



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 130 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 letter dated October 22, 1991, as supplemented November 19, 1991, Niagara Mohawk Power Corporation (the licensee) submitted a request for changes to the Nine Mile Point Nuclear Station Unit No. 1 (NMP-1), Technical Specifications (TS). The requested changes would revise TS Table 3.6.2g to establish specific setpoints for the Recirculation Flow Unit Comparator and Recirculation Flow Unit Upscale Control Rod Block functions and to revise operational condition (Reactor Mode Switch Position) applicability to be consistent with the NRC's Standard Technical Specifications for General Electric Boiling Water Reactors (GE-STs) (Ref. 1). The amendment would also revise TS Table 4.6.2g to make the Instrument Channel Calibration surveillance frequency for the Recirculation Flow Unit Comparator, Flow Unit Inoperative, and Flow Unit Upscale Control Rod Withdrawal Block consistent with the GE-STs.

2.0 EVALUATION

NMP-1 is a Boiling Water Reactor Type 2 class (BWR/2) non-jet pump plant with five external recirculation pumps, which began commercial operation in December 1969. NMP-1 has a control rod withdrawal block (CRWB) system, which performs a function equivalent to the Rod Block Monitor (RBM) in later generation plants, to mitigate the rod withdrawal error (RWE) at power event. Two separate trains (channels) of flow instrumentation (Recirculation Flow Units) receive signals from the five monitoring elements in the recirculation piping to provide the Average Power Range Monitor (APRM) units with input for flow-biasing the APRM upscale scram and APRM CRWB setpoints. The two flow units also have three internal operability monitoring trip functions which can initiate a CRWB signal: Flow Comparator, Flow Inoperative, and Flow Upscale. These flow unit rod block trips do not perform any safety-related functions since the APRM upscale scram and rod block trip setpoints are clipped at the rated recirculation flow.

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The current TS Table 4.6.2g, Items (4)a, b and c, specify an Instrument Channel Calibration frequency of once per month for the Recirculation Flow Unit Comparator, Flow Unit Inoperative, and Flow Unit Upscale CRWB functions. Performance of these surveillances require application of a one-half scram signal through the APRM instruments for a lengthy period of time and can lead to unnecessary equipment cycling and the increased likelihood of inadvertent scrams. The GE-STs require these surveillances to be performed only quarterly in the RUN mode. The observed historical performance of the NMP-1 specific recirculation flow instrumentation has shown the monthly drift to be consistent with the design specification model assumptions; therefore the drift component may be expanded to quarterly drift values as appropriate.

The current TS Table 3.6.2g, Item (4)a, does not specify a Recirculation Flow Unit Comparator Off Normal CRWB trip setpoint. A setpoint value of $\leq 6.8\%$ has been determined by a plant specific calculation using the General Electric (GE) setpoint methodology outlined in NEDC-31336 (Ref. 2), based on an analytical limit of a 10% recirculation flow differential.

The current TS Table 3.6.2g, Item (4)c, does not specify a Recirculation Flow Unit Upscale CRWB trip setpoint but refers to TS Figure 2.1.1. This figure provides a formula for adjusting the flow-biased Average Power Range Monitor (APRM) CRWB and scram setpoints with respect to recirculation flow; however, it does not specify a Flow Unit Upscale setpoint. A setpoint value of $\leq 103.7\%$ has been determined by a plant specific calculation using the same GE methodology, based on an analytical limit of 107.1% of rated recirculation flow, which corresponds to the maximum recirculation pump flow capacity.

Both of the specific setpoint values above were determined so as to be consistent with the standard GE setpoint methodology. The referenced GE topical report is currently still under staff review and is therefore not an approved methodology. However, these setpoint values are not required for safety limit monitoring and since they are determined by plant/cycle specific analyses the reference is deemed acceptable.

The TS 3/4.6.2 Bases provide the maximum allowable setpoint deviations to allow for inherent instrument error, operator setting error, and instrument drift of the setpoint. Since the historical performance of the NMP-1 specific recirculation flow instrumentation drift has been shown to be consistent with the design specification model assumptions, the model has been used to determine quarterly drift values. This has resulted in a Recirculation Flow Comparator Off Normal allowable setpoint deviation of $\pm 2.09\%$ of rated recirculation flow and a Recirculation Flow Unit Upscale allowable setpoint deviation of $\pm 1.6\%$ of rated recirculation flow. The nominal values for the Flow Unit Comparator Off Normal and Upscale trip setpoint deviations proposed above were determined by considering the expected total loop inaccuracy, calibration inaccuracy, and instrument drift over a 3-month period.



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Since the APRM scram setpoint is biased by the recirculation flow, the same GE setpoint methodology was also used to determine the plant specific APRM scram and APRM rod block allowable setpoint deviations to be $\pm 2.3\%$ of rated neutron flux, based on the existing TS analytical limits for the APRM scram setpoint of 120% rated flux and the APRM rod block setpoint of 110% rated flux.

The staff has reviewed the licensee's submittal proposing changes to TS 3/4.6.2 to allow consistency with the GE-STS, regarding the required instrument calibration frequency and to establish plant specific trip setpoint values for the Control Rod Withdrawal Block functions. Based on the above safety evaluation, the staff concludes that the requested changes 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. 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 (56 FR 64656). 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:
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Date: July 23, 1992



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6.0 REFERENCES

1. U.S. Nuclear Regulatory Commission, "Standard Technical Specifications for General Electric Boiling Water Reactors," NUREG-0123, Revision 3, December 1980.
2. "General Electric Instrument Setpoint Methodology," General Electric Company topical report NEDC-31336-P, October 1986.



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