NRC 2003-0029

10 CFR 50.90

March 27, 2003

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

DOCKETS 50-266 AND 50-301
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
SUPPLEMENT 1 TO LICENSE AMENDMENT REQUEST 229
TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – OPERATING,
AND LCO 3.5.3, ECCS – SHUTDOWN

By submittal dated September 12, 2002, Nuclear Management Company, LLC (NMC), submitted a request for an amendment to the Technical Specifications (TS), in accordance with the provisions of 10 CFR 50.90, for Point Beach Nuclear Plant (PBNP), Units 1 and 2. The purpose of the proposed amendment was to revise TS 3.5.2, ECCS – Operating, and TS 3.5.3, ECCS – Shutdown, to add a surveillance to verify the emergency core cooling system (ECCS) piping is full of water every 31 days. This proposed amendment was consistent with NUREG-1431, *Standard Technical Specifications, Westinghouse Plants*, Revision 2.

During a conference call between the Nuclear Regulatory Commission (NRC) and NMC on January 14, 2003, discussions were held regarding compliance aspects of the proposed TS. Based on a potential for incorrectly interpreting the originally proposed requirement, clarifying changes are being proposed to the TS Bases. The originally proposed TS is unchanged. To facilitate review, this supplement replaces the September 12, 2002 submittal in its entirety.

NMC requests approval of the proposed license amendment by November 2003, with the amendment being implemented within 45 days. The approval date was administratively selected to allow for NRC review but the plant does not require this amendment to allow continued safe full power operation.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on March 27, 2003.

A. J. Cayia
Site Vice President

A001

RDS/kmd

Attachments: 1 - Description of Changes
2 - Proposed Technical Specification Changes
3 - Proposed Technical Specification Bases Changes
4 - Revised Technical Specification Pages

cc: Project Manager, Point Beach Nuclear Plant, NRR, USNRC
Regional Administrator, Region III, USNRC
NRC Resident Inspector - Point Beach Nuclear Plant
PSCW

ATTACHMENT 1

DESCRIPTION OF CHANGES

LICENSE AMENDMENT REQUEST 229, REVISION 1

TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – OPERATING, AND

LCO 3.5.3, ECCS – SHUTDOWN

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

1.0 INTRODUCTION

This License Amendment Request (LAR) is made pursuant to 10 CFR 50.90 to modify Technical Specification (TS) 3.5.2, ECCS – Operating and TS 3.5.3, ECCS – Shutdown, to add a surveillance to require verification that the Emergency Core Cooling System (ECCS) piping is full of water every 31 days.

2.0 BACKGROUND

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after any of the following accidents:

a. Loss of coolant accident (LOCA), coolant leakage greater than the capability of the normal charging system;

b. Rod ejection accident;

c. Loss of secondary coolant accident, including uncontrolled steam release; and

d. Steam generator tube rupture (SGTR).

The addition of negative reactivity is designed primarily for the loss of secondary coolant accident where primary cooldown could add enough positive reactivity to achieve criticality and return to significant power.

System License Basis

In Modes 1, 2, and 3, two independent (and redundant) ECCS trains are required to ensure that sufficient ECCS flow is available, assuming a single failure affecting either train. Additionally, individual components within the ECCS trains may be called upon to mitigate the consequences of other transients and accidents.

An ECCS train consists of, a safety injection (SI) subsystem, and a residual heat removal (RHR) subsystem. Each train includes the piping, instruments, and controls to ensure an operable flow path taking suction from the refueling water storage tank (RWST) upon an SI signal and capable of manually transferring suction to the containment sump.

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the reactor coolant system (RCS) via the ECCS pumps and their respective supply headers to the RCS. In the long term, this flow path may be switched to take its supply from the containment sump.

The flow path for each train must maintain its designed independence to ensure that no single failure can disable both ECCS trains.

In Mode 4, one of the two independent (and redundant) ECCS trains is required to be operable to ensure that sufficient ECCS flow is available to the core following a design basis accident (DBA).

3.0 PROPOSED CHANGE

The proposed amendment adds surveillance requirement (SR) 3.5.2.2 to TS 3.5.2, to require verification that the ECCS piping is full of water. Within TS 3.5.2, surveillance requirements subsequent to SR 3.5.2.2 are renumbered to reflect the insertion of the new SR. Additionally, SR 3.5.3.1 is revised to reflect the addition of SR 3.5.2.2 to TS 3.5.2 and the applicability of SR 3.5.2.2 for all equipment required to be operable per TS 3.5.3.

Technical Specification Bases changes are also being made to reflect the proposed Technical Specifications changes.

The proposed change is consistent with NUREG-1431, *Standard Technical Specifications, Westinghouse Plants*, Revision 2.

4.0 ANALYSIS

Each ECCS subsystem is taken credit for in a large break LOCA event at full power. This event establishes the requirement for runout flow for the ECCS pumps. The SI pumps are also credited in a small break LOCA event. This event establishes the flow and discharge head at the design point for the SI pumps The SGTR and main steam line break (MSLB) events also credit the SI pumps. The small break LOCA and MSLB events establish the maximum response time for the SI pumps.

The operability requirements for the ECCS are based on the following LOCA analysis assumptions:

a. A large break LOCA event, with offsite power available and a single failure disabling one RHR pump (offsite power is assumed for modeling full containment heat removal and reactor coolant pump operation); and

b. A small break LOCA event, with a loss of offsite power and a single failure disabling one ECCS train.

During the blowdown stage of a LOCA, the RCS depressurizes as primary coolant is ejected through the break into the containment. The nuclear reaction is terminated either by moderator voiding during large breaks or control rod insertion for small breaks. Following depressurization, emergency cooling water injected into the reactor vessel upper plenum and RCS cold legs, flows into the downcomer, fills the lower plenum, and refloods the core.

The effects on containment mass and energy releases are accounted for in the Final Safety Analysis Report (FSAR), Chapter 14, Accident Analysis. TS 3.5.2 ensures that an ECCS train will deliver sufficient water to match boiloff rates soon enough to minimize the consequences of the core being uncovered following a large LOCA. TS 3.5.2 also ensures that the SI pumps will deliver sufficient water and boron during a small LOCA to maintain core subcriticality.

The ECCS pumps are normally in a standby, nonoperating mode. As such, the flow path piping has the potential to develop voids and pockets of entrained gases. The presence of voids and pockets of entrained gases in ECCS piping could lead to a delay in the delivery of flow, pump cavitation, and pumping of noncondensible gas into the reactor vessel following an SI signal or during shutdown cooling.

Venting the accessible ECCS piping outside containment and the SI pump casings will minimize any voids and pockets of entrained gases. The RHR pump casings do not need to be vented because they are at the system low point and their configuration is such that gases are unlikely to collect there. In addition, the design of the RHR pumps makes them capable of tolerating small amounts of entrained gas.

The installed vents in the ECCS system that are accessible from outside the containment structure provide adequate means for venting to ensure that the ECCS piping is sufficiently full of water to maintain ECCS operability. The effect of void formation in the piping, on ECCS operability, is mostly of concern in the ECCS pumps' suction piping, including the SI/RHR suction crossover piping. Excessive amounts of gas in the suction piping could lead to gas binding of the ECCS pumps and prevent fluid flow. The tolerance for void formation in the discharge piping is significantly higher since the pumps will produce flow and sweep out any entrained gases. Pumping of nominal amounts of noncondensible gas into the reactor vessel following an SI signal or during shutdown cooling does not significantly affect system performance.

During the venting process, that ECCS train is considered inoperable. Although performance of this surveillance will affect the availability of the associated ECCS train, the surveillance requirement is consistent with the requirements of NUREG-1431, Standard Technical Specifications for Westinghouse Plants, Revision 2. Additionally, maintaining the piping from the ECCS pumps to the RCS full of water ensures that the system will perform properly, injecting its full capacity into the RCS upon demand.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Determination

In accordance with the requirements of 10 CFR 50.90, Nuclear Management Company, LLC (NMC) (licensee) hereby requests amendments to facility operating licenses DPR-24 and DPR-27, for Point Beach Nuclear Plant (PBNP), Units 1 and 2, respectively. The purpose of the proposed amendment is to revise Technical Specification (TS) 3.5.2, ECCS – Operating, and TS 3.5.3, ECCS – Shutdown, to add a surveillance requirement to require verification that the ECCS piping is full of water every 31 days.

NMC has evaluated the proposed amendments in accordance with 10 CFR 50.91 against the standards in 10 CFR 50.92 and has determined that the operation of the Point Beach Nuclear Plant in accordance with the proposed amendments presents no significant hazards. Our evaluation against each of the criteria in 10 CFR 50.92 follows.

1. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a significant increase in the probability or consequences of any accident previously evaluated.**

   Operation of this facility under the proposed Technical Specifications will not create a significant increase in the probability or consequences of an accident previously evaluated.

   This license amendment request proposes to add a surveillance requirement to verify the ECCS is full of water every 31 days while operating in Modes 1, 2, 3 and 4.

This proposed change does not cause an increase in the probabilities of any accidents previously evaluated, because the change will not cause an increase in the probability of any initiating events for accidents previously evaluated. In particular, the change affects the ECCS, which serves to mitigate rather than initiate accidents.

The consequences of the accidents previously evaluated in the PBNP Final Safety Analysis Report (FSAR) are determined by the results of analyses that are based on initial conditions of the plant, the type of accident, transient response of the plant, and the operation and failure of equipment and systems. The change proposed in this license amendment request provides an appropriate surveillance requirement for the ECCS, and thus does not increase the probability of failure of this equipment or its ability to operate as required for the accidents previously evaluated in the PBNP FSAR.

Therefore, the consequences of an accident previously evaluated in the PBNP FSAR will not be significantly increased as a result of the proposed change, because the factors that are used to determine the consequences of accidents are not being changed.

2. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a new or different kind of accident from any accident previously evaluated.**

   Equipment important to safety will continue to operate as designed. The proposed change does not result in any event previously deemed incredible being made credible. The change does not result in more adverse conditions or result in any increase in the challenges to safety systems. Therefore, operation of the Point Beach Nuclear Plant in accordance with the proposed amendment will not create the possibility of a new or different type of accident from any accident previously evaluated.

3. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a significant reduction in a margin of safety.**

   There are no new or significant changes to the initial conditions contributing to accident severity or consequences. The proposed amendment will not otherwise affect the plant protective boundaries and will not cause a release of fission products to the public. Venting the piping associated with a train of ECCS will render that ECCS train inoperable while it is being vented. Performance of this surveillance will therefore affect the availability of the associated ECCS train, but performance of the surveillance requirement at the specified frequency is consistent with the requirements of NUREG-1431, Standard Technical Specifications for Westinghouse Plants, Revision 2. Additionally, verifying the ECCS piping is full of water ensures that the system will perform properly, injecting its full capacity into the RCS, upon demand. Therefore, adopting a surveillance requirement to verify the ECCS piping is full of water, will not result in more than a minimal reduction in the margin of safety.

Conclusion

Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments will not result in a significant increase in the probability or consequences of any accident previously analyzed; will not result in a new or different kind of accident from any accident previously analyzed; and, does not result in more than a minimal reduction in any margin of safety. Therefore, operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a significant hazards determination.

5.2 Applicable Regulatory Requirements

Point Beach was licensed prior to the 1971 publication of Appendix A, "General Design Criteria for Nuclear Power Plants", (GDC) to 10 CFR Part 50. As such, Point Beach is not licensed to the GDC. The Point Beach Final Safety Analysis Report (FSAR), Section 1.3, lists the plant-specific GDC to which the plant was licensed. The Point Beach GDC are similar in content to the draft GDC proposed for public comment in 1967. The Point Beach GDC affecting Emergency Core Cooling System (ECCS) requirements are Point Beach GDC-37, 38, and 40 through 48. The applicable criteria for these ECCS design requirements are FSAR Section 6.0, Engineered Safety Features, and 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Plants".

Point Beach GDC-41, "Engineered Safety Features Performance Capability", requires, in part, that such features provide sufficient performance capability to accommodate the failure of any single active component. Point Beach GDC-43, "Accident Aggravation Prevention", requires protection against any action of the engineered safety features which would accentuate significantly the adverse after-effects of a loss of normal cooling. Point Beach GDC-44, "Emergency Core Cooling System Capability", requires, in part, an ECCS with the capability for accomplishing adequate emergency core cooling. This system shall be designed to prevent fuel and clad damage and to limit the clad metal-water reaction to acceptable amounts for all sizes of breaks in the reactor coolant piping. The performance of such ECCS shall be evaluated conservatively in each area of uncertainty. Point Beach GDC-45 through 48 require, in part, design provisions to allow testing of the ECCS for operability and functional performance. The technical analysis performed by NMC concludes that the proposed changes to TS SR 3.5.2.2 and TS SR 3.5.3.1 will continue to maintain acceptable ECCS performance. The proposed changes will not affect the other requirements of these criteria.

Surveillance Requirements (SRs), per 10 CFR 50.36(c)(3), are "...to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." The technical analysis performed by NMC concludes that the proposed changes to TS SR 3.5.2.2 and TS SR 3.5.3.1 will provide added assurance of operability without a corresponding reduction in plant safety margins.

NMC concludes that the proposed changes are in accordance with 10 CFR 50.36(c)(3) with regards to maintaining the necessary quality of systems and components, sustaining facility operation within safety limits, and meeting the limiting conditions for operation. These changes also continue to meet the requirements stated in the PBNP FSAR and the requirements of 10 CFR 50.46. The proposed changes thus continue to be compliant with the above regulatory requirements.

5.3 Commitments

There are no actions committed to by NMC in this document. Any statements in this submittal are provided for information purposes and are not considered to be commitments.

6.0 ENVIRONMENTAL EVALUATION

NMC has determined that the information for the proposed amendment does not involve a significant hazards consideration, authorize a significant change in the types or total amounts of effluent release, or result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, we conclude that the proposed amendment meets the categorical exclusion requirements of 10 CFR 51.22(c)(9) and that an environmental impact appraisal need not be prepared.

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGES

LICENSE AMENDMENT REQUEST 229, REVISION 1

TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – OPERATING, AND

LCO 3.5.3, ECCS – SHUTDOWN

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS – Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

---NOTE---
In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ECCS train inoperable.	A.1	Restore train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.2.2	Verify ECCS piping is full of water.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.3	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.4	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.5.2.5	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.2.6	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet debris screens show no evidence of structural distress or abnormal corrosion.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.1 SR 3.5.2.4 SR 3.5.2.2 SR 3.5.2.5 SR 3.5.2.3 SR 3.5.2.6	In accordance with applicable SRs

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

LICENSE AMENDMENT REQUEST 229, REVISION 1

TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – OPERATING, AND

LCO 3.5.3, ECCS – SHUTDOWN

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

BASES

ACTIONS (continued)

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 5) has shown that the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

With more than one component inoperable such that both ECCS trains are not available, the facility is in a condition outside design and licensing basis. Therefore, LCO 3.0.3 must be immediately entered.

B.1 and B.2

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a non-accident position provided the valve will automatically reposition within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day Frequency is appropriate because the valves are operated under administrative control, and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.

SR 3.5.2.2

The ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the SI pumps and accessible portions of ECCS suction piping, including cross-connect piping to RHR, free of gas quantities sufficient to render the SI pump inoperable, ensures that the system will perform properly, injecting its full capacity into the RCS

BASES

SURVEILLANCE REQUIREMENTS (continued)

upon demand. Performance of this SR also includes venting accessible portions of the piping from the ECCS pumps to the RCS. This will also prevent pump cavitation and minimize pumping noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SI signal or during shutdown cooling. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation.

SR 3.5.2.3

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. SRs are specified in the Inservice Testing Program, which implements the requirements of the ASME OM Code, providing the activities and Frequencies necessary to satisfy the requirements.

SR 3.5.2.4 and SR 3.5.2.5

These Surveillances demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SI signal and that each ECCS pump starts on receipt of an actual or simulated SI signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned plant transients if the Surveillances were performed with the reactor at power. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of ESF Actuation System testing, and equipment performance is monitored as part of the Inservice Testing Program.

SR 3.5.2.6

Periodic inspections of the containment sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and on the need to have

BASES

SURVEILLANCE REQUIREMENTS (continued)	access to the location. This Frequency has been found to be sufficient to detect abnormal degradation and is confirmed by operating experience.
REFERENCES	1. FSAR, Section 6.1.1. 2. 10 CFR 50.46. 3. FSAR, Section 6.2.1. 4. FSAR, Chapter 14, "Accident Analysis." 5. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

ATTACHMENT 4

REVISED TECHNICAL SPECIFICATION PAGES

LICENSE AMENDMENT REQUEST 229, REVISION 1

TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – OPERATING, AND

LCO 3.5.3, ECCS – SHUTDOWN

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS – Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

---NOTE---
In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ECCS train inoperable.	A.1	Restore train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.2.2	Verify ECCS piping is full of water.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.3	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.4	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.5.2.5	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.2.6	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet debris screens show no evidence of structural distress or abnormal corrosion.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.1 SR 3.5.2.4 SR 3.5.2.2 SR 3.5.2.5 SR 3.5.2.3 SR 3.5.2.6	In accordance with applicable SRs

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ACTIONS (continued) An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 5) has shown that the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

With more than one component inoperable such that both ECCS trains are not available, the facility is in a condition outside design and licensing basis. Therefore, LCO 3.0.3 must be immediately entered.

B.1 and B.2

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a non-accident position provided the valve will automatically reposition within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day Frequency is appropriate because the valves are operated under administrative control, and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.

SR 3.5.2.2

The ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the SI pumps and accessible portions of ECCS suction piping, including cross-connect piping to RHR, free of gas quantities sufficient to render the SI pump inoperable, ensures that the system will perform properly, injecting its full capacity into the RCS

BASES

SURVEILLANCE REQUIREMENTS (continued)

upon demand. Performance of this SR also includes venting accessible portions of the piping from the ECCS pumps to the RCS. This will also prevent pump cavitation and minimize pumping noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SI signal or during shutdown cooling. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation.

SR 3.5.2.3

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. SRs are specified in the Inservice Testing Program, which implements the requirements of the ASME OM Code, providing the activities and Frequencies necessary to satisfy the requirements.

SR 3.5.2.4 and SR 3.5.2.5

These Surveillances demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SI signal and that each ECCS pump starts on receipt of an actual or simulated SI signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned plant transients if the Surveillances were performed with the reactor at power. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of ESF Actuation System testing, and equipment performance is monitored as part of the Inservice Testing Program.

SR 3.5.2.6

Periodic inspections of the containment sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and on the need to have

BASES

SURVEILLANCE REQUIREMENTS (continued)	access to the location. This Frequency has been found to be sufficient to detect abnormal degradation and is confirmed by operating experience.
REFERENCES	1. FSAR, Section 6.1.1. 2. 10 CFR 50.46. 3. FSAR, Section 6.2.1. 4. FSAR, Chapter 14, "Accident Analysis." 5. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.