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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 49 TO FACILITY OPERATING LICENSE NO. NPF-69

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT 2

DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated April 7, 1993, as superseded September 2, 1993, Niagara Mohawk Power Corporation (the licensee) submitted a request for changes to the Nine Mile Point Nuclear Station, Unit 2 (NMP-2), Technical Specifications (TSs). The requested changes would delete TS 4.1.3.5.b.2 which requires control rod drive (CRD) scram accumulator check valve leak testing once per 18 months and specifies test acceptance criteria. The changes would also modify the required actions for inoperable scram accumulators in OPERATIONAL CONDITIONS 1 and 2 that are contained in Actions a.1 and a.2 of TS 3.1.3.5

The design of the CRD hydraulic system is described in Section 4.6.1 of the NMP-2 Updated Safety Analysis Report. The CRD hydraulic system supplies and controls the pressure and flow to and from the individual control rod drives through hydraulic control units. There is one hydraulic control unit for each of the 185 control rods and each of these units is equipped with a control rod scram accumulator. Two CRD supply pumps pressurize the system and the normal source of pump suction is the condensate system, downstream of the condensate demineralizers. During normal plant operations, one CRD pump is operating at all times and the other pump is maintained in standby. The switchover from one pump to another is not automatic. The operating pump maintains the required pressure in all 185 scram accumulators such that the accumulators contain sufficient stored energy to ensure complete insertion of all control rods in the required time at any reactor pressure. However, reactor pressure alone will insert the control rods in the required time at higher reactor pressures. Specifically, at reactor steam dome pressures greater than or equal to 900 psig, the scram insertion time of an individual control rod with zero accumulator pressure would still be within TS and design basis requirements. At lower reactor pressures, where accumulator pressure is needed to assure a successful scram, the normally operating CRD pump maintains the necessary accumulator pressure. If the operating pump trips, check valves in the accumulator charging lines close to prevent rapid loss of accumulator pressure while operators are restarting a CRD pump. Since reactor pressure alone will successfully scram the control rods at reactor steam dome pressures greater than or equal to 900 psig, the leak tightness of these check valves is only a concern during reactor startups and shutdowns and during depressurization transients.

The NMP-2 TSs currently allow continued plant operation with one inoperable scram accumulator with or without an operating CRD pump, regardless of reactor steam dome pressure. This allowance is based on the assumption that at reactor steam dome pressures less than 900 psig, with no CRD pump operating, the accumulator check valves assure that the operable scram accumulators provide sufficient pressure to scram the associated control rods. The adequacy of the accumulator check valves is assured by the leak test requirements of TS 4.1.3.5.b.2.

The licensee has proposed to delete the leak testing requirements for the accumulator check valves. Without leak test requirements for the accumulator check valves, no credit can be taken for the accumulators when the operating CRD pump trips. The licensee has, therefore, proposed additional TS changes to restrict operation when no CRD pump is operating. Specifically, the licensee has proposed to modify the required actions of TS 3.1.3.5 such that the operator would be required to immediately place the mode switch in the shutdown position when one or more accumulators are inoperable and the operating CRD pump trips at reactor steam dome pressures below 900 psig. The changes proposed by the licensee would also allow the operator 20 minutes to restart at least one CRD pump provided reactor pressure is greater than or equal to 900 psig.

2.0 EVALUATION

Action a for TS 3.1.3.5 currently reads as follows:

a. In OPERATIONAL CONDITIONS 1 or 2:

1. With one control rod scram accumulator inoperable, within 8 hours:

   a) Restore the inoperable accumulator to OPERABLE status, or
   b) Declare the control rod associated with the inoperable accumulator inoperable.

   Otherwise, be in at least HOT SHUTDOWN within the next 12 hours.

2. With more than one control rod scram accumulator inoperable, declare the associated control rods inoperable and:

   a) If the control rod associated with any inoperable scram accumulator is withdrawn, immediately verify that at least one control rod drive pump is operating by inserting at least one withdrawn control rod at least one notch or place the reactor mode switch in the Shutdown position.

   b) Insert the inoperable control rods and disarm the associated control valves either:

1) Electrically, or

2) Hydraulically by closing the drive water and exhaust water isolation valves.

Otherwise, be in at least HOT SHUTDOWN within 12 hours.

The licensee has proposed to modify Action a for TS 3.1.3.5 to read as follows:

a. In OPERATIONAL CONDITIONS 1 or 2:

1. With one control rod scram accumulator inoperable:

a) If reactor steam dome pressure is greater than or equal to 900 psig, within 8 hours declare the control rod associated with the inoperable accumulator inoperable.

Otherwise, place the reactor mode switch in the Shutdown position.

b) If reactor steam dome pressure is less than 900 psig, declare the associated control rod inoperable and if the associated control rod is withdrawn, immediately verify that at least one control rod drive pump is operating by inserting at least one withdrawn control rod at least one notch.

Otherwise, place the reactor mode switch in the Shutdown position.

2. With more than one control rod scram accumulator inoperable, declare the associated control rods inoperable and:

a) If the control rod associated with any inoperable scram accumulator is withdrawn, immediately verify that at least one control rod drive pump is operating by inserting at least one withdrawn control rod at least one notch. Otherwise:

1) If the reactor steam dome pressure is greater than or equal to 900 psig, restart at least one control rod drive pump within 20 minutes and then immediately insert at least one withdrawn control rod at least one notch or place the reactor mode switch in the Shutdown position, or

2) If the reactor steam dome pressure is less than 900 psig, immediately place the reactor mode switch in the Shutdown position.

b) Insert the inoperable control rods and disarm the associated control valves either:

1) Electrically, or

2) Hydraulically by closing the drive water and exhaust water isolation valves.

Otherwise, be in at least HOT SHUTDOWN within 12 hours.

The surveillance requirement associated with TS 4.1.3.5.b.2 requires that the control rod scram accumulators be leak tested at least once per 18 months by measuring and recording for up to 10 minutes that each individual accumulator check valve maintains the associated accumulator pressure above the alarm setpoint with no control rod drive pump charging water supplying the scram accumulators. The licensee has proposed to delete this surveillance requirement.

As previously mentioned, the scram accumulator check valves function to retain sufficient accumulator pressure to ensure that control rods scram after the operating CRD pump trips. Without a leak test requirement for the accumulator check valves, the ability of the scram accumulators to retain pressure following a CRD pump trip is not assured and no credit can be taken for accumulators when the operating CRD pump trips. The licensee has proposed TS changes to restrict operation when no CRD pump is in operation and thereby support deletion of the leak test requirement for the scram accumulator check valves. These changes are intended to provide operating flexibility where plant safety is not an immediate concern and prevent operation in a condition where inoperable accumulators are required to support the scram function.

The proposed TS changes would permit continued operation with one inoperable accumulator and no operating CRD pump, provided reactor steam dome pressure is greater than or equal to 900 psig and the associated control rod is declared inoperable within 8 hours. This is based on adequate shutdown margin and the ability of the affected control rod to scram with only reactor pressure. With two or more scram accumulators inoperable, no CRD pump operating, and reactor steam dome pressure greater than or equal to 900 psig, reactor pressure alone will fully insert all control rods. However, with inadequate charging water pressure, all of the accumulators could become inoperable during a depressurization transient, resulting in a potentially severe degradation of the scram function. Therefore, the licensee has proposed to require that a CRD pump be started within 20 minutes and that charging water pressure be subsequently verified immediately if two or more scram accumulators are inoperable, an associated control rod is withdrawn, no CRD pump is operating, and reactor steam dome pressure is greater than or equal to 900 psig. An immediate shutdown would be required if the required actions could not be completed. The 20-minute completion time was selected to provide a reasonable time to place a CRD pump in service to restore charging header pressure and recognizes the ability of reactor pressure alone to fully insert all control rods.

As previously noted, the function of the accumulators in providing energy to scram control rods becomes important at reactor steam dome pressures below 900 psig. The licensee has, therefore, proposed TS changes that would require that the reactor mode switch be placed in the Shutdown position if a CRD pump is not operating, reactor steam dome pressure is less than 900 psig, and the control rod associated with an inoperable accumulators is withdrawn. The shutdown would be required since withdrawn control rods with inoperable scram accumulators may fail to scram under these low pressure conditions.

The NRC staff has determined that the proposed TS changes will provide assurance that the reactor can be successfully scrammed without reliance on the leak tightness of the accumulator check valves, regardless of reactor steam dome pressure. The proposed change would require immediate shutdown if the control rod associated with an inoperable accumulator is withdrawn, no CRD pump is operating, and reactor steam dome pressure is less than 900 psig. Immediate shutdown under these circumstances protects against the possible loss of scram function. Additional but less severe actions would be required at reactor steam dome pressures greater than or equal to 900 psig. Continued operation with one scram accumulator inoperable and the associated withdrawn control rod declared inoperable is acceptable since adequate shutdown margin exists and the control rod can meet its scram time requirements based on reactor pressure alone. The proposed change to permit 20 minutes to start a CRD pump, upon discovery of no CRD pump operating, with two or more accumulators inoperable and any associated control rod withdrawn is acceptable since 20 minutes provides a reasonable time to place the CRD pump in service and reactor pressure alone can fully insert all control rods at these pressures. The staff has, therefore, concluded that the TS changes proposed by the licensee are acceptable.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to 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 such finding (58 FR 25858) and (58 FR 47771). 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 Commission 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 Contributor:
John E. Menning

Date: October 13, 1993

Docket No. 50-410 October 13, 1993

Mr. B. Ralph Sylvia
Executive Vice President, Nuclear
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Sylvia:

SUBJECT: ISSUANCE OF AMENDMENT FOR NINE MILE POINT NUCLEAR STATION, UNIT 2 (TAC NO. M86185)

The Commission has issued the enclosed Amendment No. 49 to Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit 2. The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated April 7, 1993, which was superseded by your application dated September 2, 1993.

The amendment deletes TS 4.1.3.5.b.2 which required control rod drive scram accumulator check valve leak testing once per 18 months and specified test acceptance criteria. In order to support deletion of the check valve test requirement, the amendment also modifies the required actions for inoperable control rod scram accumulators in OPERATIONAL CONDITIONS 1 and 2 that are contained in Actions a.1 and a.2 of TS 3.1.3.5.

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,
Original signed by Donald S. Brinkman for:
John E. Menning, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 49 to NPF-69
2. Safety Evaluation

cc w/enclosures:
See next page

PDI-1:LA	PDI-1:PM	RSRXB	EMEB	OTSB	OGC	PDI-1:D
CVogan	JMenning:avl	Jones	JNorberg	CGrimes		RACapra
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