technical adequacy of their PRA is consistent with the requirements of RG 1.200 relevant to the ILRT extension application.

In Regulatory Issue Summary 2007-06 (RIS 2007-06), "Regulatory Guide 1.200 Implementation," the NRC clarified that for all risk-informed applications received after December 2007, the NRC staff will use Revision 1 of RG 1.200 to determine whether the technical adequacy of the PRA used to support a submittal is consistent with accepted practices. Revision 2 of RG 1.200 will be used for all risk-informed applications received after March 2010. Given the June 29, 2009, date of the subject LAR, Revision 1 is applicable.

In the SE for EPRI TR-1009325, Revision 2, the NRC staff states that Capability Category I of the ASME PRA Standard shall be applied as the standard for assessing PRA quality for ILRT extension applications since approximate values of core damage frequency (CDF) and LERF and their contribution among release categories are sufficient to support the evaluation of changes to ILRT frequencies.

In accordance with this guidance, the licensee's June 29, 2009, LAR, addresses the technical adequacy of the PRA which forms the basis for the subject risk assessment. Additional information regarding the industry peer review of the NMP2 PRA model and the findings from this review was provided by the licensee in its letter dated February 3, 2010. As described therein, the NMP2 internal events/PRA model has been updated to meet ASME PRA Standard RA-Sb-2005 and RG 1.200, Revision 1, and an industry peer review of the updated model has been recently completed. The licensee provided a summary of the peer review findings, the status of the resolution of each finding, and an assessment of the potential impact of each finding on the NMP2 ILRT interval extension risk assessment. Based on this assessment, the

licensee determined that: (1) the majority of the findings are related to documentation and have no material impact on the risk assessment, (2) resolution of the peer review findings to date has had only a minor impact on the PRA model and its quantitative results, with the internal events CDF decreasing since the ILRT risk assessment was performed, and (3) required model changes to address the remaining open peer review findings would result in minor reductions in model quantification results and would have a negligible, if any, impact on the risk assessment.

The NRC staff reviewed this information and concurs with the licensee's assessment. Given that the licensee has (1) evaluated its PRA against RG 1.200 and the ASME PRA Standard, (2) evaluated all of the PRA peer review findings for applicability to the ILRT interval extension, and (3) determined that any unresolved issues would not impact the conclusions of the ILRT risk assessment, the NRC staff concludes that the NMP2 PRA model used for this application is of sufficient technical quality to support the evaluation of changes to ILRT frequencies. Accordingly, the first limitation and condition is met.

3.5.3 Estimated Risk Increase

The second limitation and condition stipulates that the licensee submit documentation indicating that the estimated risk increase associated with permanently extending the ILRT interval to 15 years is small, and consistent with the guidance in RG 1.174 and the clarification provided in Section 3.2.4.5 of the NRC SE for NEI 94-01, Revision 2-A. The associated metrics include LERF, population dose, and conditional containment failure probability (CCFP).

The licensee reported the results of the plant-specific risk assessment. The reported risk impacts are based on a change in test frequency from three tests in 10 years (the test frequency under Appendix J, Option A) to one test in 15 years, which bounds the impact of extending the test frequency from one test in 10 years to one test in 15 years. The reported increases in LERF (7.3E-8 per year for internal events and 1.0E-7 per year for internal and external events combined) are small and consistent with the RG 1.174 acceptance criteria, and the increases in population dose (0.037 person-rem per year) and CCFP (0.87 percentage point) are below the values associated with a small increase, as provided in the NRC SE and in EPRI TR-1009325, Revision 2-A.

In its RAI letter, the NRC staff questioned the licensee regarding the bases for the site-specific offsite population doses used in the NMP2 risk assessment, and the number of observed corrosion events considered in the assessment of corrosion-induced leakage of the steel liner. The licensee provided additional information on both of these items in its February 3, 2010, RAI response. The submitted information adequately supports the licensee's approach and resolves the NRC staff's concerns. Based on the risk assessment results and additional information, the NRC staff concludes that the increase in LERF is small and consistent with the acceptance guidelines of RG 1.174, the increase in the total integrated plant risk for the proposed change is small and supportive of the proposed change, and the defense-in-depth philosophy is maintained based on the small magnitude of the change in the CCFP. Accordingly, the second limitation and condition is met.

3.5.4 Leak Rate for the Large Pre-Existing Containment Leak Rate Case

The third limitation and condition stipulates that in order to make the methodology in EPRI TR-1009325, Revision 2-A acceptable, the average leak rate for the pre-existing containment large leak rate accident case (accident case 3b) used by the licensees shall be 100 L_a instead of 35 L_a. As noted by the licensee, the methodology in EPRI TR-1009325, Revision 2-A incorporates the use of 100 L_a as the average leak rate for the pre-existing containment large leak rate accident case, and this value has been used in the NMP2 plant-specific risk assessment. Accordingly, the third limitation and condition is met.

3.5.5 Applicability if Containment Over-Pressure is Credited for ECCS Performance

The fourth limitation and condition stipulates that in instances where containment over-pressure is relied upon for ECCS performance, a traditional license amendment request should be submitted. Those plants may experience an increase in CDF as a result of the proposed change in the ILRT interval. For those plants, the impact of the ILRT interval extension on both CDF and LERF would need to be considered in the ILRT evaluation and compared with the risk acceptance guidelines in RG 1.174. Other safety principles in RG 1.174 such as defense-in-depth may also need to be further considered.

The licensee has stated that NMP2 does not rely on containment over-pressure to assure adequate net positive suction head for ECCS pumps following design basis accidents. Accordingly, the fourth limitation and condition is met.

3.5.6 Conclusion

Based on review of the information provided by the licensee, the NRC staff concludes that each of the limitations and conditions placed on the methodology in EPRI TR-1009325, Revision 2 have been met in the NMP2 application. This application for NMP2 confirms that the proposal to permanently extend the ILRT interval to 15 years would result in acceptably small increases in LERF and total integrated plant risk, and that the defense-in-depth philosophy would continue to be maintained at NMP2.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no-significant-hazards consideration, and there has been no public comment on the finding issued on October 20, 2009 (74 FR 53779). Accordingly, the

amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, on the basis of the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: B. Heida
R. Palla
G. Thomas

Date: March 30, 2010

March 30, 2010

Mr. Samuel L. Belcher
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. 2 - ISSUANCE OF AMENDMENT RE: EXTENSION OF PRIMARY CONTAINMENT INTEGRATED LEAKAGE RATE TESTING INTERVAL (TAC NO. ME1650)

Dear Mr. Belcher:

The Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 134 to Renewed Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit No. 2 (NMP2), in response to your application dated June 29, 2009, (Agencywide Documents Access Management System (ADAMS) Accession No. ML091830310), as supplemented by letters dated August 13, 2009 (ADAMS Accession No. ML092260629) and February 3, 2010 (ADAMS Accession No. ML100430366).

The amendment revises Technical Specification (TS) 5.5.12, "10 CFR 50 Appendix J Testing Program Plan," by replacing the reference to Regulatory Guide 1.163 with a reference to Nuclear Energy Institute (NEI) Topical Report NEI 94-01, Revision 2-A, as the implementation document used by NMPNS to develop the NMP2 performance-based leakage testing program in accordance with Option B of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix J. In addition, the amendment allows NMPNS to extend the current interval for the NMP2 primary containment integrated leak rate test (ILRT) from 10 years to 15 years, and would allow successive ILRTs to be performed at 15-year intervals.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,
/RA/

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosures:
1. Amendment No. 134 to NPF-69
2. Safety Evaluation

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ADAMS Accession No.: ML100460016 *SE provided by memo. No substantial changes made. NRR-106

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