February 20, 2001

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION UNIT NO. 1 - ISSUANCE OF AMENDMENT RE: PRIMARY CONTAINMENT INTEGRITY (TAC NO. MB0090)

Dear Mr. Mueller:

The Commission has issued the enclosed Amendment No. 170 to Facility Operating License No. DPR-63 for the Nine Mile Point Nuclear Station, Unit No. 1 (NMP-1). The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated September 26, 2000.

The amendment changes the TSs to (1) allow reactor vessel hydrostatic tests, leakage tests, scram time tests and excess flow check valve tests be performed; (2) require containment building integrity be maintained; and (3) establish a limit and a surveillance requirement on reactor coolant radioactive iodine activity, when coolant temperature is above 215 °F, the reactor is not critical, and primary containment integrity has not been established.

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/

Peter S. Tam, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-220

Enclosures: 1. Amendment No. 170 to DPR-63
2. Safety Evaluation

cc w/encls: See next page

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NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-220

NINE MILE POINT NUCLEAR STATION UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 170
License No. DPR-63

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

   A. The application for amendment by Niagara Mohawk Power Corporation (the licensee) dated September 26, 2000, 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 Facility Operating License No. DPR-63 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, which is attached hereto, as revised through Amendment No. 170 , is hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

/RA/ G. Vissing for

Marsha Gamberoni, Chief, Section I
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 20, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 170

TO FACILITY OPERATING LICENSE NO. DPR-63

DOCKET NO. 50-220

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

Remove Pages	Insert Pages
99	99
123	123
127	127
131	131
143	143
151	151
159	159
164	164
165	165
168	168
170	170
171	171
174	174
178	178

Replace the following pages of the Technical Specifications Bases with the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

100	100
172	172

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 170 TO FACILITY OPERATING LICENSE NO. DPR-63

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT NO. 1

DOCKET NO. 50-220

1.0 INTRODUCTION

By application dated September 26, 2000, Niagara Mohawk Power Corporation (NMPC or the licensee) requested an amendment to the Technical Specifications (TSs) of Nine Mile Point Nuclear Station, Unit No. 1. The proposed amendment would change various sections of the TSs to (1) allow reactor vessel hydrostatic tests, leakage tests, scram time tests and excess flow check valve tests; (2) require containment building integrity be maintained; and (3) establish a limit and a surveillance requirement on reactor coolant radioactive iodine activity when coolant temperature is above 215 °F, the reactor is not critical, and primary containment integrity has not been established.

2.0 EVALUATION

2.1 Background

Hydrostatic or leakage tests of the reactor coolant system, scram time testing (to verify control rod drive (CRD) system valve function), and excess flow check valve testing are all required by Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). Hydrostatic tests are required to be performed once every 10 years and leakage tests are required to be performed each refueling outage. The only significant differences between the hydrostatic and leakage tests are the higher pressure and hold time for a hydrostatic test prior to performing examinations. ASME Code Cases N-416-1 and N-498-1 allow hydrostatic tests to be performed at the same pressure as leakage tests, which is the nominal operating pressure.

Appendix G to 10 CFR Part 50 states that “pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Code must be completed before the core is critical.” These reactor vessel hydrostatic and leakage tests are performed with the reactor pressure vessel in an essentially water-solid condition using reactor recirculation and CRD pump operation to achieve the required test temperatures and pressures. The minimum allowed temperatures for these tests are conservatively based on the fracture toughness of the reactor vessel, taking into account anticipated neutron fluence. For the current reactor vessel fluence, hydrostatic and leakage tests are required to be performed with minimum reactor coolant temperatures greater than 215 °F.

Excess flow check valve testing is performed under hydrostatic or leakage test conditions. These valves are located on instrument lines that function to provide status and automatic trip signals relating to reactor vessel conditions. These valves are tested for operability during each scheduled refueling outage.

Control rod scram time testing is also performed under hydrostatic or leakage test conditions, and is done after each refueling outage before power operation with reactor pressure above 800 psig.

With the required reactor coolant temperature above 215 °F, the TSs currently require that primary containment integrity be maintained. Establishing primary containment integrity requires that all openings be secured including installation of the drywell head. Installation of the drywell head and carousel (flashing type insulation) restricts access to the reactor vessel head area for required reactor vessel hydrostatic and leakage test inspections. The restricted access to the reactor vessel head combined with the elevated test temperature makes performance of the required inspections a personnel safety concern.

2.2 Specifics of the Proposed Changes

In the September 26, 2000, application, the licensee proposed four types of changes to the TSs. The first type will specifically allow performance of reactor vessel hydrostatic or leakage tests, control rod scram time tests, and excess flow check valve tests when reactor coolant temperature is above 215 °F, the reactor is not critical, and primary containment integrity has not been established:

Section 3.3.0, “Primary Containment”

The second type would revise the conditions for various requirements which involve reactor coolant temperatures above 215 °F. The revision would add the phrase “and primary containment integrity is required” as an additional condition:

Section 3.3.2, “Pressure Suppression System Pressure and Suppression Chamber Water Temperature and Level”

Section 3.3.3, “Leakage Rate” [of the primary containment]

Section 3.3.4, “Primary Containment Isolation Valves”

Section 3.3.5, “Access Control” [of the primary containment]

Section 3.3.7, “Containment Spray System”

The third type of proposed changes will establish a limit and surveillance requirement on reactor coolant radioactive iodine activity when reactor coolant temperature is above 215°F, the reactor is not critical, and primary containment integrity has not been established. This change ensures that the consequences of a large primary system break, occurring during conduct of the subject tests, would be bounded by the previously evaluated main steamline break accident outside containment accident:

Sections 3.2.4 and 4.2.4, “Reactor Coolant Activity

The fourth type would require reactor building integrity to ensure that the reactor building will be available to function as secondary containment when the primary containment is in service, and as primary containment when the reactor coolant temperature is above 215 °F and the primary containment is open or its integrity is not required to be maintained:

Section 3.4.0, “Reactor Building”

Section 3.4.1, “Leakage Rate” [of the reactor building]

Section 3.4.2, “Reactor Building Integrity - Isolation Valves”

Section 3.4.3, “Access Control” [to the reactor building]

Section 3.4.4, “Emergency Ventilation System”

Section 3.4.5, “Control Room Air Treatment System”

In addition to the four types of TS changes, the licensee also proposes to change the associated bases to reflect the above TS changes. The affected bases sections are:

Bases for TS Section 3.4.3 and 4.4.3

Bases for TS Section 3.2.4 and 4.2.4

2.3 <u>Evaluation of Proposed Changes</u>

The proposed changes to the TSs will no longer require primary containment integrity be maintained when performing the subject tests with the reactor coolant temperature above 215 °F. The higher the temperature at which these tests are performed, the more energy there is in the coolant. At greater than 215 °F, there is sufficient energy stored in the reactor coolant providing the potential for steam leaks, rather than water leaks. Small system leaks would be detected by leakage inspections and reactor coolant leakage monitoring equipment before significant inventory losses occurred. In addition, the secondary containment and the standby gas treatment system would be capable of handling any airborne radioactivity from small steam leaks.

In the unlikely event of a large primary system break without primary containment integrity, the secondary containment (i.e. reactor building) would be pressurized, which could possibly result in a ground level radiological release to the environment. Potential radioactive material releases to the environment were conservatively assumed by the licensee to be equivalent to 10 percent of the activity in the reactor coolant in the vessel and recirculation lines at the start of a subject test. With the reactor vessel nearly water solid, at nominal operating pressure, not critical, and at low decay heat values, the energy stored in the reactor vessel would be minimized such that a large primary system break would quickly depressurize the reactor vessel, allowing the low pressure core cooling systems to operate, and minimizing the potential for failed fuel and a subsequent increase in coolant activity. The probability of a core damage event resulting from hydrostatic or leakage testing was evaluated by the licensee and

determined to be below the level considered credible. Therefore, fuel failure was not postulated. The licensee's proposed limit of 1.5 microcuries/gram total iodine would limit the potential offsite and control room thyroid doses due to a primary system break during reactor test conditions. Potential offsite and control room doses were calculated by the licensee using assumptions set forth in the submittal. All of these doses are bounded by the doses previously evaluated by the licensee for a postulated main steam line break accident outside containment (see Nine Mile Point, Unit 1, Updated Safety Analysis Report (USAR) Section XV.C.1.3.2; letter, J. H. Mueller of Niagara Mohawk to NRC, December 18, 1998). The table below shows comparison of the doses:

	Primary System Break 1.5 µCi/gm total iodine	Main Steam Line Break 9.47 µCi/gm total iodine
At Site Boundary	0.75 rem thyroid 0.0062 rem whole body	7.18 rem thyroid 0.079 rem whole body
In Control Room	9.3 rem thyroid* 0.004 rem whole body	28.6 rem thyroid* 0.005 rem whole body

*no credit given to air treatment system operation

The proposed coolant activity limit of 1.5 microcuries/gram total iodine thus provides reasonable assurance that the radiological consequences of a large primary system break during the subject tests will be within the acceptance criteria given in 10 CFR 100 for offsite doses and 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 19 for control room doses.

A large primary system break during the subject tests with reactor coolant temperatures above 215 °F could also create harsh environmental conditions in the secondary containment. The licensee has evaluated the environmental conditions in the secondary containment for this postulated accident and stated that required equipment would still be qualified to perform its safety-related functions.

In summary, the proposed changes apply only to the conditions under which the reactor vessel hydrostatic tests, leakage tests, control rod scram time tests, and excess flow check valve tests are performed. The subject tests are not changed, but only the associated conditions, i.e., without maintaining primary containment integrity. There is no change to any operability requirement associated with the reactor cooling or other safety system. Since the tests are performed when the cooling system is nearly water solid, at low decay heat values, and not critical, the stored energy in the reactor core will be very low. Under these conditions, the potential for failed fuel and a subsequent increase in coolant activity are minimized. The new TS total iodine limit of 1.5 microcuries/gram under testing conditions would ensure that any radiological consequences will be bounded by those of the previously analyzed main steam line break accident. In the event of a large primary system leak, the reactor vessel would rapidly depressurize, allowing the low pressure core cooling systems to operate. The capability of these systems is more than adequate to keep the core flooded under the low decay heat load conditions. Small system leaks would be detected by leakage inspections and reactor coolant leakage monitoring equipment before significant inventory loss occurred. Additionally, the SBGTS would be capable of handling any airborne radioactivity from small steam leaks.

The staff has published its position regarding not maintaining primary containment integrity in Section 3.10.1 and Bases Section B 3.10.1, “Inservice Leak and Hydrostatic Testing Operation,” of NUREG-1433, Rev.1, “Standard Technical Specifications, General Electric Plants, BWR/4.” The licensee’s proposed changes to the TS are consistent with the staff’s position. Further, the staff had previously approved a similar amendment for the Monticello Nuclear Generating Plant (dated November 24, 1999). Therefore, the licensee’s proposed changes are acceptable.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to use of facility components 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 NRC staff has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (65 FR 65344, dated November 1, 2000). 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.

5.0 CONCLUSION

The staff has concluded, based on 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: M. Hart, R. Lobel, P. S. Tam

Date: February 20, 2001

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Unit No. 1

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