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

Dominion

OCT - 1 2001

Docket No. 50-423
B18343

RE: 10 CFR 50.90

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

Millstone Power Station, Unit No. 3
Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 3. DNC is proposing to change Technical Specifications 3.4.3.1, "Reactor Coolant System – Pressurizer – Startup and Power Operation;" 3.4.3.2, "Reactor Coolant System – Pressurizer – Hot Standby;" 3.4.4, "Reactor Coolant System – Relief Valves;" 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 activities while the plant is operating. The requirement for the pressurizer heaters and the pressurizer power operated relief and block valves to be supplied by emergency power will be removed for consistency with the proposed EDG AOT change. Additional changes to improve the format of the electrical power sources action 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 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. 3 Normal and Reserve Station System Transformers.

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

3. Reliance on the Configuration Risk Management Program, required by 10 CFR 50.65(a)(4), to control plant aggregate risk while a Millstone Unit No. 3 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. 3 Engineered Safety Features buses during extended EDG outages. The Nuclear Regulatory Commission (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, respectively; dated September 1, 2000).

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 evaluated the proposed changes against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.22. DNC has determined that the proposed changes meet the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that the changes are being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, or that changes an inspection or a surveillance requirement, and that the amendment request meets the following specific criteria.

(i) The proposed changes involve no Significant Hazards Consideration.

As demonstrated in Attachment 2, the proposed changes do not involve a Significant Hazards Consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released off site.

The proposed changes will increase the AOT for one inoperable EDG, revise the requirement for the pressurizer heaters and the pressurizer power operated relief and block valves to be supplied by emergency power for consistency with the proposed EDG AOT change, and improve the format of the electrical power sources action requirements. The proposed changes are consistent with the design basis of the plant. The proposed changes will not result in an increase in power level, will not increase the production of radioactive waste and byproducts, and will not alter the flowpath or method of disposal of radioactive waste or byproducts. Therefore, the proposed changes will not increase the type and amounts of effluents that may be released off site.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will increase the AOT for one inoperable EDG, revise the requirement for the pressurizer heaters and the pressurizer power operated relief and block valves to be supplied by emergency power for consistency with the proposed EDG AOT change, and improve the format of the electrical power sources action requirements. Additional changes to improve the format of the electrical power sources action requirements are included. The proposed changes will not result in changes in the configuration of the facility. There will be no change in the level of controls or methodology used for processing radioactive effluents or the handling of solid radioactive waste. There will be no change to the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from the proposed changes.

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 10CFR50.92 (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. 3 prior to May 31, 2002, with the amendment to be implemented within 60 days of issuance.

State Notification

In accordance with 10CFR50.91(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.

J. Alan Price, Vice President
Nuclear Technical Services - Millstone

Sworn to and subscribed before me
this 1ST day of October, 2001

Notary Public

My Commission expires SANDRA J. ANTON NOTARY PUBLIC COMMISSION EXPIRES MAY 31, 2005

Attachments (5)

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
NRC Senior Resident Inspector, Millstone Unit No. 3

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

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Attachment 1

Millstone Power Station, Unit No. 3

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Discussion of Proposed Changes and Safety Summary

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Discussion of Proposed Changes and Safety Summary

Introduction

Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 3. DNC is proposing to change Technical Specifications 3.4.3.1, "Reactor Coolant System – Pressurizer – Startup and Power Operation;" 3.4.3.2, "Reactor Coolant System – Pressurizer – Hot Standby;" 3.4.4, "Reactor Coolant System – Relief Valves;" 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 and the pressurizer power operated relief and block valves to be supplied by emergency power will be removed for consistency with the proposed EDG AOT change. Additional changes to improve the format of the electrical power sources action requirements are included.

This is a risk informed submittal to modify the Technical Specifications of Millstone Unit No. 3 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. 3 Electrical Distribution System Description

The Millstone Unit No. 3 electrical distribution system (refer to Figure 1 located at the end of this attachment) consists of normal and emergency 4160 V systems. During normal operation, power is supplied through the Normal Station Service Transformer (NSST) from the unit generator via the isolated phase bus duct, with the generator breaker closed to the normal 4160V buses 34A and 34B. The normal 4160V buses feed the emergency, or Engineered Safety Features (ESF) buses, 34C and 34D.

In the event of a generator trip or turbine trip (low vacuum, high vibration, or excessive thrust bearing wear), the generator breaker opens immediately. In the event of a reactor or turbine trip (other than that described above), there is a 30-second time delay before the generator breaker opens. This time delay aids in preventing turbine overspeed. In either event, continuous power to buses 34C (Train A) and 34D (Train B) via the normal offsite power source and the NSST is ensured. In the event of loss of

the normal offsite power source, the alternate offsite power source supplies power through the Reserve Station Service Transformer (RSST) from the 345 kV switchyard. The RSST supplies power to emergency 4160V buses 34C and 34D. Upon loss of the normal offsite source of power, an automatic high-speed transfer is initiated to the alternate offsite source, thus ensuring power to buses 34C and 34D.

During startup or shutdown, each of the preferred offsite power sources (via the NSST or RSST) has adequate capacity to supply all normal and emergency loads.

The 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, a safety injection signal, or a containment depressurization 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, and standby EDGs) in compliance with 10 CFR 50 Appendix A General Design Criterion (GDC) 17, Electric Power Systems.

The Millstone Unit No. 3 and Millstone Unit No. 2 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 the 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 3.4.3.1

The phrase "supplied by emergency power" will be removed from Limiting Condition for Operation (LCO) Item a., Action Requirement a., and Surveillance Requirement (SR)

4.4.3.1.2. 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 groups (A and B) which meet this requirement are permanently connected to the Millstone Unit No. 3 Class 1E (emergency 480V) electrical buses. This plant configuration will not be affected by the proposed changes. In addition, the proposed changes are consistent with the Millstone Unit No. 3 definition of operability, which only requires the components to have electrical power. The Bases for this specification has been modified to specify that the pressurizer backup heater groups A and B are used to meet the LCO heater capacity requirement.

Technical Specification 3.4.3.2

The phrase "supplied by emergency power" will be removed from LCO Item a., Action Requirement a., and SR 4.4.3.2.2. 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 groups (A and B) which meet this requirement are permanently connected to the Millstone Unit No. 3 Class 1E (emergency 480V) electrical buses. This plant configuration will not be affected by the proposed changes. In addition, the proposed changes are consistent with the Millstone Unit No. 3 definition of operability, which only requires the components to have electrical power. The Bases for this specification has been modified to specify that the pressurizer backup heater groups A and B are used to meet the LCO heater capacity requirement.

Technical Specification 3.4.4

SR 4.4.4.3 will be deleted to support the proposed increase in the EDG AOT to 14 days. The purpose of this surveillance requirement is to demonstrate that emergency power has been provided by cycling the power operated relief valves (PORVs) and block valves through one complete cycle. However, the current SR is not met when the associated EDG is inoperable since the EDG is the emergency power source. This has not created any operational problems historically since the EDG and pressurizer PORVs and block valves 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 change. Therefore, the proposed change is necessary to allow continued plant operation during an extended EDG outage.

The pressurizer PORVs and block valves are permanently connected to the Millstone Unit No. 3 Class 1E electrical buses. This plant configuration will not be affected by the proposed changes. The proposed change is consistent with the Millstone Unit No. 3 definition of operability, which only requires the components to have electrical power. In addition, operation of the associated valves through one complete cycle will still be required by SRs 4.4.4.1.b and 4.4.4.2.

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 Technical Specification changes are necessary to support the proposed AOT increase, and to improve the format of the action requirements. The format changes will not modify any technical aspects of the action requirements. Each change will be discussed.

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

   The requirement to test the remaining offsite circuit will be retained. The wording will change from "remaining A.C. source by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit." This wording change does not change any technical aspect of the action statement.

   The requirement to verify the remaining offsite circuit by performing SR 4.8.1.1.1.a 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.

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

   The requirement to test the offsite circuits will be retained. The wording will change from "A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for the offsite circuits." This wording change does not change any technical aspect of the action statement.

   The requirement to verify the offsite circuits by performing SR 4.8.1.1.1.a 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.

The requirement to test the remaining operable diesel generator will be rewritten. Testing will not be required provided a common cause failure is not the reason for declaring the diesel generator inoperable. This is consistent with the intent of the current footnote (*). This footnote, which defines items that would not constitute a common cause failure, will be relocated to the Bases for this specification. The use of the term "common cause failure" is consistent with NUREG-1431.[1] However, NUREG-1431 does not define this term in the Bases.

The time requirement to determine if a common cause failure exists on the other diesel generator will remain at 24 hours. This is the current time requirement to demonstrate operability of the other diesel generator, and is also consistent with the time allowed by NUREG-1431 to demonstrate the problem is not a common cause failure.

Action Requirement b.3 will be added. This is the same requirement currently specified in Action Requirement d. The required actions will not be changed.

Action Requirement b.4 will be added. This will address the additional requirement for the required Millstone Unit No. 2 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. 3 can remain in operation with one EDG inoperable and a required Millstone Unit No. 2 EDG inoperable or Millstone Unit No. 3 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 the Millstone Unit No. 3 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.

The requirement to test the remaining offsite circuit will be retained. The wording will change from "remaining offsite A.C. source by performing Surveillance Requirement 4.8.1.1.1.a" to "Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit." This wording change does not change any technical aspect of the action requirement.

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[1] NUREG-1431, Standard Technical Specifications Westinghouse Plants, Rev. 2, April 2001.

The requirement to test the remaining operable diesel generator will be modified. Testing will not be required provided a common cause failure is not the reason for declaring the diesel generator inoperable. This is consistent with the intent of the current footnote (*). This footnote, which defines items that would not constitute a common cause failure, will be relocated to the Bases for this specification. The use of the term "common cause failure" is consistent with NUREG-1431. However, NUREG-1431 does not define this term in the Bases.

The time requirement to determine if a common cause failure exists on the other diesel generator will remain at 8 hours. This is the current time requirement to demonstrate operability of the other diesel generator, and is also consistent with the time allowed by NUREG-1431 to demonstrate the problem is not a common cause failure.

Action Requirement c.3 will be added. This is the same requirement currently specified in Action Requirement d. The required actions will not be changed.

Action Requirement c.4 will retain the current 12 hour AOT and subsequent actions if one of the inoperable A.C. sources is not restored to operable status.

Action Requirement c.5 will retain the current requirement to restore the remaining inoperable A.C. source to operable status.

The statement that a successful test of the diesel generator for this action requirement will satisfy the required test of Action Requirement b. is not necessary. Testing of the other EDG would only be required if a common cause failure evaluation was not completed within the required time. If a common cause failure did exist, both EDGs would be declared inoperable and proposed Action Requirement e. (current Action Requirement f.) would apply.

4. Action Requirement d. - Additional action one diesel generator inoperable.

   The requirements of Action Requirement d. will be relocated to the proposed Action Requirements b.3 and c.3. The current requirements will not change.

5. Action Requirement e. - Two offsite circuits inoperable.

   The current 24 hour AOT and subsequent actions if an offsite source is not restored to operable status will be retained in the proposed Action Requirement d. The subsequent actions associated with the remaining inoperable offsite source will also be retained.

6. Action Requirement f. - Two diesel generators inoperable.

   The current offsite source verification requirements, 2 hour AOT, and subsequent actions if an EDG is not restored to operable status will be retained

in the proposed Action Requirement e. The subsequent actions associated with the remaining inoperable EDG will also be retained.

The statement that a successful test of the diesel generator for this action requirement will satisfy the required test of Action Requirement b. is not necessary. Testing of the other EDG would only be required if a common cause failure evaluation was not completed within the required time. If a common cause failure did exist, both EDGs would be declared inoperable and proposed Action Requirement e. applied.

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).

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, which is referenced in the Bases for the action requirements associated with Technical Specification 3.8.1.1, 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 Nuclear Regulatory Commission (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 is consistent with 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 and reliability 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. Improve EDG reliability before entering scheduled outages.

The proposed AOT of 14 days is adequate to perform normal preventive EDG inspections and maintenance requiring disassembly of the EDG, and to perform post-maintenance and operability tests required to return the EDG to operable status. Millstone Unit No. 3 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. 3 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 the 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 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. 3 is designed and operated consistent with the defense-in-depth philosophy. Millstone Unit No. 3 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 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. 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. 3 compliance with the GDC of 10 CFR 50 Appendix A. The Millstone Unit No. 3 Final Safety Analysis Report (FSAR) Section 3.1, Conformance with NRC General Design Criteria, provides the basis for this conclusion.

Availability of the Electrical Power System

The Millstone Unit No. 3 electrical power system, which was described earlier in this attachment, consists of the normal and emergency systems. During normal operation, power is supplied through the NSST from the main generator via the isolated phase bus duct, with the main generator breaker closed, to the normal 4160 V buses 34A and 34B.

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 (34C and 34D) which feeds the various ESF loads and downstream buses. Each ESF 4160V bus has three independent sources of power.

1. A normal preferred source from the offsite 345 kV system (or the main generator during normal plant operation) through the NSST to the normal 4160V buses to the emergency 4160V buses.

2. A second reserve source from the 345 kV switchyard through the RSST directly to the emergency 4160V buses.

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 EDGs 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 and one half calendar years (i.e., 1999, 2000, and first two quarters of 2001), there have been no unplanned unavailability of the Millstone Unit No. 3 NSST or RSST.

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. 3 NSST and RSST) in compliance with GDC 17.

The Millstone Unit No. 3 and Millstone Unit No. 2 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 the 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 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 a 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 the SBO event, and has sufficient capacity and capability to operate equipment necessary to attain and maintain a safe shutdown condition of the affected unit.

The assumptions used in the Millstone Unit No. 3 SBO analysis regarding the availability and reliability of the EDGs are unaffected by this proposed change. The results of the SBO analysis are also unaffected by this change.

Fire Protection Requirements

The proposed changes do not affect Millstone Unit No. 3 compliance with the fire protection requirements of Branch Technical Position CMEB 9.5-1.

NRC Regulatory Guide Compliance

The onsite power system at Millstone Unit No. 3 complies with the NRC RGs as described in the Millstone Unit No. 3 FSAR Section 1.8, Conformance to NRC Regulatory Guides. 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 RG 1.6, "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 RG 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Rev. 3, dated July 1993, is not affected by the proposed changes.

Conformance with RG 1.93, "Availability of Electric Power Sources," dated December 1974, is affected by these proposed changes. RG 1.93 prescribes a maximum AOT of 72 hours for an inoperable AC power source (current Technical Specification requirement) and states that the 72 hour AOT will not be entered for preventative maintenance of the EDGs. When the proposed changes are approved, Millstone Unit No. 3 will continue to conform to RG 1.93 with the exception that the AOT for restoration of an EDG will be increased to 14 days, and the AOT will be used for EDG preventative maintenance.

Conformance to other key design criteria applicable to onsite electrical systems that are unaffected by these proposed changes include RG 1.53, "Single Failure Criterion," dated June 1973; RG 1.62, "Manual Initiation of Protective Actions," dated October 1973; and RG 1.75, "Physical Independence of Electrical Systems," Rev. 2, dated September 1978.

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.

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. The proposed change to 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. In addition, a recent Technical Specification change[2] has removed the restriction that EDG inspections are required to be performed while the plant is shut down.

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.

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[2] V. Nerses (NRC) letter to R. G. Lizotte (Northeast Nuclear Energy Company), "Millstone Nuclear Power Station, Unit No. 3 - Issuance of Amendment RE: Electrical Power Systems (TAC No. MA9661)," Amendment No. 194, dated February 2, 2001.

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 (Attachment 5), including the sensitivity studies, are summarized in the following table.

Risk Evaluation Results

Risk Matrix	Nominal	Sensitivity Studies			
		Case 1	Case 2	Case 3	Case 4
ΔCDF	7.00E-07/yr (EDG PC=200 hrs/yr) 1.50E-06/yr (EDG PC=300 hrs/yr)	NA	NA	NA	NA
ICCDP	3.87E-07	5.22E-07	6.25E-07	6.64E-07	5.72E-07
ΔLERF	5.00E-09/yr (EDG PC=200 hrs/yr) 1.00E-08/yr (EDG PC=300 hrs/yr)	NA	NA	NA	NA
ICLERP	6.64E-09	9.32E-09	1.06E-08	1.13E-08	1.18E-08

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 = 3.87E-07
ICLERP = 6.64E-09

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

PRA model validity was addressed by performing sensitivity studies to determine the risk significance of certain parameters modeled in the PRA. The parameters studied include Loss of Offsite Power (LOOP) frequency, reactor coolant pump (RCP) seal induced Loss of Coolant Accident (LOCA) time frame, scenario mission time, and common cause failure probability. Two of the sensitivity studies were performed as a result of Westinghouse Owners Group (WOG) peer review comments.

The acceptable results for the proposed 14 day EDG AOT 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 charging pump and charging pump cooling pump in operation are powered from the bus not associated with the out of service EDG. In addition, the spare charging pump will be available to replace an inservice charging pump if necessary.

2. The extended EDG outage will not be scheduled when adverse or inclement weather conditions and/or unstable grid conditions are predicted or present.

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

4. 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. 3 EDG to be inoperable for greater than 72 hours.

5. While in the proposed extended EDG AOT, additional elective equipment maintenance or testing that requires the equipment to be removed from service will be evaluated and activities that yield unacceptable results will be avoided.

6. All activity in the switchyard will be closely monitored and controlled. No elective maintenance within the switchyard that could challenge offsite power availability will be scheduled.

7. A contingency plan will be in place to provide alternate room cooling to the charging and reactor plant component cooling water pumps, which are housed in the same area (24'6" Auxiliary Building), prior to commencing an extended EDG outage.

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

Technical Specifications 3.4.3.1, 3.4.3.2, and 3.4.4

These specifications currently contain requirements for two groups of pressurizer heaters and the pressurizer PORVs and block valves to be supplied from emergency power. This requirement may be interpreted to mean "from an OPERABLE diesel generator."[3] The proposed changes to these specifications will eliminate this potential compliance issue during periods of extended EDG unavailability (e.g., EDG inspection activities).

The requirements for emergency power for the pressurizer heaters, PORVs, and block valves came from the Three Mile Island (TMI) action item requirements, as described in items II.E.3.1, "Emergency Power Requirements for Pressurizer Heaters," and II.G.1, "Emergency Power for Pressurizer Equipment," of NUREG-0737, "A Clarification of TMI Action Plan Requirements." The emergency power requirements for this equipment will continue to be met because the pressurizer heaters, PORVs, and block valves are permanently connected to Class 1E power supplies as described in the Millstone Unit No. 3 FSAR (Sections 5.4.10.3.6, 5.4.13.2, and 8.3.1.1.3). In addition, the proposed changes are consistent with NUREG-1431 (Technical Specifications 3.4.9 and 3.4.11).

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. 2 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 changes to improve the structure of the action requirements and relocate additional information to the associated Bases will result in requirements that will be easier for the plant operators to use. The additional changes will not result in any technical changes to the current requirements.

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[3] 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.

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 are consistent with 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 and reliability of emergency power during refueling outages. The proposed changes in EDG AOT in conjunction with the availability of the Millstone Unit No 3 NSST and RSST, 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 RG 1.93 (i.e., extending the 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.

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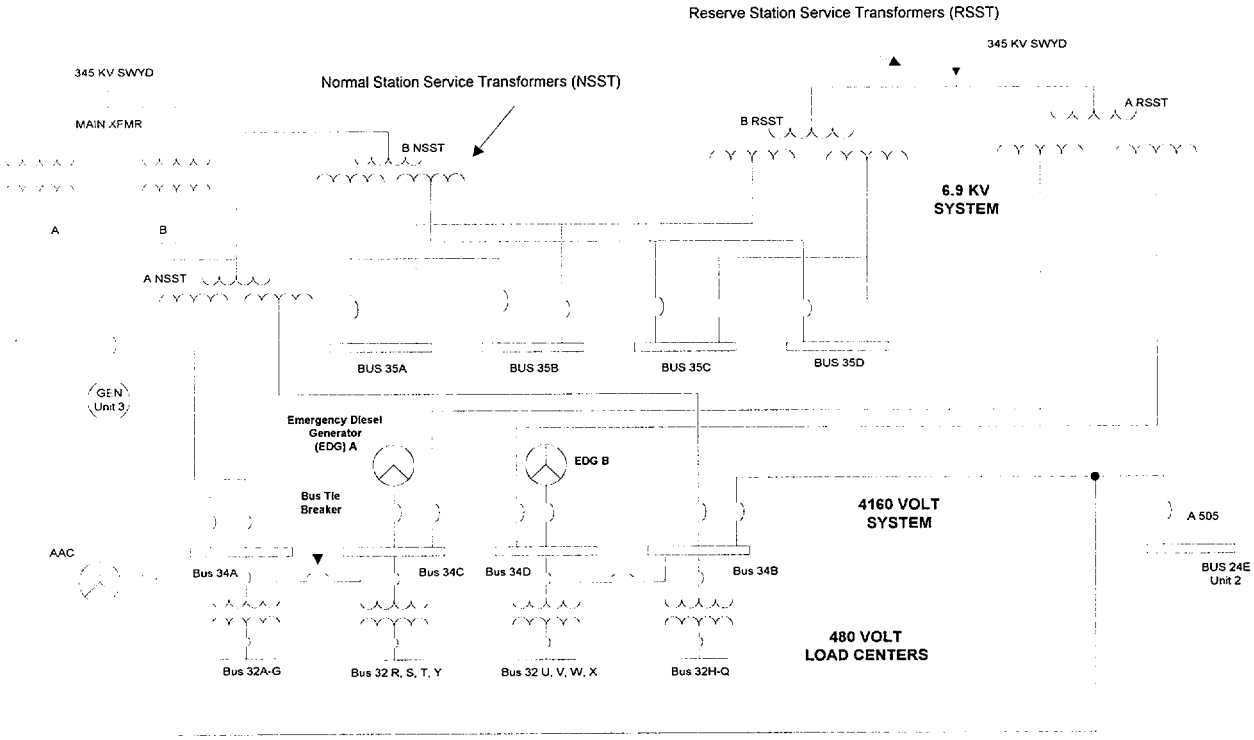
[4] NRC Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis," dated July 1998.

Figure 1
6.9 KV and 4160 Volt Systems



Attachment 2

Millstone Power Station, Unit No. 3

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Significant Hazards Consideration

Technical Specifications Change Request 3-2-00
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. 3 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 activities while the plant is operating. The requirement for the pressurizer heaters and the pressurizer power operated relief and block valves to be supplied by emergency power will be removed. Additional changes to improve the format of the electrical power sources action 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. 3 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. 3 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 and the pressurizer power operated relief and block valves 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 these components 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. 3 FSAR. Therefore, the proposed changes will not increase the probability or consequences of an accident previously evaluated.

The additional proposed changes to the Technical Specifications that will improve the format of the electrical power sources action requirements will not result in any technical changes to the current requirements. Therefore, these additional proposed changes 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 changes to increase the EDG AOT from 72 hours to 14 days and to allow verification of offsite circuit(s) within 1 hour prior to or after entering the condition of an inoperable offsite source or inoperable EDG 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 proposed Technical Specification changes, in conjunction with the administrative controls, provide 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 and the pressurizer power operated relief and block valves 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 requirements for the pressurizer heaters, power operated relief valves, and block valves, which came from the Three Mile Island (TMI) action item requirements, as described in items II.E.3.1, "Emergency Power Requirements for Pressurizer Heaters," and II.G.1, "Emergency Power for Pressurizer Equipment," of NUREG-0737, "A Clarification of TMI Action Plan Requirements," will continue to be met. The pressurizer

heaters, power operated relief valves, and block valves are permanently connected to Class 1E power supplies as described in the Millstone Unit No. 3 FSAR. Therefore, these proposed changes will not result in a significant reduction in a margin of safety.

The additional proposed changes to the Technical Specifications that will improve the format of the electrical power sources action requirements 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.

Docket No. 50-423
B18343

Attachment 3

Millstone Power Station, Unit No. 3

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Marked Up Pages

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Marked Up Pages

Changes to the following Technical Specification pages have been proposed.

Technical Specification Section Numbers	Title(s) of Section(s)	Page and Revision Numbers
3/4.4.3.1	Reactor Coolant System Pressurizer Startup and Power Operation	3/4 4-11 Amend. 160
3/4.4.3.2	Reactor Coolant System Pressurizer Hot Standby	3/4 4-11b Amend. 160
3/4.4.4	Reactor Coolant System Relief Valves	3/4 4-13 Amend. 161
3/4.8.1.1	Electrical Power Systems A. C. Sources - Operating	3/4 8-1 Amend. 112 3/4 8-2 Amend. 112 3/4 8-3 Amend. 194
3/4.4.3	Reactor Coolant System Pressurizer Bases	B 3/4 4-2a Amend. 160
3/4.8.1	Electrical Power Systems A. C. Sources Bases	B 3/4 8-1 Amend. 112 B 3/4 8-1a Amend. 112

REACTOR COOLANT SYSTEM

3/4.4.3 PRESSURIZER

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.3.1 The pressurizer shall be OPERABLE with:

a. at least two groups of pressurizer heaters ~~supplied by emergency power~~, each having a capacity of at least 175 kW; and

b. water level maintained at programmed level +/-6% of full scale (Figure 3.4-5).

APPLICABILITY: MODES 1 and 2.

ACTION:

a. With only one group of pressurizer heaters ~~supplied by emergency power~~ OPERABLE, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

b. With pressurizer water level outside the parameters described in Figure 3.4-5, within 2 hours restore programmed level to within +/- 6% of full scale, or be in at least HOT STANDBY within the next 6 hours.

c. With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the Reactor Trip System breakers open within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.1.1 The pressurizer water level shall be verified to be within programmed level +/- 6% of full scale at least once per 12 hours.

4.4.3.1.2 The capacity of each of the above required groups of pressurizer heaters ~~supplied by emergency power~~ shall be verified by energizing the heaters and measuring circuit current at least once each refueling interval.

PRESSURIZER LEVEL CONTROL

NO CHANGE
FOR INFORMATION ONLY

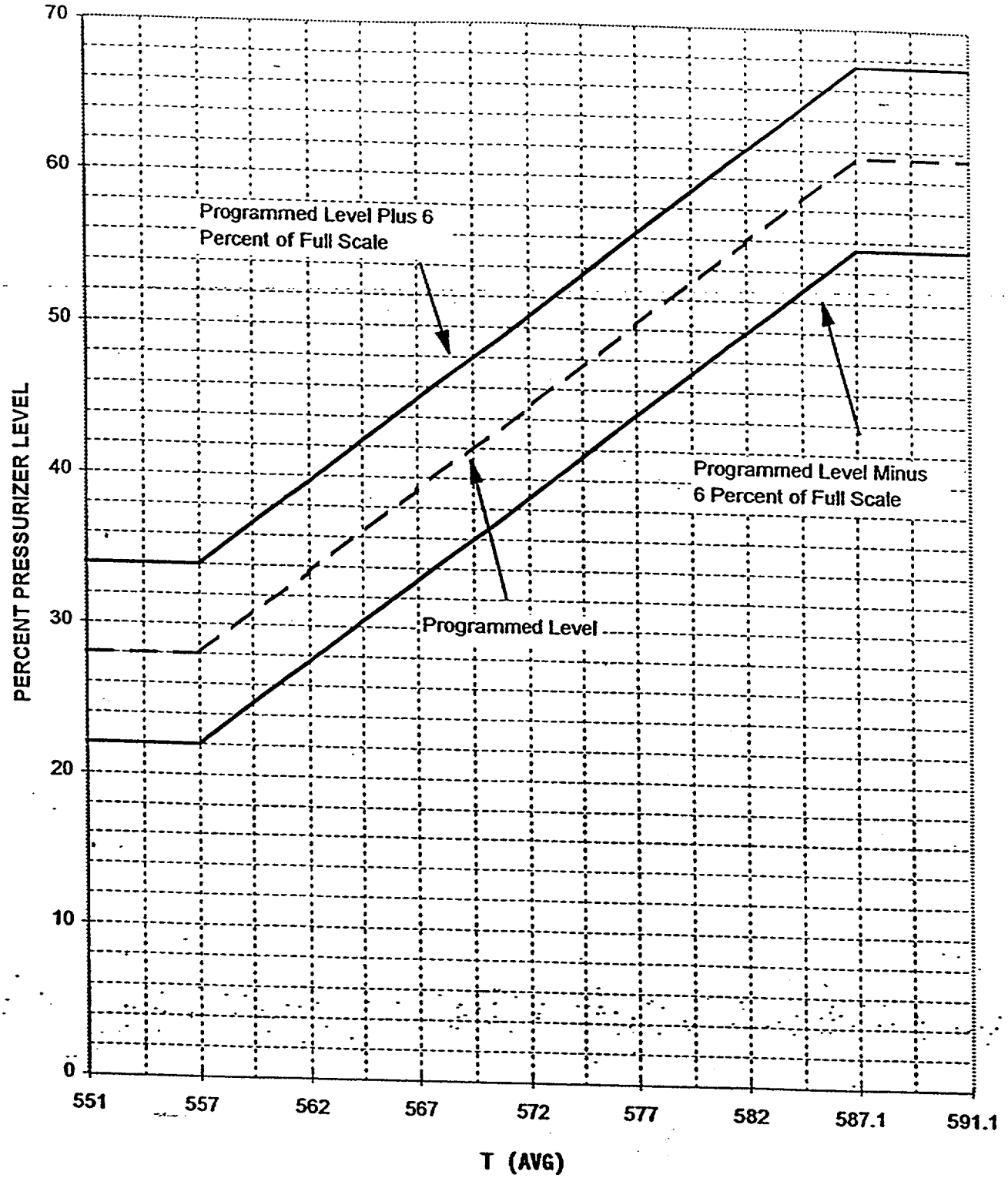


FIGURE 3.4-5

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.3.2 The pressurizer shall be OPERABLE with:

a. at least two groups of pressurizer heaters ~~supplied by emergency power~~, each having a capacity of at least 175 kW; and

b. water level less than or equal to 89% of full scale.

APPLICABILITY: MODE 3

ACTION:

a. With only one group of pressurizer heaters ~~supplied by emergency power~~ OPERABLE, restore at least two groups to OPERABLE status within 72 hours of being declared inoperable, or be in HOT SHUTDOWN within the following 6 hours.

b. With the pressurizer otherwise inoperable, be in HOT SHUTDOWN within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The pressurizer water level shall be determined to be less than or equal to 89% of full scale at least once per 12 hours.

4.4.3.2.2 The capacity of each of the above required groups of pressurizer heaters ~~supplied by emergency power~~ shall be verified by energizing the heaters and measuring circuit current at least once each refueling interval.

NO CHANGE
FOR INFORMATION ONLY

REACTOR COOLANT SYSTEM

3/4.4.4 RELIEF VALVES

LIMITING CONDITION FOR OPERATION

3.4.4. Both power-operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one or both PORV(s) inoperable because of excessive seat leakage, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) with power maintained to the block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one PORV inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV to OPERABLE status or close the associated block valve and remove power from the block valve; restore the PORV to OPERABLE status within the following 72 hours or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With both PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore at least one PORV to OPERABLE status or close its associated block valve and remove power from the block valve and be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

d. With one or both block valve(s) inoperable, within 1 hour restore the block valve(s) to OPERABLE status, or place its associated PORV(s) control switch to "CLOSE." Restore at least one block valve to OPERABLE status within the next hour if both block valves are inoperable; restore any remaining inoperable block valve to operable status within 72 hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

e. Entry into an OPERATIONAL MODE is permitted while subject to these ACTION requirements.

REACTOR COOLANT SYSTEM

RELIEF VALVES

SURVEILLANCE REQUIREMENTS

4.4.4.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE by:

a. Performance of a CHANNEL CALIBRATION at least once each REFUELING INTERVAL; and

b. Operating the valve through one complete cycle of full travel during MODES 3 or 4 at least once each REFUELING INTERVAL; and

c. Performance of an ANALOG CHANNEL OPERATIONAL TEST on the PORV high pressurizer pressure actuation channels, but excluding valve operation, at least once each quarter; and

d. Verify the PORV high pressure automatic opening function is enabled at least once per 12 hours.

4.4.4.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed with power removed in order to meet the requirements of ACTION b. or c. in Specification 3.4.4.

4.4.4.3 The emergency power supply for the PORVs and block valves shall be demonstrated OPERABLE at least once each REFUELING INTERVAL by operating the valves through a complete cycle of full travel.

May 12, 1995

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:

1) A separate day tank containing a minimum volume of 278 gallons of fuel,
2) A separate Fuel Storage System containing a minimum volume of 32,760 gallons of fuel,
3) A separate fuel transfer pump,
4) Lubricating oil storage containing a minimum total volume of 280 gallons of lubricating oil, and
5) Capability to transfer lubricating oil from storage to the diesel generator unit.

APPLICABILITY: MODES 1, 2, 3, and 4.

INSERT A

ACTION:

a. With one offsite circuit inoperable, demonstrate the OPERABILITY of the remaining A.C. source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

b. With one diesel generator inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.5 within 24 hours*; restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*The OPERABILITY of the remaining diesel generator need not be verified if the diesel generator became inoperable due to:

(1) Preplanned preventive maintenance or testing,
(2) An inoperable support system with no potential common mode failure for the remaining diesel generator, or
(3) An independently testable component with no potential common mode failure for the remaining diesel generator.

INSERT A - Page 3/4 8-1 Page 1 of 4

Inoperable Equipment	Required Action	
a. One offsite circuit	a.1	Perform Surveillance Requirement 4.8.1.1.1.a 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 at least 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.a 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.5 for the OPERABLE diesel generator within 24 hours.
	AND	
	b.3	Verify all required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are OPERABLE, and the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If these conditions are not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 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. 2 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. 2 diesel generator to OPERABLE status and/or Millstone Unit No. 3 SBO diesel generator to available status within 72 hours or be in at least 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 at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

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c.	One offsite circuit	c.1	Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit within 1 hour and at least once per 8 hours thereafter.
AND		AND	
	One diesel generator	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.5 for the OPERABLE diesel generator within 8 hours.
		AND	
		c.3	Verify all required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are OPERABLE, and the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If these conditions are not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
		AND	
		c.4	Restore one inoperable A.C. source to OPERABLE status within 12 hours or be in at least 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.

INSERT A - Page 3/4 8-1 Page 4 of 4

d.	Two offsite circuits	d.1	Restore one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least 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.
e.	Two diesel generators	e.1	Perform Surveillance Requirement 4.8.1.1.1.a 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 at least 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.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION (continued)

c. With one offsite circuit and one diesel generator inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. source by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.5 within 8 hours*; restore one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of Section 3.8.1.1 Action Statement a or b, as appropriate with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.5 performed under this Action Statement for an OPERABLE diesel generator or a restored to OPERABLE diesel generator satisfies the diesel generator test requirement of Action Statement b.

d. With one diesel generator inoperable, in addition to ACTION b or c above, verify that:

1. All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feedwater pump is OPERABLE.

If these conditions are not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the required offsite A.C. circuits inoperable, restore one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow Action Statement a with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable offsite A.C. circuit.

*The OPERABILITY of the remaining diesel generator need not be verified if the diesel generator became inoperable due to:
(1) Preplanned preventive maintenance or testing,
(2) An inoperable support system with no potential common mode failure for the remaining diesel generator, or
(3) An independently testable component with no potential common mode failure for the remaining diesel generator.

LIMITING CONDITION FOR OPERATION

ACTION (continued)

f. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator unit, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable diesel generator. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.5 performed under this Action Statement for a restored to OPERABLE diesel generator satisfies the diesel generator test requirement of Action Statement b.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the Onsite Class 1E Distribution System shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each 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 day tank,
2) Verifying the fuel level in the fuel storage tank,
3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank,
4) Verifying the lubricating oil inventory in storage,
5) Verifying the diesel starts from standby conditions and achieves generator voltage and frequency at 4160 ± 420 volts and 60 ± 0.8 Hz. The diesel generator shall be started for this test by using one of the following signals:

a) Manual, or

*All planned starts for the purpose of these surveillances may be preceded by an engine prelube period.

b) Simulated loss-of-offsite power by itself, or

c) Simulated loss-of-offsite power in conjunction with an ESF Actuation test signal, or

d) An ESF Actuation test signal by itself.

6) Verifying the generator is synchronized and gradually loaded in accordance with the manufacturer's recommendations between 4800-5000 kW* and operates with a load between 4800-5000 kW* for at least 60 minutes, and

7) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 184 days by:

1) Verifying that the diesel generator starts from standby conditions and attains generator voltage and frequency of 4160 $\pm$ 420 volts and 60 $\pm$ 0.8 Hz within 11 seconds after the start signal.

2) Verifying the generator is synchronized to the associated emergency bus, loaded between 4800-5000 kW* in accordance with the manufacturer's recommendations, and operate with a load between 4800-5000 kW* for at least 60 minutes.

The diesel generator shall be started for this test using one of the signals in Surveillance Requirement 4.8.1.1.2.a.5. This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.5, may also serve to concurrently meet those requirements as well.

c. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank;

d. At least once per 31 days by checking for and removing accumulated water from the fuel oil storage tanks;

e. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:

1) By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:

a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate, or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;

*The operating band is meant as guidance to avoid routine overloading of the diesel. Momentary transients outside the load range shall not invalidate the test.

b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes (alternatively, Saybolt viscosity, SUS at 100°F of greater than or equal to 32.6, but less than or equal to 40.1), if gravity was not determined by comparison with the supplier's certification;

c) A flash point equal to or greater than 125°F; and

d) Water and sediment less than 0.05 percent by volume when tested in accordance with ASTM-D1796-83.

2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that: (1) the cetane index shall be determined in accordance with ASTM-D976 (this test is an appropriate approximation for cetane number as stated in ASTM-D975-81 [Note E]), and (2) the analysis for sulfur may be performed in accordance with ASTM-D1552-79, ASTM-D2622-82 or ASTM-D4294-83.

f. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78, Method A;

g. At least once per 18 months, during shutdown, by:

1) DELETED

2) Verifying the generator capability to reject a load of greater than or equal to 595 kW while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 3 Hz;

3) Verifying the generator capability to reject a load of 4986 kW without tripping. The generator voltage shall not exceed 5000 volts during and 4784 volts following the load rejection;

4) Simulating a loss-of-offsite power by itself, and:

a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and

b) Verifying the diesel starts from standby conditions on the auto-start signal, energizes the emergency busses with permanently connected loads within 11 seconds, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 0.8 Hz during this test.

5) Verifying that on an ESF Actuation test signal, without loss-of-offsite power, the diesel generator starts from standby conditions on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be 4160 $\pm$ 420 volts and 60 $\pm$ 0.8 Hz within 11 seconds after the auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test;

6) Simulating a loss-of-offsite power in conjunction with an ESF Actuation test signal, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses;

   b) Verifying the diesel starts from standby conditions on the auto-start signal, energizes the emergency busses with permanently connected loads within 11 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 $\pm$ 420 volts and 60 $\pm$ 0.8 Hz during this test; and

   c) Verifying that all automatic diesel generator trips, except engine overspeed, lube oil pressure low (2 of 3 logic) and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a Safety Injection Actuation signal.

7) DELETED

8) Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 5335 kW;

9) Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;

11) DELETED

12) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval; and

13) DELETED

h. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously from standby conditions, during shutdown, and verifying that both diesel generators achieve generator voltage and frequency at 4160 ± 420 volts and 60 ± 0.8 Hz in less than or equal to 11 seconds; and

i. At least once per 10 years by draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution.

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j. At least once per 18 months by verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded between 5400-5500kW* and during the remaining 22 hours of this test, the diesel generator shall be loaded between 4800-5000kW*. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 0.8 Hz within 11 seconds after the start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test.** Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2.a.5) excluding the requirement to start the diesel from standby conditions.***

k. At least once per 18 months by verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines.

l. At least once per 18 months by verifying that the following diesel generator lockout features prevent diesel generator starting:

1) Engine overspeed,

2) Lube oil pressure low (2 of 3 logic),

3) Generator differential, and

4) Emergency stop.

---

* The operating band is meant as guidance to avoid routine overloading of the diesel. Momentary transients outside the load range shall not invalidate the test.

** Diesel generator loadings may include gradual loading as recommended by the manufacturer.

*** If Surveillance Requirement 4.8.1.1.2.a.5) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated between 4800-5000 kW for 2 hours or until operating temperature has stabilized.

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LIMITING CONDITION FOR OPERATION

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

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. One diesel generator with:

1) A day tank containing a minimum volume of 278 gallons of fuel,

2) A fuel storage system containing a minimum volume of 32,760 gallons of fuel,

3) A fuel transfer pump,

4) Lubricating oil storage containing a minimum total volume of 280 gallons of lubricating oil, and

5) Capability to transfer lubricating oil from storage to the diesel generator unit.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A. C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, crane operation with loads over the fuel storage pool, or operation with a potential for draining the reactor vessel; initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENT

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specifications 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2).

3/4.4.2 SAFETY VALVES

The pressurizer Code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve 420,000 lbs per hour of saturated steam at the valve Setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating RHR loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization. In addition, the Cold Overpressure Protection System provides a diverse means of protection against RCS overpressurization at low temperatures.

During operation, all pressurizer Code safety valves must be OPERABLE to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss-of-load assuming no Reactor trip until the first Reactor Trip System Trip Setpoint is reached (i.e., no credit is taken for a direct Reactor trip on the loss-of-load) and also assuming no operation of the power-operated relief valves or steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Code.

3/4.4.3 PRESSURIZER

The pressurizer provides a point in the RCS when liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during load transients.

MODES 1 AND 2

The requirement for the pressurizer to be OPERABLE, with pressurizer level maintained at programmed level within ± 6% of full scale is consistent with the accident analysis in Chapter 15 of the FSAR. The accident analysis assumes that pressurizer level is being maintained at the programmed level by the automatic control system, and when in manual control, similar limits are established. The programmed level ensures the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure and pressurizer overfill transients. A pressurizer level control error based upon automatic level control has been taken into account for those transients where pressurizer overfill is a concern (e.g., loss of feedwater, feedwater line break, and inadvertent ECCS actuation at power). When in manual control, the goal is to maintain pressurizer level at the program level value. The ±6 % of full scale acceptance criterion in the Technical Specification establishes a band for operation to accommodate variations between level measurements. This value is bounded by the margin applied to the pressurizer overfill events.

3/4.4.3 PRESSURIZER (cont'd.)

The 12-hour periodic surveillances require that pressurizer level be maintained at programmed level within ± 6% of full scale. The surveillance is performed by observing the indicated level. The 12-hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and to ensure that the appropriate level exists in the pressurizer. During transitory conditions, i.e., power changes, the operators will maintain programmed level, and deviations greater than 6% will be corrected within 2 hours. Two hours has been selected for pressurizer level restoration after a transient to avoid an unnecessary downpower with pressurizer level outside the operating band. Normally, alarms are also available for early detection of abnormal level indications.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of the reactor coolant. Unless adequate heater capacity is available, the hot high-pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single-phase natural circulation and decreased capability to remove core decay heat.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity of at least ~~175 kW, capable~~ 175 kW. The heaters are capable of being powered from either the offsite power source or the emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The emergency power supply requirements for the heaters provides assurance that the heaters can be energized during a loss of offsite power condition to maintain natural circulation at HOT STANDBY.

INSERT B

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that a demand caused by loss of offsite power would be unlikely in this time period. Pressure control may be maintained during this time using normal station powered heaters.

MODE 3

The requirement for the pressurizer to be OPERABLE, with a level less than or equal to 89%, ensures that a steam bubble exists. The 89% level preserves the steam space for pressure control. The 89% level has been established to ensure the capability to establish and maintain pressure control for MODE 3 and to ensure a bubble is present in the pressurizer. Initial pressurizer level is not significant for those events analyzed for MODE 3 in Chapter 15 of the FSAR.

INSERT B - Page B 3/4 4-2a

The requirement for two groups of pressurizer heaters, each having a capacity of 175 kW, is met by verifying the capacity of the pressurizer heater groups A and B. Since the pressurizer heater groups A and B 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.

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3/4.4.3 PRESSURIZER (cont'd.)

The 12-hour periodic surveillance requires that during MODE 3 operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The surveillance is performed by observing the indicated level. The 12-hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and to ensure that a steam bubble exists in the pressurizer. Alarms are also available for early detection of abnormal level indications.

The basis for the pressurizer heater requirements is identical to MODES 1 and 2.

3/4.4.4 RELIEF VALVES

The power-operated relief valves (PORVs) and steam bubble function to relieve RCS pressure during all design transients up to and including the design step load decrease with steam dump. Operation of the PORVs minimizes the undesirable opening of the spring-loaded pressurizer Code safety valves. Each PORV has a remotely operated block valve to provide a positive shutoff capability should a relief valve become inoperable. Requiring the PORVs to be OPERABLE ensures that the capability for depressurization during safety grade cold shutdown is met.

Action statements a, b, and c distinguishes the inoperability of the power operated relief valves (PORV). Specifically, a PORV may be designated inoperable but it may be able to automatically and manually open and close and therefore, able to perform its function. PORV inoperability may be due to seat leakage which does not prevent automatic or manual use and does not create the possibility for a small-break LOCA. For these reasons, the block valve may be closed but the action requires power to be maintained to the valve. This allows quick access to the PORV for pressure control. On the other hand if a PORV is inoperable and not capable of being automatically and manually cycled, it must be either restored or isolated by closing the associated block valve and removing power.

Automatic operation of the PORVs is created to allow more time for operators to terminate an Inadvertent ECCS Actuation at Power. The PORVs and associated piping have been demonstrated to be qualified for water relief. Operation of the PORVs will prevent water relief from the pressurizer safety valves for which qualification for water relief has not been demonstrated. If the PORVs are capable of automatic operation but have been declared inoperable, closure of the PORV block valve is acceptable since the Emergency Operating Procedures provide guidance to assure that the PORVs would be available to mitigate the event. Operability and setpoint controls for the safety grade PORV opening logic are maintained in the Technical Requirements Manual.

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REACTOR COOLANT SYSTEM

BASES

RELIEF VALVES (Continued)

The prime importance for the capability to close the block valve is to isolate a stuck-open PORV. Therefore, if the block valve(s) cannot be restored to operable status within 1 hour, the remedial action is to place the PORV in manual control (i.e. the control switch in the "CLOSE" position) to preclude its automatic opening for an overpressure event and to avoid the potential of a stuck-open PORV at a time that the block valve is inoperable. The time allowed to restore the block valve(s) to operable status is based upon the remedial action time limits for inoperable PORV per ACTION requirements b. and c. Action statement d. does not specify closure of the block valves because such action would not likely be possible when the block valve is inoperable. For the same reasons, reference is not made to Action statements b. and c. for the required remedial actions.

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION

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 Criterion 17 of Appendix A to 10 CFR Part 50.

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 safety analyses and are based upon maintaining at least one redundant set of 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. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss-of-offsite power event will not result in a complete loss of safety function of critical systems 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 certain components are out-of-service for maintenance or other reasons. It does not mean to perform the Surveillance Requirements needed to demonstrate the OPERABILITY of the component.

INSERT C

in part

(b.3 and c.3)

New paragraph

INSERT D

Action Statement 'b'

Required Action Statement 'b' provides 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.5 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 and ACTION Statement 'f' would be entered and appropriate actions will be completed per ACTION Statement 'f'. Once the failure is repaired, the common cause failure no longer exists, and the required ACTION 'b' will be satisfied. If the cause of the initial inoperable diesel generator can not be confirmed not to exist on the remaining diesel generator, performance of Surveillance Requirement 4.8.1.1.2.a.5 (within 24 hours of entering ACTION Statement 'b') suffices to provide assurance of continued OPERABILITY of the other diesel generator. In the event the inoperable diesel generator is restored to OPERABLE status prior to determination of the cause of the inoperability of the diesel

INSERT C - Page B 3/4 8-1

Technical Specification 3.8.1.1 Action Statements b.2 and c.2 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.5 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 can not 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.5, 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 Statements b.2 or c.2.

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 preventative maintenance or testing; or

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

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

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If one Millstone Unit No. 3 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. 2 diesel generators are OPERABLE as required by the applicable Millstone Unit No. 2 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. 2 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. 2 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. 2 diesel generator requirements and/or Millstone Unit No. 3 SBO diesel generator requirements are not met, 72 hours is allowed for restoration of the required Millstone Unit No. 2 diesel generators and the Millstone Unit No. 3 SBO diesel generator. If any of the required Millstone Unit No. 2 diesel generators and/or the Millstone Unit No. 3 SBO diesel generator are not restored within 72 hours, and one Millstone Unit No. 3 diesel generator is still inoperable, Millstone Unit No. 3 is required to shut down.

The 14 day allowed outage time for one inoperable Millstone Unit No. 3 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 Millstone Unit No. 3 requirements must be met:

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

2. The extended diesel generator outage shall not be scheduled when adverse or inclement weather conditions and/or unstable grid conditions are predicted or present.

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

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4. All activity in the switchyard shall be closely monitored and controlled. No elective maintenance within the switchyard that could challenge offsite power availability shall be scheduled.

5. A contingency plan shall be available (OP 3314J, Auxiliary Building Emergency Ventilation and Exhaust) to provide alternate room cooling to the charging and CCP pump area (24'6" Auxiliary Building) in the event of a failure of the ventilation system prior to commencing an extended diesel generator outage.

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

generator, NNECO will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in ACTION Statement 'b'.

According to Generic Letter 84-15, 24 hours is reasonable to confirm that the OPERABLE diesel generator is not affected by the same problem as the inoperable diesel generator.

Action Statement 'c'

Required ACTION Statement 'c' provides 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.5 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 and ACTION Statement 'f' would be entered and appropriate actions will be completed per ACTION Statement 'f'. Once the failure is repaired, the common cause failure no longer exists, and the required ACTION 'c' will be satisfied. If the cause of the initial inoperable diesel generator can not be confirmed not to exist on the remaining diesel generator, performance of Surveillance Requirement 4.8.1.1.2.a.5 (within 8 hours of entering ACTION Statement 'c') suffices to provide assurance of continued OPERABILITY of the other diesel generator.

In the event, the inoperable diesel generator is restored to operable status prior to determination of the cause of the inoperability of the diesel generator, NNECO will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under eight hours constraint imposed while in ACTION Statement 'c'.

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 unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971; 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977; and 1.137, "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION

Technical Specification 3.8.1.1.b.1 requires a minimum volume of 278 gallons be contained in each of the diesel generator day tanks. Technical Specification 3.8.1.2.b.1 requires a minimum volume of 278 gallons be contained in the required diesel generator day tank. This capacity ensures that a minimum usable volume of 189 gallons is available to permit operation of each of the diesel generators for approximately 27 minutes with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The shutoff level for the (two) fuel oil transfer pumps is 493 gallons (413 gallons usable volume) which corresponds to approximately 60 minutes of engine operation at the 2,000 hour rating. The first pump has a make-up setpoint of 372 gallons (284 gallons usable volume) which corresponds to approximately 42 minutes of operation at the 2,000 hour rating. The 278 gallon day tank low level value corresponds to the auto make-up setpoint of the second pump and is therefore the lowest value of fuel oil with auto make-up capability. Loss of the two redundant pumps would cause day tank level to drop below the minimum value.

Technical Specification 3.8.1.1.b.2 requires a minimum volume of 32,760 gallons be contained in each of the diesel generator's fuel storage systems. Technical Specification 3.8.1.2.b.2 requires a minimum volume of 32,760 gallons be contained in the required diesel generator's fuel storage system. This capacity ensures that a minimum usable volume (29,180 gallons) is available to permit operation of each of the diesel generators for approximately three days with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The ability to cross-tie the diesel generator fuel oil supply tanks ensures that one diesel generator may operate up to approximately six days. Additional fuel oil can be supplied to the site within twenty-four hours after contacting a fuel oil supplier.

Surveillance Requirements 4.8.1.1.2.a.6 (monthly) and 4.8.1.1.2.b.2 (once per 184 days) and 4.8.1.1.2.j (18 months test)

The Surveillances 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2 verify that the diesel generators are capable of synchronizing with the offsite electrical system and loaded to greater than or equal to continuous rating of the machine. A minimum time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Surveillance Requirement 4.8.1.1.2.j requires demonstration once per 18 months that the diesel generator can start and run continuously at full load capability for an interval of not less than 24 hours, $\geq$ 2 hours of which are at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the diesel generator. The load band is provided to avoid routine overloading of the diesel generator. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain diesel generator operability. The load band specified accounts for instrumentation inaccuracies using plant computer and for the operational control capabilities and human factor characteristics. The note (*) acknowledges that momentary transient outside the load range shall not invalidate the test.

NO CHANGE
FOR INFORMATION ONLY

Surveillance Requirements 4.8.1.1.2.a.5 (Monthly), 4.8.1.1.2.b.1 (Once per 184 Days), 4.8.1.1.2.g.4.b (18 Month Test), 4.8.1.1.2.g.5 (18 Month Test) and 4.8.1.1.2.g.6.b (18 Month Test)

Several diesel generator surveillance requirements specify that the emergency diesel generators are started from a standby condition. Standby conditions for a diesel generator means that the EDG system is aligned for automatic start and loading, diesel engine coolant and lubricating oil are being circulated and temperatures are maintained within design ranges. Design ranges for standby temperatures are greater than or equal to the low temperature alarm setpoints and less than or equal to the standby "keep-warm" heater shutoff temperatures for each respective sub-system.

Surveillance Requirement 4.8.1.1.2.j (18 Month Test)

The existing "standby condition" stipulation contained in specification 4.8.1.1.2.a.5 is superseded when performing the hot restart demonstration required by 4.8.1.1.2.j.

Docket No. 50-423
B18343

Attachment 4

Millstone Power Station, Unit No. 3

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Retyped Pages

3/4.4.3 PRESSURIZER

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.3.1 The pressurizer shall be OPERABLE with:

a. at least two groups of pressurizer heaters, each having a capacity of at least 175 kW; and

b. water level maintained at programmed level +/-6% of full scale (Figure 3.4-5).

APPLICABILITY: MODES 1 and 2.

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.

b. With pressurizer water level outside the parameters described in Figure 3.4-5, within 2 hours restore programmed level to within +/- 6% of full scale, or be in at least HOT STANDBY within the next 6 hours.

c. With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the Reactor Trip System breakers open within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.1.1 The pressurizer water level shall be verified to be within programmed level +/- 6% of full scale at least once per 12 hours.

4.4.3.1.2 The capacity of each of the above required groups of pressurizer heaters shall be verified by energizing the heaters and measuring circuit current at least once each refueling interval.

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.3.2 The pressurizer shall be OPERABLE with:

a. at least two groups of pressurizer heaters, each having a capacity of at least 175 kW; and

b. water level less than or equal to 89% of full scale.

APPLICABILITY: MODE 3

ACTION:

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

b. With the pressurizer otherwise inoperable, be in HOT SHUTDOWN within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The pressurizer water level shall be determined to be less than or equal to 89% of full scale at least once per 12 hours.

4.4.3.2.2 The capacity of each of the above required groups of pressurizer heaters shall be verified by energizing the heaters and measuring circuit current at least once each refueling interval.

SURVEILLANCE REQUIREMENTS

4.4.4.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE by:

a. Performance of a CHANNEL CALIBRATION at least once each REFUELING INTERVAL; and

b. Operating the valve through one complete cycle of full travel during MODES 3 or 4 at least once each REFUELING INTERVAL; and

c. Performance of an ANALOG CHANNEL OPERATIONAL TEST on the PORV high pressurizer pressure actuation channels, but excluding valve operation, at least once each quarter; and

d. Verify the PORV high pressure automatic opening function is enabled at least once per 12 hours.

4.4.4.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed with power removed in order to meet the requirements of ACTION b. or c. in Specification 3.4.4.

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:

1) A separate day tank containing a minimum volume of 278 gallons of fuel,
2) A separate Fuel Storage System containing a minimum volume of 32,760 gallons of fuel,
3) A separate fuel transfer pump,
4) Lubricating oil storage containing a minimum total volume of 280 gallons of lubricating oil, and
5) Capability to transfer lubricating oil from storage to the diesel generator unit.

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.a 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 at least 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.a 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.5 for the OPERABLE diesel generator within 24 hours. AND

LIMITING CONDITION FOR OPERATION

ACTION (continued)

Inoperable Equipment	Required Action
b. One diesel generator	b.3 Verify all required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are OPERABLE, and the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If these conditions are not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 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. 2 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. 2 diesel generator to OPERABLE status and/or Millstone Unit No. 3 SBO diesel generator to available status within 72 hours or be in at least 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 at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
c. One offsite circuit AND One diesel generator	c.1 Perform Surveillance Requirement 4.8.1.1.1.a 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.5 for the OPERABLE diesel generator within 8 hours. AND

LIMITING CONDITION FOR OPERATION

ACTION (continued)

Inoperable Equipment	Required Action
c. One offsite circuit AND One diesel generator	c.3 Verify all required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are OPERABLE, and the steam-driven auxiliary feedwater pump is OPERABLE (MODES 1, 2, and 3 only). If these conditions are not satisfied within 2 hours, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. AND c.4 Restore one inoperable A.C. source to OPERABLE status within 12 hours or be in at least 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 at least 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.
e. Two diesel generators	e.1 Perform Surveillance Requirement 4.8.1.1.1.a for the offsite circuits within 1 hour and at least once per 8 hours thereafter. AND

LIMITING CONDITION FOR OPERATION

ACTION (continued)

Inoperable Equipment	Required Action
e. Two diesel generators	e.2 Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least 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 Each of the above required independent circuits between the offsite transmission network and the Onsite Class 1E Distribution System shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each 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 day tank,
2) Verifying the fuel level in the fuel storage tank,
3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank,
4) Verifying the lubricating oil inventory in storage,
5) Verifying the diesel starts from standby conditions and achieves generator voltage and frequency at 4160 $\pm$ 420 volts and 60 $\pm$ 0.8 Hz. The diesel generator shall be started for this test by using one of the following signals:

a) Manual, or

*All planned starts for the purpose of these surveillances may be preceded by an engine prelube period.

3/4.4.3 PRESSURIZER (cont'd.)

The 12-hour periodic surveillances require that pressurizer level be maintained at programmed level within ± 6% of full scale. The surveillance is performed by observing the indicated level. The 12-hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and to ensure that the appropriate level exists in the pressurizer. During transitory conditions, i.e., power changes, the operators will maintain programmed level, and deviations greater than 6% will be corrected within 2 hours. Two hours has been selected for pressurizer level restoration after a transient to avoid an unnecessary downpower with pressurizer level outside the operating band. Normally, alarms are also available for early detection of abnormal level indications.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of the reactor coolant. Unless adequate heater capacity is available, the hot high-pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single-phase natural circulation and decreased capability to remove core decay heat.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity of at least 175 kW. The heaters are capable of being powered from either the offsite power source or the emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The requirement for two groups of pressurizer heaters, each having a capacity of 175 kW, is met by verifying the capacity of the pressurizer heater groups A and B. Since the pressurizer heater groups A and B 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.

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that a demand caused by loss of offsite power would be unlikely in this time period. Pressure control may be maintained during this time using normal station powered heaters.

MODE 3

The requirement for the pressurizer to be OPERABLE, with a level less than or equal to 89%, ensures that a steam bubble exists. The 89% level preserves the steam space for pressure control. The 89% level has been established to ensure the capability to establish and maintain pressure control for MODE 3 and to ensure a bubble is present in the pressurizer. Initial pressurizer level is not significant for those events analyzed for MODE 3 in Chapter 15 of the FSAR.

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION

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 Criterion 17 of Appendix A to 10 CFR Part 50.

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 safety analyses and are based upon maintaining at least one redundant set of 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. The A.C. and D.C. source allowable out-of-service times are based in part on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. Technical Specification 3.8.1.1 Action Statements b.2 and c.2 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.5 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 can not 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.5, 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 Statements b.2 or c.2.

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 preventative maintenance or testing; or

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

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

When one diesel generator is inoperable, there is an additional ACTION requirement (b.3 and c.3) to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss-of-offsite power event will not result in a complete loss of safety function of critical systems 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 certain components are out-of-service for maintenance or other reasons. It does not mean to perform the Surveillance Requirements needed to demonstrate the OPERABILITY of the component.

If one Millstone Unit No. 3 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. 2 diesel generators are OPERABLE as required by the applicable Millstone Unit No. 2 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. 2 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. 2 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. 2 diesel generator requirements and/or Millstone Unit No. 3 SBO diesel generator requirements are not met, 72 hours is allowed for restoration of the required Millstone Unit No. 2 diesel generators and the Millstone Unit No. 3 SBO diesel generator. If any of the required Millstone Unit No. 2 diesel generators and/or Millstone Unit No. 3 SBO diesel generator are not restored within 72 hours, and one Millstone Unit No. 3 diesel generator is still inoperable, Millstone Unit No. 3 is required to shut down.

The 14 day allowed outage time for one inoperable Millstone Unit No. 3 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 Millstone Unit No. 3 requirements must be met:

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

2. The extended diesel generator outage shall not be scheduled when adverse or inclement weather conditions and/or unstable grid conditions are predicted or present.

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

4. All activity in the switchyard shall be closely monitored and controlled. No elective maintenance within the switchyard that could challenge offsite power availability shall be scheduled.

5. A contingency plan shall be available (OP 3314J, Auxiliary Building Emergency Ventilation and Exhaust) to provide alternate room cooling to the charging and CCP pump area (24'6" Auxiliary Building) in the event of a failure of the ventilation system prior to commencing an extended diesel generator outage.

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

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 unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971; 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977; and 1.137, "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION

Technical Specification 3.8.1.1.b.1 requires a minimum volume of 278 gallons be contained in each of the diesel generator day tanks. Technical Specification 3.8.1.2.b.1 requires a minimum volume of 278 gallons be contained in the required diesel generator day tank. This capacity ensures that a minimum usable volume of 189 gallons is available to permit operation of each of the diesel generators for approximately 27 minutes with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The shutoff level for the (two) fuel oil transfer pumps is 493 gallons (413 gallons usable volume) which corresponds to approximately 60 minutes of engine operation at the 2,000 hour rating. The first pump has a make-up setpoint of 372 gallons (284 gallons usable volume) which corresponds to approximately 42 minutes of operation at the 2,000 hour rating. The 278 gallon day tank low level value corresponds to the auto make-up setpoint of the second pump and is therefore the lowest value of fuel oil with auto make-up capability. Loss of the two redundant pumps would cause day tank level to drop below the minimum value.

Technical Specification 3.8.1.1.b.2 requires a minimum volume of 32,760 gallons be contained in each of the diesel generator's fuel storage systems. Technical Specification 3.8.1.2.b.2 requires a minimum volume of 32,760

gallons be contained in the required diesel generator's fuel storage system. This capacity ensures that a minimum usable volume (29,180 gallons) is available to permit operation of each of the diesel generators for approximately three days with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The ability to cross-tie the diesel generator fuel oil supply tanks ensures that one diesel generator may operate up to approximately six days. Additional fuel oil can be supplied to the site within twenty-four hours after contacting a fuel oil supplier.

Surveillance Requirements 4.8.1.1.2.a.6 (monthly) and 4.8.1.1.2.b.2 (once per 184 days) and 4.8.1.1.2.j (18 months test)

The Surveillances 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2 verify that the diesel generators are capable of synchronizing with the offsite electrical system and loaded to greater than or equal to continuous rating of the machine. A minimum time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Surveillance Requirement 4.8.1.1.2.j requires demonstration once per 18 months that the diesel generator can start and run continuously at full load capability for an interval of not less than 24 hours, $\geq$ 2 hours of which are at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the diesel generator. The load band is provided to avoid routine overloading of the diesel generator. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain diesel generator operability. The load band specified accounts for instrumentation inaccuracies using plant computer and for the operational control capabilities and human factor characteristics. The note (*) acknowledges that momentary transient outside the load range shall not invalidate the test.

Surveillance Requirements 4.8.1.1.2.a.5 (Monthly), 4.8.1.1.2.b.1 (Once per 184 Days), 4.8.1.1.2.g.4.b (18 Month Test), 4.8.1.1.2.g.5 (18 Month Test) and 4.8.1.1.2.g.6.b (18 Month Test)

Several diesel generator surveillance requirements specify that the emergency diesel generators are started from a standby condition. Standby conditions for a diesel generator means that the EDG system is aligned for automatic start and loading, diesel engine coolant and lubricating oil are being circulated and temperatures are maintained within design ranges. Design ranges for standby temperatures are greater than or equal to the low temperature alarm setpoints and less than or equal to the standby "keep-warm" heater shutoff temperatures for each respective sub-system.

Surveillance Requirement 4.8.1.1.2.j (18 Month Test)

The existing "standby condition" stipulation contained in specification 4.8.1.1.2.a.5 is superseded when performing the hot restart demonstration required by 4.8.1.1.2.j.

Docket No. 50-423
B18343

Attachment 5

Millstone Power Station, Unit No. 3

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Risk Evaluation

Technical Specifications Change Request 3-2-00
Emergency Diesel Generator Allowed Outage Time
Risk Evaluation

Introduction

The proposed Millstone Unit No. 3 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 Nuclear Regulatory Commission (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.

Tables 2 and 3, located at the end of this attachment, summarize the CDF contribution by initiating event and the LERF contributors, respectively, for Millstone Unit No. 3.

The justification for the change to the Millstone Unit No. 3 EDG AOT is based upon a risk-informed, deterministic evaluation consisting of three main elements:

1. Availability of offsite power via the Millstone Unit No. 3 Normal and Reserve Station System Transformers.

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

3. Reliance on the Configuration Risk Management Program (CRMP), required by 10 CFR 50.65(a)(4), to control plant aggregate risk while a Millstone Unit No. 3 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 Black-out (SBO) event, or a fire when an EDG is inoperable for an extended time period (i.e., 14 days).

Scoping Analysis

A risk evaluation of the proposed increase in the AOT for one inoperable EDG at Millstone Unit No. 3, consistent with the guidelines provided in RG 1.177, has been performed. In support of that risk evaluation, a scoping analysis to determine whether the risk increase associated with the AOT extension would be within the RG 1.177 acceptance criteria was performed. The scoping analysis concluded that the acceptance criteria would be exceeded and thus, compensatory measures would be required to reduce the risk. The acceptance criteria would be exceeded due to the increased risk of incurring a reactor coolant pump (RCP) seal failure resulting in a loss of coolant accident (LOCA). The primary reason for the risk increase is the Reactor Plant Component Cooling Water (CCP) System configuration (refer to Figure 1 at the end of this attachment) which requires both CCP trains to operate to ensure RCP seal cooling (i.e., each CCP train provides thermal barrier cooling to 2 RCPs). RCP seal cooling is normally provided by the following two redundant methods:

1. Seal injection to all four RCPs via the operating charging pump, or

2. Thermal barrier cooling via the 2 operating CCP pumps, the A CCP train supports RCPs A and D, and the B CCP train supports RCPs B and C.

This redundancy becomes compromised when an EDG is removed from service. If a loss of offsite power were to occur during the EDG outage, continued RCP seal cooling is dependent upon operation of the unaffected charging pump. If the unaffected charging pump were to fail, an RCP seal induced LOCA is postulated to occur on the 2 affected RCPs 30 minutes after the loss of all seal cooling. Furthermore, this event is difficult to mitigate because two charging pumps would be unavailable to provide RCS makeup via high head safety injection. (The charging pumps are also the high head safety injection pumps at Millstone Unit No. 3.) Consequently, it was necessary to evaluate compensatory actions to reduce the risk contribution from this scenario.

As a result, the following compensatory measure will be implemented during extended EDG outages. The spare charging pump will be mechanically and electrically aligned, to the extent possible, to allow rapid replacement of the charging pump associated with the unaffected EDG should that charging pump fail. This will allow use of the spare charging pump within approximately 30 minutes after failure of the charging pump associated with the unaffected EDG.

This compensatory action will allow the restoration of a charging pump for mitigation of an RCP seal induced LOCA during an extended EDG outage.

PRA Evaluation

A probabilistic risk assessment (PRA) of the proposed increase in the AOT for one inoperable EDG at Millstone Unit No. 3 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. 3.

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 = 95 hr/yr
EDG B = 109 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 3.67E-05/yr, compared with the current baseline CDF of 3.60E-05/yr. This constitutes a 2.0% increase in CDF. If the unavailability value were to become 300 hr/yr, the baseline CDF would be 3.75E-05/yr, which is a 4.0% increase in CDF. Similarly, substituting 200 hr/yr into the PRA model yields a baseline LERF of 3.09E-07/yr, compared with the current baseline LERF of 3.04E-07/yr, which is a 2.0% increase in LERF. If the unavailability value were to become 300 hr/yr, the baseline LERF would be 3.14E-07/yr, which is a 3.0% 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 when 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 plant-specific data. For Millstone Unit No. 3 EDG performance data from the first quarter 1990 through the first quarter 2000 was used to determine EDG failure rates.[1] The report identifies that there has been one EDG start failure in 549 demands and two EDG run failures in 371 EDG load runs (i.e., loads being placed on the operating EDG). A load run equates to approximately 1.5 hours of EDG operation. Therefore, the 371 load runs correlate to 556 hours of EDG operation. The resultant EDG failure rates used in the analysis are:

Failure to start = 1.82E-03/demand
Failure to run = 3.39E-03/hour

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[1] A review of Millstone Unit No. 3 EDG performance from the second quarter 2000 through first quarter 2001 indicated that no EDG failures were observed. Therefore, the calculated EDG failure rates used for this evaluation are conservative (i.e., indicate a higher than actual failure rate).

Ave. Maintenance
Unavailability = 1.16E-02

The PRA model which incorporates the proposed CCP System compensatory measure was used to calculate the ICCDP and ICLERP values. The intermediate results are:

baseline CDF	=	3.60E-05/yr
baseline LERF	=	3.04E-07/yr
conditional CDF (EDG A out)	=	4.51E-05/yr
conditional CDF (EDG B out)	=	4.61E-05/yr

The conditional CDF of a B train EDG outage is greater than an A train EDG outage. This is due to asymmetrical dependencies associated with the EDGs. Specifically, room heat-up calculations have concluded that, of the 2 motor driven Auxiliary Feedwater (AFW) pump rooms, only the A train motor driven AFW pump requires operation of the AFW & Mechanical Room Ventilation System to prevent room temperatures from exceeding equipment qualification limits. The AFW & Mechanical Room Ventilation System consists of 2 trains of supply and exhaust fans that provide room cooling to several rooms including both motor driven AFW pump rooms. Therefore, given a Loss of Offsite Power (LOOP) during a B train EDG outage, risk of failing the A train motor driven AFW pump is increased since a failure of the unaffected train of AFW & Mechanical Room ventilation results in potential loss of the pump. Conversely, during an A train EDG outage, risk of failing the B train motor driven AFW pump is unaffected since it is not dependent upon the A train EDG. Due to the increased risk associated with B train EDG outages, all ICCDP and ICLERP calculations are based on the unavailability of the B train EDG.

conditional LERF (EDG B out) = 4.77E-07/yr

Assuming a 14 day AOT, the risk measures are:

ICCDP = (4.61E-05/yr - 3.60E-05/yr) * (14 d) * (yr/365 d)
ICCDP = 3.87E-07

ICLERP = (4.77E-07/yr - 3.04E-07/yr) * (14 d) * (yr/365 d)
ICLERP = 6.64E-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. 3 PRA model is sufficient.

PRA Model Chronology

In response to Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities - 10CFR50.54(f)," the Millstone Unit No. 3 Individual Plant Examination (IPE) and Individual Plant Examination of External Events (IPEEE) were submitted in

the same letter to the NRC dated August 31, 1990.[2] The NRC staff evaluation reports for the IPE (May 5, 1992)[3] and IPEEE (May 26, 1998)[4] concluded that the studies meet the intent of Generic Letter 88-20. The NRC staff did note, however, that the IPE reported a smaller (by more than an order of magnitude) loss of offsite power contribution to core damage than that estimated in previous staff studies on station blackout. To address this issue, Northeast Nuclear Energy Company committed to install a third air-cooled diesel generator in accordance with the Station Blackout rule requirements. Therefore, with installation of the third diesel, the NRC staff concluded that the loss of offsite power/station blackout contribution would be sufficiently reduced such that the intent of Generic Letter 88-20 would be met.

A brief chronology of the Millstone Unit No. 3 PRA model development is provided in the following table.

Date	Description
8/83	Millstone 3 PSS submitted
9/83	Amendment 1: Corrected consequence analysis
1/84	Transfer of PSS technology from Westinghouse (PSS contractor) to the licensee
4/84	Amendment 2: Reanalysis of seismic fragilities by Structural Mechanics Assoc.
11/84	Amendment 3: Correction of mathematical error in seismic analysis
8/85	Published Millstone 3 risk evaluation report (NUREG-1152)
8/87	Amendment 4 (internal): Reanalysis of the Level 1 PRA to account for actual surveillance intervals, main feedwater recovery, etc.
1988	First round of evaluation of projects under internal Integrated Safety Assessment Program (ISAP)
1989	Second round of internal ISAP evaluations
1989-1990	Transferred PSS from mini-computer to PC
5/90	5th update: Correction of math and logic errors discovered in transfer
6/90	6th update: Updated transient frequencies (plant data), revised V sequence model, and coupled the Level 2 PRA to the Level 1
8/90	Submittal of IPE
Fall 1990	Coupled the Level 3 PRA to Levels 1 and 2; third round of ISAP evaluations
5/92	NRC staff evaluation report concludes IPE meets the intent of Generic Letter 88-20. The report contains recommendations to explicitly model total loss of service water initiating event, HVAC dependency, and DC power dependency
12/95	• Model converted from support state to linked fault tree methodology • Ventilation dependency explicitly modeled • DC power dependency explicitly modeled

(2) E. J. Mroczka letter to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Response to Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerabilities, Summary Report Submittal," dated August 31, 1990.

(3) V. L. Rooney (NRC) letter to Northeast Nuclear Energy Company, "Staff Evaluation of Millstone 3 Individual Plant Examination, (IPE) - Internal Events, GL 88-20 (TAC No. M74434)," May 5, 1992.

(4) J. W. Andersen (NRC) letter to Northeast Nuclear Energy Company, "Millstone Nuclear Power Station, Unit No. 3 Individual Plant Examination of External Events (TAC No. M83643)," May 26, 1998.

Date	Description
	• Total loss of service water initiator modeled
2/96	LERF model developed using original PSS model
10/98	• Station Blackout (SBO) diesel generator battery limitation modeled • Transfer to sump recirculation analyzed using simulator data • Plant-specific data update
8/99	• Time-dependent SBO model incorporated • Loss of ventilation/room heat-up calculation conclusions incorporated
9/99	Westinghouse Owner's Group peer review completed
6/00	Incorporated loss of offsite power and offsite power restoration calculations

Westinghouse Owners Group Peer Review

The Millstone Unit No. 3 PRA model has been reviewed as part of the Westinghouse Owners Group (WOG) Peer Review Process. The results of the WOG 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 yielded the following two issues:

1. Consider running sensitivity cases using the latest RCP seal LOCA model (i.e., the NRC recommends using the Brookhaven National Lab/Rhodes model).

2. Ensure all sequences in which recovery of offsite power is credited are analyzed for the standard 24 hour mission time assumed in the PRA model.

These two issues were translated into sensitivity studies which will be used to address PRA validity. In addition, the following two sensitivity studies were also performed:

3. Increase the LOOP frequency to the 95^{TH} percentile value to determine how sensitive Millstone Unit No. 3 is to the LOOP frequency.

4. 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 - Rhodes Model

The current PRA model uses NUREG/CR-4550[(5)] as the basis for the timing and probability distribution of RCP seal leakage events. The NUREG assumes:

1. RCP seal leakage will not occur within one hour subsequent to a loss of seal cooling.

[(5)] NUREG/CR-4550, SAND 86-2084, Vol. 2, "Analysis of Core Damage Frequency from Internal Events: Expert Judgement Elicitation," April 1989.

2. A probability distribution of 83% for leakage less than 100 gpm per RCP, 15% for leakage between 100-200 gpm per RCP, and 1% for leakage greater than 200 gpm per RCP.

The WOG has published a topical report[6] to more accurately define RCP seal performance during postulated SBO events and to determine the impact of the loss of seal cooling on the RCP. The NRC has indicated that the WOG topical report should not be used in license amendment applications.[7] The NRC staff does, however, believe that the Rhodes model (documented in Appendix A of NUREG/CR-5167)[8] is an acceptable model to use in risk-informed licensing submittals. Furthermore, if probabilities other than those derived from the Rhodes model are used to support a risk-informed submittal, a sensitivity study should be performed to demonstrate that the risk associated with the change is not overly sensitive to RCP seal failure.

Consequently, this sensitivity study is used to determine if the Rhodes model assumptions significantly affect the risk insights previously gained. Brookhaven Technical Report W6211[9] was used to provide guidance on Rhodes model implementation. The primary difference between the Rhodes model and NUREG/CR-4550 is with respect to the timing of the RCP seal leakage. The Rhodes model postulates that the mean starting time for leakage is 30 minutes (vs. 1 hour) following loss of seal cooling. The probability distribution is comparable to the NUREG. It is estimated that there is an 89% (vs. 83%) probability of leakage less than 100 gpm per RCP, 10% (vs. 15%) probability for leakage between 100 to 200 gpm per RCP, and 0.5% (vs. 1%) probability for leakage greater than 200 gpm per RCP.

The model differences result in competing effects. That is, the Rhodes model assumes RCP seal leakage occurs much earlier than the NUREG, therefore, time to core uncovery would occur much earlier. However, the Rhodes model predicts a higher probability of smaller seal leakage rates, therefore, prolonging the overall time to core uncovery. The primary impact of the Rhodes model is related to the largest seal leak (> 200 gpm per RCP) occurring 30 minutes after loss of seal cooling. It is conservatively assumed that the Millstone Unit No. 3 SBO diesel generator is incapable of mitigating this event due to its limited load capacity and starting time of one hour, which exceeds 30 minute LOCA initiation time. A summary of the core uncovery times and associated offsite power non-recovery probabilities for each model is provided in the following table.

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(6) Westinghouse Owners Group Topical Report WCAP-10541, Rev. 2, "Reactor Coolant Pump Seal Performance Following a Loss of All AC Power," November 1996.

(7) NRC Correspondence, "Review of Topical Report WCAP-10541, Rev. 2, Westinghouse Owners Group Report, Reactor Coolant Pump Seal Performance Following a Loss of All AC Power, (TAC No. MA6294)," dated January 5, 2000.

(8) NUREG/CR-5167, "Cost Benefit Analysis for Generic Issue 23: Reactor Coolant Pump Seal Failure," April 1991.

(9) Brookhaven National Lab Technical Report W6211-08/99, "Guidance Document for Modeling of RCP Seal Failures," dated August 1999.

NUREG/CR-4550 vs. Rhodes/Brookhaven Model

Pressurizer PORV Status	Turbine-Driven AFW System Availability	RCP Seal Leakage Rate per Pump (gpm)	NUREG/CR-4550 Model		Rhodes/Brookhaven Model	
			Time By Which Offsite Power Must Be Recovered (hrs)	Probability of Offsite Power Non-Recovery By This Time	Time at Which Offsite Power Must Be Recovered (hrs)	Probability of Offsite Power Non-Recovery By This Time
both PORVs reclose	runs for > 8.0 hr	0 - 100	15.75	0.0242	15.75	0.0242
		100 - 200	9.50	0.0427	9.50	0.0427
		200 - 500	2.25	0.2062	1.00	0.4738
	fails in < 8.0 hr	0 - 100	2.75	0.1579	2.75	0.1579
		100 - 200	2.50	0.1795	2.50	0.1795
		200 - 500	2.00	0.2394	0.75	0.5705
1 PORV fails to reclose	runs for > 1.5 hr	0 - 200	1.50	0.3318	1.50	0.3318
		200 - 500	0.83	0.5403	-	1.0000
	fails in < 1.5 hr	0 - 500	1.00	0.4738	-	1.0000

The results of the sensitivity study are:

baseline CDF	=	3.62E-05/yr
conditional CDF	=	4.98E-05/yr
ICCDP	=	5.22E-07
baseline LERF	=	3.10E-07/yr
conditional LERF	=	5.53E-07/yr
ICLERP	=	9.32E-09

The ICCDP for this sensitivity study marginally exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LOOP 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.

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

Sensitivity Study #2 - Offsite Power Recovered/24 Hour Mission Time

The peer review identified that SBO scenarios modeled in the PRA were being terminated prematurely (i.e., not evaluated for the standard 24 hour mission time) following recovery of offsite power. The PRA assumption (Sensitivity Study #1) is that there is a high probability that an RCP seal LOCA occurs following an SBO event. Therefore, the purpose of this sensitivity study is to calculate the conditional core damage probability (CCDP) of a small break LOCA and then add that probability to all the scenarios which involve recovery of offsite power. This will be a very conservative estimate since the small LOCA CCDP is calculated based on a 24 hour mission time and the scenarios in which offsite power is restored at time (t) only need to add the small LOCA CCDP for time (24-t).

The small LOCA CCDP was calculated to be 3.22E-03. This value was then added to the LOOP frequency such that every SBO scenario (i.e., not just the scenarios in which offsite power is restored) has the small break LOCA CCDP added. The results are as follows:

baseline CDF	=	3.92E-05/yr
conditional CDF	=	5.55E-05/yr
ICCDP	=	6.25E-07
baseline LERF	=	3.20E-07/yr
conditional LERF	=	5.97E-07/yr
ICLERP	=	1.06E-08

The ICCDP for this sensitivity study marginally exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LOOP 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.

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

Sensitivity Study #3 - LOOP Frequency Set to 95TH Percentile Value

The LOOP frequency was calculated based upon historical plant data compiled by Electric Power Research Institute (EPRI).[10] There have been 190 LOOP 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 LOOP frequency calculation.

The EPRI report identified that 4 LOOP events have occurred at the Millstone Station. There was also a LOOP 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 LOOP 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 October 25, 1988, during power operation. This event is excluded because both General Design Criteria 17 electrical power 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 LOOP event occurred as a result of Hurricane Gloria, prior to Millstone Unit No. 3 commercial operation. In preparation for the hurricane,

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

Millstone Unit Nos. 1 and 2 were shutdown. When offsite power was lost due to the hurricane, all emergency AC on-site sources did start and were successfully loaded. Currently, station operating procedures require Millstone Unit No. 3 to perform an orderly plant shutdown if wind speed is expected to exceed 90 mph within 6 hours. Therefore, since the operating Millstone Units were shutdown prior to hurricane-induced LOOP events, and will continue to be going forward, they were excluded from the LOOP frequency calculation. A similar argument can be made for the LOOP 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 LOOP 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. 3 LOOP frequency is calculated to be 0.0308/yr. This value is comprised of plant-centered (.0225/yr), grid-related (.0031/yr), and weather-related (.0052/yr) events.

The risk sensitivity to the LOOP frequency was evaluated by performing a sensitivity study using the 95^{TH} percentile value of 0.044/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 study are:

baseline CDF	=	4.04E-05/yr
conditional CDF	=	5.77E-05/yr
ICCDP	=	6.64E-07
baseline LERF	=	3.23E-07/yr
conditional LERF	=	6.19E-07/yr
ICLERP	=	1.13E-08

The ICCDP for this sensitivity study marginally exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LOOP 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.

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

Sensitivity Study #4 - ICCDP and Corrective Maintenance

The Waterford Station EDG AOT Safety Evaluation Report[11] identifies the ICCDP for two situations. The first is when one EDG is unavailable due to preventive maintenance (PM) and the second is when one EDG is unavailable due to corrective maintenance (CM). For the PM case, the remaining available EDG is subject to random failure and

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[11] NRC Safety Evaluation Report for Waterford Steam Electric Station, Unit 3, Issuance of Amendment Re: Emergency Diesel Generator Allowed Outage Time Increase (TAC No. MA6176), dated July 21, 2000.

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 common cause failure mechanism (i.e., the same failure mechanism may exist on the available EDG). Therefore, the EDG failure rate is assumed to be the common cause failure factor. Note that the baseline CDF and LERF for this sensitivity study are the same as the nominal case. The results of this study are:

baseline CDF	=	3.60E-05/yr
conditional CDF	=	5.09E-05/yr
ICCDP	=	5.72E-07
baseline LERF	=	3.04E-07/yr
conditional LERF	=	6.11E-07/yr
ICLERP	=	1.18E-08

The ICCDP for this sensitivity study marginally exceeds the RG 1.177 criteria. The dominant contribution for this case is a weather-related LOOP 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.

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

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. 3 EDG removed from service for an extended outage, the following additional requirements specific to this activity are necessary to minimize plant risk.

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

2. The extended EDG outage will not be scheduled when adverse or inclement weather conditions and/or unstable grid conditions are predicted or present.

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

4. 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. 3 EDG to be inoperable for greater than 72 hours.

5. While in the proposed extended EDG AOT, additional elective equipment maintenance or testing that requires the equipment to be removed from service will be evaluated and activities that yield unacceptable results will be avoided.

6. All activity in the switchyard will be closely monitored and controlled. No elective maintenance within the switchyard that could challenge offsite power availability will be scheduled

7. A contingency plan will be in place to provide alternate room cooling to the charging and CCP pumps, which are housed in the same area (24'6" Auxiliary Building), prior to commencing an extended EDG outage.

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 releasing 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 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 on plant risk are evaluated by the use of system impact matrices, work document job details, plant drawings, or additional means to effectively determine the overall impact on plant risk levels.

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	Sensitivity Studies			
		Case 1	Case 2	Case 3	Case 4
ΔCDF	7.00E-07/yr (EDG PC=200 hrs/yr) 1.50E-06/yr (EDG PC=300 hrs/yr)	NA	NA	NA	NA
ICCDP	3.87E-07	5.22E-07	6.25E-07	6.64E-07	5.72E-07
ΔLERF	5.00E-09/yr (EDG PC=200 hrs/yr) 1.00E-08/yr (EDG PC=300 hrs/yr)	NA	NA	NA	NA
ICLERP	6.64E-09	9.32E-09	1.06E-08	1.13E-08	1.18E-08

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 = 3.87E-07
ICLERP = 6.64E-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 B train EDG, which is the EDG with the highest risk importance.

PRA model validity was addressed by performing sensitivity studies to determine the risk significance of certain parameters modeled in the PRA. The parameters studied include LOOP frequency, RCP seal induced LOCA time frame, scenario mission time, and common cause failure probability. Two of the sensitivity studies were performed as a result of WOG 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
Excessive LOCA	3.00E-07	3.00E-07	3.00E-07	3.00E-07
Large LOCA	4.40E-05	3.88E-04	2.14E-07	8.03E-06
Medium LOCA	4.30E-05	6.11E-04	2.05E-07	1.03E-05
Small LOCA	3.00E-03	9.07E-03	9.66E-06	2.42E-06
Consequential Small LOCA	--	--	9.89E-06*	1.21E-06
ISLOCA	2.21E-07	2.21E-07	2.21E-07	2.21E-07
In-core Instrument Tube LOCA	9.20E-04	9.20E-04	3.82E-06	2.46E-07
SGTR	7.72E-03	3.92E-02	4.35E-08	1.18E-06
General Transient	2.91	3.24	9.73E-06	2.97E-06
Loss of Main Feedwater	1.13E-01	8.60E-01	3.82E-07	1.05E-06
Steamline Break Outside Containment (SLBOC)	6.04E-03	3.78E-02	2.47E-07	8.12E-06
Consequential SLBOC	--	--	--	6.73E-07
Steamline Break Inside Containment (SLBIC)	4.65E-04	3.88E-04	1.43E-08	5.85E-08
Consequential SLBIC	--	--	--	1.29E-06
Loss of Offsite Power	3.08E-02	1.12E-01	8.61E-06	4.99E-06
Loss of One DC Bus	--	3.92E-03	9.67E-07	3.72E-06
Loss of 120V AC Bus 1 or 2	--	6.15E-02	3.09E-07	1.18E-06
Loss of 120V AC Bus 3 or 4	--	6.15E-02	8.50E-09	4.72E-07
Loss of One SW Train	--	1.81E-02	1.48E-06	2.75E-06
Total Loss of SW	--	NA	4.08E-08	NA
ATWS	--	--	2.37E-06*	3.38E-06
Internal Flood				
• Switchgear/cable spreading	--	--	8.00E-07	8.00E-07
• Diesel Generator Enclosure	--	--	8.60E-09	8.60E-09
• Intake Structure	--	--	4.94E-08	4.94E-08
Fire				
• Control Room	3.50E-03	3.50E-03	7.28E-07	7.28E-07
• Instrument Rack Room	3.50E-03	3.50E-03	2.44E-07	2.44E-07
• Cable Spreading Room	6.60E-03	6.60E-03	9.89E-07	9.89E-07
• Switchgear Room	1.04E-02	1.04E-02	8.03E-07	8.03E-07
• Electrical Tunnels	6.60E-03	6.60E-03	6.93E-07	6.93E-07
• MCC Rod Control	7.00E-03	7.00E-03	8.42E-08	8.42E-08
• Charging and RPCCW	4.80E-03	4.80E-03	1.07E-06	1.07E-06
• Intake Structure	3.00E-03	3.00E-03	4.27E-08	4.27E-08
• Diesel Generator Enclosure	3.40E-02	3.40E-02	1.45E-07	1.45E-07
Seismic	--	--	9.08E-06	9.08E-06
Totals			5.10E-05	6.92E-05

* The contributions from consequential small LOCA and ATWS are not included in the overall CDF solution because they are embedded within other initiating event categories.

Table 3
Large Early Release Frequency Contributors

LERF Contributor	Large Early Release Frequency (Yr^{-1})
Steam Generator Tube Rupture	7.64E-08
Interfacing Systems LOCAs	1.25E-07
Containment Isolation Failures	9.98E-09
Containment Overpressurization	9.26E-08
Total Large Early Release Frequency (LERF)	3.04E-07
LERF as % of Internal Events CDF	0.84%

Figure 1
Reactor Plant Component Cooling Water System
Containment Supply Header