

August 26, 2002

Mr. J. A. Price
Site Vice President - Millstone
Dominion Nuclear Connecticut, Inc.
Mr. David A. Smith
Rope Ferry Road
Waterford, CT 06385

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 - ISSUANCE OF AMENDMENT
RE: EMERGENCY DIESEL GENERATOR ALLOWED OUTAGE TIME (TAC
NO. MB3125)

Dear Mr. Price:

The Commission has issued the enclosed Amendment No. 210 to Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3 (MP3), in response to your application dated October 1, 2001, as supplemented by letters dated May 13 and July 1, 2002.

The amendment modifies the MP3 Technical Specifications (TSs) to increase the emergency diesel generator (EDG) allowed outage time, to perform a verification of the offsite power circuits within 1 hour prior to or after entering the condition of either an inoperable offsite power source or inoperable EDG, to revise the requirements for the pressurizer heaters and the pressurizer power operated relief and block valves, and to improve the format of the electrical power sources action requirements. The Bases of the affected TSs will be modified to address the proposed changes.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/RA/

Victor Nerses, Sr. Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures: 1. Amendment No. 210 to NPF-49
2. Safety Evaluation

cc w/encls: See next page

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DOMINION NUCLEAR CONNECTICUT, INC., ET AL.

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 210

License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the applicant dated October 1, 2001, as supplemented by letters dated May 13 and July 1, 2002, 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. NPF-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 210, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. Dominion Nuclear Connecticut, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Jacob I. Zimmerman, Acting Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: August 26, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 210

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following pages of the Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3/4 4-11
3/4 4-11b
3/4 4-13
3/4 8-1
3/4 8-2
3/4 8-3
3/4 8-3a
B 3/4 4-2a
B 3/4 8-1
B 3/4 8-1a
B 3/4 8-1b
B 3/4 8-1c

Insert

3/4 4-11
3/4 4-11b
3/4 4-13
3/4 8-1
3/4 8-2
3/4 8-3
3/4 8-3a
B 3/4 4-2a
B 3/4 8-1
B 3/4 8-1a
B 3/4 8-1b
B 3/4 8-1c
B 3/4 8-1d

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 210

TO FACILITY OPERATING LICENSE NO. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated October 1, 2001, as supplemented on May 13 and July 1, 2002, Dominion Nuclear Connecticut, Inc. (licensee or DNC) submitted an application requesting an amendment of their operating license. The application proposed changes to the Millstone Power Station, Unit No. 3 (MP3) Technical Specifications (TSs). The proposed changes would modify the MP3 TSs to increase the emergency diesel generator (EDG) allowed outage time (AOT), to perform a verification of the offsite power circuits within 1 hour prior to or after entering the condition of either an inoperable offsite power source or inoperable EDG, to revise the requirements for the pressurizer heaters and the pressurizer power operated relief and block valves, and to improve the format of the electrical power sources action requirements. The Bases of the affected TSs will be modified to address the proposed changes. The May 13 and July 1, 2002, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination and was within the scope of the original application.

2.0 REGULATORY EVALUATION

2.1 Emergency Diesel Generator

The licensee's proposed changes would allow MP3 EDGs to be out of service for 14 days rather than the current limit of 3 days. The main purpose of the proposed change is to allow online performance of 18-month EDG maintenance activities that would normally be performed during refueling outages. In addition, the extended AOT may also be used for corrective maintenance that may be needed to resolve EDG deficiencies that are discovered during surveillance to avert a potential unplanned plant shutdown.

The licensee indicated that increasing the AOT from the current 3 days to 14 days is not risk-significant. According to the licensee, the risk is offset by the benefits associated with avoiding unnecessary transition risk during a forced plant shutdown, and by reducing risk when the plant is shut down. The proposed change would also improve EDG availability and reliability during shutdown. The licensee's request for the MP3 AOT is evaluated with the use of deterministic methods and probabilistic risk assessment (PRA).

General Design Criterion (GDC) 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 requires in part that nuclear power plants have onsite and offsite electric power systems to permit the functioning of structures, systems, and components that are important to safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. In addition, this criteria requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18, "Inspection and Testing of Electric Power Systems," requires electric power systems that are important to safety to be designed to permit appropriate periodic inspection and testing. Title 10 of the *Code of Federal Regulations*, Section 50.36, "Technical Specifications," requires a licensee's TS to establish a limiting condition for operation (LCO), which would include an AOT for equipment that is required for safe operation of the facility. In the MP3 TS, LCO 3.8.1 deals with the EDG AOT.

"Station Blackout," 10 CFR Section 50.63, requires that all nuclear power plants must have the capability to withstand a loss of all AC power for an established period of time.

"Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plant," 10 CFR Section 50.65, requires that preventive maintenance activities must not reduce the overall availability of the systems, structures, and components. Regulatory Guide (RG) 1.93, "Availability of Electric Power Sources," provides guidance with respect to operating restrictions (i.e., AOTs) if the number of available AC sources is less than that required by the TS LCO. In particular, this guide prescribes a maximum AOT of 72 hours for an inoperable AC source.

As described in the licensee's application, dated October 1, 2001, the MP3 electrical distribution system consists of normal and emergency 4160 volt (V) systems. During normal operation, power is supplied through the normal station service transformer (NSST) from the main generator via the isolated phase bus duct, with the generator breaker closed to the normal 4160 V buses 34A and 34B. The normal 4160 V buses feed the emergency buses, 34C and 34D. In the event of a generator trip or turbine trip (low vacuum, high vibration, or excessive thrust bearing wear), the generator breaker opens immediately. In the event of a reactor or turbine trip (other than low vacuum, high vibration, or excessive thrust bearing wear), there is a 30-second time delay before the generator breaker opens. This time delay aids in preventing turbine overspeed. In either event, continuous power to buses 34C (Train A) and 34D (Train B) via the normal offsite power source and the NSST is ensured. In the event of a loss of the normal offsite power source, the alternate offsite power source supplies power through the reserve station service transformer (RSST) from the 345 kV switchyard. The RSST supplies power to the emergency 4160 V buses 34C and 34D. After a loss of the normal offsite power source, an automatic high-speed transfer is initiated to the alternate offsite source, thereby ensuring power to buses 34C and 34D. During startup or shutdown, each of the preferred offsite power sources (via the NSST or RSST) has adequate capacity to supply all normal and emergency loads.

The emergency power is supplied by two independent and redundant EDGs. Each EDG is capable of supplying power to the respective emergency 4160 V bus. During normal power operation, the EDGs are maintained in a standby mode. The EDGs are designed to automatically start on a loss of power to the respective emergency bus, a safety injection actuation signal, or a containment depressurization actuation signal. If the normal and alternate offsite power sources are not available, the EDGs are automatically connected to the respective emergency bus and sequentially loaded.

Additionally, the MP3 and MP2 electrical systems can be cross-connected at the 4160 V level by use of a cross-tie from MP3 bus 34A or 34B to MP2 bus 24E. This cross-tie is used to provide an alternate source of offsite power to MP2 to meet the GDC 17 requirement for an alternate source of offsite power by providing power from either the Unit 3 RSST or NSST. The cross-tie also provides a source of power for MP2 to meet the post-fire Appendix R or dedicated shutdown requirement. It is also used to provide an alternate ac (AAC) source for MP2 by utilizing the MP3 station blackout (SBO) diesel generator (DG) to supply power via bus 24E.

MP3 is able to withstand and recover from an SBO event of 8 hours, in accordance with RG 1.155, "Station Blackout," dated August 1988. In an SBO event, the SBO DG serves as an AAC source for the affected unit. An SBO event is only assumed to occur at one unit. The SBO DG is available within 1 hour of the onset of the SBO event, and has sufficient capacity and capability to operate equipment necessary to attain and maintain a safe shutdown condition of the affected unit.

2.2 Pressurizer Heaters

Pressurizer heaters keep the water in the pressurizer at saturation temperature corresponding to the pressure necessary to maintain subcooled conditions in the reactor coolant system (RCS). The capability to maintain and control the RCS pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of the reactor coolant.

Three Mile Island (TMI) Action Plan Item II.E.3.1 of NUREG-0737, "Emergency Power Requirements for Pressurizer Heaters," requires that the pressurizer heater power supply design shall provide the capability to supply, from either the offsite power source or the emergency power source, a predetermined number of pressurizer heaters necessary to establish and maintain natural circulation at hot standby conditions. In this TMI Action Plan, the U.S. Nuclear Regulatory Commission (NRC) staff concluded that either permanently connecting the required pressurizer heaters to emergency power sources or connecting these pressurizer heaters to the emergency power sources in a manner that operator actions are needed when offsite power is not available would be an acceptable means of meeting this requirement. Due to the different design of the electrical power distribution system in each plant, any current operating plant may use one of the two methods to provide emergency power supplies to the pressurizer heaters for satisfying the above TMI Action Plan requirements. A predetermined number of pressurizer heaters is necessary to establish and maintain natural circulation at hot standby conditions.

The current TSs 3.4.3.1 (applicable in reactor Operational Modes 1 and 2) and 3.4.3.2 (applicable in reactor Operational Mode 3) require that the pressurizer shall be operable with at least two groups of pressurizer heaters supplied by emergency power, each having a capacity of at least 175 KW. The phrase “supplied by emergency power” are used in the LCOs, Actions and surveillance requirement (SR) sections of these current TSs. These TSs are intended, in part, to ensure that the pressurizer heater capacity is sufficient to maintain the RCS in subcooled conditions when offsite power is not available and to satisfy the TMI Action Plan requirements. However, the safety analyses presented in Chapter 15 of the UFSAR do not take credit for pressurizer heater operation for mitigation of any design-basis events.

The proposed changes to TSs 3.4.3.1 and 3.4.3.2 will eliminate the phrase “supplied by emergency power” in LCOs, Actions, and SRs. The licensee stated that the proposed changes are needed due to the proposed extended AOT for EDGs and to avoid misinterpretation of the TSs requirement regarding pressurizer heaters with different AOT from the EDGs. The licensee considers that the phrase “supplied by emergency power” is not necessary in the TSs since the pressurizer heaters are permanently connected to the emergency power supplies.

2.3 Power Operated Relief Valves (PORVs)

The licensee credits PORVs as the safety-grade means for depressurization of the RCS for mitigation of a design-basis steam generator tube rupture accident. The PORVs also serve as the low temperature overpressure protection system to prevent the reactor vessel from exceeding its allowable pressure limit during plant startup and shutdown per the requirements of 10 CFR Part 50, Appendix G.

Block valves, which are normally open, are located between the pressurizer and the PORVs. The block valves can isolate the PORVs in case of excessive leakage or a stuck-open PORV. A stuck-open PORV is, in effect, a small break loss of coolant accident. Therefore, block valve closure terminates the RCS depressurization and coolant inventory loss.

TMI Action Plan Item II.G.1 of NUREG-0737, “Emergency Power for Pressurizer Equipment,” requires that the motor and control components of the PORVs and their associated block valves shall be capable of being supplied from either the offsite power source or the emergency power source when the offsite power is not available.

The current SR 4.4.4.3 of TS 3.4.4 requires a demonstration that the emergency power supply for the PORVs and block valves shall be operable at least once per 24 months by operating the valves through a complete cycle of full travel. The proposed change will eliminate this surveillance from TS 3.4.4. Because the PORVs and block valves are permanently connected to the emergency power supplies at MP3, the licensee stated that satisfying the current SRs 4.4.4.1.b and 4.4.4.2 of TS 3.4.4 will demonstrate the operation of the associated valves through one complete cycle. Therefore, SR 4.4.4.3 is not needed.

2.4 Probabilistic Evaluation of Risks Associated with TS LCO AOT Extensions

In evaluating the risk associated with changes to an LCO AOT, the NRC staff considers both the average risk of normal operation after the change compared to that before, and the risk of operation during the proposed allowed outage interval compared to average risk of normal

operation or the base risk. With regard to the change in the average risk of normal operation associated with a proposed change to a plant's licensing basis (LB), RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," provides guidance on the limiting levels of risk that need to be met in order for the staff to consider the proposed risk-informed LB change. This guidance does not address the specific analyses needed for each nuclear power plant activity or design characteristic that may be amenable to risk-informed regulation. However, given that the acceptance guidance of RG 1.174 is met, RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," provides information on an approach for assessment of TS changes (e.g., discussions of estimates of the risk of operation during the increase in allowed outage compared to average risk of normal operation) as well as acceptance guidelines for the associated risk change (e.g., specification of a risk change that the staff considers small for a single TS LCO AOT change).

According to RG 1.177, the TS acceptance guidelines specifically for evaluating risk associated with a single TS LCO AOT change are: (a) the incremental conditional core damage probability (ICCDP) for equipment out of service is considered small if less than $5.0E-07$, and (b) the incremental conditional large early release probability (ICLERP) for equipment out of service is considered small if less than $5.0E-08$. In the context of integrated decision-making, the acceptance guidelines are not interpreted in an overly prescriptive manner. Also, in the context of integrated decision-making, the ICCDP and ICLERP must take into consideration all equipment out of service that can contribute to risk during the proposed AOT in determining the appropriateness of the change. In addition to consideration of internal events, the impact of a proposed change on risks from fire and external events needs to be evaluated. When adequate supporting information is provided, the staff also considers the risk of shutting down the plant to complete maintenance.

Licensees are encouraged to implement the three-tiered approach discussed in RG 1.177 in assessing risk associated with proposed TS LCO AOT changes. Tier 1, intended to ensure that the change in risk is small, involves an evaluation of the minimum impact on plant risk of the proposed TS change as expressed by the change in core damage frequency (CDF), the ICCDP, and when appropriate, the change in large early release frequency (LERF), and the ICLERP for the case where only the equipment covered by the LCO is out of service. Tier 2 is intended to provide assurance that appropriate restrictions will be placed on dominant risk-significant configurations that could exist if equipment in addition to that covered by the TS LCO were to be taken out of service simultaneously for maintenance or testing. It involves an identification of potentially high-risk configurations that could exist during the LCO AOT prior to entering the LCO. Tier 3 involves the implementation of an overall configuration risk management program to ensure that other potentially lower probability, but nonetheless risk-significant configurations resulting from maintenance and other operational activities are identified and compensatory measures taken.

As the frequency and length of online maintenance outages for risk significant equipment increases, the probability of overlap (both inadvertent and planned) increases, with associated increases in risk. Hence, an essential feature of this approach is an effective configuration risk management program (CRMP). With the encouragement of the NRC, licensees typically use the risk management procedures developed for implementation of the maintenance rule

(in particular, paragraph 10 CFR 50.65(a)(4)) to manage risks associated with TS LCO AOT changes.

3.0 TECHNICAL EVALUATION

3.1 Emergency Diesel Generator

The staff's review and evaluation of the deterministic aspects of the amendment request is presented in Sections 3.1.1 through 3.3. The staff's review and evaluation of the licensee's assessment of risk associated with the proposed EDG AOT extension is presented in Section 3.4 of this Safety Evaluation (SE).

3.1.1 LCO 3.8.1.1, Action b - One EDG Inoperable

This action requirement (AR) currently requires that if one EDG is inoperable, the licensee must demonstrate the operability of the remaining EDG by performing SR 4.8.1.1.2.a.5 within 24 hours; restore the inoperable EDG to operable status within 72 hours or be in hot standby within the next 6 hours, or be in cold shutdown within the following 30 hours. The licensee has proposed to extend the AOT for an inoperable EDG from the current 72 hours to 14 days if the additional power source requirements specified in the new AR b.4 are met. AR b.4 will address the additional requirement that the required MP2 EDGs must be operable and the MP3 SBO EDG must be available in order for the licensee to use the proposed 14-day AOT for one inoperable MP3 EDG. In addition, this requirement will impose a 72-hour limit on the time MP3 can remain in operation with one EDG inoperable when either a required MP2 EDG is inoperable or the MP3 SBO DG unavailable, consistent with the current AOT for one inoperable EDG.

The purpose of the proposed change to LCO 3.8.1 to extend the EDG AOT from the current 72 hours to 14 days is to allow the licensee to perform various maintenance and repair activities on line and to allow increased flexibility in the scheduling of preventative maintenance and repair of EDGs. The licensee stated that it intends to use the proposed 14-day AOT to perform a planned major overhaul at a frequency of no more than once per EDG per operating cycle. Beyond that, the licensee will continue to minimize the time to complete any unplanned maintenance or repair activity. In addition, the licensee stated that the proposed change would also improve EDG availability and reliability during shutdown. The specifics of these changes are discussed in detail in the following sections.

3.1.1.1 Station Blackout

The NRC staff evaluated the licensee's request to extend the AOT to determine whether or not the decrease in severe accident risk that was achieved by implementing the SBO requirements in 10 CFR 50.63, "Loss of All Alternating Current Power," would be negated.

MP3 is able to withstand and recover from an SBO event of 8 hours. In an SBO event, the MP3 SBO DG serves as an AAC source. The licensee stated that the proposed change will not impact the SBO coping analysis at MP3. The assumptions used in the SBO analysis regarding reliability of the EDGs and the results of the SBO analysis will be unaffected by the proposed change since preventive maintenance and testing will continue to be performed to maintain the

assumptions regarding reliability. Also, the results of the SBO analysis will be unaffected by this change because the EDGs are not assumed to be available during the coping period. Therefore, MP3 will continue to meet the requirements of 10 CFR 50.63.

3.1.1.2 EDG Availability Due to On line Maintenance

The staff evaluated the proposed change to ensure that the overall availability of the EDGs will not be significantly reduced as a result of increased on line preventive maintenance activities, and that the 14-day AOT will also be consistent with the objectives and intent of the Maintenance Rule in 10 CFR 50.65. The licensee stated that the EDG reliability and availability are monitored in accordance with the Maintenance Rule. The Maintenance Rule unavailability performance criterion established by the licensee for the EDGs is 300 hours per 24-month rolling window. The current data on unavailability for EDG 'A' is approximately 126 hours or 42 percent of the performance criteria. The current data on unavailability for EDG 'B' is approximately 204 hours or 68 percent. This indicates that the overall availability of the EDGs due to maintenance is reasonably controlled when compared to the 300 hours.

The licensee reported that the recorded reliability data of the EDGs at MP3 indicates that EDG 'A' experienced zero start and zero load failures in the last 100 attempts and EDG 'B' experienced zero start failures and 1 load failure in the last 100 attempts. These data indicate that the EDGs at MP3 are reliable.

3.1.1.3 AAC Source

MP3 has an AAC source (SBO DG) available as a backup to the EDGs. The AAC source can be available within 1 hour of the onset of the SBO event and has sufficient capacity and capability to operate systems that are necessary to maintain the plant in a safe shutdown condition. Thus, in the event of a loss of offsite power (LOOP) and failure of the operable EDG during the extended AOT, power will be supplied from SBO DG. The licensee periodically tests the AAC source to ensure that the power supply is available upon demand.

3.1.1.4 Additional Operational Restrictions

The current TS requirements establish controls to ensure that in the event an EDG is inoperable, all MP3 redundant systems, subsystems, trains, components, and devices that depend on the remaining operable EDG as a source of emergency power are verified operable and that the steam-driven auxiliary feedwater pump (SDAFP) is operable. This provides assurance that a LOOP event will not result in a complete loss of safety function of critical systems during the period for which one of the EDGs is inoperable.

In addition, the licensee will take the following compensatory measures during the extended EDG AOT :

- 1) The charging pump and its cooling pump in operation shall be powered from the bus not associated with the out-of-service EDG. In addition, the spare charging pump will be available to replace an inservice charging pump, if necessary.

- 2) The extended EDG outage will not be scheduled when adverse weather or unstable grid conditions are predicted or present.
- 3) MP2 EDGs are operable, as required by MP2 TSs, during the extended EDG outage.
- 4) The availability of the MP3 SBO DG will be verified by test within the previous 30 days prior to allowing an MP3 EDG to be inoperable for greater than 72 hours.
- 5) While in the proposed extended EDG AOT, additional elective equipment maintenance or testing that requires the equipment to be removed from service will be evaluated, and activities that yield unacceptable results will be avoided.
- 6) All activities in the switchyard will be closely monitored and controlled. No elective maintenance will be scheduled within the switchyard if such maintenance could challenge the availability of offsite power.
- 7) A contingency plan will be in place to provide alternate room cooling to the charging and reactor plant component cooling water pumps, which are housed in same area (24' 6" Auxiliary Building), prior to commencing an extended EDG outage.

On the basis of the factors previously discussed, the staff finds that the proposed increase in the EDG AOT from 3 days to 14 days is acceptable.

Additionally, the licensee has proposed to reformat and modify this AR. This AR also requires that if one EDG is inoperable, the licensee must demonstrate the operability of the AC sources by performing SR 4.8.1.1.1 within 1 hour and at least once per 8 hours thereafter. The licensee has proposed to change the wording from "A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for the offsite circuits." Since the wording does not change any technical aspect of the action statement, the staff finds the proposed change to be acceptable.

The licensee also proposed to modify the requirement to test the offsite circuits by performing SR 4.8.1.1.1.a within one 1 hour to allow performance before or after entering this condition. The phrase "prior to or after entering this condition" will be added to the within 1 hour time requirement. This will allow plant operators to verify operability of the remaining offsite circuits before removing an EDG for maintenance, thereby reducing the potential to establish an adverse plant configuration. The staff finds the proposed change to be conservative and acceptable.

The requirement to test the remaining operable EDG is rewritten. Testing will not be required, provided that a common-cause failure is not the reason for declaring the EDG inoperable. This is consistent with the intent of the current TS footnote (*). This footnote, which defines items that would not constitute a common-cause failure, is being proposed to be relocated to the Bases for this specification. The staff finds that the proposed change will reduce unnecessary EDG starts and, therefore, is acceptable. Since no technical changes are made to the footnote, the relocation of the footnote from the TS to the Bases is acceptable.

The time to determine whether a common-cause failure exists on the other EDG will remain at 24 hours. This is the current time requirement to demonstrate the operability of the other EDG, and is also consistent with the time that NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," allows to demonstrate that the problem is not a common cause failure.

The licensee also proposed to add two new ARs (b.3 and b.4). AR b.3 will verify that SDAFP is operable when one EDG is inoperable. This is the same requirement currently specified in AR d. This requirement will ensure that sufficient auxiliary feedwater capability would be available if a LOOP was to occur. AR b.4 will address the additional requirement for the MP2 EDGs to be operable and the SBO DG to be available in order for the licensee to use the proposed 14-day AOT for one inoperable EDG. In addition, this requirement will impose a 72-hour limit for the time that MP3 can remain in operation with one EDG inoperable if the required MP2 EDGs becomes inoperable or the SBO DG becomes unavailable. AR b.5 will retain the current 72 hour AOT and subsequent actions if the EDG is not restored to operable status. In addition, a 14-day AOT will be permitted if the additional power source requirements specified in AR b.4 are met. The staff finds these proposed changes to be conservative and consistent with GDC 17 requirements and thus are acceptable.

3.1.2 Additional TS Changes

3.1.2.1 LCO 3.8.1.1, Action a. - One Offsite Circuit Inoperable

The licensee has proposed to reformat and modify this AR. This AR currently requires that if one offsite circuit is inoperable, the licensee must perform SR 4.8.1.1.1 for the remaining offsite circuit within 1 hour and at least once per 8 hours thereafter. The licensee proposed to change the wording from "remaining AC source by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit." Since the wording does not change any technical aspect of the action statement, the staff finds the proposed change to be acceptable.

The licensee also proposed to add the phrase "prior to or after entering this condition" to the within 1-hour time requirement. The licensee stated that this will allow plant operators to verify the operability of the remaining offsite circuit before removing the other offsite circuit for maintenance, thereby reducing the potential to establish an adverse plant configuration. The staff finds this proposed change to be conservative and, therefore, acceptable.

3.1.2.2 LCO 3.8.1.1, Action c. - One Offsite Circuit and One EDG Inoperable

The licensee has proposed to reformat and modify this AR. This AR currently requires, in part, that if one offsite circuit and one EDG are inoperable, the licensee must perform SR 4.8.1.1.1.a for the remaining offsite circuit within 1 hour and at least once per 8 hours thereafter, and demonstrate that the operable EDG does not become inoperable as a result of a common-cause failure within 8 hours, or must perform SR 4.8.1.1.2.a.2 for the operable EDG within 8 hours. The licensee proposed to change the wording from "remaining offsite A.C. source by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit." Since the wording does not change any technical aspect of the action statement, the proposed change is acceptable.

The requirement to test the remaining operable EDG is also rewritten. Testing will not be required, provided that a common-cause failure is not the reason for declaring the EDG inoperable. This is consistent with the intent of the current TS footnote (*). This footnote, which defines items that would not constitute a common-cause failure, is being proposed to be relocated to the Bases for this specification. The staff finds that the proposed change will reduce unnecessary EDG starts and, therefore, is acceptable. Since no technical changes are made to the footnote, the relocation of the footnote from the TS to the Bases is acceptable.

The time to determine whether a common-cause failure exists on the other EDG will remain at 8 hours. This is the current time requirement to demonstrate the operability of the other EDG, and is also consistent with the time that NUREG-1431 allows to rule out common cause failure. The current requirement specified in AR d. will be retained as a new AR c.3 in this revised SR. The staff finds this proposed change to be conservative and acceptable.

AR c.4 will retain the current 12-hour AOT and subsequent actions if one of the inoperable AC sources is not restored to operable status. No change to the requirement is proposed.

Action Requirement c.5 will retain the current requirement to restore the remaining inoperable AC source to operable status. No change to the requirement is proposed.

The licensee proposed to delete the statement contained in AR b. that a successful test of the EDG, per SR 4.8.1.1.2.a.5 for this action requirement, will satisfy the required test of AR b.. The licensee stated that this statement is not necessary since testing of the other EDG would be required only if a common-cause failure evaluation was not completed within the required time. If a common-cause failure did exist, both EDGs would be declared inoperable and the proposed AR e. (currently AR f.) would apply. The staff concludes that since the common cause failure is retained in the proposed AR, it is not necessary to retain the successful EDG test statement contained in current ARs c. and f., therefore, the proposed change is acceptable.

3.1.2.3 LCO 3.8.1.1, Action d.- Required Additional Action When One EDG Is Inoperable.

This AR currently requires that with one EDG inoperable, in addition to performing ARs b. or c. the licensee must verify that the following requirements are met:

- 1) All required systems, subsystems, trains, components, and devices that depend on the remaining operable EDG as a source of emergency power are also operable, and
- 2) When in Mode 1, 2, or 3, the SDAFP is operable.

The licensee has proposed to relocate the requirements of this AR to the proposed ARs b.3 and c.3, as discussed in Sections 3.1.1.4 and 3.1.2.2 of this safety evaluation. Since the current requirements of this SR are not changed, the proposed change is acceptable.

3.1.2.4 LCO 3.8.1.1, Action e.- Two Offsite Circuits Inoperable

This AR applies when two of the required offsite AC circuits are inoperable. The licensee proposed to reformat this AR and renumber it as AR d. Since no changes to the current requirements have been made, the proposed change is acceptable.

3.1.2.5 LCO 3.8.1.1, Action f. - Two EDGs Inoperable

This AR is renumbered as AR e. This AR applies when two of the required EDGs are inoperable. The licensee proposed to reformat this AR and to delete the statement that a successful test of the EDG per SR 4.8.1.1.2.a.5 for this action requirement will satisfy the required test of AR b. For the reasons stated in Section 3.1.2.2 of this SE, the staff finds the proposed change to be acceptable.

3.2 Pressurizer Heaters

The current TSs 3.4.3.1 and 3.4.3.2 use the phrase “Pressurizer heater supplied by emergency power” in the LCO, Action, and SR sections of these TSs. The licensee’s proposed changes will eliminate the phrase “supplied by emergency power” from these TSs. The staff has reviewed the electrical system design at MP3 and finds that the two groups of required pressurizer heaters are permanently connected to separated safety-related Class 1E power supplies under all conditions. Final Safety Analysis Report (FSAR) Section 8.3 documents the electrical system design. The proposed changes to the TSs will not result in a change to the actual design of the plant. Because the pressurizer heaters are permanently installed on Class 1E safety buses, the electrical system design will continue to satisfy requirements of TMI Action Plan Item II.E.3.1. Additionally, the changed TSs are consistent with the format of the Standard TSs for Westinghouse plants, NUREG-1431, with pressurizer heaters that are permanently installed on Class 1E safety related buses.

The staff requested that the licensee modify the TS Bases associated with TSs 3.4.3.1 and 3.4.3.2 to include the TMI Action Plan requirements applicable to the pressurizer heater power supplies. In response to the staff request, the licensee revised TS Bases 3/4.4.3 to include a description of the design for the pressurizer heater power supplies at MP3 that satisfies the requirements of TMI Action Plan Item II.E.3.1.

Based on the above, the staff concluded that the licensee proposed changes to TSs 3.4.3.1 and 3.4.3.2 are acceptable.

3.3 PORVs

The staff discussed the safety-related function of the PORVs and their associated block valves in the preceding Section 3.2. To demonstrate the operability of these safety-related valves, the current TS SR 4.4.4.1.b requires that each PORV operate through one complete cycle of full travel during Modes 3 or 4 at least once per 24 months and the current TS SR 4.4.4.2 requires that each block valve operate through one complete cycle of full travel at least once per 92 days unless the block valve is closed with power removed in order to meet the Action statement of TS 3.4.4.

In addition, the current TS SR 4.4.4.3 requires a demonstration that the emergency power supply for the PORVs and block valves shall be operable at least once per 24 months by operating the valves through a complete cycle of full travel. The purpose of this SR is to have the licensee demonstrate that emergency power can be provided and is demonstrated by transferring power from normal power source to emergency power supplies and cycling the valves.

The staff has reviewed the electrical system design at MP3 and finds that the PORVs and their associated block valves are permanently connected to separated safety-related Class 1E power supplies under all conditions. FSAR Section 8.3 documents the electrical system design. This design satisfies the requirements of TMI Action Plan Item II.G.1 of NUREG-0737, "Emergency Power for Pressurizer Equipment" that requires that the motor and control components of the PORVs and their associated block valves be capable of being supplied from either the offsite power source or the emergency power source when the offsite power is not available. The current configuration negates the need to demonstrate the availability of the safety-related power supply because the PORVs are always connected to safety-related power supplies.

The staff concluded that the proposed change is acceptable because the PORVs and block valves are permanently connected to the emergency power supplies at MP3 and, therefore, the purpose of the SR 4.4.4.3 is not applicable to MP3. The deletion of SR 4.4.4.3 is acceptable.

3.4 Probabilistic Evaluation - Emergency Diesel Generator Allowed Outage Time Extension

3.4.1 Minimum Incremental Risk Estimates (Tier 1)

Average risk estimates were made using the most recently updated version (June 2000) of the MP3 PRA. The MP3 PRA model has been reviewed as part of the Westinghouse Owners Group (WOG) Peer Review Process (September 1999). The objective of the PRA Peer Review process is to provide a method for establishing the technical quality and adequacy of a PRA for a spectrum of potential risk-informed plant applications for which the PRA may be used. The review was performed by a group of qualified peers who are aware of the attributes of a quality PRA, and who are also aware of techniques and assumptions used in other PRAs to identify PRA strengths and areas for improvement.

3.4.1.1 Resolution of Findings from Peer Review of PRA

The results of the peer review were evaluated by the licensee and a corrective action plan was developed to address the findings. Since the corrective action plan has not yet been implemented, the licensee reviewed each finding to determine if any are specifically applicable to the proposed EDG AOT extension and concluded that the current PRA is capable of supporting this amendment application. The licensee provided the staff with their evaluation and disposition of the recommendations in a letter dated July 1, 2002. The staff's evaluation of the licensee's disposition of the recommendations is discussed below.

The actions recommended by the peer review group fell into the following technical areas: accident sequence evaluation, human reliability analysis, dependency analysis, structural response, quantification, containment performance assessment, maintenance, and update process. For each recommendation, the licensee performed a technical review and evaluation

to determine whether action was necessary to ensure that the PRA supporting the proposed AOT extension was adequate. The reviews focused on those parts of the PRA important to the analysis of the EDG AOT extension, e.g., loss of offsite power (LOOP) and station blackout (SBO) accident sequences. In several cases the licensee concluded that actions in response to the recommendations were appropriate to ensure that the analysis supporting the amendment request was adequate and implemented those actions. This included sensitivity studies on the modeling of RCP seal failures that affect SBO sequences. These studies led to an interim conservative treatment of the contribution to core damage frequency from RCP seal failure, and implementation of a number of compensatory measures to reduce the likelihood of a LOOP event during the EDG outage and the availability of back-up safety equipment during the outage. In several other cases, the licensee's reviews confirmed that processes for risk-assessment (e.g., quality assurance review of quantification), in-place for the amendment request, were adequate. In the remaining cases, the licensee determined that the specific actions recommended by the peer review group would not impact the analysis supporting the amendment.

The staff concludes that the licensee's evaluation of the peer review recommendations with respect to the analysis supporting the amendment request was comprehensive and that the actions taken to ensure that the analysis supporting the amendment is adequate are acceptable.

3.4.1.2 Treatment of External Events

The licensee provided no estimates of the contribution of internal flooding or fire events on the change in risk associated with the proposed AOT extension, essentially taking the position that the impact of the probability of a fire or flood on initiation or mitigation of a LOOP is negligible. The basis for this position is that the MP3 equipment layout is such that there are no spatial dependency issues which make the unit susceptible to internal flood and/or fire hazards. Indeed, the switchyard, transformer yards (two yards, one per offsite transformer), two service water trains, SBO DG, train related switchgear rooms, and EDGs are all physically separated and located in separate fire/flood zones. Due to the plant's physical characteristics, there is no single fire/flood event that could either:

- initiate a loss of offsite power and cause failure of one of the two remaining available diesel generators (EDG or SBO DG), or
- result in failure of both remaining available diesel generators (EDG and SBO DG).

Consequently, in order for internal flood or fire events to lead to core damage, several random events must also occur simultaneously. Similarly, no estimate was made of the seismic contribution, essentially based on the argument that the probability of a design-basis earthquake at MP3 (0.17g) is low and, although it is reasonable to assume the offsite power grid (capacity 0.2g) and the SBO DG (non-seismically qualified) would not be available, the operable EDG (with a high confidence, low frequency failure level of 0.38g) should be available. The staff considers the licensee's rationale to be acceptable because it is supported by reasonable qualitative and semi-quantitative technical assessments.

3.4.1.3 Compensatory Measures to Ensure a Small Increase in Risk

With the current version of the MP3 PRA, the licensee has estimated the minimum risk of operation during the LCO for which an EDG is out of service (OOS) for the proposed AOT. Initial estimates showed that the NRC risk level guidelines would not be met and that compensatory measures would have to be introduced to reduce risks. Specifically, although the ICLERP was estimated to be only 6.6E-09, the ICCDP was found to be 9.8E-07. Due to the component cooling water (CCW) system configuration at MP3, a significant contributor to the risk associated with the AOT extension was the potential for an RCP seal failure resulting in a LOCA. This configuration requires that both CCW trains operate to ensure RCP seal cooling (i.e., each train provides thermal barrier cooling to two RCPs) via two CCW pumps; a redundant means of cooling all four RCPs is by seal injection via an operating charging pump. A LOOP event during an EDG outage would make RCP cooling dependent on the unaffected charging pump, and failure of the unaffected charging pump would cause loss of all seal cooling for the two affected RCPs and, in 30 to 60 minutes (depending on the model used), a seal-induced LOCA. In order to reduce risks during extended EDG outages, the licensee will mechanically and electrically align a spare charging pump to allow rapid (within about 30 minutes) replacement of the charging pump associated with the unaffected EDG should that charging pump fail. Taking into account the spare charging pump, the CDF for EDG B OOS (which, due to load asymmetries yields a larger CDF value) is estimated to be 4.6E-5 per year. The estimated internal events ICCDP and ICLERP for EDG B are 3.9E-07 and 6.6E-09, respectively. Under these circumstances, i.e., no other equipment OOS at the time, the estimated ICCDP and ICLERP are within what the staff considers small.

3.4.1.4 Conclusion of Tier 1 Assessment

According to RG 1.177, a Tier 1 assessment is acceptable to the staff if (1) the PRA used is adequate for this application, (2) PRA insights from analysis of various applicable initiating events is adequate, and (3) an internal events estimate of minimum incremental risk probabilities (ICCDP and ICLERP) are within the level of risk the staff considers small for a single TS LCO AOT change. The licensee's assessment is acceptable to the staff because it is considered to be consistent with the staff's Tier 1 guidance.

3.4.2 Avoidance of Risk Significant Plant Configurations (Tier 2)

It is intended that Tier 2 of the three-tiered approach will identify potentially high-risk configurations that could exist if equipment in addition to that associated with the proposed change were taken OOS simultaneously, or other risk-significant operational factors such as concurrent system or equipment testing were also to take place, and ensure that appropriate restrictions on dominant risk-significant configurations associated with the change are in place. In this regard, the licensee has established additional requirements designed to eliminate potential high risk configurations. Accordingly, to minimize plant risk the licensee will implement the following administrative requirements as compensatory measures when an EDG is removed from service for an extended outage (i.e., for maintenance expected to take longer than 72 hours):

- 1) The charging pump and charging pump cooling pump in operation are to be powered from the bus not associated with the OOS EDG, and the spare charging pump will be available to replace an in-service charging pump if necessary.
- 2) The extended EDG outage will not be scheduled when adverse or inclement weather conditions and/or unstable grid conditions are predicted or present.
- 1) MP2 EDGs are operable, as required by MP2 Technical Specifications, during the extended EDG outage.
- 2) The availability of the MP3 SBO DG will be verified by test performance within the previous 30 days prior to allowing an MP3 EDG to be inoperable for greater than 72 hours.
- 3) While in the proposed extended EDG AOT, additional elective equipment maintenance or testing that requires the equipment to be removed from service will be evaluated and activities that yield unacceptable results will be avoided.
- 4) All activity in the switchyard will be closely monitored and controlled and no elective maintenance within the switchyard that could challenge offsite power availability will be scheduled.
- 5) A contingency plan will be in place to provide alternate room cooling to the charging and CCW pumps, which are housed in the same area prior to commencing an extended EDG outage.

In a letter dated July 1, 2002, the licensee stated that complying with these administrative requirements in conjunction with their Configuration Risk Management Program (CRMP) and other technical specification controls already in place is necessary to ensure that the level of plant risk with an EDG OOS for longer than 3 days, but no longer than 14 days is acceptable. The licensee described the additional TS controls for 23 risk significant equipment configurations. These controls are acceptable to the staff because they are enforced through the TSs. The licensee also stated that the administrative requirements listed above will be applicable when utilizing the 14-day LCO. However, when the EDG LCO is entered for immediate corrective maintenance, the plant operators will initially utilize the current 72-hour EDG AOT, during which the additional administrative requirements will not be applicable. This approach to addressing Tier 2 is acceptable to the staff because it conforms with guidance provided in RG 1.177.

3.4.3 CRMP (Tier 3)

Consistent with the last paragraph of the Maintenance Rule (10 CFR 50.65 (a)(4)), the licensee developed a program that ensures that the risk impact of OOS equipment is appropriately evaluated prior to performing a maintenance activity. The licensee's procedure that governs this process is "Conduct of On-line Maintenance," MP-20-WM-FAP02, Rev 004-02. This procedure ensures that the risk from planned maintenance is evaluated and that maintenance activities are scheduled appropriately. The CRMP requires an integrated review (i.e., both probabilistic and deterministic) to identify risk-significant plant equipment outage configurations.

This review is required both during the work management process and for emergent conditions during normal plant operation. Appropriate consideration is given to equipment unavailability, operational activities such as testing or load dispatching, and weather conditions. The licensee's program includes provisions for performing a configuration-dependent assessment of the overall impact on plant risk of proposed plant configurations prior to, and during, the performance of maintenance activities that remove equipment from service. Risk is reassessed if an equipment failure/malfunction or emergent condition produces a plant configuration that has not been previously assessed.

For planned maintenance activities, the licensee performs a risk assessment of the proposed activities on plant safety prior to releasing the scheduled work. This assessment includes the following considerations:

- 1) Maintenance activities that affect redundant and diverse structures, systems, and components (SSCs) that provide backup for the same safety function are minimized.
- 2) Work is not scheduled that is likely to exceed a TS or Technical Requirements Manual requirement (i.e., a licensee-controlled document containing requirements removed from the TS as part of a conversion to the Improved Standard TS) completion time requiring a plant shutdown.
- 3) For Maintenance Rule Program risk-significant SSCs, the impact of the planned activity on the unavailability performance criteria is evaluated.
- 4) A quantitative risk assessment is performed to ensure that the activity does not pose an unacceptable risk. This evaluation is performed using the Level 1 PRA model.

Emergent work is reviewed by Operations Shift Management to ensure that the work does not invalidate the assumptions made during the work management process. Prior to starting any work, the work scope and schedule are critically reviewed to ensure that nuclear safety and plant operations are consistent with the management expectations. Individual work activities that potentially have an impact on plant risk are evaluated by the use of system impact matrices, work document job details, plant drawings, or additional means to effectively determine the overall impact on plant risk levels.

The CRMP previously described provides an adequate procedure-based risk-informed assessment process to manage the risk associated with inoperable equipment. The program applies to the TS structures, systems, and components for which the risk-informed AOT has been requested and, therefore provides an acceptable means of providing the Tier 3 assessment.

3.5 Summary

3.5.1 Emergency Diesel Generator

The staff evaluated the proposed changes to increase the AOT for one inoperable EDG from the current 72 hours to 14 days and determined that the changes were acceptable. The staff's conclusion is based on the following considerations:

- 1) The extended AOT will typically be used to perform infrequent (i.e., once every 18 months) diesel manufacturer's recommended inspections and preventive maintenance activities.
- 2) The extended AOT would reduce entries into the LCO and reduce the number of EDG starts for major EDG maintenance activities.
- 3) The AAC source is capable of powering an MP3 safety bus in the event of an SBO.
- 4) The licensee will implement its CRMP during the extended outage.
- 5) The licensee will limit the time for which the SDAFP can be inoperable.
- 6) The licensee will implement other restrictions and compensatory measures during the extended AOT to ensure the availability of the remaining sources of power and minimize the occurrence of an SBO.

The staff also evaluated the other changes to the TSs and determined that the changes remain in compliance with the requirements of GDCs 17 and 18 and, therefore, acceptable.

3.5.2 Pressurizer Heaters and PORVs

The staff determined that the licensee's proposed changes to TSs 3.4.3.1 and 3.4.3.2 to remove the phrase "supplied by emergency power" from their LCOs, Actions, and SRs, and the proposed change of TS 3.4.4 to remove SR 4.4.4.3 are acceptable for the reasons discussed in Sections 3.2 and 3.3.

3.5.3 Probabilistic Evaluation

As set forth above, consistent with NRC guidance in RG 1.177, the licensee has provided: (1) minimum incremental risk estimates of ICCDP and ICLERP (i.e., for the case where no other risk significant equipment is OOS) that meet NRC staff guidance for a small change in risk, (2) information on how it intends to minimize the potential for high risk configurations, and (3) a description of the MP3 maintenance management procedure that meets the essential characteristics for a CRMP as discussed in RG 1.177. A CRMP (or equivalent procedure) with the characteristics specified in RG 1.177 provides reasonable assurance that the licensee can acceptably control maintenance, both planned and unplanned. Therefore, the licensee's proposed amendment is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 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 (67 FR 2920). 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.

6.0 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.

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