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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 76 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 March 20, 1996, Niagara Mohawk Power Corporation (the licensee) proposed an amendment to the operating license for Nine Mile Point, Unit 2 (NMP2). The proposed amendment would revise Tables 3.3.1-1 and 4.3.1-1 of Technical Specification (TS) 3/4.3.1 "Reactor Protection System Instrumentation" to delete the operability requirement for the Average Power Range Monitor (APRM) Neutron Flux-Upscale, Setdown and Inoperative functions in Operational Conditions (OCs) 3 (Hot Shutdown) and 4 (Cold Shutdown). These same functions would also be revised for OC 5 (Refueling) to indicate that operability will only be required during shutdown margin demonstrations performed per TS 3.10.3.

2.0 BACKGROUND

2.1 Basis for Request

The licensee notes that the revisions to the APRM functions are proposed to support the planned replacement of the existing APRM system with a digital General Electric (GE) Nuclear Measurement Analysis and Control (NUMAC) power range neutron monitoring system (PRNMS). Specifically, the amendment is intended to support the licensee's plans to replace Local Power Range Monitors (LPRMs) during the outage scheduled for fall 1996, and to install the NUMAC-PRNM System in 1998. The NUMAC-PRNM is designed to replace the existing APRM System and to support the eventual installation of the Oscillation Power Range Monitor (OPRM) system required for the detection of thermal-hydraulic instability conditions in the reactor.

These planned modifications are based upon, and are described in, Report NEDO-31960, "BWR Owners' Group Long-Term Solutions Licensing Methodology," approved by the Commission July 12, 1993; the licensee's response of November 8, 1994, selecting Option III in NEDO-31960 for NMP2; NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors" dated July 11, 1994; and General Electric Licensing Topical Report, NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) Retrofit Plus Option III Stability Trip Function," which was approved by the Commission September 5, 1995.

The existing TS requires certain APRM functions to be operable during refueling outages. If these functions are inoperable, all operations involving core alterations must be suspended. Under the existing TS operability requirements, replacement of LPRMs or installation of the NUMAC-PRNMS could result in suspending core alterations while the associated APRMs are inoperable.

2.2 System Description

The Neutron Monitoring System (NMS) consists of the Source Range Monitors (SRMs), Intermediate Range Monitors (IRMs), LPRMs, APRMs, the Rod Block Monitor (RBM), and the Traversing Incore Probe. The SRMs, IRMs, and APRMs provide trip signals to the Reactor Protection System (RPS) and the control rod block portion of the Reactor Manual Control System (RMCS). The NMS also provides local and core average power information to the reactor operator. The APRM and some portions of the IRM are safety-related subsystems.

The SRM subsystem is composed of four detectors that are inserted into the core during shutdown conditions. Although the SRM subsystem is not safety-related, it is important to safety, and is required by TS to be operational in OC 5. During refueling operations, the plant operators monitor the SRMs to ensure the neutron flux remains within an acceptable range, and to control the approach to reactor criticality.

The IRM subsystem is composed of eight incore neutron flux detectors that provide protection against local criticality events caused by control rod withdrawal errors. The IRMs monitor neutron flux levels from the upper range of the SRMs into the lower range of the APRMs (from 10^{-4}% to 15% full reactor power). The IRMs provide control rod block and scram functions on high neutron flux. The safety design bases of the IRM subsystem is to generate trip signals to prevent fuel damage resulting from anticipated or abnormal operational transients while operating in the intermediate power range.

In the power range, the LPRMs, which are fixed ion chambers arranged in a uniform pattern throughout the reactor core, monitor neutron flux. The LPRMs cover a range of approximately 1% to 125% of full reactor power. The APRM subsystem averages selected groupings of these LPRM signals for continuous indication of average reactor power. The safety design bases of the APRM subsystem is to prevent fuel damage while the reactor is operating in the power range by generating reactor trip signals in response to average neutron flux increases. Additionally, for low power operating conditions (OC 2), the APRM Neutron Flux-Upscale, Setdown function provides a secondary scram trip signal for the IRM Neutron Flux-High scram function. In OC 5, the APRMs operate in the setdown mode to provide a secondary control rod block and scram function at 12% and 15% core average power, respectively.

3.0 EVALUATION

The NRC staff reviewed the proposed TS changes to determine the affect of the proposed changes on the safety design bases of NMP2. The staff's evaluation is discussed in this section.

The licensee proposes to delete the operability requirements for the APRM Neutron Flux-Upscale, Setdown function in OC 3 and OC 4. The licensee states that during normal operations all control rods are fully inserted into the core, and the reactor mode switch position control rod withdrawal blocks do not allow any control rods to be withdrawn. Consequently, the APRM functions are not required under these conditions. TS 3.9.10, "Control Rod Removal," does allow one control rod to be withdrawn in OC 4 by placing the mode switch in the refuel position. However, in the refuel position, the refueling interlocks are in place, which together with adequate shutdown margin, will preclude unacceptable reactivity excursions. This conclusion is consistent with NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4," which require the APRM Neutron Flux-High, Setdown function to be operable during Mode 2 only. The NRC staff, therefore, finds this justification acceptable.

Since the APRM Neutron Flux-Upscale, Setdown function operability would not be required in OC 3 and OC 4, the licensee also requested relief from surveillance requirements for this function while in these operational conditions. Removal of these surveillance requirements is consistent with the operability requirements for these operational conditions. The NRC staff, therefore, finds this removal acceptable.

The APRM Neutron Flux-Upscale, Setdown function is required during shutdown margin demonstrations in OC 5. Consequently, the licensee requested a change to the TSs to allow the APRMs to be inoperable during OC 5 except during shutdown margin demonstrations. This change is consistent with Amendments 41 and 7 for the Limerick Generating Station, Units 1 and 2, that were approved by the NRC July 30, 1990. The licensee acknowledges that, unlike the Limerick IRM subsystem, portions of the NMP2 IRM subsystem are not safety-related. However, the licensee will continue to monitor the performance of the IRM subsystem in accordance with TS to ensure adequate protection against reactivity increases that could lead to a criticality event. The NRC staff, therefore, finds this justification for the TS change to be acceptable.

The NMP2 TS also differs from the Limerick TS in that multiple control rod removals are permitted by NMP2 TS 3.9.10.2. However, TS 3.9.10.2 requires that the fuel assemblies surrounding the affected control rods must first be removed from the surrounding fuel cell. As discussed in the STS, control rods withdrawn from a core fuel cell containing no fuel assemblies do not affect core reactivity. Therefore, these control rods are not required to be inserted to scram the reactor.

The licensee states that the control rod block functions are tested in accordance with the TS, and thereby concludes that sufficient measures are provided to ensure there will be adequate systems and interlocks available without the APRMs to preclude inadvertent reactor criticality or violation of a safety limit during operations in OCs 3, 4, and 5. The NRC staff concurs with this licensee conclusion.

In summary, from its review of the justifications for changing the NMP-2 TS to allow the APRMs to be out of service during OCs 3, 4, and 5, except during shutdown margin demonstrations, the NRC staff concludes that the requested TS changes are consistent with the applicable BWR STS and the safety design bases for NMP2. Therefore, the proposed TS changes are acceptable.

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 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 (61 FR 20852). 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, 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.

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Date: August 28, 1996