NMC
Committed to Nuclear Excellence

Point Beach Nuclear Plant
Operated by Nuclear Management Company, LLC

January 12, 2004

NRC 2004-0004
10 CFR 50.36

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

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
License Nos. DPR-24 and DPR-27
Technical Specification Bases Revisions

Nuclear Management Company, LLC (NMC), licensee for the Point Beach Nuclear Plant (PBNP) Units 1 and 2, hereby submits a revision to the Technical Specifications (TS) Bases for the following TSs: LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation", LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation", LCO 3.5.2, "ECCS-Operating", LCO 3.6.3, "Containment Isolation Valves", LCO 3.7.4, "Atmospheric Dump Valves (ADVs) Flowpaths", LCO 3.7.5, "Auxiliary Feedwater System", LCO 3.8.1, "AC Sources – Operating", and LCO 3.9.3, "Containment Penetrations". A description of the changes is provided in Enclosure 1.

These changes have been screened for evaluation pursuant to the requirements of 10 CFR 50.59 in accordance with approved PBNP procedures and were determined to be acceptable.

Enclosure 2 provides clean copies of the affected TS Bases pages indicating the changes. These are provided for your information in accordance with the TS Bases Control Program.

A. J. Cayia
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosures: 1 - Description of Changes
2 - Revised Technical Specification Bases Pages

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

A001

6590 Nuclear Road • Two Rivers, Wisconsin 54241
Telephone: 920.755.2321

ENCLOSURE 1
TECHNICAL SPECIFICATION BASES REVISIONS
DESCRIPTION OF CHANGES

1.0 INTRODUCTION

Nuclear Management Company, LLC (NMC), licensee for the Point Beach Nuclear Plant (PBNP) Units 1 and 2, hereby submits a revision to the following Bases for Technical Specifications (TS):

- LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation",
- LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation",
- LCO 3.5.2, "ECCS-Operating",
- LCO 3.6.3, "Containment Isolation Valves" (two revisions),
- LCO 3.7.4, "Atmospheric Dump Valves (ADVs) Flowpaths",
- LCO 3.7.5, "Auxiliary Feedwater System" (two revisions),
- LCO 3.8.1, "AC Sources – Operating", and
- LCO 3.9.3, "Containment Penetrations".

2.0 DESCRIPTION OF CHANGES

LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation"

The Bases for LCO 3.3.1 were revised to reinsert the ending of an inadvertently truncated sentence at the top of page B 3.3.1-12.

LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation"

The Bases for LCO 3.3.3 were revised to remove discussion of an administrative clause that was not required by the corresponding TS and to revise the discussion of initiation of required actions to better conform to TS 5.6.6.

LCO 3.5.2, "ECCS-Operating"

The Bases for LCO 3.5.2 were revised to reflect license amendments 209 and 214, issued September 5, 2003, for Units 1 and 2, respectively.

LCO 3.6.3, "Containment Isolation Valves" (two revisions)

The Bases for LCO 3.6.3 were revised to remove the limitation that verification of containment isolation valve position be only performed through a system walkdown.

A subsequent revision to the Bases for LCO 3.6.3 was made to reflect a modification to the Unit 2 containment purge valves. The Unit 1 supply and exhaust lines each contain two isolation valves. The Unit 2 purge supply and exhaust outboard valves have been removed. Blind flanges are installed in lieu of the outboard valves to provide containment isolation. The Unit 2 purge supply and exhaust inboard valves remain in place as containment isolation valves.

LCO 3.7.4, "Atmospheric Dump Valves (ADVs) Flowpaths"

The Bases for LCO 3.7.4 were revised to add clarification on the function of ADVs to terminate the release from the ruptured steam generator. The time required to terminate the release from the ruptured steam generator is more critical than the time required to cool down to RHR conditions.

LCO 3.7.5, "Auxiliary Feedwater System (AFW)" (two revisions)

The Bases for LCO 3.7.5 were revised to clarify the Mode change requirements for the Note in Required Action E.1 and to require that a minimum recirculation flow path be available for AFW operability.

A subsequent revision to the Bases for LCO 3.7.5 was made to require that the backup pneumatic supply for the minimum recirculation air-operated valve must be OPERABLE (to reflect a plant modification).

LCO 3.8.1, "AC Sources – Operating"

The Bases for LCO 3.8.1 were revised to expand the justification for the 24 hour Completion Time associated with Required Action A.1.

LCO 3.9.3, "Containment Penetrations"

The Bases for LCO 3.9.3 were revised to reflect a modification to the Unit 2 containment purge valves. The Unit 1 purge and exhaust penetrations each contain two isolation valves. The Unit 2 purge and exhaust outboard valves have been removed. Blind flanges are installed in lieu of the outboard valves to provide containment isolation. All four Unit 1 and the two Unit 2 inboard valves are closed by the Containment Purge and Exhaust Isolation Instrumentation.

ENCLOSURE 2
TECHNICAL SPECIFICATION BASES REVISIONS

Affected TS Bases Pages:

B 3.3.1-12
B 3.3.3-11
B 3.5.2-6 through B 3.5.2-8
B 3.6.3-4 and B 3.6.3-7 (first revision)
B 3.6.3-1 through B 3.6.3-9 (second revision)
B 3.7.4-1
B 3.7.5-4, and 3.7.5-7 (first revision)
B 3.7.5-4 (second revision)
B 3.8.1-9 through B 3.8.1-20
B 3.9.3-2 and 3.9.3-3

BASES

APPLICABLE SAFETY ANALYSES, LCO AND APPLICABILITY (continued)

will normally alleviate the Overpower ΔT condition and may prevent a reactor trip.

The LCO requires four channels of the Overpower ΔT trip Function to be OPERABLE. Note that the Overpower ΔT trip Function receives input from channels shared with other RPS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

In MODE 1 or 2, the Overpower ΔT trip Function must be OPERABLE. These are the only times that enough heat is generated in the fuel to be concerned about the heat generation rates and overheating of the fuel. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about fuel overheating and fuel damage.

7. Pressurizer Pressure

The same sensors provide input to the Pressurizer Pressure-High and -Low trips and the Overtemperature ΔT trip. The Pressurizer Pressure channels are also used to provide input to the Pressurizer Pressure Control System. The actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation.

a. Pressurizer Pressure-Low

The Pressurizer Pressure-Low trip Function ensures that protection is provided against violating the DNBR limit due to low pressure.

The LCO requires four channels of Pressurizer Pressure-Low to be OPERABLE.

In MODE 1, when DNB is a major concern, the Pressurizer Pressure-Low trip must be OPERABLE. This trip Function is automatically enabled on increasing power by the P-7 interlock (NIS power range P-10 or turbine impulse pressure greater than approximately 10% of full power equivalent). On decreasing power, this trip Function is automatically blocked below P-7. Below the P-7 interlock, no conceivable power distributions can occur that would cause DNB concerns.

BASES

ACTIONS (continued)

A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel (or in the case of a Function that has only one required channel, other non-Regulatory Guide 1.97 instrument channels to monitor the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

B.1

Condition B applies when the Required Action and associated Completion Time for Condition A are not met. This Required Action specifies immediate initiation of the actions in Specification 5.6.6, which requires a written report to be submitted to the NRC within 14 days following the expiration of the 30 day Completion Time for Condition A. This report discusses the results of the evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

C.1

Condition C applies when one or more Functions have two inoperable required channels (i.e., two channels inoperable in the same Function). Required Action C.1 requires restoring one channel in the Function(s) to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Continuous operation with two required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur. Condition C is modified by a Note that excludes hydrogen monitor channels.

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 ECCS pumps and accessible portions of ECCS suction piping, including cross-connect piping to RHR, free of gas quantities that could jeopardize ECCS operability, ensures that the system will perform properly, injecting its full capacity into the RCS

BASES

SURVEILLANCE REQUIREMENTS (continued)

upon demand. This is accomplished by venting the SI pumps and accessible portions of ECCS suction piping. 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 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.

BASES

ACTIONS (continued)

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

In the event the containment isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low.

For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and

BASES

ACTIONS (continued)

D.1 and D.2

If the Required Actions and associated Completion Times are not met, 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 at least MODE 3 within 6 hours and to MODE 5 within 36 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 3.6.3.1

Each containment purge supply and exhaust valve is required to be verified closed with their control board switches locked at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close under LOCA conditions. Therefore, these valves are required to be in the closed position with their control switches locked during MODES 1, 2, 3, and 4. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 3), related to containment purge valve use during plant operations. In the event of purge valve leakage in excess of that allowed by the Containment Leakage Rate Testing Program, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.

SR 3.6.3.2

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves

BASES

BACKGROUND

The containment isolation valves form part of the containment pressure boundary and provide a means for penetrations to be provided with two isolation barriers. These isolation barriers are either passive or active. Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive barriers. Valves designed to close either automatically or manually (including check valves with flow through the valve not secured), are considered active barriers. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active barrier can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. These barriers (typically containment isolation valves) make up the Containment Isolation System.

An automatic containment isolation signal is produced upon receipt of a safety injection signal. The containment isolation signal isolates process lines in order to minimize leakage of fission product radioactivity. As a result, the containment isolation valves (and passive barriers) help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Loss of Coolant Accident (LOCA).

The OPERABILITY requirements for containment isolation valves help ensure that containment integrity is established and maintained in accordance with the safety analysis. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

Containment Purge System (purge supply and exhaust valves)

The Containment Purge System can be operated to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment whenever the unit is not in MODES 1, 2, 3, or 4. The Unit 1 supply and exhaust lines each contain two isolation valves. The Unit 2 purge supply and exhaust outboard valves have been removed. Blind flanges are installed in lieu of the outboard valves to provide containment isolation. The Unit 2 purge supply and exhaust inboard valves remain in place as containment isolation valves.

BASES

BACKGROUND (continued)	Because of their large size, the containment purge supply and exhaust valves are not qualified for automatic closure from their open position under DBA conditions. Therefore, the purge supply and exhaust valves are normally maintained closed with their control switches locked in the closed position in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained.
APPLICABLE SAFETY ANALYSES	The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO. The DBA that results in a release of radioactive material within containment is a LOCA (Ref. 1). In the analyses for this accident, it is assumed that containment isolation valves are either closed or capable of closure to isolate penetrations. This ensures that potential paths to the environment through containment isolation valves (including containment purge valves) are minimized. The safety analyses assume that the purge supply and exhaust valves are closed at event initiation. No specific containment isolation time was assumed in the LOCA analysis. However, containment isolation is an implicit assumption in maintaining containment leakage within it's design leakage rate, L_a, and containment back pressure relative to RCS blowdown rate. The purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain closed with its control switch locked in the closed position during MODES 1, 2, 3, and 4. The single failure criterion is still applicable to the containment purge valves due to the potential for a failure in the control circuit associated with each valve. However, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO. The containment isolation valves satisfy Criterion 3 of the NRC Policy Statement.

BASES

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The automatic power operated isolation valves are required to actuate to the closed position on an automatic isolation signal. The containment purge supply and exhaust valves must be maintained closed with their control switches in the locked closed position. The valves covered by this LCO are listed in the FSAR (Ref. 2).

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. Position verification, when necessary in accordance with the required actions and/or surveillance requirements, is still required for these valves. These passive isolation valves/devices are those listed in Reference 2.

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.3, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow paths, except for containment purge supply and exhaust penetration flow paths, to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. Due to the size of the containment purge line penetrations and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls in MODES 1, 2, 3, and 4. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1.

BASES

ACTIONS (continued)

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

In the event the containment isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for

BASES

ACTIONS (continued)

isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low.

For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by two Notes. Note 1 indicating that this Condition is only applicable to those penetration flow paths with two containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions. Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed or otherwise secured in position and allows these devices to be verified closed by administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

B.1

With two containment isolation valves in one or more penetration flow paths inoperable, the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated

BASES

ACTIONS (continued)

under administrative control and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two containment isolation valves. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path.

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the 72 hour Completion Time. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Ref 2. This Note is necessary since this Condition is written to specifically address those penetration flow paths which utilize closed systems as one of the two containment barrier.

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and

BASES

ACTIONS (continued)

allows these devices to be verified closed by administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

D.1 and D.2

If the Required Actions and associated Completion Times are not met, 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 at least MODE 3 within 6 hours and to MODE 5 within 36 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 3.6.3.1

Each containment purge supply and exhaust valve is required to be verified closed with their control board switches locked at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close under LOCA conditions. Therefore, these valves are required to be in the closed position with their control switches locked during MODES 1, 2, 3, and 4. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 3), related to containment purge valve use during plant operations. In the event of purge valve leakage in excess of that allowed by the Containment Leakage Rate Testing Program, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.

SR 3.6.3.2

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering

BASES

SURVEILLANCE REQUIREMENTS (continued)

judgment and was chosen to provide added assurance of the correct positions. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3 and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.4

Verifying that the isolation time of each automatic power operated containment isolation valve is within Inservice Testing Program limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.3.5

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation 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 this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section 14.
2. FSAR, Section 5.2.
3. Generic Issue B-24.

B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valves (ADVs) Flowpaths

BASES

BACKGROUND	The ADVs provide a method for cooling the unit to residual heat removal (RHR) entry conditions should the preferred heat sink via the Steam Bypass System to the condenser not be available, as discussed in the FSAR, Section 10.1 (Ref. 1). This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST) or the service water system. The ADVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the condenser to permit use of the Steam Dump System. One ADV flowpath for each of the two steam generators is provided. Each ADV flowpath consists of one ADV and an associated block valve. The ADVs are provided with upstream block valves to permit their being tested at power, and to provide an alternate means of isolation. The ADVs are equipped with pneumatic controllers to permit control of the cooldown rate. A description of the ADVs is found in Reference 1. The ADVs are OPERABLE when the ADVs are capable of being locally opened and closed.
APPLICABLE SAFETY ANALYSES	The design basis of the ADVs is established by the capability to cool the unit to RHR entry conditions. The design rate of approximately 50°F per hour is applicable for one steam generator. This rate is adequate to cool the unit to RHR entry conditions with only one steam generator and one ADV, utilizing the cooling water supply available in the CST or the service water system. In the accident analysis presented in Reference 2, the ADVs are assumed to be used by the operator to cool down the unit to RHR entry conditions for accidents accompanied by a loss of offsite power. Prior to operator actions to cool down the unit, the main steam safety valves (MSSVs) are assumed to operate automatically to relieve steam and maintain the steam generator pressure below the design value. For the recovery from a steam generator tube rupture (SGTR) event, the operator is required to perform a limited cooldown to establish adequate subcooling as a necessary step to terminate the primary to secondary break flow into the ruptured steam generator. The time required to terminate the release from the ruptured steam generator is more

BASES

LCO

This LCO provides assurance that the AFW System will perform its design safety function to mitigate the consequences of Design Basis Accidents and transients. Three AFW pump systems, consisting of two shared motor driven pump systems and one dedicated turbine driven pump system are required to be OPERABLE to ensure the availability of RHR capability for all events accompanied by a loss of offsite power and a single failure. This is accomplished by powering two of the pumps from independent emergency buses. The third AFW pump is powered by a different means, a steam driven turbine supplied with steam from a source that is not isolated by closure of the MSIVs.

The AFW System is configured into three pump systems. The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow to the steam generators are OPERABLE, and the components required to manually transfer AFW pump suction supply to the service water system are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE, each capable of supplying AFW to a separate steam generator. The turbine driven AFW pump is required to be OPERABLE with redundant steam supplies from each main steam line upstream of the MSIVs, and shall be capable of supplying AFW to both of the steam generators. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE. For an AFW pump system to be considered OPERABLE, a minimum recirculation flow path must be available.

The LCO is modified by a Note indicating that only the motor driven AFW pumps which are associated with steam generators required to be operable for heat removal (per LCO 3.4.6) are required to be OPERABLE in MODE 4. This is because of the reduced heat removal requirements and short period of time in MODE 4 during which the AFW is required and the insufficient steam available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory, lost as the unit cools to MODE 4 conditions.

In MODE 4 the AFW System may be used for heat removal via the steam generators.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

BASES

ACTIONS (continued)

The allowed Completion Times, as modified by the Notes, are reasonable based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

E.1

If all three AFW pump systems are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with non-safety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action E.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW pump system is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition. This Note does not prohibit voluntary MODE changes that may be prudent for safe operation.

F.1

In MODE 4, either the reactor coolant pumps or the RHR loops can be used to provide forced circulation. This is addressed in LCO 3.4.6, "RCS Loops-MODE 4." With one or more required motor driven pump systems inoperable, action must be taken to immediately restore the inoperable pump system(s) to OPERABLE status. The immediate Completion Time is consistent with LCO 3.4.6.

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths provides assurance that the proper flow paths will exist for AFW operation. This SR therefore also applies to Main Steam and Service Water valves located in these flowpaths. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. 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.

BASES

LCO

This LCO provides assurance that the AFW System will perform its design safety function to mitigate the consequences of Design Basis Accidents and transients. Three AFW pump systems, consisting of two shared motor driven pump systems and one dedicated turbine driven pump system are required to be OPERABLE to ensure the availability of RHR capability for all events accompanied by a loss of offsite power and a single failure. This is accomplished by powering two of the pumps from independent emergency buses. The third AFW pump is powered by a different means, a steam driven turbine supplied with steam from a source that is not isolated by closure of the MSIVs.

The AFW System is configured into three pump systems. The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow to the steam generators are OPERABLE, and the components required to manually transfer AFW pump suction supply to the service water system are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE, each capable of supplying AFW to a separate steam generator. The turbine driven AFW pump is required to be OPERABLE with redundant steam supplies from each main steam line upstream of the MSIVs, and shall be capable of supplying AFW to both of the steam generators. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE. For an AFW pump system to be considered OPERABLE, a minimum recirculation flow path must be available, and the backup pneumatic supply for the minimum recirculation air-operated valve must be OPERABLE.

The LCO is modified by a Note indicating that only the motor driven AFW pumps which are associated with steam generators required to be operable for heat removal (per LCO 3.4.6) are required to be OPERABLE in MODE 4. This is because of the reduced heat removal requirements and short period of time in MODE 4 during which the AFW is required and the insufficient steam available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory, lost as the unit cools to MODE 4 conditions.

In MODE 4 the AFW System may be used for heat removal via the steam generators.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

BASES

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

ACTIONS

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources-Shutdown.

Bases Table B 3.8.1-1 provides a reference of Conditions that are applicable based on various inoperabilities.

A.1 and A.2

To ensure a highly reliable power source of offsite power remains available when the associated unit's X03 transformer is inoperable, Required Action A.1 requires verification that offsite power is supplying the associated unit's 4.16 kV safeguards buses from the opposite unit's X03 transformer within 24 hours and Required Action A.2 requires that the gas turbine generator be placed in operation within 24 hours. The 24 hour Completion Time associated with Required Action A.2 is sufficient time to start, synchronize and load the gas turbine.

The 24 hour Completion Time associated with Required Action A.1 is sufficient to verify that the associated unit's safeguards buses continue to be energized from offsite power, since transfer to the opposite unit's X03 transformer should have occurred automatically. If auto bus transfer has not occurred, the 24 hour Completion Time is sufficient to return offsite power to the associated unit's safeguards buses.

With the required offsite circuit inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a Design Basis Accident or transient. A simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

BASES

ACTIONS (continued) B.1

Required Action B.1 applies when the associated unit's X04 transformer is inoperable. The inoperability of the associated unit's X04 transformer renders offsite power to the associated units safeguards buses inoperable. According to Regulatory Guide 1.93 (Ref. 5), operation may continue in Condition B for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded.

Because of the normally high availability of the offsite source, this level of degradation may appear to be more severe than other combinations of AC sources inoperable that involve one or more inoperable standby emergency power sources. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With the required offsite circuit inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

C.1

Required Action C.1, applies when offsite power to both safeguards buses on the same unit are inoperable (i.e., 1A05 and 1A06, or 2A05 and 2A06), or offsite power to safeguards buses 1A05 and 2A06 are inoperable. This level of degradation means that the offsite electrical power system does not have the capability to supply the minimum number of ESF systems required to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This condition is similar to that of Condition B, which according to Regulatory Guide 1.93 (Ref. 5), allows

BASES

ACTIONS (continued)

operation to continue for a period that should not exceed 24 hours. Because of the normally high availability of the offsite source, this level of degradation may appear to be more severe than other combinations of AC sources inoperable that involve one or more inoperable standby emergency power sources. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With the required offsite circuit inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

D.1

Condition D applies when offsite power is inoperable to one or more required 4.16 kV safeguards bus(es). The Required Actions for this Condition provide appropriate compensatory actions for each inoperable power supply, while the combination of Condition C and Condition D dictates which combinations of buses with inoperable power sources are allowed for 7 days versus 24 hours.

Required Action D.1 is intended to provide assurance that an event coincident with a single failure of the associated standby emergency power source will not result in a complete loss of safety function of critical redundant required features. These features are powered from the redundant safeguards train.

The Completion Time for Required Action D.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

BASES

ACTIONS (continued)

a. The safeguards bus has no offsite power supplying its loads; and

b. A required feature on the other train is inoperable.

If at any time during the existence of Condition D a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering no offsite power to one safeguards bus coincident with one or more inoperable required redundant support or supported features, or both, results in starting the Completion Times for the Required Action. Twelve hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE safeguards bus(es)' offsite power supplies and standby emergency power sources are adequate to supply electrical power to Train A and Train B of the onsite Class 1E Distribution System. The 12 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.2

Operation may continue in Condition D for a period that should not exceed 7 days with offsite power to one or more 4.16 kV safeguards buses inoperable. In this condition, the reliability of the offsite system is degraded, and the potential for a loss of offsite power may be increased, with attendant potential for a challenge to the unit safety systems. However, the remaining OPERABLE 4.16 kV safeguards buses supplied by offsite power and standby emergency power sources are adequate to supply electrical power to the onsite Class 1E Safeguards Distribution System.

The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action D.2 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition D is entered while, for instance, a standby emergency power source is inoperable and that

BASES

ACTIONS (continued)

standby emergency power source is subsequently returned to OPERABLE, the LCO may already have been not met for up to 7 days. This could lead to a total of 14 days, since initial failure to meet the LCO, to restore the offsite power supply. At this time, a standby emergency power source could again become inoperable, the offsite power supply restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions D and E are entered concurrently. The "AND" connector between the 7 day and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action D.1, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition D was entered.

E.1

Condition E applies when one or more standby emergency power supplies are inoperable. Condition E contains a Note which provide clarification that, for this Condition, separate Condition entry is allowed for each inoperable standby emergency power supply. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each inoperable power supply, while the combination of Condition E and Condition G dictates which combinations of buses with inoperable power sources are allowed for 7 days versus 2 hours.

Required Action E.1 is intended to provide assurance that a loss of offsite power, during the period that a standby emergency power source is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has the inoperable standby emergency power source.

The Completion Time for Required Action E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

BASES

ACTIONS (continued)

a. An inoperable standby emergency power source exists; and

b. A required redundant feature is inoperable.

If at any time during the existence of this Condition a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering an inoperable standby emergency power source coincident with one or more inoperable required support or supported features, or both, that are associated with the remaining OPERABLE standby emergency power source, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE standby emergency power source(s) and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.2.1, E.2.2, and E.2.3

Required Action E.2.1 provides an allowance to avoid unnecessary testing of OPERABLE standby emergency power source(s). If it can be determined that the cause of the inoperable standby emergency power source does not exist on the OPERABLE standby emergency power source, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other standby emergency power source(s), the other standby emergency power source(s) would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered for the additional inoperable source. Which additional standby emergency power supply(ies) are inoperable will dictate whether entry into LCO 3.8.1 Condition F is required. Once the failure is repaired, the common cause failure no longer exists, and Required Action E.2.1 is satisfied. If the cause of the initial inoperable standby emergency power source cannot be confirmed not to exist on the remaining standby emergency power source(s), performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that

BASES

ACTIONS (continued) standby emergency power source.

In the event the inoperable standby emergency power source is restored to OPERABLE status prior to completing either E.2.1 or E.2.2, the plant corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition E.

According to Generic Letter 84-15 (Ref. 6), 24 hours is reasonable to confirm that the OPERABLE standby emergency power source(s) is not affected by the same problem as the inoperable standby emergency power source.

Failure to complete Required Action E.2.1 or E.2.2 outlined above will result in declaring the other required standby emergency power sources inoperable in accordance with Required Action E.2.3.

E.3

Operation may continue in Condition E for a period that should not exceed 7 days.

In Condition E, the remaining OPERABLE standby emergency power source and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action E.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition E is entered while, for instance, an offsite source is inoperable and that source is subsequently restored OPERABLE, the LCO may already have been not met for up to 7 days. This could lead to a total of 14 days, since initial failure to meet the LCO, to restore the standby emergency power source. At this time, an offsite source could again become inoperable, the standby emergency power source restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 day Completion Time provides a limit on time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions D and E are entered concurrently. The "AND" connector between the 7 day and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive

BASES

ACTIONS (continued) Completion Time must be met.

As in Required Action E.1, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition E was entered.

F.1 and F.2

Pursuant to LCO 3.0.6, the distribution system Actions would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Action of Condition F are modified by a Note to indicate that when Condition F is entered with no AC power to any Class 1E 4.16 kV bus, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems – Operating" must be immediately entered. This allows Condition F to provide requirements for the loss of one offsite power source to one or more Class 1E 4.16 kV bus(es) and one required standby emergency power source, without regard to whether a train is de-energized. LCO 3.8.9 provides appropriate restrictions for a de-energized Class 1E 4.16 kV bus.

G.1

Required Action G.1 applies to each unit in MODE 1, 2, 3 or 4, when standby emergency power to both safeguards buses on the same unit are inoperable (i.e., 1A05/1B03 and 1A06/1B04, or 2A05/2B03 and 2A06/2B04), or standby emergency power to safeguards buses 1A05/1B03 and 2A06/2B04 are inoperable. Thus, with an assumed loss of offsite electrical power, insufficient standby emergency power sources are available to power the minimum required ESF functions.

Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

According to Reference 5, operation may continue for a period that should not exceed 2 hours.

ACTIONS (continued)

H.1 and H.2

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with the Point Beach Design Criteria (Ref. 1). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions).

Where various SRs discussed herein specify voltage and frequency limitations, the following is applicable. The minimum continuous rating for safety-related electrical motors is 90% of nominal motor voltage as recommended by ANSI C50.41-1977 and NEMA MG-1. Additionally, the safety-related motors have a one-minute rating of 75% of nominal motor voltage as recommended by ANSI C50.41-1977. Therefore, under a worst case (maximum) loading condition, safeguards bus voltages must be maintained high enough to prevent the terminal voltage at any 4160 or 480 V motor from falling below 3600 / 414 V continuous (90% of nominal) or 3000 / 345 V for one minute (75% of normal). Additionally, motor control center continuous and instantaneous voltages must be maintained above 400 V and 308 V, respectively, to ensure that 480 V Motor Control Center contactors are able to close and do not drop out. These voltages are below the minimum continuous and instantaneous 480 V motor voltage requirements.

The maximum allowable safety related system voltages must be low enough to ensure all connected equipment will operate properly at minimum plant design loading conditions. Minimum plant loading conditions at maximum grid limits (362 kV) will result in maximum voltage at the 4160 and 480 safety related buses. Motors are the most sensitive plant loads to high voltage. The maximum continuous operating design rating for safety related motors is 110% of nominal nameplate voltage as recommended by ANSI C50.41-1977. Therefore, under a worst case (minimum) design loading condition, electrical system voltages should be maintained low enough such that voltages at motor terminals remain below 110% of the motor nominal rating for continuous operation. It is permissible to operate motors above 110%

BASES

SURVEILLANCE REQUIREMENTS (continued)

for short duration, non-continuous operation when actual plant load conditions are higher than continuous operating conditions without causing damage or significantly reducing qualified motor life as stated in ANSI C84.1-1989. Continuous operation is defined as 24 hours per day per the NEC (National Electric Code). The maximum system voltage operating limits including instrument error should be maintained below 115% of nominal to ensure proper operation of all protective devices. This 115% limit is below the minimum 125% motor protective device setting limit from the NEC and is below the 119% limit listed in NUREG-1431 Rev. 2.

The safeguards distribution system frequency must be maintained within the limits allowed by connected equipment; below the setting of overcurrent relays; and above the setting of underfrequency relays. Electrical motors are sensitive to variations in operating frequency.

Equipment Technical Manuals for various 4160 V and 480 V motors have indicated motor terminal frequency must be maintained between 57 - 63 Hz, which is consistent with industry motor standards. The 57 - 63 Hz rating is also consistent with the allowable frequency ranges for other frequency sensitive non-motor loads (i.e., 480 V battery chargers). Although 63 Hz is the upper limit for motor operation to prevent motor damage, motors may not be capable of operating at 63 Hz due to circuit breaker settings. Since motor current increases with frequency, the possibility exists that circuit breakers supplying 480 V motors may trip on overcurrent if the 4160 V System is operated at elevated frequencies. Calculations performed verify that all safety related 480 V motors will not trip on overcurrent assuming their terminal frequency does not exceed 62.4 Hz. Therefore, to ensure that connected safety-related loads do not trip on overcurrent, 4160 V System frequency must not exceed 62.4 Hz.

<u>SR 3.8.1.1</u>

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

<u>SR 3.8.1.2</u>

This SR helps to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

SURVEILLANCE REQUIREMENTS (continued)

To minimize the wear on moving parts that do not get lubricated when the engine is not running, SR 3.8.1.2 is modified by a Note to indicate that all standby emergency power source starts for this surveillance may be preceded by an engine prelube and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 testing, the standby emergency power sources are started from standby conditions. Standby conditions for a standby emergency power source mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

SR 3.8.1.2 requires that, at a 31 day Frequency, the standby emergency power source starts from standby conditions and achieves required voltage and frequency.

The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 4). This Frequency provides adequate assurance of standby emergency power source OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the standby emergency power sources are capable of synchronizing with the offsite electrical system and accepting loads ≥ 2500 kW and ≤ 2850 kW. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the standby emergency power source is connected to the offsite source.

Although no power factor requirements are established by this SR, the standby emergency power source is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while the 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the standby emergency power source. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain standby emergency power source OPERABILITY.

The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 4).

This SR is modified by three Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus

BASES

SURVEILLANCE REQUIREMENTS (continued)

loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 stipulates a prerequisite requirement for performance of this SR. A successful standby emergency power source start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This Surveillance demonstrates that each required fuel oil transfer pump system operates and transfers fuel oil from its associated storage tank to its associated day tank and engine mounted sump as applicable. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer system is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

The design of fuel transfer systems is such that pumps and valves operate automatically to maintain an adequate volume of fuel oil in the day and engine mounted sump tanks during or following standby emergency source testing.

The 31 day Frequency is adequate to assure that the fuel oil transfer system is OPERABLE, since low level alarms are provided.

SR 3.8.1.5

In the event of a DBA coincident with a loss of offsite power, the standby emergency power sources are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the standby emergency power source operation, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal.

This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the standby emergency power source. It further demonstrates the capability of the standby emergency power source to automatically achieve the required voltage and frequency within analysis limits.

The standby emergency power source autostart time of 10 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

BASES

BACKGROUND (continued)

The requirements for containment purge and exhaust system penetration closure ensure that a release of fission product radioactivity within containment will be restricted to within regulatory limits.

The Containment Purge and Exhaust System includes a 36 inch purge penetration and a 36 inch exhaust penetration. The Unit 1 purge and exhaust penetrations each contain two isolation valves. The Unit 2 purge and exhaust outboard valves have been removed. Blind flanges are installed in lieu of the outboard valves to provide containment isolation. During MODES 1, 2, 3, and 4, each of the purge and exhaust penetration valves are secured in the closed position. The Containment Purge and Exhaust System is not subject to a Specification in MODE 5.

In MODE 6, large air exchanges are necessary to conduct refueling operations. The 36 inch purge system is used for this purpose. All four Unit 1 and the two Unit 2 inboard valves are closed by the Containment Purge and Exhaust Isolation Instrumentation.

APPLICABLE SAFETY ANALYSES

During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 1). Fuel handling accidents, analyzed in Reference 2, include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies. The requirements of LCO 3.9.6, "Refueling Cavity Water Level," and the minimum decay time of 161 hours prior to movement of irradiated fuel ensure that the release of fission product radioactivity subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 2), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits).

Containment penetrations satisfy Criterion 3 of the NRC Policy Statement.

LCO

This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any Containment Purge and Exhaust System penetration to be closed except for the OPERABLE containment purge and exhaust

BASES

LCO (continued)

penetrations. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge and Exhaust Isolation System. The OPERABILITY requirements for this LCO ensure that the automatic purge and exhaust valve closure specified in the FSAR can be achieved.

The containment personnel airlock doors may be open during movement of irradiated fuel in the containment and during CORE ALTERATIONS provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel airlock door will be closed following an evacuation of containment.

The allowance to have containment personnel airlocks open during fuel movements and CORE ALTERATIONS is based on the Point Beach confirmatory dose calculation of a fuel handling accident. This calculation assumes a ground level release with acceptable radiological consequences. The personnel airlocks are not assumed to be closed during the fuel handling accident, nor are the airlocks assumed to be closed within any amount of time following the fuel handling accident.

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when CORE ALTERATIONS or movement of irradiated fuel assemblies within containment are not being conducted, the potential for a fuel handling accident does not exist. Therefore, under these conditions no requirements are placed on containment penetration status.

ACTIONS

A.1 and A.2

If the containment equipment hatch, air locks, or any containment Purge and Exhaust System penetration is not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.