November 9, 1984

Docket No. 50-220

Mr. B. G. Hooten
Executive Director, Nuclear Operations
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Dear Mr. Hooten:

The Commission has issued the enclosed Amendment No. 67 to Facility Operating License No. DPR-63 for the Nine Mile Point Nuclear Station, Unit No. 1. The amendment changes the Technical Specifications in response to your request dated April 13, 1984 and supplemented August 3, 1984.

The revision to the Technical Specifications adds the Limiting Conditions for Operation and surveillance requirements for the equipment that provides automatic initiation of the diesel generators.

A copy of the Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Robert A. Hermann, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 67 to License No. DPR-63
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION	JPartlow		
Docket File	SNorris	JNGrace	OPA, CMiles
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SNorris:ajs	RHermann	DVassallo	BMBaukema	GLainas
10/26/84	10/26/84	10/29/84	10/01/84	10/ /84

Mr. B. G. Hooten
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station, Unit No. 1

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

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-220

NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 67
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 April 13, 1984 and supplemented August 3, 1984, 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 Appendices A and B, as revised through Amendment No. 67 , are hereby incorporated in the 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 9, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 67

FACILITY OPERATING LICENSE NO. DPR-63

DOCKET NO. 50-220

Revise the Appendix A Technical Specifications by removing and inserting the following pages:

Existing Page	Revised Page
226	226
	226a
227	227

The revised areas are indicated by marginal lines.

Table 3.6.2i

DIESEL GENERATOR INITIATION

Limiting Condition for Operation

Parameter	Total No. of Channels	Channels[1] to Trip	Minimum Channels Operable	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
Loss of Power							
a. 4.16kV PB 102/103 Emergency Bus Undervoltage (Loss of Voltage)	3 per Bus	2 per Bus	2 per Bus	X	X	X	X
b. 4.16kV PB 102/103 Emergency Bus Undervoltage (Degraded Voltage)	3 per Bus	2 per Bus	2 per Bus	X	X	X	X

(1) If one out of three channels becomes inoperable, the inoperable channel will be placed in the trip condition.

Table 3.6.2i (continued)

DIESEL GENERATOR INITIATION

Limiting Condition for Operation

Parameter	Set Point (Inverse Time Undervoltage Relays)	
Loss of Power	Relay Dropout	Operating Time[a]
a. 4.16kV PB 102/103 Emergency Bus Undervolt (Loss of Voltage)	≥ 3200 volts	0 volts ≤ 3.2 seconds
b. 4.16kV PB 102/103 Emergency Bus Undervoltage (Degraded Voltage)	≥ 3600 volts	3580 volts 18.5 ± 3 seconds

(a) The operating time indicated in the table is the time required for the relay to operate its contacts when the voltage is suddenly decreased from operating voltage level values to the voltage level listed in the table above.

Table 4.6.2i

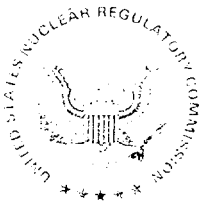
DIESEL GENERATOR INITIATION

Surveillance Requirements

Parameter	Sensor Check	Instrument[a] Channel Test	Instrument[b] Channel Calibration
Loss of Power			
a. 4.16kV PB 102/103 Emergency Bus Undervoltage (Loss of Voltage)	NA	Once per month	Once per refueling cycle
b. 4.16kV PB 102/103 Emergency Bus Undervoltage (Degraded Voltage)	NA	Once per month	Once per refueling cycle

(a) The instrument channel test will demonstrate the operability of the instrument channel by simulating an undervoltage condition to verify that the tripping logic functions properly.

(b) The instrument channel calibration will demonstrate the operability of the instrument channel by simulating an undervoltage condition to verify that the tripping logic functions properly. In addition, a sensor calibration will be performed to verify the set points listed in Table 3.6.2.i.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 67 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 April 13, 1984 (Ref. 2) and supplemented August 3, 1984 (Ref. 3), Niagara Mohawk Power Corporation (the licensee) requested an amendment to Appendix A of Operating License No. DPR-63 for the Nine Mile Point Nuclear Power Station, Unit No. 1. The amendment request involves limiting conditions for operation and surveillance requirements for equipment that provides for automatic initiation of the diesel generators should the grid voltage degrade. By letter dated March 27, 1984 (Ref. 1), Niagara Mohawk Power Corporation proposed design modifications to the undervoltage protection system due to its recent discovery of inherent design deficiencies in the existing undervoltage protection system. The licensee states in Reference 1 that under the two-out-of-two logic design an open circuit in phase 2 (i.e., a blow potential transformer (PT) fuse, open PT winding, etc.) could cause a spurious actuation of the degraded voltage protection relays. This condition results in an unnecessary separation of the Class 1E buses from the preferred offsite power source. In addition, Ref. 1 states the early design would not allow the undervoltage relays to reset when the Class 1E buses are reenergized by the emergency diesel generator. This is due to the above open circuit and maintaining the load shed feature when the diesel generator is supplying power to Class 1E buses. Therefore, as soon as a safeguard pump motor breaker closes it trips immediately. Breaker tripping and closing will continue until the open circuit failure is correct. The design described in Ref. 1 will protect safeguard equipment against possible damage as a result of breaker tripping and closing. The two-out-of-three logic modification was installed in the Spring 1984 refueling outage.

2.0 Evaluation

The earlier design of the degraded grid undervoltage protection system at the Nine Mile Point Nuclear Station, Unit No. 1 consists of two loss-of-voltage and two degraded-grid-voltage relays. These relays were connected across the secondary windings of three single phase potential transformers. The PTs were connected in wye-wye configuration with neutral grounded on both primary and secondary sides. The relays connection logic for both loss of voltage and degraded grid was two-out-of-two. One loss-of-voltage relay and one degraded-grid-voltage relay were connected in parallel across phases 1 and 2 and the second loss-of-voltage and degraded-

grid-voltage relays were connected in parallel across phases 2 and 3. Under the earlier design an open circuit in phase 2 (common phase) such as a blow PT fuse or open PT winding would deenergize all four relays and cause spurious separation of the Class 1E buses from the preferred offsite source. In addition, the earlier design does not bypass the load shed feature when the diesel generator (DG) is supplying power to the Class 1E buses. Therefore, under the above open circuit condition the relays would not serve when able to reset when the buses are reenergized by the DG. This condition causes each of the safeguard pump motor breakers (i.e., core spray and containment spray pump motors) to trip as soon as its timer initiates a closure.

Since the safety buses continue to be energized by the DG and the undervoltage relays remain deenergized due to the open circuit, the breakers would have received contrasting permissive signals to close and open repeatedly (pumping actions) until breaker failure occurred or necessary manual action was taken to correct the condition. The above pumping action is also detrimental to the pump motors.

The newly installed design consists of three loss-of-voltage and three degraded-grid-voltage relays connected in two-out-of-three coincident logic. These relays are connected across secondary windings of three single phase PTs that are connected in wye-wye configuration with grounded neutral on both primary and secondary sides. Each loss of voltage relay is connected in parallel with one degraded grid voltage relay from phase to ground. Therefore, with an open circuit in any of the three phases, only one loss of voltage and one degraded grid voltage will be activated. The safety buses continue to be supplied by the offsite source and the open circuit is annunciated by alarm in the control room.

This design bypasses the load shed feature when the emergency diesel generator is supplying power to the safety buses and is automatically reinstated when the diesel generator breaker trips.

Licensee's voltage analysis dated September 27, 1982 (Ref. 4) indicates that under the worst case condition analyzed (minimum grid voltage and maximum load) all safety equipment will be provided with adequate voltage for both starting and continuous operation. The above analysis showed under the postulated maximum loading condition including running one of the largest nonsafety loads (2500 HP feedwater pump) the voltage at 4160V Class 1E Power Board 102 remained adequate (90.5% of 4000V at the Power Board 102 and 90.4% of 4000V at the motor terminal).

Both loss-of-voltage relays and degraded-grid-voltage relays have inverse time characteristics. Therefore, with decrease in voltage, the relay's response time decreases exponentially. The loss of voltage relays are set to actuate in less-than-or-equal-to 3.2 seconds at zero volt. The dropout voltage for these relays is greater-than-or-equal-to 3200 volts (80% of 4000V). At 3580V (89.5% of 4000V) it takes approximately 18 seconds for

these relays to operate. Although not stated in the above reference letters the licensee stated via a telephone conversation conducted on August 7, 1984, that degraded grid voltage relays will operate in less-than-or-equal-to 30 seconds at 3607 volts (90.2% of 4000V). The proposed voltage setpoints will ensure adequate voltage at the terminal of safety equipment and the associated time delays will prevent spurious tripping of the preferred offsite source.

Based on our evaluation, we conclude that design changes and Technical Specifications will ensure adequate protection of Class 1E equipment from sustained degraded voltage conditions and prevent unnecessary separation of safety equipment from the preferred offsite power source and are, therefore, acceptable.

3.0 Environmental Considerations

This amendment involves changes in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in inspection and surveillance requirements. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (10). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 Conclusion

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 References

1. Letter, C. V. Mangan to D. B. Vassallo, dated March 27, 1984.
2. Letter, C. V. Mangan to D. B. Vassallo, dated April 13, 1984.
3. Letter, C. V. Mangan to D. B. Vassallo, dated August 3, 1984.
4. Letter, T. E. Lempges to D. B. Vassallo, dated September 27, 1982.

Principal Contributor: J. Emami

Dated: November 9, 1984