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Executive Vice President
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February 18, 1992
NMP1L 0643

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Gentlemen:

SUBJECT: REPLY TO ELECTRICAL DISTRIBUTION SYSTEM FUNCTIONAL
INSPECTION (EDSFI) OF NINE MILE POINT UNIT 1, NRC INSPECTION
REPORT NO. 50-220/91-80

Attached is Niagara Mohawk Power Corporation's response to the NRC Inspection Report No. 91-80 dated January 10, 1992. Attachment A provides our reply to the Notices of Violation and Attachment B responds to the non-cited violation. Also enclosed, Attachment C, is a schedule for the resolution of the unresolved issues identified in the inspection report and actions taken or planned in order to enhance the functionality of the electrical distribution system. If you have any questions concerning this matter, please contact me.

Very truly yours,



B. Ralph Sylvia
Exec. Vice President-Nuclear

NAS/mls
002394GG
Attachment

xc: Regional Administrator, Region I
Mr. W. L. Schmidt, Senior Resident Inspector
Mr. R. A. Capra, Project Director, NRR
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ATTACHMENT A

**NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 1
DOCKET NO. 50-220
DPR-63**

**REPLY TO NOTICES OF VIOLATION AS CONTAINED
IN INSPECTION REPORT 50-220/91-80**

VIOLATION 50-220/91-80-001:

Technical Specification 4.6.3, Emergency Power Sources, b. requires that the emergency diesels be manually started and operated at rated load for a minimum of one hour on a monthly basis. The emergency diesel generator nameplate rates the units at 3125 kVA at a 0.8 power factor.

Contrary to the above, on or before October 25, 1991, monthly surveillance test procedure N1-ST-M4 did not demonstrate that the emergency diesel generators would operate at rated loads in that they were tested at 2800 kW at a 0.98 to 0.99 power factor which corresponds to a load of 2828 to 2836 kVA.

This is a Severity Level IV Violation (Supplement I).

1.) BASIS FOR DISPUTING THE VIOLATION

Niagara Mohawk Power Corporation disagrees that a violation of NRC requirements occurred. The same issue was identified during Niagara Mohawk's internal Electrical Distribution System self assessment and documented under a Deficiency/Event Report (DER 1-91-Q-0638). The disposition of the DER concluded that we were not in violation of Technical Specification requirements. After further review of the situation, Niagara Mohawk maintains that we are in compliance with the relevant Technical Specification.

The Emergency Power Sources Technical Specification surveillance requirement, 4.6.3.b, states "manual start and operation at rated load shall be performed for a minimum time of one hour." The bases for this specification states "the monthly test run paralleled with the system is based on the manufacturer's recommendation for these units in this type of service." The manufacturer's recommendations described in Maintenance Instruction No. 1742 describes testing requirements associated with the emergency diesel generator's engine. The monthly testing recommendation states, "test engine on trial run, and run at not less than 75% load for not less than one hour." No requirements for testing the generator on a monthly basis were given.



Based on the above, Niagara Mohawk's monthly surveillance test N1-ST-M4 satisfies the Technical Specification requirements in accordance with the manufacturer's recommendations by testing the engine to a minimum of 2560kW, which is the rated load as stated in FSAR Section IX 4.1.

From the language of the Technical Specification's section 4.6.3 bases, as well as through documentation found in our technical specification bases file, it is evident that the emphasis of the monthly test was on the engine and the real (kW) power loading and not the reactive (kVAR) power loading.

WHY THE EXISTING TESTING IS ADEQUATE:

The emergency diesel engine (not the generator) is the most limiting factor for the worst case accident loading conditions. Therefore, Niagara Mohawk appropriately tests the engine capabilities on a monthly basis at 2800kW which is above the calculated worst case accident loading conditions of 2524kW. The generator including its excitation system was fully tested during the initial pre-operational test by a two-hour run at 2820kW and greater than 1600kVAR load which is 10% above the continuous rating. Also, at every refueling outage, the N1-ST-R2 test verifies the EDG's can start and accelerate to rated speed, in the required sequence, all the needed safeguard loads. This, coupled with the preventative maintenance and trending program for the diesel generators, ensures that the diesel generators will perform their intended safety function.

RESPONSE TO INFORMATION NOTICE 91-13:

In response to the new information provided to us in Information Notice 91-13, as well as the EDSFI inspection team concerns, Niagara Mohawk has reviewed the EDG testing methodology and agrees that periodically testing the generator would be a desirable enhancement. Niagara Mohawk has committed to perform a special test of the Emergency Diesel Generator system at the next available forced outage or scheduled outage after July 31, 1992. This test will be conducted on a two-year frequency, starting in 1992, to verify the capability of both the engine and the Emergency Diesel Generator system. The July 31, 1992 date represents a change to the March 31, 1992 date provided in section 2.6 of Inspection Report No. 91-80, due to the availability of replacement parts.

Niagara Mohawk recognizes the value of periodically testing the Emergency Diesel Generator system. However, we consider this change in the testing methodology to be an enhancement to the EDG testing program in response to Information Notice 91-13, rather than a corrective action to achieve compliance with the Technical Specifications.



In summary, Niagara Mohawk does not consider that there has been a violation of Technical Specification section 4.6.3.b and respectfully requests that the NRC reconsider its Notice of Violation.

VIOLATION 50-220/91-80-002:

10 CFR 50.49, Paragraph f, requires electric equipment important to safety be qualified by type-test, analysis or a combination of both. 10 CFR 50.49, Paragraph g, requires the qualification be accomplished before November 30, 1985.

Contrary to the above, on October 25, 1991, the qualification of the core spray topping pump motors and the reactor building closed cooling pump motors were not established in that they had not been type-tested nor analyzed to 109% and 105%, respectively, of their rated horse-power at which they were required to operate following a postulated accident.

This is a Severity Level IV Violation (Supplement I).

1.) THE REASONS FOR THE VIOLATION

Niagara Mohawk Power Corporation admits to the violation as stated. The root cause for this violation was determined to be personnel error. The personnel error was Engineering's failure to recognize a design basis change in the operational requirements for the Core Spray Topping (CST) and Reactor Building Closed Loop Cooling (RBCLC) pump motors. This led to the failure to obtain cross disciplinary review that would have been necessary to implement such a design basis change.

The Nine Mile Point Unit 1 Equipment Qualification Program had included the CST and RBCLC pump motors before November 30, 1985 as required by 10CFR50.49(g). The qualification evaluations used the design data established at the time which was 100% of their rated horse-power.

In 1991, as part of the Nine Mile Point Unit 1 Design Basis Reconstitution Program, Niagara Mohawk reanalyzed the individual loads which are on the Emergency Diesel Generator (EDG) to ensure that the diesels were not operated above rated output. This calculation (4.16 KVAC-DG-ES, Revision 0) documented the maximum power demand for the CST and RBCLC motors at a level greater than 100% of their rated horse-power and thus, greater than what had been previously considered in the equipment qualification test/analyses.

The Engineers concluded that both the CST and RBCLC pump motors were still within their service factor rating of 1.15 and could be operated continuously at 15% above their nominal nameplate horsepower rating. However, the individuals performing the EDG loading calculation did not recognize that operating a motor beyond rated horsepower could mean the motor operation was outside of other design basis assumptions including equipment qualification and therefore constituted a design basis change.



Recognition of a design basis change would have triggered the appropriate deficiency reporting and the proper interdisciplinary review including equipment qualification.

2.) **THE CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND THE RESULTS ACHIEVED**

After discovering the potential equipment qualification deficiency, Niagara Mohawk's Equipment Qualification group performed an analysis to demonstrate that the original qualification enveloped the deficient condition.

Equipment Qualification Action Item EQAI-0145 was documented on October 24, 1991, to evaluate the effect of motor operation above nameplate rating, make a definitive statement on qualification, and identify the qualification file updating requirements. An Equipment Qualification calculation performed for EQAI-0145 verified that the additional heat generated by the motor's operation above nameplate rating did not exceed the levels of qualification established by the original qualification report. The NRC EDSFI inspection team reviewed and accepted EQAI-0145, and its associated calculation.

Additionally, the Equipment Qualification design basis review was extended to reassess operational extremes for the balance of pump and fan motors in the Equipment Qualification Program. That review determined that the CST and RBCLC pump motors were the only motors for which design parameters identified operation above the original equipment qualification program basis. The design bases review concluded that the qualification violation has been appropriately bounded and evaluated, and that appropriate qualification has been documented for motors within the scope of the Equipment Qualification Program.

Furthermore, since the equipment qualification analysis for the indicated motors was found to be deficient, a Justification for Continued Operation (JCO) was generated to demonstrate qualification. Also, a Deviation/Event Report (DER 1-91-Q-1745) was generated to document the Equipment Qualification Group review of this finding.

3.) **THE CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS**

The failure to recognize a design basis change was reviewed with the responsible individuals. These individuals understand their error and will be involved in reinforcing these design change principles in sessions with other members of Design Engineering.

An Accountability Meeting was held to investigate the details surrounding this violation. From the results of the Accountability Meeting and the disposition of the Deviation/Event Report (DER 1-91-Q-1745), a Lessons



Learned Transmittal (LLT) will be issued to further reinforce design basis change principles.

4.) **THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED**

Full Compliance was achieved on October 24, 1991 when the Equipment Qualification Action Item (EQAI-0145) documented the qualification of the CST and RBCLC pump motors.



ATTACHMENT B

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 1

DOCKET NO. 50-220

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NON-CITED VIOLATION 50-220/91-80-003

1) INADEQUATE SURVEILLANCE PROCEDURE (91-80-003)

As discussed in Section 2.8 of Inspection Report No. 91-80, Procedure N1-ESP-GEN-333, Revision 0 incorrectly defined the relay "dropout" voltage as "pickup" voltage. As a result the pickup function of the relays was not tested as required by Engineering Specification E-130. However, the most critical functional portion of the undervoltage relay (dropout) was found to be tested adequately.

Niagara Mohawk immediately resolved this procedure discrepancy by issuing a Procedure Change Evaluation (PCE) to add steps to record pickup voltage. The data sheet which is used by the relay technician was revised to add requirements to record pickup voltage.

On November 15, 1991, the relays for power board PB102 were tested and on November 18, 1991 power board PB103 relays were tested. Relays found to be out of tolerance, were returned to within the tolerance band during the calibration.

Niagara Mohawk considers this non-cited violation resolved.



ATTACHMENT C

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 1

DOCKET NO. 50-220

DPR-63

UNRESOLVED ITEMS

1) ADEQUACY OF VOLTAGE DURING PUMP STARTS (91-80-004)

Niagara Mohawk provided to the NRC EDSFI team a written analysis of the Core Spray logic associated with the Emergency Diesel Generator (EDG) and the Automatic Depressurization System (ADS) with respect to possible startup conditions of voltage and frequency variations on October 31, 1991. These analyses were accepted by the NRC EDSFI inspection team. Niagara Mohawk has developed an action plan to perform additional verification testing of EDG/ADS control circuit timers and relays during the first available forced outage or scheduled outage after July 31, 1992. As described earlier, the July 31, 1992 date represents a change to the March 31, 1992 date provided in section 2.6 of Inspection Report No. 91-80, due to the availability of replacement parts. The results of the transient voltage study (Unresolved Item No. 91-80-008) which is scheduled to be performed by June 30, 1992 will be used to further validate the results of the above verification testing. Based on these results, modifications will be completed if necessary.

2) ADEQUACY OF FAST/SLOW TRANSFER SCHEMES (91-80-005)

Niagara Mohawk will perform a bus transfer simulation study to demonstrate that the non-class 1E bus transfer scheme would not impose any degraded conditions on the safety related power boards PB102 and PB103. This simulation study will be completed by December 31, 1992.

3) DERATING OF CABLES DUE TO FLAMEMASTICS (91-80-006)

As stated in Inspection Report No. 91-80, Section 2.10, Niagara Mohawk plans to analyze the effect of cable derating due to flamemastic application for additional sample cable trays by February 29, 1992, as a short term action. Long term corrective action is to perform a cable ampacity study as part of the Design Basis Reconstitution program by December 31, 1993.



4) MISCOORDINATION AT VARIOUS VOLTAGE LEVELS (91-80-007)

4160VAC System:

Niagara Mohawk will complete a coordination study to resolve the coordination problems identified in Section 2.9 of the EDSFI Inspection Report. Based on this study, modification(s) to improve the coordination concerns will be completed by the end of the 1994 refueling outage.

600VAC System:

Niagara Mohawk has developed an action plan to address the coordination problems at the 600VAC system level. The modification to address the coordination problem which resulted from the action plan is scheduled to be completed by the end of the 1994 refueling outage.

125VDC System

Niagara Mohawk has completed a 125VDC system coordination study which provides a method to correct the coordination problem. A modification to resolve the coordination problem in the 125VDC system will be implemented by the end of the 1994 refueling outage.

5) TRANSIENT VOLTAGE STUDY FOR THE EDG's (91-80-008)

The Emergency Diesel Generator Transient study will be performed by June 30, 1992. This analysis will address the NRC concerns on EDG transient response and data verification as discussed in Section 2.6 of Inspection Report No. 91-80. Additional validation will be performed using test data obtained during the 1992 refueling outage.

6) ELECTRICAL PENETRATION PROTECTION (91-80-009)

As a result of a self audit of the electrical distribution system, an interim bounding study was performed. The study included 5KV penetration types and six 600VAC penetration types. The interim study concluded that all the penetrations reviewed had at least one protection device that adequately protects the respective penetration for overload and fault conditions. However, seven containment penetrations were identified as inadequate, because the coordination curves for these circuit breakers overlapped a small portion of the extrapolated penetration's thermal capability curve. In the December 1991 forced outage, the seven 600VAC circuit breakers were replaced to enhance containment penetration protection.

Niagara Mohawk has developed an action plan to complete a thorough penetration protection study of all electrical containment penetrations by December 31, 1992.



7) PUMP CURVES TO VERIFY POWER DEMANDS (91-80-010)

Niagara Mohawk will review and revise Mechanical Design Criteria (MDC-11), where applicable, to address the NRC's concerns on pump curves as described in Section 3.1 of Inspection Report No. 91-80. This action will be completed by December 31, 1992.

Niagara Mohawk will also perform a review of efficiencies for various large safety related pumps, specifically the Reactor Building Closed Loop Cooling, Containment Spray, Containment Spray Raw Water, Core Spray, Core Spray Topping and the Emergency Service Water pumps during normal quarterly surveillance testing. These results will be evaluated against the manufacturer's efficiencies used in EDG loading calculations. This evaluation will be completed by May 31, 1993. Follow-up actions required as part of these evaluations are provided in a Niagara Mohawk action plan for this unresolved item.

8) HVAC FOR EDS EQUIPMENT ROOM (91-80-011)

Niagara Mohawk completed the necessary mitigating actions to deal with the winter season concerns described in the inspection report, to the battery rooms and the EDG rooms on December 6, 1991.

Niagara Mohawk has further developed an action plan to perform detailed calculations to confirm the adequacy of the HVAC in the battery rooms, cable spreading room, battery board room, EDG room, EDG switchgear room, screenhouse and in the reactor building and turbine building plant areas. Niagara Mohawk will perform heat balances and/or thermal bounding calculations in each of the areas described above. The last calculation will be completed by April 30, 1993. At the completion of each of the scheduled calculations in the action plan, identification of any interim mitigating actions or long term physical modifications will be made.

9) HYDROGEN CONCENTRATION CALCULATION (91-80-012)

Niagara Mohawk calculation S10-H₂GAS-HV01, was performed to evaluate hydrogen concentration levels in the battery rooms. This calculation found that hydrogen concentrations in the battery rooms will be well below the 1% limit when the ventilation system is in operation. In cases where power to the ventilation system is lost, hydrogen will escape through holes provided by a modification to the battery room exhaust ductwork. This temporary modification was completed in November 1991. A simple design change (SC1-0279-91) will install dampers over the top of these holes such that when power is lost to the ventilation system, the dampers will fail open, allowing hydrogen to escape. Hydrogen concentration levels in the higher elevations of the turbine building will be small due to the immense volume of the turbine building. Niagara Mohawk considers this item to be closed.



10) DEGRADED VOLTAGE FOR 575 VOLT MOTORS (91-80-013)

As part of the degraded grid voltage study for the Class 1E system, Niagara Mohawk will confirm the design voltages of the Class 1E 575 volt motors including the emergency service water pump, the diesel generator cooling raw water pumps, and the control room recirculation fan. This will be completed as part of the degraded grid voltage study (see Unresolved Item No. 91-80-015).

11) EDG LOADING CALCULATIONS (91-80-014)

Niagara Mohawk has finalized EDG Loading Calculation 4.16KVAC-DG-ES, Revision 0. The maximum EDG loading has been determined to be 2524kW at a calculated power factor of 0.86. This value is below the continuous rating of the EDG (2586kW) and includes some margin. Niagara Mohawk considers this unresolved item closed.

12) DEGRADED BUS RELAY SETPOINTS (91-80-015)

Niagara Mohawk provided the NRC EDSFI inspection team with an initial response relative to historical data, Licensing basis and the safety significance of this issue on November 8, 1991.

Niagara Mohawk has further developed an action plan to address this unresolved item. This plan calls for updating the degraded voltage study for the Class 1E system using the recently developed AC Electrical Load Management System (ELMS) program for Nine Mile Point Unit 1. The results of this degraded voltage study will be evaluated against present relay settings and any necessary degraded grid voltage setpoint changes will be made prior to start up from the 1992 refueling outage. This date is a change to the June 30, 1992 date stated in Inspection Report No. 91-80 as a result of a more detailed assessment of the available manhours required to perform this activity and our decision to perform a more comprehensive analysis.

