

December 21, 2000

Mr. R. G. Lizotte
Master Process Owner - Assessment
c/o Mr. David A. Smith
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385-0128

SUBJECT: MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2 - ISSUANCE OF
AMENDMENT RE: ONE-TIME ALLOWED OUTAGE TIME EXTENSION
(TAC NO. MA9854)

Dear Mr. Lizotte:

The Commission has issued the enclosed Amendment No. 251 to Facility Operating License No. DPR-65 for the Millstone Nuclear Power Station, Unit No. 2 (MP2) in response to your application dated August 25, 2000, as supplemented on November 20, 2000.

This amendment modifies Technical Specification (TS) 3.8.1.1, "Electrical Power System - A.C. Sources - Operating," by extending the allowed outage time (AOT) for Action a.2 of TS 3.8.1.1 from 72 hours to 14 days, provided the Millstone Unit No. 3 (MP3) station blackout diesel generator is available to supply MP2 power, otherwise the AOT is only allowed to be extended for 7 days. This one-time change is approved to support the replacement of the MP2 4160-volt electrical cross-tie line from Millstone Unit No. 1 (MP1) with a cross-tie from MP3. The modification is being made due to the decommissioning of MP1.

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/

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

Docket No. 50-336

Enclosures: 1. Amendment No. 251 to DPR-65
2. Safety Evaluation

cc w/encl: See next page

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**SE input provided 12/08/00, no major changes made.

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Unit 2

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NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

DOCKET NO. 50-336

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 251
License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northeast Nuclear Energy Company, et al. (the licensee) dated August 25, 2000, as supplemented November 20, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 251, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Change to the Technical
Specifications

Date of Issuance: December 21, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 251

FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

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

Remove

3/4 8-1

Insert

3/4 8-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 251

TO FACILITY OPERATING LICENSE NO. DPR-65

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated August 25, 2000, as supplemented on November 20, 2000, the Northeast Nuclear Energy Company, et al. (NNECO/licensee), submitted an amendment request for Millstone Nuclear Power Station, Unit 2 (MP2) to modify Technical Specification (TS) 3.8.1.1, "Electrical Power System - A.C. Sources - Operating." The licensee requested an extension of the allowed outage time (AOT) for Action a.2 of TS 3.8.1.1 from 72 hours to 14 days, provided the Millstone Unit 3 (MP3) station blackout diesel generator (SBO DG) is available to supply MP2 power; otherwise, the AOT is only allowed to be extended for 7 days. This one-time change was requested to support the replacement of the MP2 4160-volt electrical cross-tie line from Millstone Unit 1 (MP1) with a cross-tie from MP3. The November 20, 2000, letter provided clarifying information that was within the scope of the original application and did not change the staff's proposed no significant hazards consideration determination.

2.0 BACKGROUND

Limiting Condition for Operation (LCO) 3.8.1.1.a of the MP2 TS requires, "two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system" to be operable. The two physically independent circuits from the switchyard to the onsite electrical distribution system are:

- a. MP2 station safeguard buses 24C and 24D via the MP2 reserve station service transformer (RSST); and
- b. MP2 station bus 24E via the MP1 RSST or the MP1 normal station service transformer (NSST) and bus 14H.

The licensee is planning to replace the MP2 4160-volt cross-tie from MP1 with a crosstie from MP3. This modification is being made due to the decommissioning of MP1. When the MP2 4160-volt cross-tie from MP1 is removed from service, MP2 must comply with Action a. of TS 3.8.1.1. Action a. of TS 3.8.1.1 requires the inoperable offsite circuit to be restored to an

operable status within 72 hours or the plant be placed in Hot Standby within the next 6 hours and Cold Shutdown within the following 30 hours.

The licensee anticipates that approximately 6 days will be required to restore compliance with LCO 3.8.1.1.a (i.e., install, test, and place in service the MP2 4160-volt cross-tie from MP3). The time period is greater than the 72 hours currently permitted by Action a.2 of TS 3.8.1.1 to restore an inoperable offsite source prior to entering a shutdown requirement. Therefore, by letter dated August 25, 2000, the licensee proposed a one-time extension to the AOT for Action a.2 of TS 3.8.1.1.

3.0 EVALUATION

The MP2 onsite electric power system consists of the NSST, which is powered by the main generator and provides normal power to two onsite 4160-volt non-emergency buses, 24A and 24B. Non-emergency buses 24A and 24B supply power to 4160-volt emergency buses 24C and 24D. In the event of a unit trip and loss of power from NSST, the emergency buses (24C and 24D) would transfer to the RSST via a fast transfer scheme. The RSST is the preferred offsite power source. If the MP2 NSST and RSST are not available, MP1 can supply power to MP2 via bus 14H to 24E. This circuit is the alternate (delayed) offsite power source. The 24E bus also serves as a transferable power source for spare units of emergency equipment (i.e., service water pump, reactor building closed cooling water pump, and high pressure safety injection pump). The 24 E bus is connected to either the 24C or 24D bus. In addition, on a complete loss of offsite power, the two emergency buses (24C and 24D) are designed to connect automatically to their respective emergency diesel generators.

The MP2 4160-volt cross-tie from MP1 is an important aspect of the current MP2 licensing and design basis. The cross-tie is one of the sources of offsite power utilized to comply with Title 10 of The *Code of Federal Regulations* (10 CFR), Appendix A, General Design Criterion (GDC) 17, "Electric Power Systems" and TS 3.8.1.1. It also permits the MP1 diesel generator to supply power to MP2 in the event of an SBO or 10 CFR 50, Appendix R fire. The existing MP2 4160-volt cross-tie is provided by a tie from MP1 bus 14H to the MP2 swing bus 24E. This crosstie will be replaced by a tie that can be aligned from MP3 bus 34A or 34B to the MP2 swing bus 24E. GDC 17 describes the requirements related to onsite and offsite power systems. The offsite power system must be available via two separate and electrically independent connections to the onsite electrical distribution system. One offsite circuit must be immediately available to mitigate the effects of design basis accident conditions.

The licensee has provided the following list of Regulatory Commitments:

1. Appropriately consider the 7 day and 14 day weather forecasts prior to removing the MP2 4160-volt cross-tie with MP1 from service to minimize the potential for loss of offsite power due to severe weather or salt spray.
2. Protect the equipment redundant to the systems removed from service or whose power supply is affected by this modification. This includes limiting work on the 345 kilo-volt (kV) lines, the switchyard, the RSST, the diesel generators (DGs), the service water system, the high pressure safety injection system, and the reactor building closed cooling water system. This restriction will ensure that MP2 will remain capable of

mitigating any potential design basis accident during the implementation of the modification.

3. Within 7 days of entering Action a. of TS 3.8.1.1, establish the capability to supply MP2 with power from the MP3 SBO DG via operator actions within one hour of an event resulting in a loss of the remaining offsite source of power. The licensee plans to use the MP3 SBO DG as a contingency measure in case of a loss of offsite power source at MP2. The MP3 SBO DG has a continuous rating of 2825 KVA (2260 kilo-watts electric (kWe) @ 0.8 pf) and a 7-day rating of 3217 kVA(2574 kWe @ 0.8 pf). The worst case post-accident loading on either MP2 DG is 2821 KVA (2370 kW @ 0.84 pf.) Thus, the MP3 SBO DG has the capacity and capability to provide a source of temporary power to MP2. The MP3 SBO DG will be verified to be available as a temporary power source by energizing MP2 bus 24E from the MP3 SBO DG and ensuring proper phase rotation with the MP2 electrical distribution system by starting a motor on this bus. These two tests are sufficient to show that the MP3 SBO DG is available to serve as a temporary DG as a compensatory measure.

The staff has determined that the second offsite power circuit required by GDC 17 is provided by the MP3 SBO DG and has the capacity and capability to provide the worst case post-accident loading on MP2. Our determination regarding the suitability of the MP3 SBO DG as the alternate (delayed) power source for MP2 is based on the following:

1. The likelihood of an SBO occurring at MP2 during the proposed 14 days AOT is low. The licensee has committed to consider weather related events effecting the offsite power prior to removing the MP2 4160-volt cross-tie with MP1.
2. A total loss of offsite power can occur for both MP2 and MP3 simultaneously, but the design basis for an SBO event at a multi-unit site with normally dedicated emergency alternating current (AC) power source (emergency diesel generators), assumes an SBO occurs at only one unit. The staff therefore assumes an SBO in MP2, allowing the MP3 SBO DG to provide power to cope with an SBO in MP2. Similarly, if we assume an SBO in MP3, then its own SBO DG is available to cope with this postulated event. In this latter scenario, the staff assumed that the MP2 emergency diesel generators (EDGs) will be available to mitigate the consequences of the loss of total offsite power at MP2 if the MP3 SBO DG is not available to MP2 because of an SBO in MP3.

In addition, the licensee has made regulatory commitments to monitor the weather conditions, limit work in the switchyard, and to assure that redundant equipment is available during this modification. The staff considers these commitments to provide additional safety margin in the unlikely event of a design basis accident that might occur during the implementation of the modification.

The staff considers the licensee's administrative processes, including its regulatory commitment management program provides reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments.

The staff has evaluated the licensee's submittal and concludes that the proposed change to extend the AOT for Action a.2 of TS 3.8.1.1 from 72 hours to 14 days provided the MP3 SBO DG is available to supply MP2; or the AOT would only be extended to 7 days, is acceptable

because the second offsite power circuit required by GDC 17 is provided by the MP3 SBO DG. In addition, the MP3 SBO DG has the capacity and capability to provide the worst case post-accident electrical loading on MP2. Further, the licensee has also provided a list of Regulatory Commitments that will be applicable during the proposed replacement of the MP2 4160-volt cross-tie from MP1 with a crosstie from MP3.

4.0 RISK ASSESSMENT

The MP2 request for a one-time AOT extension was not a risk-informed submittal; however, the staff reviewed the submittal using a three-tiered approach based on RG 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications” and Standard Review Plan (SRP) Chapter 16.1, “Risk-Informed Decisionmaking: Technical Specifications.” The first tier evaluates the MP2 probabilistic risk assessment (PRA) and the impact of the change on plant operational risk as expressed by the change in core damage frequency (CDF). Since this is a one-time AOT extension, the impact on plant risk will only occur during the year in which the cross-tie modification occurs and subsequent years may actually show a reduction in plant risk due to this modification. The change in risk is compared against the acceptance guidelines, consistent with the Commission’s Safety Goal Policy Statement, as documented in RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis.” The first tier also aims to ensure that plant risk does not increase unacceptably during the period when equipment is taken out of service as part of the modification as expressed by the incremental conditional core damage probability (ICCDP)¹ as defined by RG 1.177 and the incremental core damage probability (ICDP or Δ CDP)² as defined by RG 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants” and Revision 2 of NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants.” The second tier addresses the need to preclude potentially high-risk plant configurations that could result if equipment in addition to that associated with the modification work activities are taken out of service simultaneously, or if other risk-significant operational factors such as concurrent system or equipment testing are also involved. The objective of this part of the review is to ensure that appropriate restrictions on dominant risk-significant plant configurations associated with the AOT extension are in place. The third tier addresses the licensee’s overall configuration risk management program (CRMP) to ensure that adequate programs and procedures are in place

$${}^1\text{ICCDP} = \{ \text{CDF}_{\text{OOS}=1} - \text{CDF}_{\text{AVG}} \} \times \{ \text{Outage Duration} \}$$

where,

$\text{CDF}_{\text{OOS}=1}$ is the calculated conditional CDF with the unavailability of the subject equipment set to 1.0 (i.e., the equipment is taken out of service)

CDF_{AVG} is the calculated CDF with nominal expected equipment unavailabilities

$${}^2\Delta\text{CDP} = \{ \text{CDF}_{\text{OOS}=1} - \text{CDF}_{\text{BL}} \} \times \{ \text{Outage Duration} \}$$

where,

$\text{CDF}_{\text{OOS}=1}$ is the calculated conditional CDF with the unavailability of the subject equipment set to 1.0 (i.e., the equipment is taken out of service)

CDF_{BL} is the calculated CDF with all equipment in service (i.e., all maintenance unavailabilities are set to zero)

for identifying risk-significant plant configurations resulting from maintenance or other operational activities and taking appropriate compensatory measures to avoid such configurations. The CRMP is to ensure that equipment removed from service prior to or during the proposed extended AOT period will be appropriately assessed from a risk perspective.

Each tier and the associated findings are discussed below.

4.1 Tier 1: PRA Evaluation of AOT Extension

The first tier evaluates the impact of the proposed AOT extension on plant operational risk based on the MP2 PRA model. The tier 1 staff review involves two aspects: (1) evaluation of the validity of the PRA and its application to the proposed AOT extension; and (2) evaluation of the PRA results and insights stemming from its application.

4.1.1 Evaluation of the Validity of the PRA and its Application

To determine whether the PRA used in support of the proposed one-time AOT extension is of sufficient quality, scope, and detail, the staff evaluated the relevant information provided by the licensee in their submittal, as supplemented, and considered the findings of the reviews of the original MP2 individual plant examination (IPE). The staff's review of the licensee's submittal focused on the capability of the licensee's PRA model to analyze the risks stemming from the proposed AOT extension and did not involve an in-depth review of the licensee's PRA.

The proposed AOT extension is based on the licensee's latest PRA models, which have been modified since the MP2 IPE submittal of December 1993 in response to Generic Letter 88-20. The MP2 IPE CDF was estimated to be approximately $3.4E-5$ /year for internal initiating events, including internal floods. The staff's evaluation of the IPE, as documented in February 1996, indicated that the licensee's PRA met the intent of Generic Letter 88-20. The IPE appeared to be complete in terms of examining significant initiating events and dominant accident sequences and no significant shortcomings were identified. However, a couple of weaknesses were identified that relate to this submittal, including: the loss of normal ac power (LNP) analyses did not address events that lasted less than 30 minutes and some human error probabilities (HEPs) used very low screening values. In addition, the cross-tie between MP1 and MP2 was identified as a key plant feature that impacted the results by essentially making the SBO event unimportant. Without this cross-tie, it is stated that the contribution from SBO would have increased by a factor of seven and contributed almost 10% to the total plant CDF. Finally, for an SBO event, the plant was determined to have a coping time of 13 hours if the turbine-driven auxiliary feedwater pump was initiated and providing flow within 45 minutes; otherwise the coping time was 54 minutes before core damage would commence. This coping time has a direct impact on the time available for, and thus probability of, recovering offsite power prior to the onset of core damage.

Since the IPE, the MP2 PRA has been revised in accordance with the "living model" philosophy. Table 1 presents the contribution to CDF in the current MP2 PRA from 18 initiating events. From the table it can be seen that the most important contributions to CDF from major initiating events arise from small loss of coolant accident (SLOCA), SBO, and loss of "A" or "B" train of dc power (LDCAB). Smaller contributions are due to LNP, anticipated transient without scram (ATWS), and small-small loss of coolant accident (SSLOCA). Approximately 23% of the total

CDF is associated with sequences involving SBO, which is an important consideration for the proposed AOT extension.

Table 1 - Contributions to Core Damage Frequency by Initiating Event

Initiating Event	CDF Contribution	%CDF Contribution
Anticipated Transient Without Scram (ATWS)	5.352e-06	6.40%
General Plant Transient (GPT)	2.573e-08	0.03%
Interfacing System Loss of Coolant Accident (ISLOCA)	9.776e-08	0.12%
Small-Small LOCA (SSLOCA)	4.826e-06	5.77%
Small LOCA (SLOCA)	2.349e-05	28.08%
Medium LOCA (MLOCA)	7.764e-08	0.09%
Large LOCA (LLOCA)	8.775e-07	1.05%
Total Loss of DC Power (LDC)	5.132e-06	6.13%
Loss of "A" or "B" Train of DC Power (LDCAB)	1.510e-05	18.05%
Loss of Main Feedwater (LMFW)	1.882e-06	2.25%
Loss of Normal AC Power (LNP)	5.374e-06	6.42%
Station Blackout (SBO)	1.929e-05	23.06%
Total Loss of Cooling Water (SW or RBCCW)	3.634e-07	0.43%
Loss of "A" or "B" Train of SW or RBCCW	1.561e-08	0.02%
Steam Generator Tube Rupture	4.467e-07	0.53%
Steamline Break Downstream of the NRVs (SBLD)	1.871e-07	0.22%
Steamline Break Upstream of the NRVs Inside Containment (SLBUI)	3.297e-07	0.39%
Steamline Break Upstream of the NRVs Outside Containment (SLBUO)	7.884e-07	0.94%
Total Unsubsumed CDF	8.37e-05	100.00%
Total Subsumed CDF (CDF _{AVG})	8.12e-05	-

The current MP2 PRA seems to have addressed the weaknesses identified by the staff during the evaluation of the IPE that are closely related to the proposed one-time AOT extension. In particular, in the current model, the HEP for establishing the cross-tie between MP1 and MP2 uses a value of 0.104, which is significantly greater than the value used in the IPE. Given that

similar actions within the same time window will be required to cross-tie MP3 to MP2, once the cross-tie modification work is completed, a similar value is expected for this cross-tie operator action. Since the MP3 SBO DG will be connected to MP2 as part of the modification work activities to test the cross-tie, which will provide the operators with actual experience in performing the cross-tie operation, this may justify using a lower probability than the value currently used. The staff found that all significant issues from the IPE review that are relevant to this proposal were either adequately addressed by the licensee or insignificant to the overall risk assessment.

In addition, since the common cause failure (CCF) of the MP2 DGs is a potentially dominant contributor to the plant SBO contribution, the staff examined the licensee's CCF analysis of the DGs. The staff found that the licensee's calculation of the MP2 DG CCF uses values, including beta factors, that are consistent with published NRC values.

Furthermore, the licensee's PRA has been the subject of peer reviews, internally and externally, during the development of the current MP2 PRA. During the fourth quarter of 1999, the licensee undertook two initiatives to evaluate and validate the quality of the MP2 PRA. The licensee performed an in-house self-assessment of the PRA, and a peer review certification process, using the Combustion Engineering Owners Group (CEOG) methodology, was performed. The licensee identified areas of strength and areas of improvement and initiated a corrective action plan to address the peer review team recommendations. The recommendations that are relevant to the proposed one-time AOT extension are:

- a. Reactor coolant pump (RCP) seal failure probability of $8.91E-5$, given that the affected RCPs have been tripped within 1 hour, is optimistic.
- b. CCF of the sequencers was not considered.
- c. The use of a 24-hour mission time for the DGs is overly conservative.

The licensee stated that the net result of using less conservatism in the mission time of the DGs is expected to outweigh the potential increases caused by the other two items. Thus, the licensee expects that the net results of these recommendations will be a decrease in the contribution of an LNP or SBO event to the total CDF. Therefore, the licensee concluded that there are no significant weaknesses that have been identified through internal or external peer reviews that would adversely affect the AOT extension request.

The staff believes that the licensee has adequately addressed the issue of PRA quality for this specific application. The licensee's PRA is of sufficient quality, scope, and detail for the proposed application and, therefore, it is a valid tool to estimate the risk measures associated with the proposed one-time AOT extension.

4.1.2 Evaluation of the PRA Results and Insights

An acceptable approach to risk-informed decisionmaking is to show that the proposed change to the licensing basis meets several key principles (e.g., as identified in RG 1.174). One of these principles is to show that the proposed change results in only a small increase in risk, in terms of CDF. Acceptance guidelines for meeting this principle are presented in RG 1.174. Although RG 1.174 refers to permanent changes to the licensing basis, this licensee proposes

a temporary change to allow a one-time AOT extension to perform the cross-tie modification. The guidance can be used, however, to show that the proposed change results in an increase in risk that is small.

Based on the information provided by the licensee, the alternate power source will be out of service for the first 7-day AOT extension period and the MP2 cross-tie bus, 24E, will be out of service for up to 72 hours of this 7-day period. Using this information, the calculated risk measures associated with the proposed one-time AOT extension are as follows:

CDF_{AVG} :	8.12E-5/year
CDF_{BL} :	6.66E-5/year
ΔCDP_{7day} :	1.77E-6
$ICCDP_{7day}$:	1.49E-6

The calculated ICCDP for the first 7-day AOT extension period is 1.49E-6 and the ΔCDP is 1.77E-6. If the second 7-day AOT extension period is entered, the MP3 SBO DG must be available to supply MP2. The staff has determined that the MP3 SBO DG is acceptable to provide the second offsite power circuit required by GDC 17; and it has the capacity and capability to provide the worst case post-accident loading on MP2. This determination was based on a number of factors, including the low likelihood of an SBO event at MP3 during the 14-day AOT period at MP2 and the licensee plant configuration considerations discussed in section 3.2. Therefore, the risk associated with the second 7-day AOT extension period, with the MP3 SBO DG available to supply MP2, is expected to be less than the values given above for the first 7-day AOT extension period.

In addition, the following risk insights were determined in association with the proposed temporary AOT extension:

- a. Since this is a one-time AOT extension, the ΔCDP will only occur during the year in which the cross-tie modification is performed.
- b. The average CDF will increase by about 7.98E-7/year (using a 7-day AOT versus the current 3-day limit) during the 1-year period following implementation of the AOT extension, taking no credit for improved performance capability as a result of the modification.
- c. Based on simplified calculations, the average CDF is expected to decrease after the modification, especially for plant-centered LNP and SBO events (40% reduction). A minimal increase (3% increase) is expected for weather and grid-related LNP and SBO events. Additional reduction in average CDF may occur since the operator failure to properly perform the cross-tie dominates the results. As part of the cross-tie modification, operators will be trained on performing the cross-tie and thus, the HEP may be lower than the value that is currently used.

The calculated ΔCDP and ICCDP values are above the criteria established in RG 1.174 and RG 1.177, respectively. However, the value of ICCDP would most likely be significantly smaller if the effects of many non-qualified monitoring and compensatory measures as discussed in Section 3.2 had been considered. For the above reasons and the fact that the proposed TS change is only a non-permanent, one-time AOT extension, the staff concludes that the MP2

plant risk will not increase unacceptably during the modification and will most likely decrease afterwards as a result of the modification.

4.2 Tier 2: Avoidance of Risk-Significant Plant Configurations

The second tier addresses the need to preclude potentially high-risk configurations if additional equipment outages occur during the AOT period. It should provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when specific plant equipment is out of service consistent with the proposed AOT extension. In addition, compensatory actions that can mitigate any corresponding increase in risk should be used to offset the risk associated with certain configurations.

The licensee identified a list of activities to minimize the potential for, and prevent the plant from entering, such high-risk configurations, including:

- a. Appropriately considering the 7-day and 14-day weather forecasts prior to removing from service the 4160V cross-tie with MP1 to minimize the potential for loss of offsite power due to severe weather or salt spray.
- b. Protect the equipment redundant to the systems removed from service or whose power supply is affected by this modification. This includes limiting work on the 345 kV lines, the switchyard, the RSST, the DGs, the service water system, the high pressure safety injection system, and the reactor building closed cooling water system.
- c. Within 7 days of entering Action a. of TS 3.8.1.1, establish and demonstrate the capability to supply MP2 with power from the MP3 SBO DG via operator actions within 1 hour of an event resulting in a loss of the remaining offsite source of power.

In addition, during the implementation of the cross-tie modification, there is an increased potential for causing a reactor trip at MP3. The licensee has stated that the majority of the plant trip risk potential is attributed to about 8 or 10 moderate-to-high risk work activities. Most of these activities have already been completed and the licensee stated that these activities will not be performed concurrently with risk-significant equipment outages. Further, the potential for creating a reactor trip core damage scenario at MP3, as a result of the cross-tie modification, will be minimized by maximizing the availability of safety significant systems such as auxiliary feedwater and ac power. After the cross-tie modification is completed, the risk at MP3 is not expected to change from its current baseline (i.e., risk neutral).

These considerations, restrictions, and contingency/compensatory measures should ensure that MP2 (and MP3) will remain capable of mitigating any potential design basis accident during the implementation of the modification. The staff finds that the proposed precautions, as well as their proposed implementation, should be adequate for preventing high-risk plant configurations during the extended AOT period.

4.3 Tier 3: Risk-Informed Plant Configuration Management

The intent of the CRMP is to ensure that plant safety is maintained and monitored during the extended AOT. The program should ensure that the risk impact of out-of-service equipment is appropriately evaluated prior to and while performing any maintenance activity and should be

able to uncover risk-significant plant equipment outage configurations in a timely manner during normal plant operations.

In addition to the specific activities to avoid high-risk conditions and plant configurations previously identified in section 4.2, the licensee indicated that they use the following tools to monitor plant risk:

- a. A PRA-based risk matrix is used for Modes 1 through 3. This matrix provides the risk factor and the associated risk color when one or two risk-significant components are removed from service for maintenance.
- b. An equipment-out-of-service (EOOS) computer model is used to assess plant risk as a result of removing one or more pieces of equipment from service for maintenance. This EOOS computer model for on-line risk assessment is applicable for Modes 1 through 3.
- c. The MP2 on-line maintenance procedure provides instructions for evaluating the risk status in Mode 4. The risk color status is dependent on the availability of specific safety-significant systems which are required to be available in Mode 4.
- d. An EOOS computer model for shutdown risk assessment has also been developed to evaluate risk during Modes 5 and 6. The EOOS model is based on plant operating procedures and NUMARC 91-06, "*Guidelines for Industry Actions to Assess Shutdown Management.*" The risk color status is dependent on the available number of layers of defense-in-depth for each of the five key shutdown safety systems and functions.

In addition, risk profiles are developed to support the on-line look-ahead work week schedule. Additionally, a daily plant risk profile is generated to reflect any changes to the schedule (e.g., any unplanned or emergent work activities). Further, the licensee's contingency measure of requiring the MP3 SBO DG to be established as a temporary DG for MP2 within 7 days of entering Action a. of TS 3.8.1.1 and the licensee's actions to protect the equipment redundant to the systems removed from service or whose power supply is affected by the modification should ensure that MP2 will remain capable of mitigating any potential design basis accident during the implementation of the modification.

The staff finds that the licensee's program is capable of adequately assessing the activities being performed to ensure that high-risk plant configurations do not occur and/or compensatory actions are implemented if plant conditions could create a high-risk plant configuration.

The staff did not identify any significant weaknesses or deficiencies associated with the licensee's risk analysis methodology and approach that could impact the overall quantitative conclusions. The staff finds that the risk analysis methodology and approach used by the licensee to estimate the risk impact were reasonable and were of sufficient quality and that the risk impact during the modification work activities, measured in terms of ICCDP and Δ CDP, are relatively small. The qualitative discussion of the change in risk following the modification indicates that the MP2 plant operational risk is expected to be reduced, with no increase in plant operational risk at MP3 (i.e., risk neutral). The licensee has also described their CRMP that provides reasonable tools and processes for configurational risk control during the modification work activities.

Based on the review, the staff concludes that there is reasonable assurance that the licensee's risk analysis to support the modification work activities requiring the AOT extension and the overall risk impact of the proposed change meet the intent of the criteria and guidelines used in RGs 1.174 and 1.177, thus indicating that the one-time AOT extension will not endanger public health and safety. Therefore, the staff concludes that the results and insights of the risk analysis supports the proposed temporary AOT extension from 72 hours to 14 days, provided the MP3 SBO DG is available to supply MP2; otherwise the AOT is only to be extended to 7 days. Note that all other Required Actions associated with TS 3.8.1.1 are to be performed in accordance with the TSs.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

This 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. The staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously published a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding (65 FR 65344). Accordingly, these amendments meet 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 these amendments.

7.0 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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