



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 136 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 September 17, 1992, 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 modify TS 3.6.12/4.6.12, "Reactor Protection System Motor Generator Set Monitoring," and associated Bases to reflect the replacement of Motor Generator (MG) Sets 162 and 172 with static Uninterruptible Power Supplies (UPSs). Reactor Protection System (RPS) buses 11 and 12 are normally energized from MG Sets 162 and 172, respectively. The licensee also requested conforming changes to the TS Table of Contents and a minor editorial change to TS 4.6.12. Page iiii of the TS Table of Contents required a modification to reflect the issuance of License Amendment No. 132 on October 2, 1992.

The licensee's submittal of September 17, 1992, stated that MG Sets 162 and 172 experienced bearing failures and were unreliable in speed and voltage control during restart from the last refueling outage. Maintenance history records for these units indicated a long-term trend of declining reliability. Consequently, the licensee has decided to replace these MG sets with four static UPSs at the end of the next refueling outage that is currently scheduled to start on February 19, 1993. Two UPS units are to be provided for each MG Set and each UPS will be capable of providing the necessary electrical power for one RPS power panel. This arrangement will provide redundant power supplies for each RPS channel.

2.0 EVALUATION

The licensee has stated that the AC and DC power boards that currently provide input power for MG sets 162 and 172 will be used to provide input power for the UPSs. Disconnect switches will be added in-line with both the AC and DC supplies for each UPS to provide isolation. The 120 VAC output of each UPS will pass through an additional disconnect switch for isolation and then enter a mechanical make-before-break transfer switch. This transfer switch will be used to select which UPS provides power to an RPS power panel. Reactor Protection System loads are connected by separate fuses to the RPS power

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panels and the associated remote shutdown panel. Each UPS is to contain a static switch that will automatically transfer loads to a bypass power source in the event of either UPS failure or a downstream system fault. The bypass power source is to be obtained from the same 600 VAC power panel as the UPS. The bypass power will be conditioned by a step-down transformer with no load taps that will permit manual compensation for large variations in source voltage. Each UPS will have internal alarm circuitry that will monitor several parameters for abnormal conditions. A latching alarm light display will be provided at each UPS for each alarm condition. A common annunciator for each UPS system channel will be displayed in the Main Control Room.

As indicated previously, the proposed design will provide two UPS units for each RPS channel. During normal operation, one UPS in each channel will be energized and connected to loads by a mechanical transfer switch. The other UPS will be shutdown, but fully operable. The second UPS is to be kept shut down to conserve 125 VDC battery capacity, as discussed below. Each UPS will normally be powered from a 600 VAC power board. If the normal 600 VAC input power is interrupted or the UPS rectifier fails, the 120 VAC output power will continue to be supplied by the UPS inverter which is supplied input power by a 125 VDC connection to a station battery. If the 125 VDC supply to the inverter is interrupted or the inverter fails, the UPS internal static switch will transfer the 120 VAC loads to the bypass power supply step-down transformer. Should conditions occur that cause interruption or loss of the 120 VAC UPS output to the RPS loads, plant operators will be alerted by both a UPS failure alarm annunciator and alarms associated with the loss of the RPS bus. Operators would then start the other UPS unit for the channel using the normal startup procedure, and switch RPS loads to that UPS using the associated mechanical transfer switch.

The RPS loads will be protected from the effects of an internal UPS system failure in three ways as outlined below:

1. The UPS system monitors itself internally for the correctness of several parameters. If any of these parameters is outside of its specific limit, (a) an alarm in the Main Control Room will actuate, and (b) if inverter output is affected, a signal will be sent to the static transfer switch causing the loads to be transferred to the bypass source of power.
2. Internal UPS system faults will be isolated by (a) overcurrent trips associated with AC and DC input breakers internal to each UPS, (b) an overcurrent trip associated with the main AC supply breaker from each of the 600 VAC power boards, (c) a fuse on the DC supply to each UPS from the 125 VDC safety-related batteries, (d) power fuses on main buses inside each UPS, and (e) fuses in the UPS transfer cabinet to each major load panel.



3. The existing RPS monitoring relays will interrupt the power to the RPS loads whenever an undervoltage, overvoltage, or low frequency condition is sensed.

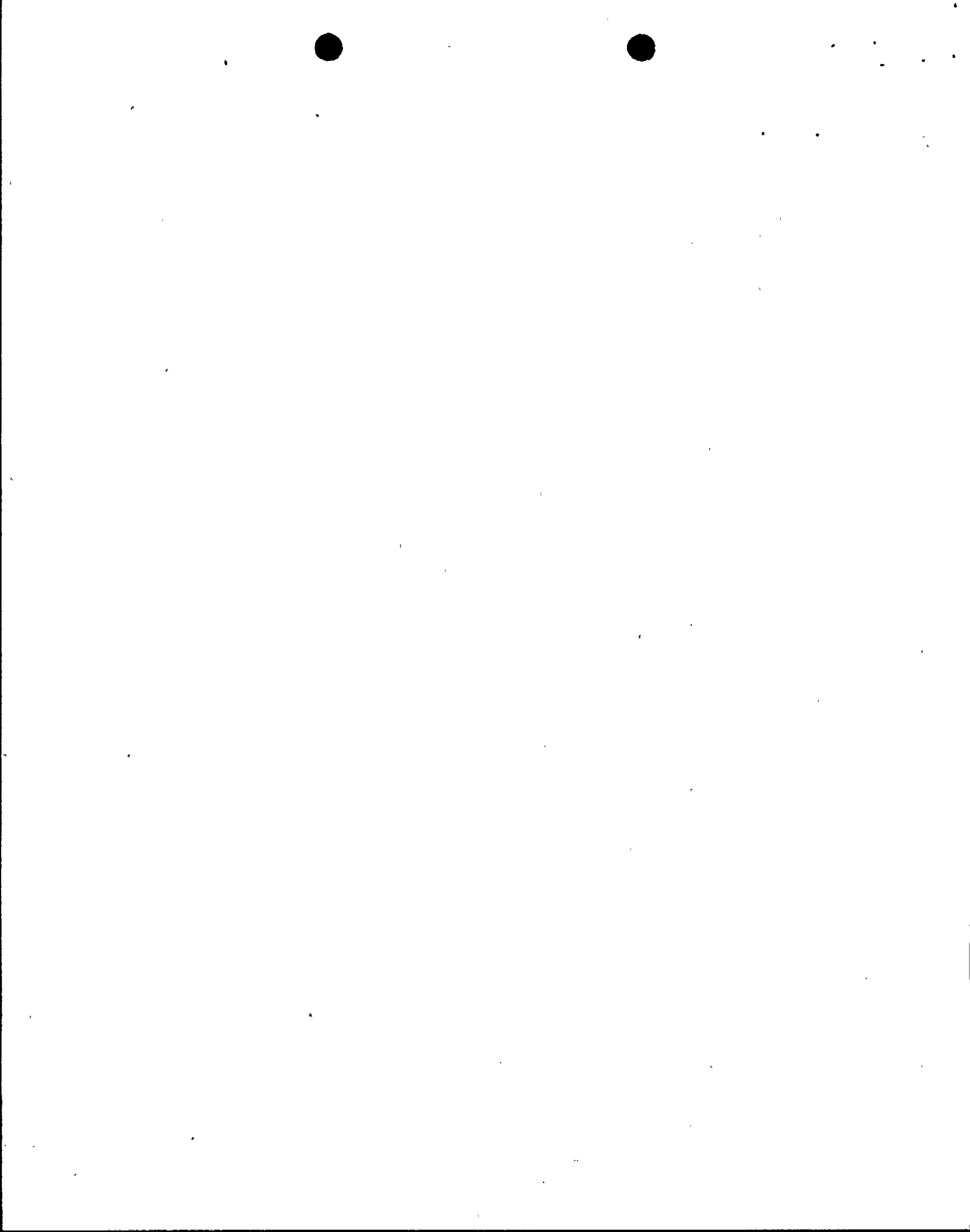
The licensee's analysis of the station batteries concluded that the loading on the batteries would be satisfactory for the duration of an Appendix R/Station Blackout event when one UPS in each channel is energized. Continuously energizing the second UPS unit in each channel would draw an additional 60 amperes from the batteries in the unloaded standby condition during a loss of all AC power. This additional current cannot be supplied within the battery capacity and margin requirements. Consequently, the second UPS unit in each channel will not be connected to the 125 VDC switchboard except during the short time period required to switch between UPS units. The diesel generator steady-state loading calculation allocates 80 KVA for each MG set. The maximum load the UPS system will draw for each channel is 55 KVA. This assumes that one UPS is fully loaded at 30 KVA with a power factor of 0.7, and considers power losses for both the on-line and off-line UPS units. The licensee determined that this loading is satisfactory, since it is less than that of the existing MG sets.

The proposed TS changes would revise the Table of Contents, Section 3.6.12/4.6.12, and the associated Bases. With the exception of the minor editorial change to Section 4.6.12, the changes are required to maintain consistency between the NMP-1 TS and the proposed as-built configuration of the RPS power supplies. The editorial change would add "cont'd" after the word Specification on page 241ii2. The licensee proposed this change to maintain consistency within the TS.

The NRC staff has determined that the UPSs are functionally equivalent to the existing MG sets and connected equipment will be protected from failures of the UPSs. Replacement of the MG sets with UPSs will have no adverse impact of battery and diesel generator loadings. The proposed TS changes are required to: (1) maintain consistency between the NMP-1 TS and the proposed as-built configuration, (2) improve consistency within the TS, and (3) reflect the issuance of License Amendment No. 132 which was issued after submittal of this request. Therefore, the staff finds that replacement of the MG sets with UPSs and the proposed TS 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 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 (57 FR 47140). 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: M. Pratt

Date: December 17, 1992



December 17, 1992

Docket No. 50-220

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 NO. 1
(TAC NO. M84544)

The Commission has issued the enclosed Amendment No. 136 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 in response to your application transmitted by letter dated September 17, 1992.

The amendment revises Technical Specification 3.6.12/4.6.12, "Reactor Protection System Motor Generator Set Monitoring," and associated Bases to reflect the replacement of Motor Generator Sets 162 and 172 with Static Uninterruptible Power Supplies. The amendment also makes conforming changes to the Table of Contents and a minor editorial change to Technical Specification 4.6.12.

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, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 136 to DPR-63
2. Safety Evaluation

cc w/enclosures:
See next page

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12/3/92	12/3/92	12/4/92	12/8/92	12/17/92	1/1

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