Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

MAY 31 2001

Docket No. 50-336
B18342

RE: 10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 2
Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. DNC is proposing to change Technical Specifications 3.4.4, "Reactor Coolant System – Pressurizer;" and 3.8.1.1, "Electrical Power Systems - A.C. Sources – Operating." The Bases for these Technical Specifications will be modified to address the proposed changes.

The proposed Technical Specification changes will increase the allowed outage time (AOT) for one inoperable emergency diesel generator (EDG) from 72 hours to 14 days to allow the performance of various maintenance and repair activities while the plant is operating. The requirement for the pressurizer heaters to be supplied by emergency power will be removed for consistency with the proposed EDG AOT change. Additional enhancements and more restrictive requirements are included.

The proposed changes will provide operational flexibility allowing more efficient application of plant resources to safety significant activities. The proposed changes will allow performance of periodic EDG inspection activities during plant operation, reducing plant refueling outage duration and improving EDG availability during shutdown.

The justification for the change to the Millstone Unit No. 2 EDG AOT is based upon a risk informed evaluation (deterministic and probabilistic) consisting of three main elements:

1. Availability of offsite power via the Millstone Unit No. 2 Reserve Station Service Transformer and either the Millstone Unit No. 3 Reserve Station Service Transformer or Normal Station Service Transformer via the 4160V cross-tie.

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2. Verification that the required Millstone Unit No. 3 EDGs are operable and the Millstone Unit No. 3 Station Blackout Diesel Generator is available.

3. Reliance on a Configuration Risk Management Program, required by 10 CFR 50.65(a)(4), to control plant integrated risk while a Millstone Unit No. 2 EDG is in an extended outage.

These elements provide the basis for the requested EDG AOT change by providing a high degree of assurance of the capability to provide power to the Millstone Unit No. 2 Engineered Safety Features buses during extended EDG outages. The NRC recently approved similar requests for several other stations including the Perry Nuclear Plant (Amendment No. 99 to Facility Operating License No. NPF-58, dated February 24, 1999) and the Byron Station and Braidwood Station (Amendment No. 114 to Facility Operating License No. NPF-37 and Amendment No. 114 to Facility Operating License No. NPF-66, Byron Units 1 and 2, respectively; and Amendment No. 108 to Facility Operating License No. NPF-72 and Amendment No. 108 to Facility Operating License No. NPF-77, Braidwood Units 1 and 2; dated September 1, 2000, respectively).

Attachment 1 provides a discussion of the proposed changes and the Safety Summary. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the marked-up version of the appropriate pages of the current Technical Specifications. Attachment 4 provides the retyped pages of the Technical Specifications. Attachment 5 provides the risk evaluation of the proposed AOT extension for the EDGs.

Environmental Considerations

DNC has reviewed the proposed License Amendment Request against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes are associated with increasing the AOT for one inoperable EDG. Additional enhancements and more restrictive requirements to the associated Technical Specifications are included. These changes do not increase the type and amounts of effluents that may be released off site. In addition, this amendment request will not increase individual or cumulative occupational radiation exposures. Therefore, DNC has determined the proposed changes will not have a significant effect on the quality of the human environment.

Conclusions

The proposed changes do not involve a significant impact on public health and safety (see the Safety Summary provided in Attachment 1), and do not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92 (see the Significant Hazards Consideration provided in Attachment 2). In addition, we have concluded the proposed changes are safe.

Site Operations Review Committee and Nuclear Safety Assessment Board

The Site Operations Review Committee and Nuclear Safety Assessment Board have reviewed and concurred with the determinations.

Schedule

We request issuance of this amendment for Millstone Unit No. 2 prior to December 31, 2001, with the amendment to be implemented within 30 days of issuance.

State Notification

In accordance with 10 CFR 50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

There are no regulatory commitments contained within this letter.

If you should have any questions on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

Raymond P. Necci - Vice President
Nuclear Technical Services/Millstone

Sworn to and subscribed before me

this 31st day of MAY, 2001

Notary Public

My Commission expires FEBRUARY 28, 2006

Attachments (5)

cc: See next page

cc: H. J. Miller, Region I Administrator
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2
S. R. Jones, Senior Resident Inspector, Millstone Unit No. 2

Director
Bureau of Air Management
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Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Discussion of Proposed Changes and Safety Summary

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
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Introduction

Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. DNC is proposing to change Technical Specifications 3.4.4, "Reactor Coolant System – Pressurizer;" and 3.8.1.1, "Electrical Power Systems - A.C. Sources – Operating." The Bases for these Technical Specifications will be modified to address the proposed changes.

The proposed Technical Specification changes will increase the allowed outage time (AOT) for one inoperable emergency diesel generator (EDG) from 72 hours to 14 days to allow the performance of various maintenance and repair activities while the plant is operating. The requirement for the pressurizer heaters to be supplied by emergency power will be removed for consistency with the proposed EDG AOT change. Additional enhancements and more restrictive requirements to these specifications are included.

This is a risk informed submittal to modify the Technical Specifications of Millstone Unit No. 2 by increasing the AOT for one inoperable EDG. The deterministic evaluation (defense-in-depth, safety analysis requirements, etc.) is contained in the Safety Summary section of this attachment. The risk evaluation, contained in Attachment 5, is based on the requirements contained in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998.

Millstone Unit No. 2 Electrical Distribution System Description

Millstone Unit No. 2 Technical Specifications require during plant operation (Modes 1 through 4) two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and two separate and independent EDGs. The safety function of the EDGs is to supply alternating current (AC) electrical power to plant safety systems whenever the preferred AC power supply is unavailable.

The Millstone Unit No. 2 Electrical Distribution System (refer to Figure 25203-30001, Main Single Line Diagram, located at the end of this attachment) consists of normal and emergency 4160V systems. During normal operation, power is supplied through the Normal Station Service Transformer (NSST) from the main generator via the isolated phase bus duct, to the normal 4160V buses 24A and 24B. The normal 4160V buses feed the emergency, or Engineered Safety Features (ESF) buses, 24C and 24D.

In the event of a loss of the main generator output, offsite electrical power is automatically supplied through the Reserve Station Service Transformer (RSST) to the

4160V ESF buses 24C and 24D. Power is then supplied from the 4160V ESF buses to the normal 4160V buses, 24A and 24B.

During startup or shutdown, offsite electrical power is supplied via the Millstone Unit No. 2 RSST as previously described.

The standby power sources consist of two independent and redundant AC power EDGs driven by separate diesel engines. Each EDG is capable of supplying power to the respective emergency 4160V bus. During normal power operation, the EDGs are maintained in a standby mode. The EDGs may be manually started, and will automatically start on a loss of power to the respective emergency bus or a safety injection actuation signal. If the normal and alternate offsite power sources are not available, the EDGs are then automatically connected to the respective emergency bus and sequentially loaded. The capacity of one EDG is sufficient to meet the ESF demand. The EDG loading sequence permits the start of large loads without voltage and frequency instability.

Physical separation of the offsite power sources, switchyard protection, redundancy, and transmission system design minimize the possibility of simultaneous failure of all power sources (NSST, RSST, Millstone Unit No. 3 RSST/NSST, and standby EDGs) in compliance with 10 CFR 50 Appendix A General Design Criterion (GDC) 17, Electric Power Systems.

The Millstone Unit No. 2 and Millstone Unit No. 3 electrical systems can be cross connected at the 4160V level by use of a 4160V cross-tie from Millstone Unit No. 3 bus 34A or 34B to Millstone Unit No. 2 bus 24E. This cross-tie is used to allow Millstone Unit No. 2 to meet the GDC 17 requirement for an alternate source of offsite power by providing power from either the Millstone Unit No. 3 RSST or NSST. The cross-tie also provides a source of onsite AC power for Millstone Unit No. 2 to meet the post-fire Appendix R alternate or dedicated shutdown requirement, and an alternate source of AC power for station blackout by utilizing the Millstone Unit No. 3 Station Blackout Diesel Generator (SBO DG) to supply power to Millstone Unit No. 2 via bus 24E.

Technical Specification Changes

The main proposed Technical Specification change is an increase in the AOT for one EDG from 72 hours to 14 days. Additional Technical Specification changes are necessary to support the proposed AOT increase. Each proposed Technical Specification change will be discussed.

Technical Specification 3.4.4

The phrase "capable of being supplied by emergency power" will be removed from Limiting Condition for Operation (LCO) item b., and the phrase "which are supplied by emergency power" will be removed from Surveillance Requirement (SR) 4.4.4.2. This

is necessary to support the proposed increase in the EDG AOT to 14 days. The current requirement is not met when the associated EDG is inoperable since the EDG is the emergency power source. This has not created any historical operational problems since the EDG and pressurizer heater AOTs are both 72 hours. With the proposed increase in EDG AOT to 14 days, this specification would still require a plant shutdown after 72 hours without the proposed changes. Therefore, the proposed changes are necessary to allow continued plant operation during an extended EDG outage.

The pressurizer heater proportional control groups 1 and 2, which meet this requirement, are permanently connected to the Millstone Unit No. 2 Class 1E (emergency 480V) electrical buses. This plant configuration will not be affected by the proposed changes. In addition, the Bases for this specification has been modified to specify that the pressurizer heater proportional control groups 1 and 2 are used to meet the LCO heater capacity requirement.

Technical Specification 3.8.1.1

The major change to this Technical Specification is an increase in the AOT for one EDG from 72 hours to 14 days. Additional changes are necessary to support the proposed AOT increase. Each change will be discussed.

1. Action Requirement a. - One offsite circuit inoperable.

   The requirement to verify the remaining offsite circuit by performing SR 4.8.1.1.1 within 1 hour will be modified to allow performance prior to removing an offsite circuit from service. 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 circuit prior to removing the other offsite circuit for maintenance, which will reduce the potential to establish an adverse plant configuration.

   The footnote (*) that allowed a one time extension of the AOT for one inoperable offsite circuit from 72 hours to 14 days will be deleted. This footnote is no longer valid and is not required. This footnote was added to allow completion of the work to establish a Millstone Unit No. 3 to Millstone Unit No. 2 electrical cross-tie. This project has been completed.

2. Action Requirement b. - One diesel generator inoperable.

   The requirement to verify the offsite circuits by performing SR 4.8.1.1.1 within 1 hour will be modified to allow performance prior to removing an EDG from service. 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 offsite circuits prior to removing an EDG for maintenance, which will reduce the potential to establish an adverse plant configuration.

A new Action Requirement b.3 will be added. This requirement will verify that the steam driven auxiliary feedwater (SDAFW) pump is operable when one EDG is inoperable. This will ensure sufficient auxiliary feedwater capability is available if a loss of offsite power were to occur. If the SDAFW pump is inoperable and one EDG is also inoperable, restoration within 2 hours will be required or a plant shutdown will be necessary. The restoration and shutdown times are consistent with the time requirements specified in Technical Specification 3.0.5, adjusted to account for the applicability of the AFW pumps (Modes 1, 2, and 3). This is a more restrictive change.

Action Requirement b.4 will be added. This will address the additional requirement for the required Millstone Unit No. 3 EDGs to be operable and the Millstone Unit No. 3 SBO DG to be available to use the proposed 14 day AOT for one inoperable EDG. In addition, this requirement will limit the time Millstone Unit No. 2 can remain in operation with one EDG inoperable and a required Millstone Unit No. 3 EDG inoperable or the SBO DG unavailable to 72 hours, which is consistent with the current AOT for one inoperable EDG.

Action Requirement b.5 will retain the current 72 hour AOT and subsequent actions if a Millstone Unit No. 2 EDG is not restored to operable status. In addition, a 14 day AOT will be permitted if the additional power source requirements specified in Action Requirement b.4 are met.

3. Action Requirement c. - One offsite circuit and one diesel generator inoperable.

A new Action Requirement c.3 will be added. This requirement will verify that the SDAFW pump is operable when one EDG and one offsite circuit are inoperable. This will ensure sufficient auxiliary feedwater capability is available if a loss of offsite power were to occur. If the SDAFW pump is not operable, and one EDG and one offsite circuit are inoperable, restoration within 2 hours will be required or a plant shutdown will be necessary. The restoration and shutdown times are consistent with the time requirements specified in Technical Specification 3.0.5, adjusted to account for the applicability of the AFW pumps (Modes 1, 2, and 3). This is a more restrictive change.

Action Requirements c.3 and c.4 will be renumbered as c.4 and c.5 to support the new action requirement. This is a non-technical change.

Safety Summary

DNC has evaluated the impact on plant safety of the proposed 14 day EDG AOT. The proposed EDG AOT change will provide additional operational flexibility for

maintenance and repair of the EDGs. Allowing an EDG to be inoperable for up to 14 days when the unit is operating will increase the overall at-power annual Core Damage Frequency (CDF). However, the increase is not risk significant and is offset by the risk benefits associated with avoiding unnecessary transition risk during a forced plant shutdown, and by reducing risk when the plant is shut down. Additionally, the unavailability of one EDG was found to not significantly impact Large Early Release Frequency (LERF).

Providing an AOT of sufficient length to allow EDG preventive and corrective maintenance during plant operation will increase the availability and reliability of the EDGs when the plant is shut down, which will decrease the plant risk during this time. The EDGs will have a higher availability during loss of offsite power events when the plant is shut down, which will improve required system availability during this time. In addition, eliminating the need to conduct EDG preventive maintenance during an outage will eliminate work during a time when all available resources are directed towards completion of a large number of safety significant activities, thereby decreasing the potential for human error. The proposed changes are also expected to reduce outage length.

Purpose of Proposed AOT Change

The current AOTs associated with inoperable AC power source(s) are intended to minimize the time an operating plant is exposed to a reduction in the number of available AC power sources. RG 1.93, "Availability of Electric Power Sources," December 1974, provides guidance with respect to operating restrictions (i.e., AOTs) if the number of available AC power sources are less than required by the Technical Specification LCO. Specifically, if the available AC power sources are one less than the number required by the LCO, power operation may continue for a period that should not exceed 72 hours if the system stability and reserves are such that a subsequent single failure (including a trip of the unit's generator, but excluding an unrelated failure of the remaining offsite circuit if this degraded state was caused by the loss of an offsite source) would not cause a total loss of offsite power. RG 1.93 also indicates that the operating time limits (AOTs) are only for corrective maintenance activities. The 72 hour AOT takes into account the capacity and capability of the remaining AC sources and the low probability of a Design Basis Accident (DBA) occurring during this period to provide a reasonable time for repairs.

The proposed AOT change to 14 days has been evaluated and determined to be consistent with current NRC policy. Allowing an EDG to be out of service for up to 14 days will continue to provide adequate protection of public health and safety and common defense and security as described below. In addition, this change advances the objectives of the NRC's Probabilistic Risk Assessment (PRA) Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities; Final Policy Statement," Federal Register, 60 FR 42622, dated August 16, 1995, for enhanced decision-making and results in a more efficient use of resources and reduction of

unnecessary burden. Implementation of this proposed AOT extension will provide the following benefits.

1. Allow increased flexibility in the scheduling and performance of EDG preventive and corrective maintenance.

2. Allow better control and allocation of resources. Allowing on-line preventive maintenance, including overhauls, provides the flexibility to focus more quality resources on any required or elected EDG maintenance.

3. Avert unplanned plant shutdowns where the transition risk incurred by unexpected plant shutdowns can be comparable to, and often exceed, that associated with continued power operation.

4. Improve EDG availability during shutdown operating modes. This will reduce the risk associated with EDG maintenance and the associated effects on risk due to EDG unavailability occurring at the same time as other various activities and equipment outages that occur during a refueling outage.

5. Allow increased flexibility in the scheduling and performance of EDG preventive maintenance.

6. Improve EDG reliability before entering scheduled outages.

The proposed AOT of 14 days is adequate to perform normal preventive EDG inspection and maintenance activities requiring disassembly of the EDG, and to perform post-maintenance and operability tests required to return the EDG to operable status. Millstone Unit No. 2 intends to use the proposed 14 day AOT for performing a planned major overhaul at a frequency of no more than once per EDG per operating cycle. Beyond that, Millstone Unit No. 2 shall continue to minimize the time periods to complete any unplanned maintenance or repair activity. Plant configuration changes for planned and unplanned work on the EDGs, as well as the maintenance of equipment having risk significance, is managed by a Configuration Risk Management Program (CRMP), as required by 10 CFR 50.65(a)(4). The CRMP helps ensure that these activities are carried out with no significant adverse impact on integrated plant risk and public health and safety.

Traditional Engineering Considerations

Defense-in-Depth

The impact of the proposed Technical Specification AOT change has been evaluated and determined to be consistent with the defense-in-depth philosophy. The defense-in-depth philosophy in reactor design and operation results in multiple means to accomplish safety functions and prevent the release of radioactive material.

Millstone Unit No. 2 is designed and operated consistent with the defense-in-depth philosophy. Millstone Unit No. 2 has diverse power sources available (e.g., EDGs and SBO DG) to cope with a loss of the preferred AC source (i.e., offsite power). The overall availability of the AC power sources to the ESF buses will not be reduced significantly as a result of increased on-line preventive maintenance and repair activities. It is acceptable, under certain controlled conditions, to extend the EDG AOT and perform on-line maintenance activities intended to maintain the reliability of the onsite emergency power sources, and repair activities intended to restore the onsite emergency power sources.

While the proposed change does increase the length of time an EDG can be out of service during unit operation, it will also increase the availability of the EDGs while the unit is shutdown. Even with one EDG out of service during operation, the system is designed with adequate defense-in-depth. There are multiple means to accomplish safety functions and prevent the release of radioactive material. The increased availability of the EDGs while shutdown will increase the systems defense-in-depth during outages.

System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system. The risk evaluation of the proposed changes (Attachment 5) has not identified any risk significant internal or external events requiring plant modifications or compensatory actions. Implementation of the proposed changes will be done in a manner consistent with the defense-in-depth philosophy. Station procedures will ensure consideration of prevailing conditions, including other equipment out of service, and implementation of compensatory actions to assure adequate defense-in-depth whenever the EDGs are out of service for an extended time period (i.e., greater than 72 hours).

No new potential common cause failure modes are introduced by these proposed changes and protection against common cause failure modes previously considered is not compromised.

The physical barriers to radionuclide release are not affected by these proposed changes.

Adequate defenses against human errors are maintained. These proposed changes do not require any new operator response or introduce any new opportunities for human errors not previously considered. Qualified personnel will continue to perform EDG maintenance and repair activities whether they are performed on-line or when shut down. The maintenance activities are not affected by this change. No other new actions are necessary because the maintenance activities will be performed on-line.

The proposed changes do not affect Millstone Unit No. 2 compliance with the GDC of 10 CFR 50 Appendix A. The Millstone Unit No. 2 Final Safety Analysis Report (FSAR) Appendix 1A, AEC General Design Criteria for Nuclear Power Plants, provides the basis for this conclusion.

Availability of the Electrical Power System

The Millstone Unit No. 2 electrical power system, which was described earlier in this attachment, consists of the normal and emergency systems. During normal operation, power is supplied to the NSST from the main generator via the isolated phase bus duct, to the normal 4160V buses 24A and 24B.

Loads important to plant safety are divided into redundant ESF trains (Train A and Train B). Only one ESF train is required for event or accident mitigation, and safe shutdown of the unit. Each ESF train consists of a Class 1E 4160V bus (24C or 24D) which feeds the various ESF loads and downstream buses. Each ESF 4160V bus has three independent sources of power. (The normal supply from the main generator through the Millstone Unit No. 2 NSST is not included since this power source is not credited to meet GDC 17 requirements.)

1. A normal preferred source from the offsite 345 kV system through the Millstone Unit No. 2 RSST to the emergency 4160V buses and the normal 4160V buses.

2. A second source from the offsite 345 kV switchyard through the Millstone Unit No. 3 RSST/NSST to Millstone Unit No. 2 via the 4160V cross-tie.

3. An emergency onsite source consisting of a dedicated EDG for each 4160V emergency bus.

Each ESF train is supplied standby power from an individual EDG. The purpose of the EDG is to provide an onsite standby power source upon the loss of normal and reserve offsite power sources. Each EDG is physically and electrically independent of any other power source in the performance of its required function. With this arrangement, redundant ESF components are supplied from separate ESF buses so that no single failure can jeopardize the proper functioning of redundant ESF loads. Due to the redundancy of the ESF trains and EDGs, the loss of any one of the EDGs will not prevent the safe shutdown of the unit. The total standby power system, including EDGs and electrical power distribution equipment, satisfies the single failure criterion.

For the previous two full calendar years (i.e., 1999 and 2000), there has been no unplanned unavailability of the Millstone Unit No. 2 RSST, Millstone Unit No. 3 RSST, or Millstone Unit No. 3 NSST.

Physical separation of the offsite power sources, switchyard protection, redundancy, and transmission system design minimize the possibility of simultaneous failure of power sources (Millstone Unit No. 2 RSST, and Millstone Unit No. 3 RSST/NSST) in compliance with GDC 17.

The Millstone Unit No. 2 and Millstone Unit No. 3 electrical systems can be cross connected at the 4160V level by use of a cross-tie from Millstone Unit No. 3 bus 34A or 34B to Millstone Unit No. 2 bus 24E. This cross-tie is used to allow Millstone Unit No. 2 to meet the 10 CFR 50 Appendix A, GDC 17 requirement for an alternate source of offsite power by providing power from either the Millstone Unit No. 3 RSST or NSST. The cross-tie also provides a source of onsite AC power to meet the post-fire Appendix R alternate or dedicated shutdown requirement, and an alternate source of AC power for station blackout by utilizing the Millstone Unit No. 3 SBO DG to supply power to Millstone Unit No. 2 via bus 24E.

Safety Analysis Requirements

The proposed changes do not affect any assumptions or inputs to the safety analyses. Unavailability of a single EDG due to maintenance or repair activities does not reduce the number of EDGs below the minimum required to mitigate all DBAs. In addition, the proposed changes have no impact on the availability of the two offsite sources of power.

Station Blackout Requirements

Millstone Unit No. 2 and Millstone Unit No. 3 are able to withstand and recover from an SBO event of eight hours in accordance with the guidelines of RG 1.155, "Station Blackout," dated August 1988. In an SBO event, the Millstone Unit No. 3 SBO DG serves as an alternate AC power source for the affected unit. An SBO event is only assumed to occur at one unit. The alternate AC power source is available within 1 hour of the onset of an SBO event, and has sufficient capacity and capability to operate equipment necessary to attain and maintain a safe shutdown condition of the affected unit.

The assumptions used in the Millstone Unit No. 2 SBO analysis regarding the availability and reliability of the EDGs are unaffected by the proposed changes. The results of the SBO analysis are also unaffected by the changes.

Appendix R Requirements

The proposed changes do not affect Millstone Unit No. 2 compliance with the requirements of 10 CFR 50 Appendix R.

NRC Regulatory Guide Compliance

Safety related systems and components that require electrical power to perform their safety related function are defined as Class 1E loads. The proposed changes do not add or reclassify any safety related systems or components. Therefore, compliance with Safety Guide (SG) 6, "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems," dated March 10, 1971, is not affected by the proposed changes.

These proposed changes do not add any loads to the EDGs. Therefore, the selection of the capacity of the EDGs for standby power systems and conformance to the applicable Sections of SG 9, "Selection of Emergency Diesel Generator Set Capacity for Standby Power Supplies," dated March 10, 1971, is not affected by the proposed changes.

Millstone Unit No. 2 compliance with these SGs, with respect to the EDGs, is discussed in FSAR Section 8.3, Emergency Generators.

Technical Specification Changes

The main proposed Technical Specification change is an increase in the AOT for one EDG from 72 hours to 14 days. Additional enhancements and changes are included to support the proposed AOT increase.

Technical Specification 3.8.1.1

The existing Technical Specification 3.8.1.1 allows one EDG to be out of service for 72 hours when operating in Modes 1 through 4. As a result, extended maintenance activities such as EDG inspections (typical duration 7 to 10 days) can not be performed unless the plant is shut down. In addition, Technical Specifications currently require EDG inspections to be performed only when the plant is shut down (Surveillance Requirement 4.8.1.1.2.c.1). A proposed Technical Specification change has recently been submitted to remove the requirement to perform EDG inspections only when the plant is shut down.[1] Assuming that change is approved, the proposed change to

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[1] E. S. Grecheck letter to Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2, Technical Specifications Change Request 2-5-01, Emergency Diesel Generator Surveillance Requirement," dated April 23, 2001.

increase the AOT for one inoperable EDG to 14 days will allow performance of extended maintenance activities, like EDG inspections, while the plant is operating.

The PRA evaluation (Attachment 5), performed to support the proposed AOT change, utilized the guidance provided in RG 1.177. This guidance defined the following three-tiered approach to evaluate the risk impact of extending a Technical Specification AOT.

Tier 1: PRA Capability and Insights

Evaluate the impact on plant risk of the proposed Technical Specification change as expressed by the change in CDF, Incremental Conditional Core Damage Probability (ICCDP), change in LERF, and Incremental Conditional Large Early Release Probability (ICLERP).

Tier 2: Avoidance of Risk Significant Plant Configurations

Identify potential high risk configurations that could exist if equipment, in addition to that associated with the change, were to be taken out simultaneously, or other risk significant operational factors such as concurrent system or equipment testing were also involved.

Tier 3: Risk-Informed Configuration Risk Management

Establish a CRMP to ensure that other potentially lower probability, but nonetheless risk significant, configurations resulting from maintenance and other operational activities are identified and compensated for.

The overall results of the risk evaluation, including the sensitivity studies, are summarized in the following table.

Table 1
Risk Evaluation Results

Risk Matrix	Nominal Case	Sensitivity Studies				
		Case 1 LNP	Case 2 RCPSF	Case 3 SDAFW	Case 4 CCF	Case 5 CM
ΔCDF	2E-07/yr (EDG PC=200 hrs/yr) 7E-07/yr (EDG PC=300 hrs/yr)	N/A	N/A	N/A	N/A	N/A
ICCDP	3.57E-07	7.21E-07	3.53E-07	3.68E-07	3.53E-07	5.29E-07
ΔLERF	3E-10/yr (EDG PC=200 hrs/yr) 5E-10/yr (EDG PC=300 hrs/yr)	N/A	N/A	N/A	N/A	N/A
ICLERP	2.07E-09	3.57E-09	2.03E-09	2.42E-09	2.07E-09	3.15E-09

Approval of the proposed 14 day EDG AOT is expected to result in a negligible increase in CDF and a negligible increase in LERF. This is due to the increase in EDG unavailability anticipated during power operation which would surpass the current EDG Maintenance Rule unavailability performance criteria. The Maintenance Rule unavailability performance criteria will be revised when the proposed change is approved.

The risk measures, based on the current PRA model, are estimated to be:

ICCDP = 3.57E-07
ICLERP = 2.07E-09

The calculated risk measures are below the RG 1.177 acceptance criteria of ICCDP < 5.0E-07 and ICLERP $\leq$ 5.0E-08. These values are based on the risk increase associated with the A train EDG which is the EDG with the highest risk importance.

PRA model quality was addressed by performing sensitivity studies to determine the risk significance of certain parameters modeled in the PRA. The parameters studied include Loss of Normal Power (LNP) frequency, reactor coolant pump (RCP) seal failure probability, failure of the operators to start the SDAFW pump, common cause failure probability of the EDG sequencers, and common cause failure related to corrective maintenance of one EDG. Four of the sensitivity studies were performed as a result of Combustion Engineering Owners Group peer review comments.

The acceptable results are based on the use of the Millstone Station CRMP, as required by 10 CFR 50.65(a)(4), and the following additional activity specific requirements.

1. The extended EDG outage will not be scheduled when adverse weather conditions are predicted.

2. Millstone Unit No. 3 EDGs will be operable, as required by Millstone Unit No. 3 Technical Specifications, during the extended EDG outage.

3. The availability of the Millstone Unit No. 3 SBO DG will be verified by test performance within the previous 30 days prior to allowing a Millstone Unit No. 2 diesel generator to be inoperable for greater than 72 hours.

4. 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.

Use of a CRMP will ensure the risk impact of out-of-service equipment is appropriately evaluated prior to performing a maintenance activity, and integrated plant risk is controlled.

Technical Specification 3.4.4

This specification currently contains requirements for two groups of pressurizer heaters to be supplied from emergency power. This requirement may be interpreted to mean "from an OPERABLE diesel generator."[2] The proposed changes to this specification will eliminate this potential compliance issue during periods of extended EDG unavailability (e.g., EDG inspection activities).

The requirement for emergency power for the pressurizer heaters came from Three Mile Island (TMI) action item requirement II.E.3.1, "Emergency Power Requirements for Pressurizer Heaters," of NUREG-0737, "A Clarification of TMI Action Plan Requirements." The emergency power requirement for this equipment will continue to be met because the pressurizer proportional control heaters are permanently connected to Class 1E power supplies (emergency 480V buses 22E and 22F) as described in the Millstone Unit No. 2 FSAR (Section 4.3.5, Pressurizer). In addition, the proposed changes are consistent with NUREG-1432 (Technical Specification 3.4.9).[3]

Technical Specification 3.8.1.1 - Additional Changes

The proposed changes to modify the requirement to verify the operability of offsite circuit(s), verify the operability of the required Millstone Unit No. 3 EDG(s), and the availability of the Millstone Unit No. 3 SBO DG within 1 hour prior to or after entering the condition of an inoperable offsite source or inoperable EDG will reduce the potential to establish an adverse plant configuration. It is a good operational practice to verify operability of redundant equipment prior to removing equipment from service. The Technical Specifications currently require this verification within 1 hour after the equipment (offsite source or EDG) is removed from service. The proposed changes will not affect the requirement to periodically perform this verification (once per 8 hours/24 hours thereafter) while the equipment is inoperable.

The additional more restrictive change to add the requirement to verify that the SDAFW pump is operable when one EDG is inoperable will ensure sufficient auxiliary feedwater capability is available if a loss of offsite power were to occur. If the SDAFW pump is not operable and one EDG is inoperable, restoration within 2 hours will be required or a plant shutdown will be necessary. The restoration and shutdown times are consistent with the time requirements specified in Technical Specification 3.0.5, adjusted to account for the applicability of the AFW pumps (Modes 1, 2, and 3). The proposed

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[2] Nuclear Regulatory Commission Safety Evaluation Related to Amendment No. 161 to Facility Operating License No. NPF-10 and Amendment No. 152 to Facility Operating License No. NPF-15, San Onofre Nuclear Generating Station, Units 2 and 3, Docket Nos. 50-361 and 50-362, dated November 22, 1999.

[3] NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Rev. 2, April 2001.

change is consistent with the action requirements contained in NUREG-1432 for an inoperable EDG (Technical Specification 3.8.1). However, it is not necessary to include the NUREG-1432 requirement to check other safety related components due to the Millstone Unit No. 2 operability definition which requires normal and emergency power, and the requirements contained in Technical Specification 3.0.5, which are redundant to the NUREG-1432 requirement.

The additional changes to renumber action requirements and remove a footnote that is no longer valid will not result in any technical changes to the current requirements.

Conclusion

A deterministic evaluation and a risk assessment of the proposed increase in the AOT for one EDG have been performed. The deterministic evaluation has concluded that an extended AOT for one EDG is consistent with the defense-in-depth philosophy and that sufficient safety margins are maintained. The risk assessment has concluded that the increase in plant risk is small and consistent with the NRC "Safety Goals for the Operations of Nuclear Power Plants; Policy Statement," Federal Register, Vol. 51, p. 30028 (51 FR 30028), August 4, 1986, as further described by NRC RGs 1.174[4] and 1.177. Together, these evaluations provide high assurance of the continued capability to provide power to the ESF buses during the proposed extension of the EDG AOT.

The proposed changes are consistent with NRC policy and will continue to provide adequate protection of public health. The changes advance the objectives of the NRC's PRA Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," for enhanced decision-making and results in a more efficient use of resources and reduction of unnecessary burden.

Maintenance during power operation will improve overall EDG availability which, in turn, will reduce shutdown risk by increasing the availability of emergency power during refueling outages. The proposed changes in EDG AOT in conjunction with the availability of the Millstone Unit No. 2 RSST, Millstone Unit No. 3 RSST and/or NSST, and use of a CRMP consistent with 10 CFR 50.65(a)(4) during the proposed extended EDG AOT, will provide adequate assurance of the capability to provide power to the ESF buses. The equipment required to mitigate design basis events will not be reduced below the required level by use of the extended EDG AOT to perform preventative maintenance and repair activities while the plant is operating.

The proposed changes are consistent with the applicable regulatory requirements and guidelines. The proposed deviation from Regulatory Guide 1.93 (i.e., extending the

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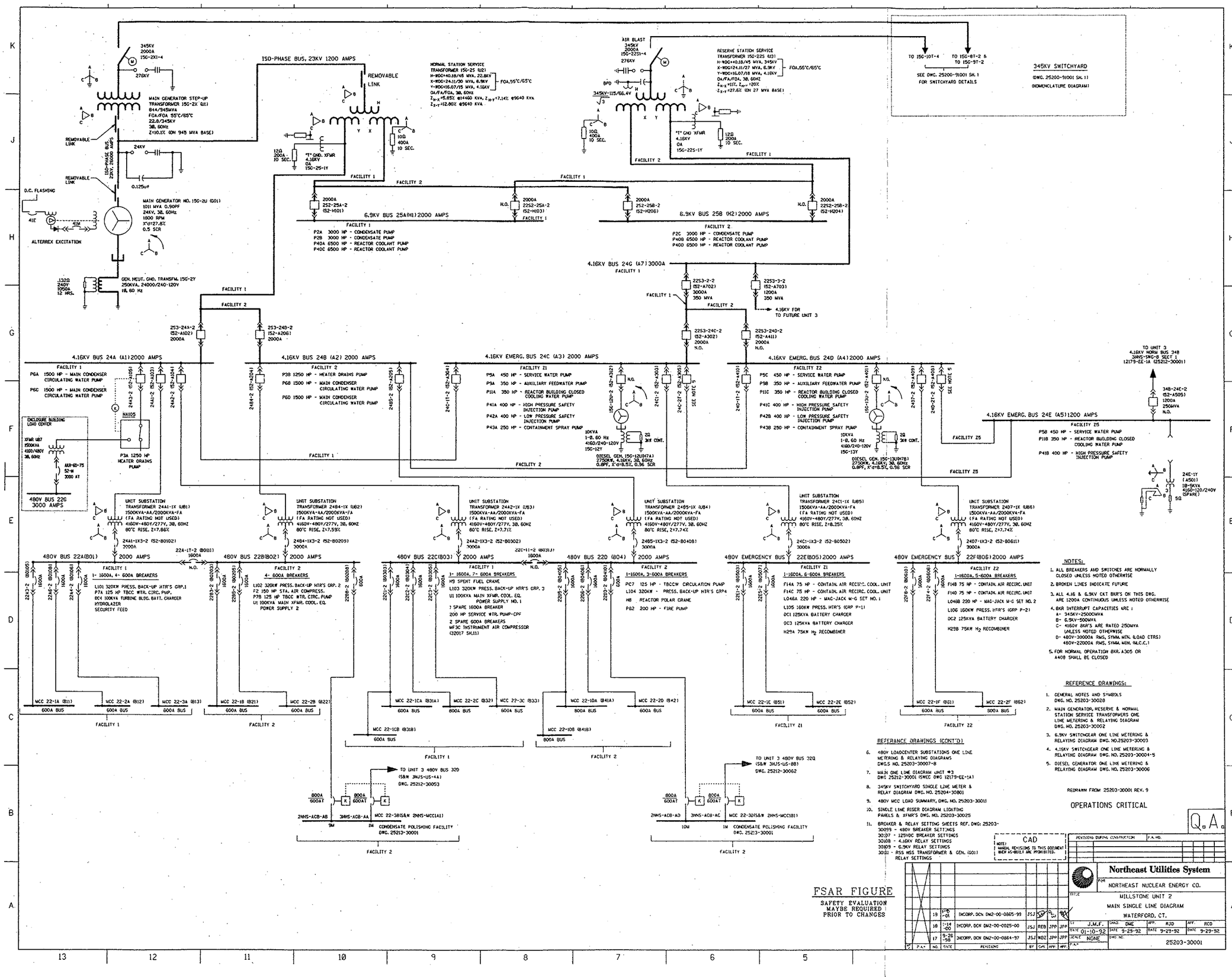
[4] NRC Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis," dated July 1998.

allowed outage time to 14 days for either a Division 1 or Division 2 EDG) has been evaluated to be acceptable. The resultant slight increases in CDF and LERF are consistent with the intent of the NRC Safety Goal Policy Statement.

The proposed changes to the Technical Specifications and associated Bases will not adversely affect the availability or operation of the equipment used to mitigate the design basis accidents. The administrative controls that will be implemented during extended EDG outages will adequately control plant risk when an EDG is out of service for up to 14 days. There will be no adverse effect on plant operation. The plant response to the design basis accidents will not change. Therefore, there will be no adverse impact on public health and safety. Thus, the proposed changes are safe.


345KV 2000A 15G-2X1-4
27.6KV
MAIN GENERATOR STEP-UP TRANSFORMER 15G-2X (U1) 844/945MVA FOA/FOA 55°C/65°C 22.8/345KV 3Ø, 60Hz Z=10.1% (ON 945 MVA BASE)
ISO-PHASE BUS, 23KV 1200 AMPS
REMOVABLE LINK
24KV
0.125uF
D.C. FLASHING
41E
41M
ALTERREX EXCITATION
MAIN GENERATOR NO. 15G-2U (G01) 1011 MVA 0.90PF 24KV, 3Ø, 60Hz 1800 RPM X"d=27.8% 0.5 SCR
GEN. NEUT. GND. TRANSFM. 15G-2Y 25KVA, 24000/240-120V 1Ø, 60 Hz
1320 240V 1050A 12 HRS.
NORMAL STATION SERVICE TRANSFORMER 15G-2S (U2) H-WDG=40.18/45 MVA, 22.8KV X-WDG=24.11/30 MVA, 6.9KV Y-WDG=16.07/15 MVA, 4.16KV OA/FA/FOA, 3Ø, 60Hz Z H-X =5.85% @14460 KVA, Z H-Y =7.14% @9640 KVA Z X-Y =12.80% @9640 KVA
FOA, 55°C/65°C
"T" GND. XFMR 4.16KV OA 15G-2S-1Y
12Ω 200A 10 SEC.
10Ω 400A 10 SEC.
AIR BLAST 345KV 2000A 15G-2251-4
276KV
BPO
345KV-115/66.4KV
RESERVE STATION SERVICE TRANSFORMER 15G-22S (U21) H-WDG=40.18/45 MVA, 345KV X-WDG=24.11/27 MVA, 6.9KV Y-WDG=16.07/18 MVA, 4.16KV OA/FA/FOA, 3Ø, 60HZ Z H-X =11%, Z H-Y =20% Z X-Y =27.6% (ON 27 MVA BASE)
FOA, 55°C/65°C
"T" GND XFMR 4.16KV OA 15G-22S-1Y
TO 15G-10T-4
TO 15G-8T-2 & TO 15G-9T-2
SEE DWG. 25200-91001 SH. 1 FOR SWITCHYARD DETAILS
345KV SWITCHYARD
DWG. 25200-91001 SH. 11 (NOMENCLATURE DIAGRAM)
FACILITY 1
FACILITY 2
2000A 252-25A-2 (52-H101)
6.9KV BUS 25A(H1) 2000 AMPS
N.O. 2000A 2252-25A-2 (52-H103)
2000A 252-25B-2 (52-H206)
6.9KV BUS 25B (H2) 2000 AMPS
N.O. 2000A 2252-25B-2 (52-H204)
FACILITY 1
P2A 3000 HP - CONDENSATE PUMP
P2B 3000 HP - CONDENSATE PUMP
P40A 6500 HP - REACTOR COOLANT PUMP
P40C 6500 HP - REACTOR COOLANT PUMP
FACILITY 2
P2C 3000 HP - CONDENSATE PUMP
P40B 6500 HP - REACTOR COOLANT PUMP
P40D 6500 HP - REACTOR COOLANT PUMP
4.16KV BUS 24G (A7) 3000A
FACILITY 1
2253-2-2 (52-A702) 3000A 350 MVA
2253-3-2 (52-A703) 1200A 350 MVA
4.16KV FOR TO FUTURE UNIT 3
2253-24C-2 (52-A302) 2000A N.O.
2253-240-2 (52-A411) 2000A N.O.
253-241-2 (52-A102) 2000A
253-240-2 (52-A206) 2000A
4.16KV BUS 24A (A1) 2000 AMPS
4.16KV BUS 24B (A2) 2000 AMPS
4.16KV EMERG. BUS 24C (A3) 2000 AMPS
4.16KV EMERG. BUS 24D (A4) 2000 AMPS
FACILITY 1
P6A 1500 HP - MAIN CONDENSER CIRCULATING WATER PUMP
P6C 1500 HP - MAIN CONDENSER CIRCULATING WATER PUMP
FACILITY 2
P3B 1250 HP - HEATER DRAINS PUMP
P6B 1500 HP - MAIN CONDENSER CIRCULATING WATER PUMP
FACILITY 21
P5A 450 HP - SERVICE WATER PUMP
P5A 350 HP - AUXILIARY FEEDWATER PUMP
P11A 350 HP - REACTOR BUILDING CLOSED COOLING WATER PUMP
P41A 400 HP - HIGH PRESSURE SAFETY INJECTION PUMP
P42A 400 HP - LOW PRESSURE SAFETY INJECTION PUMP
P43A 250 HP - CONTAINMENT SPRAY PUMP
10KVA 1-Ø, 60 Hz 4160/240-120V 15G-12T
DIESEL GEN. 15G-12U(U17A) 2750KW, 4.16KV, 3Ø, 60Hz 0.8PF, X"d=8.5%, 0.36 SCR
FACILITY 22
P5C 450 HP - SERVICE WATER PUMP
P5B 350 HP - AUXILIARY FEEDWATER PUMP
P11C 350 HP - REACTOR BUILDING CLOSED COOLING WATER PUMP
P41C 400 HP - HIGH PRESSURE SAFETY INJECTION PUMP
P42B 400 HP - LOW PRESSURE SAFETY INJECTION PUMP
P43B 250 HP - CONTAINMENT SPRAY PUMP
10KVA 1-Ø, 60 Hz 4160/240-120V 15G-13T
DIESEL GEN. 15G-13U(U17B) 2750KW, 4.16KV, 3Ø, 60Hz 0.8PF, X"d=8.5%, 0.36 SCR
SEE NOTE 5
TO UNIT 3 4.16KV NORM BUS 34B 3NNS-SWG-8 SECT 1 12179-EE-1A (25212-30001)
348-24E-2 (52-A505) 1200A 250MVA N.O.
4.16KV EMERG. BUS 24E (A5) 1200 AMPS
FACILITY 25
P5B 450 HP - SERVICE WATER PUMP
P11B 350 HP - REACTOR BUILDING CLOSED COOLING WATER PUMP
P41B 400 HP - HIGH PRESSURE SAFETY INJECTION PUMP
24E-1Y (A501) 18-5KVA 4160-120/240V (SPARE)
ENCLOSURE BUILDING LOAD CENTER
XFMR UB7 1500KVA 4160/480V 3Ø, 60Hz
N4105
AKR-30-75 52-14 3000 AT
P3A 1250 HP HEATER DRAINS PUMP
480V BUS 22G 3000 AMPS
UNIT SUBSTATION TRANSFORMER 24A1-1X (U81) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160V-480Y/277V, 3Ø, 60HZ 60°C RISE, Z=7.86%
UNIT SUBSTATION TRANSFORMER 2484-1X (U82) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160V-480Y/277V, 3Ø, 60HZ 60°C RISE, Z=7.59%
UNIT SUBSTATION TRANSFORMER 2442-1X (U83) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160V-480Y/277V, 3Ø, 60HZ 60°C RISE, Z=7.71%
UNIT SUBSTATION TRANSFORMER 2495-1X (U84) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160V-480Y/277V, 3Ø, 60HZ 60°C RISE, Z=7.74%
UNIT SUBSTATION TRANSFORMER 24C1-1X (U85) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160Y-480Y/277V, 3Ø, 60HZ 80°C RISE, Z=8.25%
UNIT SUBSTATION TRANSFORMER 2407-1X (U86) 1500KVA-AA/2000KVA-FA (FA RATING NOT USED) 4160Y-480Y/277V, 3Ø, 60HZ 80°C RISE, Z=7.74%
480V BUS 22A(B01) 2000 AMPS
480V BUS 22B(B02) 2000 AMPS
480V BUS 22C(B03) 2000 AMPS
480V BUS 22D (B04) 2000 AMPS
480V EMERGENCY BUS 22E(B05) 2000 AMPS
480V EMERGENCY BUS 22F(B06) 2000 AMPS
22A-1T-2 (B0111) 1600A N.O.
22C-11-2 (B0311) 1600A N.O.
FACILITY 1
1- 1600A, 4- 600A BREAKERS
L101 320KW PRESS. BACK-UP HTR'S GRP.1
P7A 125 HP TBCC WTR. CIRC. PUMP
DC1 100KVA TURBINE BLDG. BATT. CHARGER
HYDROLAZER
SECURITY FEED
FACILITY 2
4- 600A BREAKERS
L102 320KW PRESS. BACK-UP HTR'S GRP. 2
F2 150 HP STA. AIR COMPRESS.
P7B 125 HP TBCC WTR. CIRC. PUMP
U1 100KVA MAIN XFMR. COOL. EQ. POWER SUPPLY NO. 2
FACILITY 1
1- 1600A, 7- 600A BREAKERS
MS SPENT FUEL CRANE
L103 320KW PRESS. BACK-UP HTR'S GRP. 3
U1 100KVA MAIN XFMR. COOL. EQ. POWER SUPPLY NO. 1
1 SPARE 1600A BREAKER
200 HP SERVICE WTR. PUMP-CPF
2 SPARE 600A BREAKERS
WF3C INSTRUMENT AIR COMPRESSOR (32017 SH.11)
FACILITY 2
1-1600A, 3-600A BREAKERS
PC7 125 HP - TBCCW CIRCULATION PUMP
L104 320KW - PRESS. BACK-UP HTR'S GRP4
H8 REACTOR POLAR CRANE
P82 200 HP - FIRE PUMP
FACILITY 21
1-1600A, 6-600A BREAKERS
F14A 75 HP - CONTAIN. AIR RECIRC. COOL. UNIT
F14C 75 HP - CONTAIN. AIR RECIRC. COOL. UNIT
L046A 220 HP - MAC-JACK M-G SET NO. 1
L105 160KW PRESS. HTR'S (GRP P-1)
DC1 125KVA BATTERY CHARGER
DC3 125KVA BATTERY CHARGER
H2PA 75KW H_2 RECOMBINER
FACILITY 22
1-1600A, 5-600A BREAKERS
F14B 75 HP - CONTAIN. AIR RECIRC. UNIT
F14D 75 HP - CONTAIN. AIR RECIRC. UNIT
L046B 220 HP - MAC-JACK M-G SET NO. 2
L106 160KW PRESS. HTR'S (GRP P-2)
DC2 125KVA BATTERY CHARGER
H2PB 75KW H_2 RECOMBINER
MCC 22-1A (B11) 600A BUS
MCC 22-24 (B12) 600A BUS
MCC 22-3A (B13) 600A BUS
MCC 22-1B (B21) 600A BUS
MCC 22-2B (B22) 600A BUS
MCC 22-1CA (B31A) 600A BUS
MCC 22-2C (B32) 800A BUS
MCC 22-3C (B33) 600A BUS
MCC 22-1CB (B31B) 600A BUS
MCC 22-1DA (B41A) 800A BUS
MCC 22-2D (B42) 600A BUS
MCC 22-1DB (B41B) 800A BUS
MCC 22-1E (B51) 600A BUS
MCC 22-2E (B52) 600A BUS
MCC 22-1F (B61) 600A BUS
MCC 22-2F (B62) 600A BUS
TO UNIT 3 480V BUS 32G (S&W 3NJS-US-8B) DWG. 25212-30062
TO UNIT 3 480V BUS 32H (S&W 3NJS-US-4A) DWG. 25212-30053
800A 600AT
2NNS-ACB-AB
3NNS-ACB-AA
MCC 22-3B1(S&W 2NNS-MCC1A1)
5M
1M
CONDENSATE POLISHING FACILITY DWG. 25213-30001
2NNS-ACB-AD
3NNS-ACB-AC
MCC 22-3D1(S&W 2NNS-MCC1B1)
10M
NOTES:
1. ALL BREAKERS AND SWITCHES ARE NORMALLY CLOSED UNLESS NOTED OTHERWISE
2. BROKEN LINES INDICATE FUTURE
3. ALL 4.16 & 6.9KV CKT BKR'S ON THIS DRG. ARE 1200A CONTINUOUS UNLESS NOTED OTHERWISE
4. BKR INTERRUPT CAPACITIES ARE :
A- 345KV-25000MVA
B- 6.9KV-500MVA
C- 4160V BKR'S ARE RATED 250MVA UNLESS NOTED OTHERWISE
D- 480V-30000A RMS, SYMM. MIN. (LOAD CTRS) 480V-22000A RMS, SYMM. MIN. (LC.C.)
5. FOR NORMAL OPERATION BKR. A305 OR A408 SHALL BE CLOSED
REFERENCE DRAWINGS:
1. GENERAL NOTES AND SYMBOLS DWG. NO. 25203-30028
2. MAIN GENERATOR, RESERVE & NORMAL STATION SERVICE TRANSFORMERS ONE LINE METERING & RELAYING DIAGRAM DWG. NO. 25203-30002
3. 6.9KV SWITCHGEAR ONE LINE METERING & RELAYING DIAGRAM DWG. NO.25203-30003
4. 4.16KV SWITCHGEAR ONE LINE METERING & RELAYING DIAGRAM DWG. NO. 25203-30004-S
5. DIESEL GENERATOR ONE LINE METERING & RELAYING DIAGRAM DWG. NO. 25203-30006
REFERANCE DRAWINGS (CONT'D)
6. 480V LOADCENTER SUBSTATIONS ONE LINE METERING & RELAYING DIAGRAMS DWGS NO. 25203-30007-8
7. MAIN ONE LINE DIAGRAM UNIT #3 DWG 25212-30001 (SMEC DWG 12179-EE-1A)
8. 345KV SWITCHYARD SINGLE LINE METER & RELAY DIAGRAM DWG. NO. 25204-30801
9. 480V MCC LOAD SUMMARY, DWG. NO. 25203-30011
10. SINGLE LINE RISER DIAGRAM LIGHTING PANELS & XFMR'S DWG. NO. 25203-30025
11. BREAKER & RELAY SETTING SHEETS REF. DWG: 25203-
30099 - 480V BREAKER SETTINGS
30107 - 125VDC BREAKER SETTINGS
30108 - 4.16KV RELAY SETTINGS
30109 - 6.9KV RELAY SETTINGS
30131 - RSS HSS TRANSFORMER & GEN. (G01) RELAY SETTINGS
REDRAWN FROM 25203-30001 REV. 9
OPERATIONS CRITICAL
Q.A.
CAD NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED.
FSAR FIGURE
SAFETY EVALUATION MAYBE REQUIRED PRIOR TO CHANGES
REVISIONS
18 I-6-91 -01 INCORP. DCN DM2-00-0805-99 JSJ
17 9-28-98 INCORP. DCN DM2-00-0884-97 JSJ
16 1-14-00 INCORP. DCN DM2-00-0025-00 JSJ
Northeast Utilities System
FOR NORTHEAST NUCLEAR ENERGY CO.
MILLSTONE UNIT 2
MAIN SINGLE LINE DIAGRAM
WATERFORD, CT.
DRWN J.M.F. 01-10-92
CHKD DME 9-29-92
APP. RJD 9-29-92
APP. RCD 9-29-92
SCALE NONE
DWG NO. 25203-30001

Docket No. 50-336
B18342

Attachment 2

Millstone Nuclear Power Station, Unit No. 2

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Significant Hazards Consideration

Technical Specifications Change Request TSCR 2-6-00
Emergency Diesel Generator Allowed Outage Time
Significant Hazards Consideration

Description of License Amendment Request

Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to revise the Millstone Unit No. 2 Technical Specifications as described in this License Amendment Request. The proposed Technical Specification changes will increase the allowed outage time (AOT) for one inoperable emergency diesel generator (EDG) from 72 hours to 14 days to allow the performance of various maintenance and repair activities while the plant is operating. The requirement for the pressurizer heaters to be supplied by emergency power will be removed for consistency with the proposed EDG AOT change. Additional enhancements and more restrictive requirements are included. Refer to Attachment 1 of this submittal for a detailed discussion of the proposed changes.

Basis for No Significant Hazards Consideration

In accordance with 10 CFR 50.92, DNC has reviewed the proposed changes and has concluded that they do not involve a Significant Hazards Consideration (SHC). The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised. The proposed changes do not involve an SHC because the changes do not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed Technical Specification change to increase the EDG AOT from 72 hours to 14 days will not cause an accident to occur and will not result in any change in the operation of the associated accident mitigation equipment. The EDGs are not accident initiators, and extending the EDG AOT will not impact the frequency of any previously evaluated accidents. The design basis accidents will remain the same postulated events described in the Millstone Unit No. 2 Final Safety Analysis Report (FSAR). In addition, extending the EDG AOT will not impact the consequences of an accident previously evaluated. The consequences of previously evaluated accidents will remain the same during the proposed 14 day AOT as during the current 72 hour AOT. The ability of the remaining EDG to mitigate the consequences of an accident will not be affected since no additional failures are postulated while equipment is inoperable within the Technical Specification AOT. The remaining EDG is sufficient to mitigate the consequences of any design basis accident. Therefore, the proposed change will not increase the probability or consequences of an accident previously evaluated.

The proposed Technical Specification change to allow verification of offsite circuit(s) within 1 hour prior to or after entering the condition of either an inoperable offsite source or inoperable EDG will not cause an accident to occur and will not result in any change in the operation of the associated accident mitigation equipment. Performing a verification of the offsite circuits does not require any equipment manipulations or operator actions that could cause a previously evaluated accident to occur. Providing the flexibility to verify offsite circuit availability before removing equipment from service will reduce the potential to establish an adverse plant configuration. The design basis accidents will remain the same postulated events described in the Millstone Unit No. 2 FSAR. In addition, allowing an early verification of offsite circuit(s) will not impact the consequences of an accident previously evaluated. The consequences of previously evaluated accidents will remain the same whether the verification is performed immediately after, or just before, an EDG or offsite circuit is removed from service. The ability of the remaining power sources to mitigate the consequences of an accident will not be affected since no additional failures are postulated while equipment is inoperable within the Technical Specification AOT. The remaining power sources are sufficient to mitigate the consequences of any design basis accident. Therefore, the proposed change will not increase the probability or consequences of an accident previously evaluated.

The proposed Technical Specification changes associated with the requirements for the pressurizer heaters to be supplied by emergency power will not result in any change in plant design. These components will continue to be powered from Class 1E power sources. As a result, the operation and reliability of the pressurizer heaters will not be affected by the proposed changes. In addition, operation of the pressurizer heaters is not assumed to mitigate any design basis accident. The proposed changes will not cause an accident to occur and will not result in a change in the operation of any accident mitigation equipment. The design basis accidents remain the same postulated events described in the Millstone Unit No. 2 FSAR. Therefore, the proposed changes will not increase the probability or consequences of an accident previously evaluated.

The additional change to add the requirement to verify that the steam driven auxiliary feedwater (SDAFW) pump is operable when one EDG is inoperable will ensure sufficient auxiliary feedwater capability is available if a loss of offsite power were to occur. Operation of the SDAFW pump will not be affected by the proposed change, and the SDAFW pump is not an accident initiator. Verifying operability of the SDAFW pump will not impact the frequency of any previously evaluated accidents. The design basis accidents will remain the same postulated events described in the Millstone Unit No. 2 FSAR. The ability of the SDAFW pump to mitigate the consequences of an accident will not be affected. Therefore, the proposed change will not increase the probability or consequences of an accident previously evaluated.

The additional proposed changes to renumber action requirements and remove a footnote that is no longer valid will not result in any technical changes to the current requirements. Therefore, these additional proposed change will not increase the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes to the Technical Specifications do not impact any system or component in a manner that could cause an accident. The proposed changes will not alter the plant configuration (no new or different type of equipment will be installed) or require any unusual operator actions. The proposed changes will not alter the way any structure, system, or component functions, and will not significantly alter the manner in which the plant is operated. There will be no adverse effect on plant operation or accident mitigation equipment. The response of the plant and the operators following an accident will not be significantly different. In addition, the proposed changes do not introduce any new failure modes. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

The proposed Technical Specification change to increase the EDG AOT from 72 hours to 14 days and allow verification of offsite circuit(s) within 1 hour prior to or after entering the condition of an inoperable offsite source or inoperable EDG does not adversely affect equipment design or operation, and there are no changes being made to the Technical Specification required safety limits or safety system settings that would adversely affect plant safety. The proposed Technical Specification change, in conjunction with the administrative controls, provides adequate assurance of the capability to supply power to the safety related Class 1E electrical loads thereby ensuring the accident mitigation functions will be maintained. The availability of offsite power combined with the availability of the Millstone Unit No. 3 Station Blackout diesel generator and the use of the Configuration Risk Management Program required by 10 CFR 50.65(a)(4) provide adequate compensation for the small incremental increase in plant risk of the proposed EDG AOT extension. This small increase in plant risk while operating is offset by a reduction in shutdown risk resulting from the increased availability and reliability of the EDGs during refueling outages, and avoiding transition risk incurred during unplanned plant shutdowns. In addition, the calculated risk measures associated with the proposed AOT are below the acceptance criteria defined in Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998. Therefore, the proposed change will not result in a significant reduction in a margin of safety.

The proposed Technical Specification changes associated with the requirements for the pressurizer heaters to be supplied by emergency power do not adversely affect equipment design or operation, and there are no changes being made to the Technical Specification required safety limits or safety system settings that would adversely affect plant safety. The emergency power requirement for the pressurizer heaters, which came from the Three Mile Island (TMI) action item requirement item II.E.3.1, "Emergency Power Requirements for Pressurizer Heaters," of NUREG-0737, "A Clarification of TMI Action Plan Requirements," will continue to be met. The pressurizer heaters are permanently connected to Class 1E power supplies as described in the Millstone Unit No. 2 FSAR. Therefore, these changes will not result in a significant reduction in a margin of safety.

The additional more restrictive change to add the requirement to verify that the SDAFW pump is operable when one EDG is inoperable will not adversely affect equipment design or operation, and there are no changes being made to the Technical Specification required safety limits or safety system settings that would adversely affect plant safety. Operation of the SDAFW pump will not be affected by the proposed change. Therefore, this change will not result in a significant reduction in a margin of safety.

The additional proposed changes to renumber action requirements and remove a footnote that is no longer valid will not result in any technical changes to the current requirements. Therefore, these additional changes will not result in a significant reduction in a margin of safety.

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Attachment 3

Millstone Nuclear Power Station, Unit No. 2

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Marked Up Pages

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Changes to the following Technical Specification pages have been proposed.

Technical Specification Section Numbers	Title(s) of Section(s)	Page and Revision Numbers
3/4.4.4	Reactor Coolant System Pressurizer	3/4 4-4 Amend. 219
3/4.8.1.1	Electrical Power Systems A. C. Sources - Operating	3/4 8-1 Amend. 251 3/4 8-2 Amend. 231
3/4.4.4	Reactor Coolant System Pressurizer Bases	B 3/4 4-2a Amend. 218
3/4.8.1	Electrical Power Systems A. C. Sources Bases	B 3/4 8-1b Amend. 248

3/4.0 APPLICABILITY

NO CHANGE FOR INFORMATION ONLY

September 14, 2000

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals, except as provided in LCO 3.0.6. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour ACTION shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time it is identified that a Limiting Condition for Operation is not met. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODES 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within 2 hours, ACTION shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours.
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

This specification is not applicable in MODES 5 or 6.

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance time interval.

4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. The time limits of the ACTION requirements are applicable at the time it is identified that a Surveillance Requirement has not been performed. The ACTION requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the ACTION requirements are less than 24 hours. Surveillance Requirements do not have to be performed on inoperable equipment.

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2 and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2 and 3 components and inservice testing ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a.

REACTOR COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.4 The pressurizer shall be OPERABLE with:

a. A water volume greater than or equal to 525 cubic feed (35%) but less than or equal to 1050 cubic feet (70%), and

b. At least two groups of pressurizer heaters each having a capacity of at least 130 kW ~~capable of being supplied by emergency power~~.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With only one group of pressurizer heaters OPERABLE, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.

b. With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the reactor trip breakers open within 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.4.1 The pressurizer water volume shall be determined to be within its limits at least once per 12 hours.

4.4.4.2 Verify at least two groups of pressurizer heaters~~, which are supplied by emergency power,~~ each have a capacity of at least 130 kW at least once per 92 days.

3/4.8.1 A.C. SOURCES

OPERATING December 21, 2000

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators each with a separate fuel oil supply tank containing a minimum of 12,000 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Inoperable Equipment	Required Action
a. One offsite circuit	a.1 Perform Surveillance Requirement 4.8.1.1.1 for remaining offsite circuit within 1 hour and at least once per 8 hours thereafter. (prior to or after entering this condition) AND a.2 Restore the inoperable offsite circuit to OPERABLE status within 72 hours* or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
b. One diesel generator	b.1 Perform Surveillance Requirement 4.8.1.1.1 for the offsite circuits within 1 hour and at least once per 8 hours thereafter. (prior to or after entering this condition) AND b.2 Demonstrate OPERABLE diesel generator is not inoperable due to common cause failure within 24 hours or perform Surveillance Requirement 4.8.1.1.2.a.2 for the OPERABLE diesel generator within 24 hours. AND b.3 Restore the inoperable diesel generator to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

INSERT A

*Except that once during the implementation of the MP2 4.16 kV cross-tie with MP3, the 72-hour allowed outage time can be extended to 14 days provided the MP3 station blackout diesel generator is available to supply MP2, otherwise the allowed outage time can only be extended to 7 days.

INSERT A - Page 3/4 8-1

b.3 Verify the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If this condition is not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours.

AND

b.4 (Applicable only if the 14 day allowed outage time specified in Action Statement b.5 is to be used.) Verify the required Millstone Unit No. 3 diesel generator(s) is/are OPERABLE and the Millstone Unit No. 3 SBO diesel generator is available within 1 hour prior to or after entering this condition, and at least once per 24 hours thereafter. Restore any inoperable required Millstone Unit No. 3 diesel generator to OPERABLE status and/or Millstone Unit No. 3 SBO diesel generator to available status within 72 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

AND

b.5 Restore the inoperable diesel generator to OPERABLE status within 72 hours (within 14 days if Action Statement b.4 is met) or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

March 12, 1999

Inoperable Equipment	Required Action
c. One offsite circuit AND One diesel generator	c.1 Perform Surveillance Requirement 4.8.1.1.1 for remaining offsite circuit within 1 hour and at least once per 8 hours thereafter. AND c.2 Demonstrate OPERABLE diesel generator is not inoperable due to common cause failure within 8 hours or perform Surveillance Requirement 4.8.1.1.2.a.2 for the OPERABLE diesel generator within 8 hours. INSERT B AND c.3 (4) Restore one inoperable A.C. source to OPERABLE status within 12 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours. AND C.4 (5) Restore remaining inoperable A.C. source to OPERABLE status following the time requirements of Action Statements a or b above based on the initial loss of the remaining inoperable A.C. source.
d. Two offsite circuits	d.1 Restore one of the inoperable offsite sources to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours. AND d.2 Following restoration of one offsite source restore remaining inoperable offsite source to OPERABLE status following the time requirements of Action Statement a above based on the initial loss of the remaining inoperable offsite source.

INSERT B - Page 3/4 8-2

AND

C.3 Verify the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If this condition is not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours.

ACTION (Continued)

NO CHANGE
FOR INFORMATION ONLY

Inoperable Equipment	Required Action
e. Two diesel generators	e.1 Perform Surveillance Requirement 4.8.1.1.1 for the offsite circuits within 1 hour and at least once per 8 hours thereafter. AND e.2 Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours. AND e.3 Following restoration of one diesel generator restore remaining inoperable diesel generator to OPERABLE status following the time requirements of Action Statement b above based on the initial loss of the remaining inoperable diesel generator.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Verify correct breaker alignment and indicated power available for each required offsite circuit at least once per 24 hours.

4.8.1.1.2 Each required diesel generator shall be demonstrated OPERABLE:*

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the fuel oil supply tank,

2. Verifying the diesel starts from standby conditions and accelerates to $\geq$ 90% of rated speed and to $\geq$ 97% of rated voltage.** A modified start involving idling and gradual acceleration to synchronous speed may be used as recommended by the manufacturer. If a modified start, as just defined, is not used, the requirements of Surveillance Requirement 4.8.1.1.2.d.1 apply for this test.

3. Verifying the generator is synchronized and loaded in accordance with the manufacturer's recommendations to $\geq$ 1300 kW and operates with a load $\geq$ 1300 kW for $\geq$ 60 minutes.**

*All diesel starts may be preceded by an engine prelube period.

**Performance of Surveillance Requirement 4.8.1.1.2.d satisfies this Surveillance Requirement.

stuck open PORV at a time that the block valve is inoperable. This may be accomplished by various methods. These methods include, but are not limited to, placing the NORMAL/ISOLATE switch at the associated Bottle Up Panel in the "ISOLATE" position or pulling the control power fuses for the associated PORV control circuit.

Although the block valve may be designated inoperable, it may be able to be manually opened and closed and in this manner can be used to perform its function. Block valve inoperability may be due to seat leakage, instrumentation problems, or other causes that do not prevent manual use and do not create a possibility for a small break LOCA. This condition is only intended to permit operation of the plant for a limited period of time. The block valve should normally be available to allow PORV operation for automatic mitigation of overpressure events. The block valves must be returned to OPERABLE status prior to entering MODE 3 after a refueling outage.

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the completion time of 1 hour or isolate the flow path by closing and removing the power to the associated block valve and cooldown the RCS to MODE 4.

3/4.4.4 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the reactor coolant system during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which occurs if the heaters are energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves and power operated relief valve against water relief. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability of the plant to control Reactor Coolant System pressure and establish and maintain natural circulation.

INSERT C

The requirement that 130 kW of pressurizer heaters and their associated controls be capable of being supplied electrical power from an emergency bus provides assurance that these heaters can be energized during a loss of off-site power condition to maintain natural circulation at HOT STANDBY.

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is

INSERT C - Page 3/4 4-2a

The requirement for two groups of pressurizer heaters, each having a capacity of 130 kW, is met by verifying the capacity of the pressurizer proportional heater groups 1 and 2. Since the pressurizer proportional heater groups 1 and 2 are supplied from the emergency 480V electrical buses, there is reasonable assurance that these heaters can be energized during a loss of offsite power to maintain natural circulation at HOT STANDBY.

NO CHANGE FOR INFORMATION ONLY

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The required circuits between the offsite transmission network and the onsite Class 1E distribution system (Station Busses 24C, 24D, and 24E) that satisfy Technical Specification 3.8.1.1.a (MODES 1, 2, 3, and 4) consist of the following:

1. At least two of the four 345 kV transmission lines (310 Line, 348 Line, 371 Line, and 383 Line) that tie the switchyard to the grid are in service with their switchyard breakers closed.

AND

2. The following circuits from the switchyard to the onsite electrical distribution system:

   a. Station safeguards busses 24C and 24D via the Unit 2 Reserve Station Service Transformer and bus 24G; and

   b. Station bus 24E via the Unit 3 Reserve Station Service Transformer or Unit 3 Normal Station Service Transformer (energized with breaker 13T and associated disconnect switches open) and bus 34A or 34B.

The required circuit between the offsite transmission network and the onsite Class 1E distribution system (Station Busses 24C, 24D, and 24E) that satisfies Technical Specification 3.8.1.2.a (MODES 5 and 6) consists of the following:

1. At least one of the four 345 kV transmission lines (310 Line, 348 Line, 371 Line, and 383 Line) that tie the switchyard to the grid are in service with their switchyard breakers closed.

AND

2. The following circuit from the switchyard to the onsite electrical distribution system:

   a. Station safeguards bus 24C or 24D via the Unit 2 Reserve Station Service Transformer and bus 24G; or

   b. Station bus 24E via the Unit 3 Reserve Station Service Transformer or Unit 3 Normal Station Service Transformer (energized with breaker 13T and associated disconnect switches open) and bus 34A or 34B.

When the plant is operating with the main generator connected to the grid, the output of the main generator will normally be used to supply the onsite Class 1E distribution system. During this time the required offsite circuits will be in standby, ready to supply power to the onsite Class 1E distribution system if the main generator is not available. When shut down, only one of the offsite circuits will normally be used to supply the onsite Class 1E distribution system. The other offsite circuit, if required, will be in standby. Verification of the required offsite circuits consists of checking control power to the breakers (breaker indicating lights), proper breaker position for the current plant configuration, and voltage indication as appropriate for the current plant configuration.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one of each of the onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

Technical Specification 3.8.1.1 Action Statements b and c provide an allowance to avoid unnecessary testing of the other OPERABLE diesel generator. If it can be determined that the cause of the inoperable diesel generator does not exist on the OPERABLE diesel generator, Surveillance Requirement 4.8.1.1.2.a.2 does not have to be performed. If the cause of inoperability exists on the other OPERABLE diesel generator, the other OPERABLE diesel generator would be declared inoperable upon discovery, Action Statement e would be entered, and appropriate actions will be taken. Once the failure is corrected, the common cause failure no longer exists, and the required Action Statements (b, c, and e) will be satisfied.

If it cannot be determined that the cause of the inoperable diesel generator does not exist on the remaining diesel generator, performance of Surveillance Requirement 4.8.1.1.2.a.2, within the allowed time period, suffices to provide assurance of continued OPERABILITY of the diesel generator. If the inoperable diesel generator is restored to OPERABLE status prior to the determination of the impact on the other diesel generator, evaluation will continue of the possible common cause failure. This continued evaluation is no longer under the time constraint imposed while in Action Statement b or c.

The determination of the existence of a common cause failure that would affect the remaining diesel generator will require an evaluation of the current failure and the applicability to the remaining diesel generator. Examples that would not be a common cause failure include, but are not limited to:

1. Preplanned preventive maintenance or testing, or

2. An inoperable support system with no potential common mode failure for the remaining diesel generator, or

INSERT D

3. An independently testable component with no potential common mode failure for the remaining diesel generator.

During performance of Surveillance Requirements 4.8.1.1.2.a.2 and 4.8.1.1.2.d.2, the diesel generators shall be started by using one of the following signals:

1. Manual;

2. Simulated loss of offsite power in conjunction with a safety injection actuation signal;

3. Simulated safety injection actuation signal alone; or

4. Simulated loss of power alone.

The diesel generator surveillance requirements specify that the diesel generators are started from a standby condition. Standby conditions for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

Surveillance Requirement (SR) 4.8.1.1.2.d.1 verifies that the diesel generators will reach $\geq$ 90% of rated speed and $\geq$ 97% of rated voltage within 15 seconds after a start signal is generated. Diesel generator voltage and speed will continue to increase to rated values, and then should stabilize. The time for voltage and speed (frequency) to stabilize is periodically monitored and the trend evaluated to identify degradation of governor or voltage regulator performance when testing in accordance with the requirements of SR 4.8.1.1.2.d.1.

The OPERABILITY of the minimum specified A.C.and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status. If the required power sources or distribution systems are not OPERABLE in MODES 5 and 6, operations involving CORE ALTERATIONS, positive reactivity changes, or movement of irradiated fuel assemblies are required to be suspended. The required action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN. In addition, suspension of these activities does not preclude completion of actions to establish a safe conservative plant condition.

The non-safety grade 125V D.C. Turbine Battery is required for accident mitigation for a main steam line break within containment with a coincident loss of a vital D.C. bus. The Turbine Battery provides the alternate source of power for Inverters 1 & 2 respectively via non-safety grade Inverters 5 & 6. For the loss of a D.C. event with a coincident steam line break within containment, the feedwater regulating valves are required to close to ensure containment design pressure is not exceeded.

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If one Millstone Unit No. 2 diesel generator is inoperable in MODES 1 through 4, Action Statements b.3 and c.3 require verification that the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If the steam-driven auxiliary feedwater pump is inoperable, restoration within 2 hours is required or a plant shutdown to MODE 4 will be necessary. This requirement is intended to provide assurance that a loss of offsite power event will not result in degradation of the auxiliary feedwater safety function to below accident mitigation requirements during the period one of the diesel generators is inoperable. The term verify, as used in this context, means to administratively check by examining logs or other information to determine if the steam-driven auxiliary feedwater pump is out of service for maintenance or other reasons. It does not mean to perform Surveillance Requirements needed to demonstrate the OPERABILITY of the steam-driven auxiliary feedwater pump.

If one Millstone Unit No. 2 diesel generator is inoperable in MODES 1 through 4, a 72 hour allowed outage time is provided by Action Statement b.5 to allow restoration of the diesel generator, provided the requirements of Action Statements b.1, b.2, and b.3 are met. This allowed outage time can be extended to 14 days if the additional requirements contained in Action Statement b.4 are also met. Action Statement b.4 requires verification that the Millstone Unit No. 3 diesel generators are OPERABLE as required by the applicable Millstone Unit No. 3 Technical Specification (2 diesel generators in MODES 1 through 4, and 1 diesel generator in MODES 5 and 6) and the Millstone Unit No. 3 SBO diesel generator is available. The term verify, as used in this context, means to administratively check by examining logs or other information to determine if the required Millstone Unit No. 3 diesel generators and the Millstone Unit No. 3 SBO diesel generator are out of service for maintenance or other reasons. It does not mean to perform Surveillance Requirements needed to demonstrate the OPERABILITY of the required Millstone Unit No. 3 diesel generators or availability of the Millstone Unit No. 3 SBO diesel generator.

When using the 14 day allowed outage time provision and the Millstone Unit No. 3 diesel generator and/or the Millstone Unit No. 3 SBO diesel generator requirements are not met, 72 hours is allowed for restoration of the required Millstone Unit No. 3 diesel generators and the Millstone Unit No. 3 SBO diesel generator. If any of the required Millstone Unit No. 3 diesel generators and/or the Millstone Unit No. 3 SBO diesel generator are not restored within 72 hours, and one Millstone Unit No. 2 diesel generator is still inoperable, Millstone Unit No. 2 is required to shut down.

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The 14 day allowed outage time for one inoperable Millstone Unit No. 2 diesel generator will allow performance of extended diesel generator maintenance and repair activities (e.g., diesel inspections) while the plant is operating. To minimize plant risk when using this extended allowed outage time the following additional requirements must be met:

1. The extended diesel generator maintenance outage shall not be scheduled when adverse or inclement weather conditions are predicted or present.

2. The availability of the Millstone Unit No. 3 SBO DG shall be verified by test performance within the previous 30 days prior to allowing a Millstone Unit No. 2 diesel generator to be inoperable for greater than 72 hours.

In addition, the plant configuration shall be controlled during the diesel generator maintenance and repair activities to minimize plant risk consistent with a Configuration Risk Management Program, as required by 10 CFR 50.65(a)(4).

NO CHANGE FOR INFORMATION ONLY August 7, 2000

The feedwater regulating valves require power to close. On loss of a vital D.C. bus, the alternate source of power to the vital A.C. bus via the Turbine Battery ensures power is available to the affected feedwater regulating valve such that the valve will isolate feed flow into the faulted generator. The Turbine Battery is considered inoperable when bus voltage is less than 125 volts D.C, thereby ensuring adequate capacity for isolation functions via the feedwater regulating valves during the onset of a steam line break.

The Turbine Battery Charger is not required to be included in Technical Specifications even though the Turbine Battery is needed to power backup Inverters 5 & 6 for a main steam line break inside containment coincident with a loss of a Class 1E D.C. bus. This is due to the fact that feedwater isolation occurs within seconds from the onset of the event.

Docket No. 50-336
B18342

Attachment 4

Millstone Nuclear Power Station, Unit No. 2

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Retyped Pages

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.4 The pressurizer shall be OPERABLE with:

a. A water volume greater than or equal to 525 cubic feed (35%) but less than or equal to 1050 cubic feet (70%), and

b. At least two groups of pressurizer heaters each having a capacity of at least 130 kW.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With only one group of pressurizer heaters OPERABLE, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.

b. With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the reactor trip breakers open within 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.4.1 The pressurizer water volume shall be determined to be within its limits at least once per 12 hours.

4.4.4.2 Verify at least two groups of pressurizer heaters each have a capacity of at least 130 kW at least once per 92 days.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators each with a separate fuel oil supply tank containing a minimum of 12,000 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Inoperable Equipment	Required Action
a. One offsite circuit	a.1 Perform Surveillance Requirement 4.8.1.1.1 for remaining offsite circuit within 1 hour prior to or after entering this condition, and at least once per 8 hours thereafter. AND a.2 Restore the inoperable offsite circuit to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

Inoperable Equipment	Required Action
b. One diesel generator	b.1 Perform Surveillance Requirement 4.8.1.1.1 for the offsite circuits within 1 hour prior to or after entering this condition, and at least once per 8 hours thereafter. AND b.2 Demonstrate OPERABLE diesel generator is not inoperable due to common cause failure within 24 hours or perform Surveillance Requirement 4.8.1.1.2.a.2 for the OPERABLE diesel generator within 24 hours. AND b.3 Verify the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If this condition is not satisfied within 2 hours, be in a least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. AND b.4 (Applicable only if the 14 day allowed outage time specified in Action Statement b.5 is to be used.) Verify the required Millstone Unit No. 3 diesel generator(s) is/are OPERABLE and the Millstone Unit No. 3 SBO diesel generator is available within 1 hour prior to or after entering this condition, and at least once per 24 hours thereafter. Restore any inoperable required Millstone Unit No. 3 diesel generator to OPERABLE status and/or Millstone Unit No. 3 SBO diesel generator to available status within 72 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours. AND b.5 Restore the inoperable diesel generator to OPERABLE status within 72 hours (within 14 days if Action Statement b.4 is met) or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

Inoperable Equipment	Required Action
c. One offsite circuit AND One diesel generator	c.1 Perform Surveillance Requirement 4.8.1.1.1 for remaining offsite circuit within 1 hour and at least once per 8 hours thereafter. AND c.2 Demonstrate OPERABLE diesel generator is not inoperable due to common cause failure within 8 hours or perform Surveillance Requirement 4.8.1.1.2.a.2 for the OPERABLE diesel generator within 8 hours. AND c.3 Verify the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If this condition is not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. AND c.4 Restore one inoperable A.C. source to OPERABLE status within 12 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours. AND c.5 Restore remaining inoperable A.C. source to OPERABLE status following the time requirements of Action Statements a or b above based on the initial loss of the remaining inoperable A.C. source.
d. Two offsite circuits	d.1 Restore one of the inoperable offsite sources to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours. AND d.2 Following restoration of one offsite source restore remaining inoperable offsite source to OPERABLE status following the time requirements of Action Statement a above based on the initial loss of the remaining inoperable offsite source.

stuck open PORV at a time that the block valve is inoperable. This may be accomplished by various methods. These methods include, but are not limited to, placing the NORMAL/ISOLATE switch at the associated Bottle Up Panel in the "ISOLATE" position or pulling the control power fuses for the associated PORV control circuit.

Although the block valve may be designated inoperable, it may be able to be manually opened and closed and in this manner can be used to perform its function. Block valve inoperability may be due to seat leakage, instrumentation problems, or other causes that do not prevent manual use and do not create a possibility for a small break LOCA. This condition is only intended to permit operation of the plant for a limited period of time. The block valve should normally be available to allow PORV operation for automatic mitigation of overpressure events. The block valves must be returned to OPERABLE status prior to entering MODE 3 after a refueling outage.

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the completion time of 1 hour or isolate the flow path by closing and removing the power to the associated block valve and cooldown the RCS to MODE 4.

3/4.4.4 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the reactor coolant system during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which occurs if the heaters are energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves and power operated relief valve against water relief. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability of the plant to control Reactor Coolant System pressure and establish and maintain natural circulation.

The requirement for two groups of pressurizer heaters, each having a capacity of 130 kW, is met by verifying the capacity of the pressurizer proportional heater groups 1 and 2. Since the pressurizer proportional heater groups 1 and 2 are supplied from the emergency 480V electrical buses, there is reasonable assurance that these heaters can be energized during a loss of offsite power to maintain natural circulation at HOT STANDBY.

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is

3. An independently testable component with no potential common mode failure for the remaining diesel generator.

If one Millstone Unit No. 2 diesel generator is inoperable in MODES 1 though 4, Action Statements b.3 and c.3 require verification that the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If the steam-driven auxiliary feedwater pump is inoperable, restoration within 2 hours is required or a plant shutdown to MODE 4 will be necessary. This requirement is intended to provide assurance that a loss of offsite power event will not result in degradation of the auxiliary feedwater safety function to below accident mitigation requirements during the period one of the diesel generators is inoperable. The term verify, as used in this context, means to administratively check by examining logs or other information to determine if the steam-driven auxiliary feedwater pump is out of service for maintenance or other reasons. It does not mean to perform Surveillance Requirements needed to demonstrate the OPERABILITY of the steam-driven auxiliary feedwater pump.

If one Millstone Unit No. 2 diesel generator is inoperable in MODES 1 through 4, a 72 hour allowed outage time is provided by Action Statement b.5 to allow restoration of the diesel generator, provided the requirements of Action Statements b.1, b.2, and b.3 are met. This allowed outage time can be extended to 14 days if the additional requirements contained in Action Statement b.4 are also met. Action Statement b.4 requires verification that the Millstone Unit No. 3 diesel generators are OPERABLE as required by the applicable Millstone Unit No. 3 Technical Specification (2 diesel generators in MODES 1 through 4, and 1 diesel generator in MODES 5 and 6) and the Millstone Unit No. 3 SBO diesel generator is available. The term verify, as used in this context, means to administratively check by examining logs or other information to determine if the required Millstone Unit No. 3 diesel generators and the Millstone Unit No. 3 SBO diesel generator are out of service for maintenance or other reasons. It does not mean to perform Surveillance Requirements needed to demonstrate the OPERABILITY of the required Millstone Unit No. 3 diesel generators or availability of the Millstone Unit No. 3 SBO diesel generator.

When using the 14 day allowed outage time provision and the Millstone Unit No. 3 diesel generator and/or the Millstone Unit No. 3 SBO diesel generator requirements are not met, 72 hours is allowed for restoration of the required Millstone Unit No. 3 diesel generators and the Millstone Unit No. 3 SBO diesel generator. If any of the required Millstone Unit No. 3 diesel generators and/or the Millstone Unit No. 3 SBO diesel generator are not restored within 72 hours, and one Millstone Unit No. 2 diesel generator is still inoperable, Millstone Unit No. 2 is required to shut down.

BASES

The 14 day allowed outage time for one inoperable Millstone Unit No. 2 diesel generator will allow performance of extended diesel generator maintenance and repair activities (e.g., diesel inspections) while the plant is operating. To minimize plant risk when using this extended allowed outage time the following additional requirements must be met:

1. The extended diesel generator maintenance outage shall not be scheduled when adverse or inclement weather conditions are predicted or present.

2. The availability of the Millstone Unit No. 3 SBO DG shall be verified by test performance within the previous 30 days prior to allowing a Millstone Unit No. 2 diesel generator to be inoperable for greater than 72 hours.

In addition, the plant configuration shall be controlled during the diesel generator maintenance and repair activities to minimize plant risk consistent with a Configuration Risk Management Program, as required by 10 CFR 50.65(a)(4).

During performance of Surveillance Requirements 4.8.1.1.2.a.2 and 4.8.1.1.2.d.2, the diesel generators shall be started by using one of the following signals:

1. Manual;

2. Simulated loss of offsite power in conjunction with a safety injection actuation signal;

3. Simulated safety injection actuation signal alone; or

4. Simulated loss of power alone.

The diesel generator surveillance requirements specify that the diesel generators are started from a standby condition. Standby conditions for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

Surveillance Requirement (SR) 4.8.1.1.2.d.1 verifies that the diesel generators will reach $\geq$ 90% of rated speed and $\geq$ 97% of rated voltage within 15 seconds after a start signal is generated. Diesel generator voltage and speed will continue to increase to rated values, and then should stabilize. The time for voltage and speed (frequency) to stabilize is periodically monitored and the trend evaluated to identify degradation of governor or voltage regulator performance when testing in accordance with the requirements of SR 4.8.1.1.2.d.1.

The OPERABILITY of the minimum specified A.C.and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status. If the required power sources or distribution systems are not OPERABLE in MODES 5 and 6, operations involving CORE ALTERATIONS, positive reactivity changes, or movement of irradiated fuel assemblies are required to be suspended. The required action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN. In addition, suspension of these activities does not preclude completion of actions to establish a safe conservative plant condition.

The non-safety grade 125V D.C. Turbine Battery is required for accident mitigation for a main steam line break within containment with a coincident loss of a vital D.C. bus. The Turbine Battery provides the alternate source of power for Inverters 1 & 2 respectively via non-safety grade Inverters 5 & 6. For the loss of a D.C. event with a coincident steam line break within containment, the feedwater regulating valves are required to close to ensure containment design pressure is not exceeded.

Docket No. 50-336
B18342

Attachment 5

Millstone Nuclear Power Station, Unit No. 2

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Risk Evaluation

Technical Specifications Change Request (TSCR) 2-6-00
Emergency Diesel Generator Allowed Outage Time
Risk Evaluation

Introduction

The proposed Millstone Unit No. 2 Technical Specification change to increase the allowed outage time (AOT) for one inoperable emergency diesel generator (EDG) from 72 hours to 14 days will allow the performance of various maintenance and repair activities while the plant is operating. This risk informed submittal is based on the requirements contained in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998.

The proposed changes have been evaluated to determine that current regulations and applicable requirements continue to be met, that adequate defense-in-depth and sufficient safety margins are maintained, and that any increase in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) is small and consistent with the NRC Safety Goal Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities; Final Policy Statement," Federal Register, 60 FR 42622, dated August 16, 1995.

The justification for the change to the Millstone Unit No. 2 EDG AOT is based upon a risk informed evaluation (deterministic and probabilistic) consisting of three main elements:

1. Availability of offsite power via the Millstone Unit No. 2 Reserve Station Service Transformer (RSST) and either the Millstone Unit No. 3 RSST or Normal Station Service Transformer (NSST) via the 4160V cross-tie.

2. Verification that the required Millstone Unit No. 3 EDGs are operable and the Millstone Unit No. 3 Station Blackout Diesel Generator (SBO DG) is available.

3. Reliance on a Configuration Risk Management Program (CRMP), required by 10 CFR 50.65(a)(4), to control plant integrated risk while a Millstone Unit No. 2 EDG is in an extended outage.

The CRMP is used for EDG work, as well as other work activities, and helps ensure that there is no significant increase in the risk to public health and safety while maintenance or repair activities are performed. These elements provide the bases for the proposed AOT change by providing a high degree of assurance that power can be provided to the Engineered Safety Features (ESF) buses during all Design Basis Accidents (DBAs), a Station Blackout (SBO) event, or a fire when an EDG is inoperable for an extended time period (i.e., 14 days).

PRA Evaluation

A probabilistic risk assessment (PRA) of the proposed increase in the AOT for one inoperable EDG at Millstone Unit No. 2 has been performed. This evaluation utilized the guidelines provided in RG 1.177. RG 1.177 defines the following three-tiered approach to evaluate the risk impact of extending a Technical Specification AOT.

Tier 1: PRA Capability and Insights

Evaluate the impact on plant risk of the proposed Technical Specification change as expressed by the change in CDF, Incremental Conditional Core Damage Probability (ICCDP), change in LERF, and Incremental Conditional Large Early Release Probability (ICLERP).

Tier 2: Avoidance of Risk Significant Plant Configurations

Identify potential high risk configurations that could exist if equipment in addition to that associated with the change were to be taken out simultaneously, or other risk significant operational factors such as concurrent system or equipment testing were also involved.

Tier 3: Risk-Informed Configuration Risk Management

Establish a CRMP to ensure that other potentially lower probability, but nonetheless risk significant, configurations resulting from maintenance and other operational activities are identified and compensated for.

The primary focus of this evaluation is placed on Tier 1, and only on the risk associated with power operation. The second and third tiers are addressed by 10 CFR 50.65(a)(4), the Maintenance Rule, which has been implemented at Millstone Unit No. 2.

The results of this evaluation are summarized in Table 1, Risk Evaluation Results, located in the conclusion section of this attachment. Additional information supporting this evaluation is contained in Table 2, Core Damage Frequency Contribution by Initiating Event, and Table 3, Large Early Release Frequency Contributors, located at the end of this attachment.

<u>Tier 1 - PRA Capability and Insights</u>

The purpose of Tier 1 is to quantitatively assess the risk impact of the proposed Technical Specification AOT change. To support this quantitative assessment, RG 1.177 recommends that 2 aspects, validity of the PRA and PRA insights and findings, be considered. These aspects are addressed during the discussion of the quantitative results.

RG 1.177 provides acceptance criteria for ICCDP and ICLERP. The purpose of the numerical guidelines is to demonstrate that the risk increase is small and to provide a quantitative basis for the risk increase based on the aspects of the Technical Specification change modeled. A small risk increase is defined as ICCDP < 5.0E-07 and ICLERP $\leq$ 5.0E-08.

ICCDP and ICLERP are defined numerically as:

ICCDP = [(conditional CDF with the subject equipment out of service)
- (baseline CDF with nominal expected equipment unavailabilities)]
* (duration of single AOT under consideration)

ICLERP = [(conditional LERF with the subject equipment out of service)
-(baseline LERF with nominal expected equipment unavailabilities)]
* (duration of single AOT under consideration)

For this evaluation, the conditional CDF and LERF terms refer to the risk of operating with an EDG out of service and the remaining equipment in service. The baseline CDF and LERF terms refer to the average risk measures calculated using historical average equipment unavailabilities for all components except the EDGs. This is because the current historical maintenance unavailability value does not take into account the proposed EDG AOT extension. The present unavailability values used within the PRA model are:

EDG A = 140.6 hr/yr
EDG B = 130.8 hr/yr

If the EDG AOT extension is approved, it is assumed that the unavailability values will range between 200 hr/yr to 300 hr/yr per EDG. Substituting 200 hr/yr into the PRA model yields a baseline CDF of 7.41E-05/yr, compared with the current baseline CDF of 7.39E-05/yr. This constitutes a 0.3% increase in CDF. If the unavailability value were to become 300 hr/yr, the baseline CDF would be 7.46E-05/yr, which is a 0.9% increase in CDF. Similarly, substituting 200 hr/yr into the PRA model yields a baseline LERF of 7.920E-07/yr, compared with the current baseline LERF of 7.917E-07/yr, which is a negligible increase in LERF. If the unavailability value were to become 300 hr/yr, the baseline LERF would be 7.922E-07/yr, which is less than a 0.1% increase in LERF.

It should be noted that the current Maintenance Rule unavailability performance criteria for the EDGs is 150 hr/yr. This will be reevaluated if the proposed Technical Specification change is approved. To be conservative, the subsequent ICCDP and ICLERP calculations use the EDG unavailabilities currently assumed in the PRA model, since this will produce the largest ICCDP and ICLERP values.

The EDG reliability values are based on generic data from NUREG/CR-4550, Volume 1,[1] which is used in the calculation of the fail to start and fail to run values for the EDGs. The report identifies that there has been 3 EDG start failures in 529 demands and 9 EDG run failures in 1891.4 hours of testing. These values are Bayesian updated in the Millstone Unit No. 2 data analysis to be:

Failure to start = 8.02E-03/demand

Failure to run = 4.63E-03/hour

Executing the approved model yields the following intermediate results:

Baseline CDF = 7.39E-05/yr

Baseline LERF = 7.92E-07/yr

Conditional CDF (EDG A out) = 8.32E-05/yr

Conditional CDF (EDG B out) = 8.22E-05/yr

The conditional CDF of an A train EDG outage is greater than for a B train EDG outage. This is due to minor dependency differences between the A and B trains not related to the SBO scenario. Due to the increased risk associated with A train EDG outages, all ICCDP and ICLERP calculations will be based on an A train EDG being out of service.

Conditional LERF (EDG A out) = 8.46E-07/yr

Assuming a 14 day AOT, the risk measures are:

ICCDP = (8.32E-05/yr - 7.39E-05/yr) * (14 days) * (1 yr / 365 days)
ICCDP = 3.57E-07

ICLERP = (8.46E-07/yr - 7.92E-07/yr) * (14 days) * (1 yr / 365 days)
ICLERP = 2.07E-09

The calculated values of ICCDP and ICLERP are less than the limits of 5.0E-07 and 5.0E-08, respectively. Therefore, the risk increase is acceptably small, assuming the quality of the Millstone Unit No. 2 PRA model is sufficient.

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[1] NUREG/CR-4550, Volume 1, "Analysis of Core Damage Frequency: Internal Events," Rev. 1, January 1990.

The Millstone Unit No. 2 PRA model has been reviewed as part of the Combustion Engineering Owners Group (CEOG) Peer Review Process. The results of the CEOG peer review were evaluated and a corrective action plan developed to address the findings. Since the corrective action plan has not yet been implemented, each finding was reviewed to determine if any are specifically applicable to the proposed EDG AOT extension. This review resulted in the need to perform the following five sensitivity studies to address PRA model quality.

1. Loss of Normal Power (LNP) frequency increased to the 95TH percentile value.

2. Reactor coolant pump (RCP) seal failure probability increased by approximately 50%.

3. Failure of the operator action (OA) to start and align the steam driven auxiliary feedwater (SDAFW) pump increased by one order of magnitude.

4. Common Cause Failure (CCF) probability of the sequencers added to the CCF probability of the diesel generator fail-to-start.

5. Calculate the ICCDP if the EDG action statement was entered for corrective rather than preventive maintenance (i.e., consider the possibility of both EDGs being unavailable due to a common cause failure).

Sensitivity Study #1 - LNP Frequency Increased to 95TH Percentile

The LNP frequency was calculated based upon historical plant data compiled by the Electric Power Research Institute (EPRI).[2] There have been 190 LNP events experienced by U.S. nuclear power plants in the 14 year period from 1984 through 1997. The 190 events were mapped with respect to their applicability to the Millstone Station. The events considered not applicable to Millstone were removed from the LNP frequency calculation.

The EPRI report identified that 4 LNP events have occurred at the Millstone Station. There was also a LNP event in 1976 (prior to the date range used in the EPRI report) as a result of Hurricane Belle. As discussed below, this event can be excluded for the same reason as the LNP event due to Hurricane Gloria (9/27/85). Two of the four events identified in the EPRI report (occurring on 11/21/85 and 4/29/89) were experienced when Millstone Unit No. 1 had certain combinations of equipment out of service that would not be permitted during operation. Another event occurred at Millstone Unit No. 2 on 10/25/88 during power operation. This event is excluded because both 10 CFR 50 Appendix A General Design Criteria 17 electrical power

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[2] TR-110398, prepared for Electric Power Research Institute (EPRI), "Losses of Offsite Power at U.S. Nuclear Power Plants - Through 1997," Final Report, April 1998.

sources were available and energized throughout the event and could have been aligned from the control room to supply power.

The only actual Millstone Station LNP event occurred as a result of Hurricane Gloria. In preparation for the hurricane, Millstone Unit Nos. 1 and 2 were shutdown. When offsite power was lost due to the hurricane, all emergency on-site AC power sources did start and were successfully loaded. Currently, station operating procedures require Millstone Unit No. 2 to perform an orderly plant shutdown if wind speed is expected to exceed 90 mph within the next 4 hours. Therefore, since the operating Millstone units were shutdown prior to hurricane-induced LNP events, and will continue to be going forward, they were excluded from the LNP frequency calculation. A similar argument can be made for the LNP event that occurred due to Hurricane Belle in 1976. However, since the consequence of a hurricane event is such that offsite power may be lost for an extended time period, all station EDGs should remain operable if adverse weather is predicted.

The LNP frequency was calculated by using the number of applicable events and the total number of U.S. reactor-years of operation. The median (50^{TH} percentile) Millstone Unit No. 2 LNP frequency is calculated to be 0.0308/yr. This value is comprised of plant-centered (0.0225/yr), grid-related (0.0031/yr), and weather-related (0.0052/yr) events.

The risk sensitivity to the LNP frequency was evaluated by performing a sensitivity study using the 95^{TH} percentile value of 0.0440/yr (plant-centered, 0.0294/yr; grid-related, 0.0059/yr; weather-related, 0.0087/yr), which was calculated using a Chi-squared one-tailed statistical distribution. The results of the sensitivity study are:

Baseline CDF	=	7.76E-05/yr
Conditional CDF	=	9.64E-05/yr
ICCDP	=	7.21E-07
Baseline LERF	=	7.96E-07/yr
Conditional LERF	=	8.89E-07/yr
ICLERP	=	3.57E-09

The ICCDP for this sensitivity study exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LNP coupled with failure of the remaining EDG and the SBO DG. Therefore, extended EDG outages will not be scheduled when adverse weather conditions are predicted. Furthermore, if severe weather conditions occur while in an extended EDG maintenance outage, such that a loss of grid is expected, unit operating procedures require a plant shutdown.

Sensitivity Study #2 - RCP Seal Failure Probability Increased

The RCP seal failure probability was calculated using the data from a CEOG report[3] which took into account elastomer failure, random failure, pop-open failure, and pre-existing failure probabilities. The probability of all of the pump seal faces in 1 of the 4 RCPs failing, resulting in a RCP seal Loss of Coolant Accident (LOCA), was calculated to be 6.52E-04.

To understand the risk sensitivity to the RCP seal failure probability, the seal failure probability was increased by approximately 50% to 1.0E-03. The results of the sensitivity study are:

Baseline CDF	=	8.01E-05/yr
Conditional CDF	=	8.93E-05/yr
ICCDP	=	3.53E-07
Baseline LERF	=	9.11E-07/yr
Conditional LERF	=	9.64E-07/yr
ICLERP	=	2.03E-09

The ICCDP and ICLERP for this sensitivity study meets the RG 1.177 criteria.

Sensitivity Study #3 - Failure of OA to Start and Align SDAFW Pump Increased

The SDAFW pump requires manual operator actions to initiate flow. The time available to start the SDAFW pump depends on the transient, and whether or not the reactor tripped on low steam generator (SG) level or at a normal level. The majority of the transients will result in a reactor trip on normal SG level, including LNP events. The limiting sequences are SBO events. The failure of the operators to start the SDAFW pump was calculated to be 6.4E-03.

The failure of the operator action to start and align the SDAFW pump was increased by one order of magnitude. The results of the sensitivity study are:

Baseline CDF	=	8.17E-05/yr
Conditional CDF	=	9.13E-05/yr
ICCDP	=	3.68E-07
Baseline LERF	=	7.92E-07/yr
Conditional LERF	=	8.55E-07/yr
ICLERP	=	2.42E-09

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[3] CE NPSD-1199-P, "Model for Failure of RCP Seal Given Loss of Seal Cooling," CEOG Task 1136, July 2000 (Draft).

The ICCDP and ICLERP for this sensitivity study meets the RG 1.177 criteria.

Sensitivity Study #4 - CCF of EDG Sequencers Included in Model

The Engineered Safeguards Actuation System Fault Tree Analysis only considers CCF of each group of sensors. The CCF of the EDG sequencers is not considered. Therefore, the CCF probability of the EDG sequencers is analyzed as part of a sensitivity study. The results of the sensitivity study are:

Baseline CDF	=	7.45E-05/yr
Conditional CDF	=	8.37E-05/yr
ICCDP	=	3.53E-07
Baseline LERF	=	7.96E-07/yr
Conditional LERF	=	8.50E-07/yr
ICLERP	=	2.07E-09

The ICCDP and ICLERP for this sensitivity study meets the RG 1.177 criteria.

Sensitivity Study #5 - ICCDP for Corrective Maintenance

The ICCDP was analyzed for two possible scenarios. The first is if the EDG is removed from service for extended maintenance as part of a planned evolution [i.e., preventive maintenance (PM)]. The second is if an EDG is declared inoperable due to equipment failure [i.e., corrective maintenance (CM)]. For the PM case, the remaining available EDG is subject to random failure and therefore, the nominal EDG failure rate is applied. The PM or nominal case results have previously been listed. For the CM case, one EDG has experienced a failure and the available EDG is subject to a CCF mechanism (i.e., the same failure mechanism may exist on the available EDG). Therefore, the EDG failure rate is assumed to be the CCF factor. Only the failure to start value was modified. The failure to run was not set to the CCF factor because the Millstone Unit No. 2 risk is highly sensitive to failure to run. Therefore, lowering this basic event probability to the CCF factor results in an ICCDP lower than the baseline case. Note that the baseline CDF and LERF for this sensitivity are the same as the baseline case. The results of this sensitivity study are:

Baseline CDF	=	7.39E-05/yr
Conditional CDF	=	8.77E-05/yr
ICCDP	=	5.29E-07
Baseline LERF	=	7.92E-07/yr
Conditional LERF	=	8.74E-07/yr
ICLERP	=	3.15E-09

The ICCDP for this sensitivity study exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LNP coupled with failure of the remaining EDG and the SBO DG. Therefore, the extended EDG outage will not be scheduled when adverse weather conditions are predicted. Furthermore, if severe weather conditions occur while in an extended diesel generator maintenance outage, such that a loss of grid is expected, unit operating procedures require a plant shutdown.

Tier 2 - Avoidance of Risk Significant Plant Configurations

A CRMP is in place at the Millstone Station as required by 10 CFR 50.65(a)(4). The program provides assurance that risk-significant plant equipment configurations are precluded or minimized when plant equipment is removed from service. For a Millstone Unit No. 2 EDG removed from service, the following additional requirements specific to this activity are necessary to minimize plant risk.

1. The extended EDG outage will not be scheduled when adverse weather conditions are predicted.

2. Millstone Unit No. 3 EDGs will be operable, as required by Millstone Unit No. 3 Technical Specifications, during the extended EDG outage.

3. The availability of the Millstone Unit No. 3 SBO DG will be verified by test performance within the previous 30 days prior to allowing a Millstone Unit No. 2 diesel generator to be inoperable for greater than 72 hours.

4. 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.

Tier 3 - Risk-Informed Configuration Risk Management

Consistent with 10 CFR 50.65(a)(4), and as indicated above, Millstone Station has developed a program that ensures that the risk impact of out-of-service equipment is appropriately evaluated prior to performing a maintenance activity. This program requires an integrated review (i.e., both probabilistic and deterministic) to identify risk-significant plant equipment outage configurations in a timely manner both during the work management process and for emergent conditions during normal plant operation. Appropriate consideration is given to equipment unavailability, operational activities like testing or load dispatching, and weather conditions. This program includes provisions for performing a configuration-dependent assessment of the overall impact on risk of proposed plant configurations prior to, and during, the performance of maintenance activities that remove equipment from service. Risk is re-assessed if an equipment failure/malfunction or emergent condition produces a plant configuration that has not been previously assessed.

For planned maintenance activities, an assessment of the overall risk of the activity on plant safety, including benefits to system reliability and performance, is performed prior to scheduled work. The assessment includes the following considerations:

- Maintenance activities that affect redundant and diverse structures, systems, and components (SSCs) that provide backup for the same function are minimized.
- Work is not scheduled that is highly likely to exceed a Technical Specification or Technical Requirements Manual completion time requiring a plant shutdown.
- For Maintenance Rule Program high risk significant SSCs, the impact of the planned activity on the unavailability performance criteria is evaluated.
- As a final check, a quantitative risk assessment is performed to ensure that the activity does not pose any 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 assure that nuclear safety and plant operations are consistent with the expectations of management. Individual work activities that potentially have an impact to 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 to plant risk levels.

Conclusion

The overall results of the quantitative evaluation, including the sensitivity studies, are summarized in the following table.

Table 1
Risk Evaluation Results

Risk Matrix	Nominal Case	Sensitivity Studies				
		Case 1 LNP	Case 2 RCPSF	Case 3 SDAFW	Case 4 CCF	Case 5 CM
ΔCDF	2E-07/yr (EDG PC=200 hrs/yr) 7E-07/yr (EDG PC=300 hrs/yr)	N/A	N/A	N/A	N/A	N/A
ICCDP	3.57E-07	7.21E-07	3.53E-07	3.68E-07	3.53E-07	5.29E-07
ΔLERF	3E-10/yr (EDG PC=200 hrs/yr) 5E-10/yr (EDG PC=300 hrs/yr)	N/A	N/A	N/A	N/A	N/A
ICLERP	2.07E-09	3.57E-09	2.03E-09	2.42E-09	2.07E-09	3.15E-09

Approval of the proposed 14 day EDG AOT is expected to result in a negligible increase in CDF and a negligible increase in LERF. This is due to the increase in EDG unavailability anticipated during power operation which would surpass the current EDG Maintenance Rule unavailability performance criteria. The Maintenance Rule unavailability performance criteria will be revised when the proposed change is approved.

The risk measures, based on the current PRA model, are estimated to be:

ICCDP	=	3.57E-07
ICLERP	=	2.07E-09

The calculated risk measures are below the acceptance criteria, ICCDP < 5.0E-07 and ICLERP $\leq$ 5.0E-08, defined in RG 1.177. These values are based on the risk increase associated with the A train EDG, which is the EDG with the highest risk importance.

PRA model quality was addressed by performing sensitivity studies to determine the risk significance of certain parameters modeled in the PRA. The parameters studied include LNP frequency, RCP seal failure probability, failure of the operators to start the SDAFW pump, CCF probability of the EDG sequencers, and CCF related to corrective maintenance of one EDG. Four of the sensitivity studies were performed as a result of CEOG peer review comments.

The acceptable results are based on the use of the Millstone Station CRMP and the additional activity specific requirements listed in the Tier 2 evaluation. Use of the CRMP will ensure that the risk impact of out-of-service equipment is appropriately evaluated prior to performing a maintenance activity.

Table 2
Core Damage Frequency Contribution by Initiating Event

Initiating Event	Initiating Event Frequency (yr^{-1})		Core Damage Frequency (yr^{-1})	
	Updated PRA Model	IPE	Updated PRA Model	IPE
Small-Small LOCA	7.50E-04	4.65E-03	2.88E-06	1.46E-06
Small LOCA	2.25E-03	2.25E-03	1.56E-05	1.63E-06
Medium LOCA	1.56E-05	7.10E-04	7.76E-08	1.27E-06
Large LOCA	6.80E-05	6.40E-04	8.78E-07	1.65E-06
Steam Generator Tube Rupture	3.86E-03	2.20E-02	3.48E-07	5.22E-07
ISLOCA	9.78E-08	6.60E-08	9.78E-08	6.60E-08
Loss of Normal Power	3.08E-02	9.10E-02	7.11E-06	8.44E-06
Loss of Vital AC Buses VA10 and VA30	6.31E-06	1.25E-02	negligible	8.41E-07
Station Blackout [1]	N/A	N/A	1.69E-06	4.08E-07
Loss of DC Bus A	2.50E-02	5.66E-02	1.00E-05	3.92E-06
Loss of DC Bus B	2.50E-02	5.34E-02	8.84E-06	3.89E-06
Total Loss of DC Power [1]	2.26E-05	2.26E-06	4.15E-06	1.23E-07
General Plant Transient	2.43	3.10	6.28E-06	4.32E-06
ATWS [1]	N/A	N/A	5.33E-06	1.50E-06
Loss of Main Feedwater	2.88E-01	7.00E-01	2.57E-06	1.78E-06
Main Feed Line Break	2.35E-04	9.20E-04	negligible	2.44E-07
Steam Line Break Upstream of NRV Outside Containment	4.80E-04	2.45E-04	7.90E-07	2.63E-06
Steam Line Break Upstream of NRV Inside Containment	1.80E-04	2.45E-04	3.30E-07	6.81E-08
Steam Line Break Downstream of NRV	1.20E-03	2.20E-03	2.13E-07	2.17E-07
Loss of Service Water	4.22E-03	4.44E-03	6.86E-06	9.70E-07
Loss of RBCCW	6.58E-03	1.06E-04	1.09E-05	1.59E-08
Loss of Instrument Air	2.70E-04	5.52E-05	3.84E-09	negligible
Internal Flooding	1.58E-02	1.58E-02	2.04E-07	2.04E-07
Fire [2]	7.03E-05	7.03E-05	6.30E-06	6.30E-06
Totals			**8.04E-05**	**4.03E-05**

[1] Within the updated PRA model, contributions from Station Blackout, Total Loss of DC Power, and ATWS events are not included in the overall CDF solution because they are embedded within other initiating event categories.

[2] Fire initiating event information from the MP2 IPEEE.

Table 3
Large Early Release Frequency Contributors

LERF Contributor	Large Early Release Frequency (yr^{-1})
Steam Generator Tube Rupture	6.17E-09
Interfacing Systems LOCAs	8.72E-08
Containment Isolation Failures [1]	1.55E-08
Containment Over-pressurization [2]	6.83E-07
Total Large Early Release Frequency (LERF) [3]	7.92E-07
LERF as % of CDF	1.07%

[1] The containment isolation failures are embedded in the early containment failure non-bypass events due to containment over-pressurization. The containment isolation failure probability is 2.1E-04. The CDF due to non-bypass internal events is 7.35E-05. Therefore, the containment isolation failure is 1.55E-08. Note that the failure due to over-pressurization is adjusted accordingly.

[2] The dominant contributors to early containment failure due to over-pressurization which results in large releases are in-vessel steam explosion at low RCS pressure and over-pressurization at low RCS pressure with containment heat removal systems available.

[3] The total LERF value does not include LERF contribution from internal flooding or fire initiating events.