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SUBJECT: Responds to NRC station blackout rule re plant capable of maintaining core cooling & containment integrity.

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April 13, 1989
(NMP2L 1194)

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

Re: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69
TAC No. 68571

Gentlemen:

On July 21, 1988, the Nuclear Regulatory Commission (NRC) amended its regulations in 10CFR, Part 50. A new Section, 10CFR50.63, was added which requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (SBO) of a specified duration. Utilities are expected to have the baseline assumptions, analyses and related information used in their coping evaluation available for NRC review. It also identifies the factors that must be considered in specifying the station blackout duration. Section 50.63 requires that, for the station blackout duration, the plant be capable of maintaining core cooling and appropriate containment integrity. Section 50.63 further requires that each licensee submit the following information:

1. A proposed station blackout duration including a justification for the selection based on the redundancy and reliability of the onsite emergency AC power sources, the expected frequency of the loss of offsite power, and the probable time needed to restore offsite power;

2. A description of the procedures that will be implemented for station blackout events for the duration (as determined in 1 above) and for recovery therefrom; and

3. A list and proposed schedule for any needed modifications to equipment and associated procedures necessary for the specified SBO duration.

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The NRC has issued Regulatory Guide 1.155 "Station Blackout" which describes a means acceptable to the NRC staff for meeting the requirements of 10CFR50.63. Regulatory Guide (RG) 1.155 states that the NRC Staff has determined that NUMARC 87-00 "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout At Light Water Reactors" also provides guidance that is in large part identical to the RG 1.155 guidance and is acceptable to the NRC Staff for meeting these requirements. Table 1 to RG 1.155 provides a cross-reference between RG 1.155 and NUMARC 87-00 and notes where the RG takes precedence.

Niagara Mohawk Power Corporation has evaluated Nine Mile Point Unit 2 against the requirements of the SBO rule using guidance from NUMARC 87-00 except where RG 1.155 takes precedence. The results of this evaluation are detailed below. (Applicable NUMARC 87-00 sections are shown in parenthesis.)

A. Proposed Station Blackout Duration

NUMARC 87-00, Section 3 was used to determine a proposed SBO duration of four hours. No modifications were required to attain this proposed coping duration category.

The following plant factors were identified in determining the proposed station blackout duration:

1. AC Power Design Characteristic Group is "P2" based on:

   a. Expected frequency of grid-related loss of offsite power events (LOOPs) does not exceed once per 20 years (Section 3.2.1, Part 1A);

   b. Estimated frequency of LOOPs due to extremely severe weather places the plant in ESW Group 1 (Section 3.2.1, Part 1B);

   c. Estimated frequency of LOOPs due to severe weather places the plant in SW Group 3 (Section 3.2.1, Part 1C);

   d. The offsite power system is in the I 1/2 Group (Section 3.2.1, part 1D);

   e. Plant-specific pre-hurricane shutdown requirements and procedures which meet the guidelines of Section 4.2.3 of NUMARC 87-00 are not required for Nine Mile Point Unit 2 nor are such procedures credited in the determination of the AC Power Design Characteristic Group.

2. The Emergency AC Power Configuration Group is C based on: (Section 3.2.2, Part 2C)

   a. There are two emergency AC power supplies not credited as alternate AC power sources (Section 3.2.2, Part 2A);

   b. One emergency AC power supply is necessary to operate safe shutdown equipment following a loss of offsite power (Section 3.2.2, Part 2B).

3. The Target Emergency Diesel Generator (EDG) Reliability is 0.975.

   A target EDG reliability of 0.975 was selected based on having a nuclear unit average EDG reliability for the last 20 demands greater than 0.90 consistent with NUMARC 87-00, Section 3.2.4.

B. Procedure Description

Plant procedures have been reviewed and modified, as necessary, to meet the guidelines in NUMARC 87-00, Section 4 in the following areas:

1. AC power restoration per NUMARC 87-00, Section 4.2.2.

   The following existing procedures currently provide guidance which will permit restoration of AC power either from offsite or from the emergency diesel generators:

   a. N2-OP-70, "Station Electrical Feed and 115kV Switchyard", Rev. 2
   b. N2-OP-71, "13.8kV/4160V/600V. A.C. Power Distribution", Rev. 3
   c. N2-OP-72, "Standby and Emergency A.C. Distribution System", Rev. 4
   d. N2-OP-73A, "Normal D.C. Distribution", Rev. 2
   e. N2-OP-74A, "Emergency D.C. Distribution", Rev. 2
   f. CS-101.2, "Major Power Failure Restoration", (Bennett's Bridge), Rev. 6/20/88
   g. CS-113, "Major Power Failure Restoration", (Scriba Substation), 5/27/87
   h. CN-100.2 "Major Power Failure Restoration", (NMP1 Nuclear Station) Rev 5/28/87
   i. Scriba Operating Instructions - Emergency 115kV "C" Bus, 4/6/87

   To enhance this existing guidance, we plan to take steps to consolidate these procedures as to the AC power restoration aspects of a station blackout event.

   Niagara Mohawk Central Regional Operating Instructions CS-113 and Scriba Operating Instructions, Emergency 115kV "C" Bus address the restoration of offsite power to NMP-2 and the Scriba Substation from various sources. In addition, instructions for the operators to advise the dispatcher that a station blackout has occurred will be implemented to expedite offsite restoration.

2. Severe weather per NUMARC 87-00, Section 4.2.3.

   N2-OP-102, "Meteorological Monitoring ", Rev. 0.

Plant procedures have been reviewed and changes necessary to meet NUMARC 87-00 will be implemented in the following areas:

1. Station blackout response per NUMARC 87-00, Section 4.2.1;

   a. Additional instructions to use the wide range RPV level indication for controlling RPV level during the SBO event will be evaluated for implementation.

b. Additional instructions for defining operator actions to enhance cooling of the control room and the energized equipment in the main and auxiliary control rooms during a station blackout will be implemented.

c. Additional instructions defining D.C. battery loads to be shed during the station blackout will be implemented.

d. Additional instructions to manually override the RCIC high room temperature trip logic within approximately two hours of initiation of the station blackout will be implemented. This is needed to avoid a RCIC turbine trip.

2. Procedure changes associated with any modifications required after assessing coping capability per NUMARC 87-00, Section 7.

   No modifications are planned. Therefore, no procedure changes associated with any modifications are required.

C. Proposed Modifications and Schedule

The ability of Nine Mile Point Unit 2 to cope with a station blackout for four hours in accordance with NUMARC 87-00, Section 3.2.5 and as determined in Section "A" above, was assessed using NUMARC 87-00, Section 7 with the following results:

1. Condensate Inventory For Decay Heat Removal (Section 7.2.1)

   It has been determined that the minimum permissible condensate storage tank level per Technical Specification provides 135,000 gallons of water, which is sufficient to provide core cooling for at least 10.7 hours.

   No plant modifications or procedure changes are needed to utilize this water source.

2. Class 1E Battery(ies) Capacity (Section 7.2.2)

   A battery capacity calculation has been performed pursuant to NUMARC 87-00, Section 7.2.2 to verify that the Class 1E batteries have sufficient capacity to meet station blackout loads for four hours. Non-class 1E batteries were also assessed. Operator action is required to shed non-essential loads from non-class 1E batteries to cope with a SBO duration of four hours. The shedding of the non-essential loads from non-class 1E batteries will be identified in plant procedures.

3. Compressed Air (Section 7.2.3)

   Air-operated valves relied upon to cope with a station blackout for four hours can either be operated manually or have sufficient backup sources independent of the preferred and blacked out unit's Class 1E power supply. Valves requiring manual operation or that need backup sources for operation will be identified in plant procedures.

4. Effects of Loss of Ventilation (Section 7.2.4)

The ambient temperature response has been calculated for the following dominant areas of concern:

AREA	TEMPERATURE
RCIC Room	137°F
Drywell	290°F
Control Room	98°F

The assumption in NUMARC 87-00, Section 2.7.1 that the control room will not exceed 120°F during a station blackout has also been assessed. The control room at Nine Mile Point Unit 2 does not exceed 120°F during a station blackout. Therefore, the control room is not a dominant area of concern.

Reasonable assurance of the operability of station blackout response equipment in the dominant areas of concern has been assessed using Appendix F to NUMARC 87-00 and the Topical Report. No hardware modifications are required to provide reasonable assurance for equipment operability. As discussed in Section B above, procedures will be revised to direct the operators to 1) open the door between the main control room and control building and 2) open the control room and auxiliary control room instrument cabinets during a station blackout. These actions will increase the cooling of the control room equipment by natural convection.

5. Containment Isolation (Section 7.2.5)

The plant list of containment isolation valves has been reviewed to verify that valves which must be capable of being closed or that must be operated (cycled) under station blackout conditions can be positioned (with indication) independent of the preferred and blacked-out units class 1E power supplies. No plant modifications and/or associated procedure changes were determined to be required to ensure that appropriate containment integrity can be provided under SBO conditions.

6. Reactor Coolant Inventory (Section 2.5)

The ability to maintain adequate reactor coolant system inventory to ensure that the core is cooled has been evaluated for the required SBO duration. It has been determined that expected rates of inventory loss under SBO conditions are adequately made up by the Reactor Core Isolation Cooling system (RCIC) and no core uncovery occurs during the SBO period. The following procedure changes are required to ensure that appropriate reactor coolant makeup water can be provided under SBO conditions:

a. Procedures may be clarified to indicate that the RCIC system will be manually controlled in manual flow control mode by the control room operator to maintain RPV level between 159" and 202" as indicated on wide range RPV level indication. This will prevent the RCIC from tripping on high RPV level and improve reliability of operation by avoiding repeated restarts.

The procedure changes identified in Parts B and C above will be completed within 12 months after the notification provided by the Director, Office of Nuclear Reactor Regulation in accordance with 10CFR50.63 (c)(3).

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

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