LCO (continued)

breakers into a common fault is prevented by trip and lockout interlocks in the breaker control circuits.

Each Onsite Class 1E Safeguards AC Power Distribution System must be capable of being powered from an OPERABLE standby emergency power source. Each standby emergency power source must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective safeguards bus(es) on detection of undervoltage within 10 seconds. Each standby emergency power source must also be capable of accepting ESF loads within the predetermined sequence established by the ESF safeguards logic and sequence timers, and continue to operate until offsite power can be restored to the ESF buses. Sequencing of loads, is a required function for standby emergency power source OPERABILITY.

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.

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

ACTIONS

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

ACTIONS (continued)

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.

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

ACTIONS (continued)

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 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.

ACTIONS (continued)

D.1

Condition D applies when offsite power is inoperable to one or more required 4.16 kV safeguards bus(es). Condition D contains a Note which provides clarification that, for this Condition, separate Condition entry is allowed for each 4.16 kV bus with an inoperable offsite 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 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:

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 support or supported features, or both, that are associated with the other train, 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

ACTIONS (continued)

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 perio d 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 Actio n 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 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

ACTIONS (continued)

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 F 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:

a. An inoperable standby emergency power source exists; and

b. A required feature on the other train 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.

ACTIONS (continued)

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 standby emergency power source.

In the event the inoperable standby emergency power source is restored to OPERABLE status prior to completing either

ACTIONS (continued)

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 outline d 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

ACTIONS (continued)

apply simultaneously, and the more restrictive 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

Required Action F.1 applies when standby emergency powe r to both safeguards buses on the same unit are inoperable (i.e. 1A05 and 1A06, or 2A05 and 2A06), or standby emergency power to safeguards buses 1A05 and 2A06 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.

G.1

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered if a required Class 1E 4.16 kV safeguards bus were de-energized, or if all AC sources to it were inoperable. Therefore, Required Action G.1 requires the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems-Operating," to be immediately entered. LCO 3.8.9 provides the appropriate restrictions for an inoperable bus.

H.1 and H.2

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion

ACTIONS (continued)

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 4160 V system voltage must be low enough to ensure all connected equipment will operate properly. Motors are the most sensitive 4.16 kV and 480 V loads to high voltages. The maximum continuous rating for safety-related motors is 110% of nominal as recommended by ANSI C50.41-1977. Therefore, under a worst case (minimum) loading condition, 4160 V System voltages should be maintained low enough to remain below 110% of the ratings.

The safeguards distribution system frequency must be maintained within the limits allowed by connected equipment; below the setting of overcurrent relays; and above the

SURVEILLANCE REQUIREMENTS (continued)

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.

SR 3.8.1.1

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.

SR 3.8.1.2

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.

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

SURVEILLANCE REQUIREMENTS (continued)

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 $\geq$ 2500 kW and $\leq$ 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 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.

SURVEILLANCE REQUIREMENTS (continued)

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.

SURVEILLANCE REQUIREMENTS (continued)

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the standby emergency power source loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the standby emergency power source systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 4), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with standard fuel cycle lengths.

For the purpose of this testing, the standby emergency power sources must be started from standby conditions. That is, with the engine oil continuously circulated and engine temperature maintained consistent with manufacturer recommendations for standby emergency power sources.

SR 3.8.1.6

As required by Regulatory Guide 1.9 (Ref. 4), this Surveillance ensures that the manual synchronization and load transfer from the standby emergency power source to the offsite source can be made and the standby emergency power source can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the standby emergency power source to reload if a subsequent loss of offsite power occurs. The standby emergency power source is considered to be in ready to load status when the standby emergency power source is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence timers are reset.

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 4), and takes into consideration unit conditions required to perform the Surveillance.

REFERENCES

1. FSAR, Section 1.3.

2. FSAR, Chapter 8.

3. FSAR, Chapter 14.

4. Regulatory Guide 1.9, Rev. 3, July 1993.

5. Regulatory Guide 1.93, Rev. 0, December 1974.

6. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.

Table B 3.8.1-1 (page 1 of 2)
Conditions for AC Sources Component Inoperabilities

Inoperable Equipment	Condition(s)
Inoperable standby emergency power source to 1A05, 1A06, 2A05, or 2A06. OR Inoperable standby emergency power sources to 1A05 and 2A05. OR Inoperable standby emergency power sources to 1A06 and 2A06.	Condition E
Inoperable standby emergency power source to A05 and A06 on the same unit. OR Inoperable standby emergency power to 1A05 and 2A06.	Condition E AND Condition F
One or more de-energized 4.16 kV safeguards buses (1A05/2A05/1A06/2A06). OR One or more 4.16 kV safeguards buses (1A05/2A05/1A06/2A06) with inoperable standby emergency power source(s) and inoperable offsite power source(s).	Condition D AND Condition E AND Condition G
Inoperable offsite power source to A05 and A06 on the same unit. OR Inoperable offsite power to 1A05 and 2A06.	Condition C AND Condition D
Inoperable offsite power source to 1A05, 1A06, 2A05, or 2A06. OR Inoperable offsite sources to 1A05 and 2A05. OR Inoperable offsite sources to 1A06 and 2A06.	Condition D

Table B 3.8.1-1 (page 2 of 2)
Conditions for AC Sources Component Inoperabilities

Inoperable Equipment	Conditions
X04 transformer de-energized.	Condition B AND Condition C AND Condition D
Associated unit's X03 transformer de-energized.	Condition A -----NOTE----- Enter appropriate Conditions for a de-energized X04 if auto bus transfer is incomplete. ----------

Cross-Reference Report - NUREG-1431 Section 3.08.02

ITS to CTS

13-Nov-99

ITS	CTS	DOC
LCO 3.08.02	NEW	M.01
LCO 3.08.02 A	NEW	M.01
LCO 3.08.02 B	NEW	M.01
LCO 3.08.02 COND A	NEW	M.01
LCO 3.08.02 COND A RA A.1	NEW	M.01
LCO 3.08.02 COND A RA A.2	NEW	M.01
LCO 3.08.02 COND B	NEW	M.01
LCO 3.08.02 COND B RA B.1	NEW	M.01
LCO 3.08.02 COND B RA B.2	NEW	M.01
SR 3.08.02.01	NEW	M.01
SR 3.08.02.02	NEW	M.01
SR 3.08.02.03	NEW	M.01
SR 3.08.02.04	NEW	M.01
SR 3.08.02.05	NEW	M.01

Description of Changes - NUREG-1431 Section 3.08.02

13-Nov-99

DOC Number	DOC Text

M.01 The CTS does not contain an explicit LCO or Required Actions which address AC power sources during Modes 5 and 6. The CTS definition of operability states that for a system, subsystem, train, component, or device to be operable its normal and emergency power sources must be capable of performing their intended support functions. Therefore, whenever a system, subsystem, train, component, or device is required to be operable, its associated AC power source is required to be operable.

Proposed ITS LCO 3.8.2 will require the one circuit between the offsite transmission network and the 480 V Class 1E safeguards buses (required by LCO 3.8.10) and one standby emergency power source capable of supplying one of the associated unit's 480 V Class 1E safeguards buses (required by LCO 3.8.10) to be operable in Modes 5 and 6. Proposed LCO 3.8.2 contains Required Actions which require associated supported feature(s) to be declared inoperable immediately when a AC source is inoperable (as would be required by the CTS definition of operability.) Additional Required Actions stipulate to immediately initiate actions to restore the required AC power source to OPERABLE status.

As such, the proposed LCO and Required Actions are consistent with the CTS definition of operability. However, this change is more restrictive due to the addition of explicit Surveillance Requirements which define operability, in turn establishing when the Conditions and Required Actions must be entered.

CTS:	ITS:
NEW	LCO 3.08.02
	LCO 3.08.02 A
	LCO 3.08.02 B
	LCO 3.08.02 COND A
	LCO 3.08.02 COND A RA A.1
	LCO 3.08.02 COND A RA A.2
	LCO 3.08.02 COND B
	LCO 3.08.02 COND B RA B.1
	LCO 3.08.02 COND B RA B.2
	SR 3.08.02.01
	SR 3.08.02.02
	SR 3.08.02.03
	SR 3.08.02.04
	SR 3.08.02.05

(c) Residual Heat Removal Loop (A)*
(d) Residual Heat Removal Loop (B)*

(2) If the conditions of specification (1) above cannot be met, corrective action to return a second decay heat removal method to operable status as soon as possible shall be initiated immediately.

(3) If no decay heat removal method is in operation, except as permitted by (4) below, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

(4) At least one of the above decay heat removal methods shall be in operation.

(a) All reactor coolant pumps and residual heat removal pumps may be deenergized for up to 1 hour in any 8 hour period provided:

(1) No operations are permitted that would cause dilution of reactor coolant system boron concentration, and

(2) Core outlet temperature is maintained at least 10°F below saturation temperature.

b. Reactor Coolant Temperature Less Than 140°F

(1) Both residual heat removal loops shall be operable except as permitted in items (3) or (4) below.

(2) If no residual heat removal loop is in operation, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

(3) One residual heat removal loop may be out of service when the reactor vessel head is removed and the refueling cavity flooded.

(4) One of the two residual heat removal loops may be temporarily out of service to meet surveillance requirements.

4. Pressurizer Safety Valves

a. At least one pressurizer safety valve shall be operable whenever the reactor head is on the vessel.

b. Both pressurizer safety valves shall be operable whenever the reactor is critical.

< See Section 3.4 and 3.9 >

*Mechanical design provisions of the residual heat removal system afford the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. Electrical design provisions of the residual heat removal system afford the necessary flexibility to allow the normal or emergency power source to be inoperable or tied together when the reactor coolant temperature is less than 200°F.

AC Power Sources-Shutdown
See Insert 3.8.2-1:

- LCO Conditions and Required Actions added.
- Surveillance Requirements added.

M.1

Insert 3.8.2-1:

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources–Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the 480 V Class 1E safeguards bus(es) B03 and B04, required by LCO 3.8.10, "Distribution Systems–Shutdown"; and

b. One standby emergency power source capable of supplying one of the associated unit's 480 V Class 1E safeguards bus(es) B03 or B04, required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Declare affected required feature(s) with no offsite power available inoperable. AND A.2 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately Immediately

(continued)

Insert 3.8.2-1 (continued):

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required standby emergency power source inoperable.	B.1 Declare affected required feature(s) with no standby emergency power source available inoperable. AND	Immediately
	B.2 Initiate action to restore required standby emergency power source to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.2.2	----------NOTE---------- All standby emergency power source starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each required standby emergency power source starts from standby conditions and achieves rated voltage and frequency.	31 days
SR 3.8.2.3	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	31 days

Insert 3.8.2-1 (continued):

SR 3.8.2.4	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify on an actual or simulated loss of offsite power signal: 1. De-energization of the safeguards buses; 2. Load shedding of the 480 V safeguards bus; 3. Standby emergency power source auto-starts from standby condition and energizes the safeguards buses, and 4. supplies bus loads for ≥ 5 minutes.	18 months
SR 3.8.2.5	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify each standby emergency power source synchronizes with offsite power source upon a simulated restoration of offsite power and returns to ready-to-load operation.	18 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources–Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

1 → 480 V Class 1E safeguards bus(es) B03 and B04

a. One ~~qualified~~ circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems–Shutdown"; and

2 → standby emergency power source

b. One ~~diesel generator (DG)~~ capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.

1 → of the associated unit's 480 V Class 1E safeguards bus(es) B03 or B04

APPLICABILITY: MODES 5 and 6.

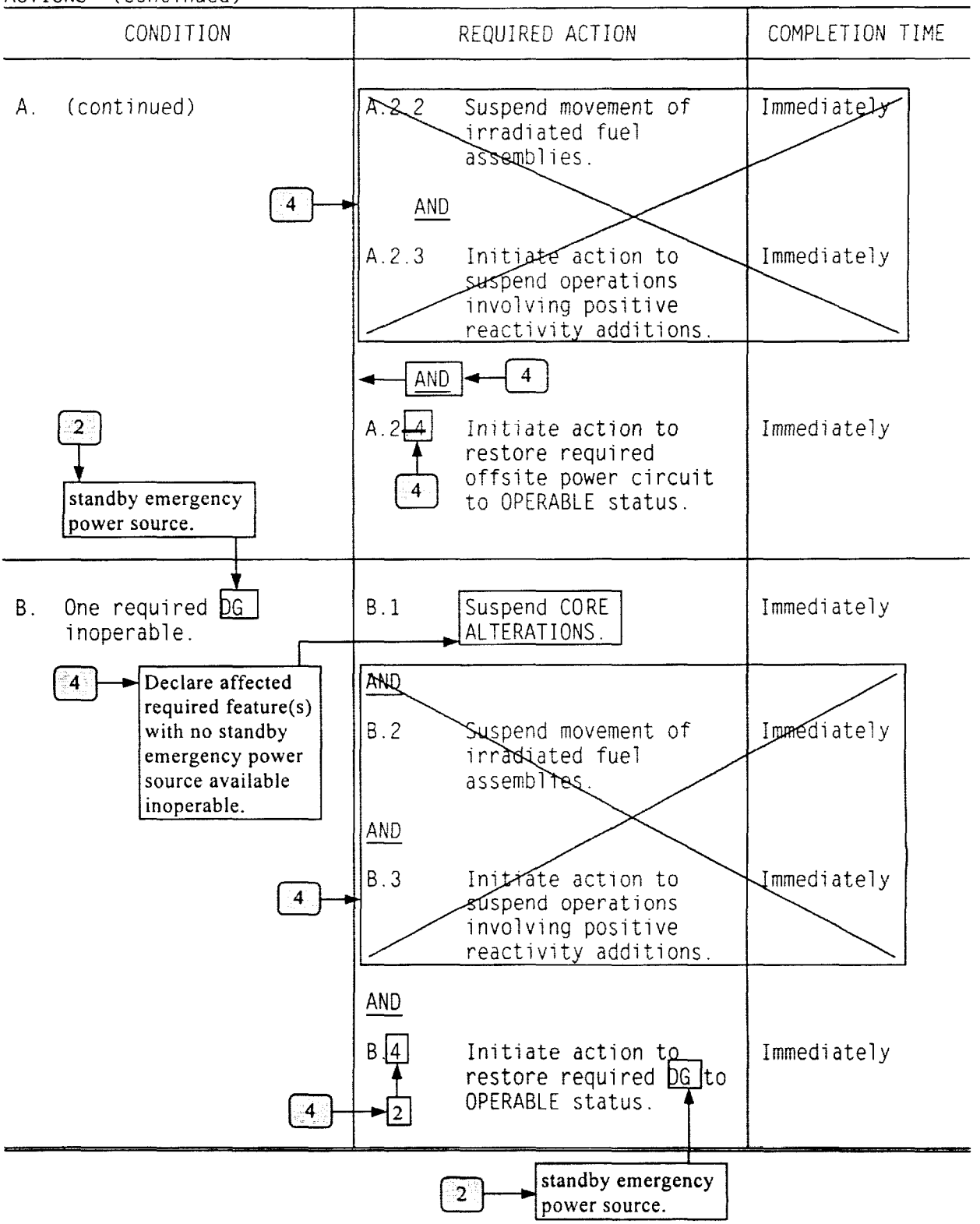
~~During movement of irradiated fuel assemblies.~~ ← 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	~~----------NOTE----------~~ ~~Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required train de-energized as a result of Condition A.~~ ~~----------~~ (4)	
	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	~~OR~~ A.2.1 Suspend ~~CORE~~ ALTERATIONS. (4) ~~AND~~	Immediately

(continued)

ACTIONS (continued)



SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTE---------- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, [SR 3.8.1.18,] and SR 3.8.1.19. ---------- For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources–Operating," except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.	In accordance with applicable SRs

5 → Replace with Insert 3.8.2-1.

3.8.2-1

SR 3.8.2.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.2.2	----------NOTE---------- All standby emergency power source starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each required standby emergency power source starts from standby conditions and achieves rated voltage and frequency.	31 days
SR 3.8.2.3	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	31 days
SR 3.8.2.4	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify on an actual or simulated loss of offsite power signal: 1. De-energization of the safeguards buses; 2. Load shedding of the 480 V safeguards bus; 3. Standby emergency power source auto-starts from standby condition and energizes the safeguards buses, and 4. supplies bus loads for $\geq$ 5 minutes.	18 months

3.8.2-1 (continued)

SR 3.8.2.5	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify each standby emergency power source synchronizes with offsite power source upon a simulated restoration of offsite power and returns to ready-to-load operation.	18 months

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources-Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources-Operating.

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 ~~and during movement of irradiated fuel assemblies~~ 3 ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown ~~, such as a fuel handling accident~~ 3.

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant

BASES

APPLICABLE SAFETY ANALYSIS (continued)

number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

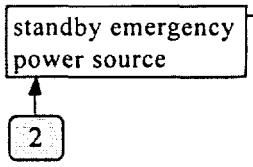
c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of the NRC Policy Statement.

LCO



One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems–Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE DG associated with the distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown ~~(e.g., fuel handling accidents)~~ 3

BASES

LCO (continued)

1

The ~~qualified~~ offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). ~~Qualified~~ offsite circuits are those that are described in the FSAR ~~and are part of the licensing basis for the unit~~.

1 → Replace with Insert 3.8.2-2.

[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]

2 → standby emergency power source

The DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within [10] seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions.

7 → 10

standby emergency power source → 2

8 → ~~Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.~~

7 → ~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required~~ OPERABLE by LCO 3.8.10.]

1 → safeguards buses

It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.

9 → for limited periods of time as addressed in LCO 3.8.9 and 3.8.10.

BASES

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 ~~and during movement of irradiated fuel assemblies~~ provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

~~b. Systems needed to mitigate a fuel handling accident are available;~~

b. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

c. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

Replace with Insert 3.8.2-3.

A.1

An offsite circuit would be considered inoperable if it were not available to one required ESF train. Although two trains are required by LCO 3.8.10, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

Replace with Insert 3.8.2-4.

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required DG inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or

BASES

ACTIONS (continued)

Replace with Insert 3.8.2-4.

4

increase reactor vessel inventory provided the required SDM is maintained.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required ESF bus, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 would provide the appropriate restrictions for the situation involving a de-energized train.

SURVEILLANCE REQUIREMENTS

Replace with Insert 3.8.2-5.

4

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit. SR 3.8.1.20 is excepted because starting independence is not required with the DG(s) that is not required to be operable.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DG(s) from being paralleled

BASES

SURVEILLANCE REQUIRMENTS (CONTINUED)

Replace with Insert 3.8.2-5. 4

with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit is required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

REFERENCES

None.

1. Regulatory Guide 1.9, Rev. 3, July, 1993. 4

3.8.2 Inserts

3.8.2-2

The AC electrical offsite sources for a unit in MODE 5 or 6 is described as follows:

One circuit between the offsite transmission network and the associated unit's 480V Class 1E safeguards buses, B03 and B04, utilizing:

a. Either unit's X03 and X04 transformers;

b. Either unit's 4.16 kV buses, A03 and A04;

c. Either unit's 4.16 kV Class 1E safeguards buses, A05 and A06;

d. The opposite unit's 480 V Class 1E safeguards buses, B03 and B04 as necessary; and

e. All associated breakers, switches, interrupting devices, cabling, and controls required to transmit power from the Offsite 345 kV Distribution System to the required 480 VAC safeguards buses B03 and B04.

3.8.2-3

A.1 and A.2

An offsite circuit would be c onsidered inoperable if it were not available to the safeguards buses required to be OPERABLE by LCO 3.8.10. Declaring the required features associated with an inoperable offsite circuit inoperable ensures that the appropriate restrictions are implemented in accordance with the affected supported features LCO Required Actions. The Completion Time of immediately is consistent with the required times for actions requiring prompt attention.

It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

3.8.2-4

B.1 and B.2

With the required standby emergency power source inoperable, the minimum required diversity of AC power sources is not available. Declaring the required features associated with the inoperable standby emergency power source inoperable ensures that the appropriate restrictions are implemented in accordance with the affected supported features LCO Required Actions. The Completion Time of immediately is consistent with the required times for actions requiring prompt attention.

It is further required to immediately initiate action to restore the required standby emergency power source to OPERABLE status. The restoration of the required standby emergency power source should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

3.8.2-5

SR 3.8.2.1

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 offsite 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.

SR 3.8.2.2

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

To minimize wear on moving parts that do not get lubricated when the engine is not running, SR 3.8.2.2 is modified by a Note to indicate that all standby emergency power source starts for this Surveillance may be preceded by an engine prelube period and followed by a warmup period prior to loading.

SR 3.8.2.2 requires that, at a 31 day Frequency, the standby emergency power source starts from standby conditions and

3.8.2-5 (continued)

SR 3.8.2.2 (continued)

achieves required voltage and frequency. While not specifically stated within this SR, the standby emergency power source must be capable of starting and accepting loads. With limited AC sources available, a single event could compromise both the required offsite circuit and the standby emergency power source.

This Frequency provides adequate assurance of standby emergency power source OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.2.3

This Surveillance demonstrates that each required fuel oil transfer system operates and transfers fuel oil from its associated storage tank to its associated day tank. 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 in order to maintain an adequate volume of fuel oil in the day 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 3.8.2.4

In the event of a loss of offsite power, the standby emergency power source is required to supply support systems necessary to avoid immediate difficulty, to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

This test verifies all actions encountered from a loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective connected loads from the standby emergency power source. It further demonstrates the capability of the standby emergency

3.8.2-5 (continued)

SR 3.8.2.4 (continued)

power source to automatically achieve the required voltage and frequency.

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.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with standard fuel cycle lengths.

For the purpose of this testing, the Standby emergency power sources must be started from standby conditions, that is, with the engine oil continuously circulated and engine temperature maintained consistent with manufacturer recommendations for standby emergency power sources.

This SR is modified by a note which exempts performance of this SR if the Frequency has expired. The standby emergency power source must continue to be capable of automatically starting and accepting loads, however performance of the SR is not required if it is not met solely due to an expired frequency. The reason for the Note is to preclude requiring the OPERABLE standby emergency power source(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the standby emergency power source. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the standby emergency power source and offsite circuit is required to be OPERABLE.

3.8.2-5 (continued)

SR 3.8.2.5

As required by Regulatory Guide 1.9 (Ref. 1), this Surveillance ensures that the manual synchronization and automatic load transfer from the standby emergency power source to the offsite source can be made and the standby emergency power source can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the standby emergency power source to reload if a subsequent loss of offsite power occurs.

The standby emergency power source is considered to be in ready to load status when the standby emergency power source is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence logic is reset.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 1), and takes into consideration unit conditions required to perform the Surveillance.

This SR is modified by a note which exempts performance of this SR if the Frequency has expired. The standby emergency power source must continue to be capable of synchronizing with offsite power and returning to a ready to load status; however, performance of the SR is not required if it is not met solely due to an expired frequency. The reason for the Note is to preclude requiring the OPERABLE standby emergency power source(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit is required to be OPERABLE.

No Significant Hazards Considerations - NUREG-1431 Section 3.08.02

13-Nov-99

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the mitigation of an accident or transient event. These more restrictive requirements continue to ensure process variables, structures, systems and components are maintained consistent with the safety analyses. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

Justification For Deviations - NUREG-1431 Section 3.08.02

13-Nov-99

JFD Number	JFD Text	
01	Point Beach was constructed and licensed prior to the General Design Criteria (GDC) of 10 CFR 50 Appendix A being issued. The Point Beach construction permit was issued prior to the GDCs being issued in 1971. Point Beach was designed and constructed utilizing the 1967 proposed GDCs. Accordingly, NUREG 1431 LCO 3.8.2 and associated Bases discussions have been modified to reflect Point Beach design basis and the plant specific nomenclature.	
	ITS:	**NUREG:**
	B 3.08.02	B 3.08.02
	LCO 3.08.02 A	LCO 3.08.02 A
	LCO 3.08.02 B	LCO 3.08.02 B
02	LCO 3.8.2, references to "diesel generator (DG)" have been changed to "standby emergency power source," to be consistent with current Point Beach nomenclature.	
	ITS:	**NUREG:**
	B 3.08.02	B 3.08.02
	LCO 3.08.02 B	LCO 3.08.02 B
	LCO 3.08.02 COND B	LCO 3.08.02 COND B
	LCO 3.08.02 COND B RA B.2	LCO 3.08.02 COND B RA B.4
03	NUREG 1431 LCO 3.8.2 Applicability and associated Bases discussions have been revised. Point Beach licensing basis does not rely upon AC electrical power sources in the mitigation of a fuel handling accident. Therefore LCO 3.8.2 is not applicable during the movement of irradiated fuel assemblies.	
	ITS:	**NUREG:**
	B 3.08.02	B 3.08.02
	LCO 3.08.02	LCO 3.08.02

Justification For Deviations - NUREG-1431 Section 3.08.02

13-Nov-99

JFD Number	JFD Text
04	The Conditions and Required Action contained in NUREG 1431 LCO 3.8.2 have been modified to provide appropriate Actions for loss of a required AC power source. The proposed ITS will require that the features supported by an inoperable AC power source to be declared inoperable immediately, which in NUREG 1431 was an option to suspending; core alterations, movement of irradiated fuel, and positive reactivity additions. The proposed ITS will simply declare the affected features inoperable, requiring entry into the Required Actions for the associated supported features. This ultimately requires the same Actions as those contained in the NUREG when a sufficient number of required features are not available to continue these activities. This presentation has been chosen for consistency with proposed ITS LCO 3.8.9 and 3.8.10.

ITS:	NUREG:
B 3.08.02	B 3.08.02
LCO 3.08.02 COND A RA A.2	LCO 3.08.02 COND A RA A.2.4
LCO 3.08.02 COND B RA B.1	LCO 3.08.02 COND B RA B.1
LCO 3.08.02 COND B RA B.2	LCO 3.08.02 COND B RA B.4
N/A	LCO 3.08.02 COND A RA A.1 NOTE
	LCO 3.08.02 COND A RA A.2.1
	LCO 3.08.02 COND A RA A.2.2
	LCO 3.08.02 COND A RA A.2.3
	LCO 3.08.02 COND B RA B.2
	LCO 3.08.02 COND B RA B.3

Justification For Deviations - NUREG-1431 Section 3.08.02

13-Nov-99

JFD Number	JFD Text
05	NUREG 1431, SR 3.8.2.1, has been replaced in ITS with SR 3.8.2.1, SR 3.8.2.2, SR 3.8.2.3, SR 3.8.2.4 and SR 3.8.2.5. NUREG 1431, SR 3.8.2.1, refers to LCO 3.8.1 surveillance requirements that are required to be met for AC Sources required to be OPERABLE per LCO 3.8.2. This change is necessary because of the modifications made to the NUREG 1431 LCO 3.8.1 surveillance requirements and the differences in the surveillance requirements between ITS LCO 3.8.1 and ITS LCO 3.8.2. The surveillance requirements between ITS LCO 3.8.1 and ITS LCO 3.8.2 differ because Point Beach licensing basis does not include a DBA when the unit is in the cold shutdown of refueling conditions. Additionally, TSTF 300, which modifies NUREG 1431, SR 3.8.2.1, has not been incorporated. The surveillance requirements of LCO 3.8.2 no longer refer to LCO 3.8.1 surveillance requirements. **ITS:** / **NUREG:** B 3.08.02 / B 3.08.02 N/A / SR 3.08.02.01 SR 3.08.02.01 NOTE SR 3.08.02.01 / N/A SR 3.08.02.02 / N/A SR 3.08.02.03 / N/A SR 3.08.02.04 / N/A SR 3.08.02.05 / N/A
06	NUREG 1431 LCO 3.8.2 Bases discussion of the offsite circuits has been modified. The statement, ". . .and are part of the licensing basis for the unit." has been deleted. Although the offsite circuits are described in the FSAR, this description does not pertain to the offsite circuits in the shutdown condition. Therefore the description it is not part of the licensing basis for AC Sources-Shutdown at Point Beach. **ITS:** / **NUREG:** B 3.08.02 / B 3.08.02
07	The brackets have been removed and the proper plant specific information has been provided. **ITS:** / **NUREG:** B 3.08.02 / B 3.08.02

Justification For Deviations - NUREG-1431 Section 3.08.02

13-Nov-99

JFD Number	JFD Text	
08	NUREG 1431 LCO 3.8.2 Bases discussion of the required functions for DG OPERABILITY has been deleted. The Point Beach licensing basis does not rely upon the "Proper sequencing of loads" for standby emergency power source OPERABILITY in MODES 5 and 6.	
	ITS:	**NUREG:**
	B 3.08.02	B 3.08.02
09	NUREG 1431 LCO 3.8.2 Bases discussion of safeguards bus cross tie during shutdown conditions has been modified. Point Beach design utilizes some shared components powered from cross-tied buses. The limitations associated with the cross tie of these buses are addressed in LCOs 3.8.9 and 3.8.10.	
	ITS:	**NUREG:**
	B 3.08.02	B 3.08.02

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources-Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the 480 V Class 1E safeguards bus(es) B03 and B04, required by LCO 3.8.10, "Distribution Systems-Shutdown"; and

b. One standby emergency power source capable of supplying one of the associated unit's 480 V Class 1E safeguards bus(es) B03 or B04, required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	AND	
	A.2 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required standby emergency power source inoperable.	B.1 Declare affected required feature(s) with no standby emergency power source available inoperable. AND	Immediately
	B.2 Initiate action to restore required standby emergency power source to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.2.2	----------NOTE---------- All standby emergency power source starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each required standby emergency power source starts from standby conditions and achieves rated voltage and frequency.	31 days
SR 3.8.2.3	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.2.4	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify on an actual or simulated loss of offsite power signal: 1. De-energization of the safeguards buses; 2. Load shedding of the 480 V safeguards bus; 3. Standby emergency power source auto-starts from standby condition and energizes the safeguards buses, and 4. supplies bus loads for $\geq$ 5 minutes.	18 months
SR 3.8.2.5	----------NOTE---------- The following SR is not required to be performed if it is not met solely due to an expired frequency. ---------- Verify each standby emergency power source synchronizes with offsite power source upon a simulated restoration of offsite power and returns to ready-to-load operation.	18 months

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources-Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources-Operating.

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 ensures that:

a. The unit can be maintained in the shutdown or refueli ng condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown.

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally

BASES

APPLICABLE SAFETY ANALYSIS (continued)

planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of the NRC Policy Statement.

LCO

One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems–Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE standby emergency power source, associated with the distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and standby emergency power source ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown.

BASES

LCO (continued)

The offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). Offsite circuits are those that are described in the FSAR.

The AC electrical offsite sources for a unit in MODE 5 or 6 is described as follows:

One circuit between the offsite transmission network and the associated unit's 480V Class 1E safeguards buses, B03 and B04, utilizing:

a. Either unit's X03 and X04 transformers;

b. Either unit's 4.16 kV buses, A03 and A04;

c. Either unit's 4.16 kV Class 1E safeguards buses, A05 and A06;

d. The opposite unit's 480 V Class 1E safeguards buses, B03 and B04 as necessary; and

e. All associated breakers, switches, interrupting devices, cabling, and controls required to transmit power from the Offsite 345 kV Distribution System to the required 480 VAC safeguards buses B03 and B04.

The standby emergency power source must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within 10 seconds. The standby emergency power source must be capable of accepting required loads within the assumed loading sequence intervals and continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as standby emergency power source in standby with the engine hot and standby emergency power source in standby at ambient conditions.

It is acceptable for safeguards buses to be cross tied during shutdown conditions for limited periods of time as addressed in LCO 3.8.9 and 3.8.10.

BASES

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

c. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

A.1 and A.2

An offsite circuit would be considered inoperable if it were not available to the safeguards buses required to be OPERABLE by LCO 3.8.10. Declaring the required features associated with an inoperable offsite circuit inoperable ensures that the appropriate restrictions are implemented in accordance with the affected supported features LCO Required Actions. The Completion Time of immediately is consistent with the required times for actions requiring prompt attention.

It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

B.1 and B.2

With the required standby emergency power source inoperable, the minimum required diversity of AC power sources is not available. Declaring the required features associated with the inoperable standby emergency power source inoperable ensures that the appropriate restrictions are implemented in accordance with the affected supported features LCO Required Actions. The Completion Time of immediately is consistent

BASES

ACTIONS (continued)

with the required times for actions requiring prompt attention.

It is further required to immediately initiate action to restore the required standby emergency power source to OPERABLE status. The restoration of the required standby emergency power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

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 offsite 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.

SR 3.8.2.2

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

To minimize wear on moving parts that do not get lubricated when the engine is not running, SR 3.8.2.2 is modified by a Note to indicate that all standby emergency power source starts for this Surveillance may be preceded by an engine prelube period and followed by a warmup period prior to loading.

SR 3.8.2.2 requires that, at a 31 day Frequency, the standby emergency power source starts from standby conditions and achieves required voltage and frequency. While not specifically stated within this SR, the standby emergency power source must be capable of starting and accepting loads. With limited AC sources available, a single event could compromise both the required offsite circuit and the standby emergency power source.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This Frequency provides adequate assurance of standby emergency power source OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.2.3

This Surveillance demonstrates that each r equired fuel oil transfer system operates and transfers fuel oil from its associated storage tank to its associated day tank. 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 in order to maintain an adequate volume of fuel oil in the day 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 3.8.2.4

In the event of a loss of offsite power, the standby emergency power source is required to supply support systems necessary to avoid immediate difficulty, to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

This test verifies all actions encountered from a loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective connected 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.

The Surveillance should be continued for a minimum o f 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 1), takes into

BASES

SURVEILLANCE REQUIREMENTS (continued)

consideration unit conditions required to perform the Surveillance, and is intended to be consistent with standard fuel cycle lengths.

For the purpose of this testing, the Standby emergency power sources must be started from standby conditions, that is, with the engine oil continuously circulated and engine temperature maintained consistent with manufacturer recommendations for standby emergency power sources.

This SR is modified by a note which exempts performance of this SR if the Frequency has expired. The standby emergency power source must continue to be capable of automatically starting and accepting loads; however, performance of the SR is not required if it is not met solely due to an expired frequency. The reason for the Note is to preclude requiring the OPERABLE standby emergency power source(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the standby emergency power source. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the standby emergency power source and offsite circuit is required to be OPERABLE.

SR 3.8.2.5

As required by Regulatory Guide 1.9 (Ref. 1), this Surveillance ensures that the manual synchronization and automatic load transfer from the standby emergency power source to the offsite source can be made and the standby emergency power source can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the standby emergency power source to reload if a subsequent loss of offsite power occurs.

The standby emergency power source is considered to be in ready to load status when the standby emergency power source is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence logic is reset.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 1), and takes

BASES

SURVEILLANCE REQUIREMENTS (continued)

into consideration unit conditions required to perform the Surveillance.

This SR is modified by a note which exempts performance of this SR if the Frequency has expired. The standby emergency power source must continue to be capable of synchronizing with offsite power and returning to a ready to load status, however performance of the SR is not required if it is not met solely due to an expired frequency. The reason for the Note is to preclude requiring the OPERABLE standby emergency power source(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit is required to be OPERABLE.

REFERENCES

1. Regulatory Guide 1.9, Rev. 3, July 1993.

Cross-Reference Report - NUREG-1431 Section 3.08.03

ITS to CTS

13-Nov-99

ITS	CTS	DOC
B 3.08.03	BASES	A.02
LCO 3.08.03	NEW	A.03
LCO 3.08.03 COND A	NEW	A.04
LCO 3.08.03 COND A RA A.1	NEW	A.04
LCO 3.08.03 COND B	NEW	M.01
LCO 3.08.03 COND B RA B.1	NEW	M.01
LCO 3.08.03 COND C	NEW	M.01
LCO 3.08.03 COND C RA C.1	NEW	M.01
LCO 3.08.03 COND D	NEW	A.05
LCO 3.08.03 COND D RA D.1	NEW	A.05
LCO 3.08.03 COND E	NEW	A.04
LCO 3.08.03 COND E RA E.1	NEW	A.04
SR 3.08.03.01	15.04.01 T 15.04.01-02 17	L.01
SR 3.08.03.02	15.04.06.A.06	A.01
SR 3.08.03.03	NEW	M.03
SR 3.08.03.04	NEW	M.03

Cross-Reference Report - NUREG-1431 Section 3.08.03

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.04.01 T 15.04.01-02 17	SR 3.08.03.01	L.01
15.04.06.A.06	N/A	LA.01
	SR 3.08.03.02	A.01
BASES	B 3.08.03	A.02

Description of Changes - NUREG-1431 Section 3.08.03

13-Nov-99

DOC Number	DOC Text
A.01	In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.04.06.A.06	SR 3.08.03.02

DOC Number	DOC Text
A.02	The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content of PBNP ITS, consistent with the Standard Technical Specifications for Westinghouse Plants, NUREG-1431. The revised Bases are as shown in the PBNP ITS Bases.

CTS:	ITS:
BASES	B 3.08.03

DOC Number	DOC Text
A.03	ITS LCO 3.8.3 establishes the conditions whereby Diesel Fuel Oil and Starting Air are required to be OPERABLE to support the operation of the standby emergency power sources. ITS LCO 3.8.3 will require the stored diesel fuel oil to be within limits and the starting air subsystem to be OPERABLE for each required standby emergency power source. By default the applicability of LCO 3.8.3 is consistent with the requirements of ITS LCO 3.8.1 and ITS LCO 3.8.2, requiring the OPERABILITY of these support systems when the associated standby emergency power source is required to be OPERABLE.

CTS:	ITS:
NEW	LCO 3.08.03

DOC Number	DOC Text
A.04	If the stored fuel oil is not within limits, the CTS does not provide specific actions. Consistent with the definition of OPERABLE, the associated standby emergency power sources are required to be declared inoperable. Proposed ITS LCO 3.8.3, Required Action A.1 requires declaring the associated standby emergency power source(s) inoperable, if the volume of a storage tank is < 11,000 gals. Proposed ITS LCO 3.8.3, Required Action E.1 requires declaring the associated standby emergency power source(s) inoperable, if one or more standby emergency power sources' diesel fuel oil is not within limits, for reasons other than total particulates or new fuel oil properties not within limits. Therefore, adopting Conditions A and E and associated Required Actions is an administrative change and is consistent with NUREG 1431.

CTS:	ITS:
NEW	LCO 3.08.03 COND A
	LCO 3.08.03 COND A RA A.1
	LCO 3.08.03 COND E
	LCO 3.08.03 COND E RA E.1

Description of Changes - NUREG-1431 Section 3.08.03

13-Nov-99

DOC Number	DOC Text	
A.05	If the starting air subsystem is not OPERABLE, the CTS does not provide specific actions. Consistent with the definition of OPERABLE, the associated standby emergency power sources are required to be declared inoperable. Proposed ITS LCO 3.8.3, Condition D requires declaring the associated standby emergency power source inoperable. Therefore, adopting Condition D is an administrative change and is consistent with NUREG 1431.	
	CTS:	**ITS:**
	NEW	LCO 3.08.03 COND D LCO 3.08.03 COND D RA D.1
L.01	CTS 15.3.7.A.1.e requires a fuel supply of 11,000 gallons to be available in each tank which is being relied upon to supply any operable emergency diesel generator(s). CTS 15.04.01 Table 15.04.01-02 Item 17 requires a daily diesel fuel supply inventory. This change reduces the frequency of this surveillance. Proposed SR 3.8.3.1 requires verification that each fuel oil storage tank contains 11,000 gallons of fuel at least once per 31 days. The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, because low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period. The CTS was originally based on maintaining 11,000 gallons in a single 14,000 gallon tank. The fuel oil system was modified in the 1990's to utilize two 35,000 gallon tanks. The capacity and normal inventory in these tanks provides substantial excess capacity that was not previously available.	
	CTS:	**ITS:**
	15.04.01 T 15.04.01-02 17	SR 3.08.03.01
LA.01	CTS 15.4.6.A.6 requires a diesel fuel oil testing program be maintained to test stored fuel oil "on a quarterly basis in accordance with the applicable ASTM standards." Proposed ITS SR 3.8.3.2 requires verification that fuel oil properties of stored fuel oil is tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program at a frequency of "In accordance with the Diesel Fuel Oil Testing Program." The testing frequency of the CTS requirement and the reference to the ASTM standards is not required to be in the ITS to provide adequate protection of the public health and safety, as the regulatory requirement (Diesel Fuel Oil Testing Program) is being maintained in Technical Specifications. Changes to plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. The testing of stored fuel oil will continue to be performed in accordance with the Diesel Fuel Oil Testing program.	
	CTS:	**ITS:**
	15.04.06.A.06	N/A

Description of Changes - NUREG-1431 Section 3.08.03

13-Nov-99

DOC Number	DOC Text

M.01 The CTS does not contain requirements comparable to proposed ITS LCO 3.8.3 Conditions B and C. Proposed ITS LCO 3.8.3 Required Action B.1 requires restoring out of specification fuel oil total particulates to within limit within 7 days. This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.2. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. It is prudent to allow a brief period prior to declaring the associated standby emergency power source inoperable, because the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine; particulate concentration is unlikely to change significantly between Surveillance Frequency intervals; and, proper engine performance has been recently demonstrated (within 31 days). The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the standby emergency power source fuel oil.

With the new fuel oil properties defined in the Diesel Fuel Oil Testing Program for SR 3.8.3.2 not within the required limits, proposed ITS LCO 3.8.3 Required Action C.1 allows 30 days to restore the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. Even if a standby emergency power source start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the standby emergency power source would still be capable of performing its intended function.

The adoption of above Actions and associated Required Actions to proposed ITS LCO 3.8.3 imposes additional requirements on unit operation and is more restrictive.

CTS:	ITS:
NEW	LCO 3.08.03 COND B
	LCO 3.08.03 COND B RA B.1
	LCO 3.08.03 COND C
	LCO 3.08.03 COND C RA C.1

A.1

15.3.7 AUXILIARY ELECTRICAL SYSTEMS

Applicability

Applies to the availability of off-site and on-site electrical power for plant power operation and for the operation of plant auxiliaries.

Objective

To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safeguards.

< See LCO 3.8.1 >

Specification

A.1 Under normal conditions neither one nor both reactors shall be made critical unless the following conditions are met:

a. At least two 345 KV transmission lines are in service.

b. The 345/13.8 KV and the 13.8/4.16 KV station auxiliary transformers associated with the reactor(s) to be taken critical are in service; or one 345/13.8 KV station auxiliary transformer and the associated 13.8/4.16 KV station auxiliary transformer(s) are in service with the gas turbine operating.

c. 4160 Volt unit supply buses A03 and A04 for the unit to be taken critical are energized from their normal supply.

< See LCO 3.8.9 >

d. Both units' B03/B04 bus tie-breakers are open with control power removed.

See Ins 3.8.3-1

e. A fuel supply of 11,000 gallons is available in each tank which is being relied upon to supply any operable emergency diesel generator(s).

A.4

f. Four of the five safety-related station batteries and all four of the main DC distribution systems are operable.

< See LCOs 3.8.4, 3.8.6 and 3.8.9 >

g. Four battery chargers are operable with one charger carrying the DC loads on each main DC distribution bus: D01, D02, D03 and D04.

h. 120 VAC Vital Instrument Buses Y01, Y02, Y03, Y04, Y101, Y102, Y103, and Y104 for the unit(s) to be taken critical are energized from a safety-related inverter.

< See LCOs 3.8.7 and 3.8.9 >

i. For one or both units to be made critical, the normal power supply and a standby emergency power supply to all the 4160/480 Volt safeguards buses shall be operable and the buses are energized from their normal supply.

< See LCOs 3.8.1 and 3.8.9 >

for operation ensure that adequate DC power will always be available for starting the emergency generators and other emergency uses. The emergency diesel generators are the sources of standby emergency power. The support systems necessary to be operable to ensure the operability of the emergency diesel generators (EDGs) are the EDG starting air system, EDG fuel oil system, EDG ventilation system, and EDG DC control power. The standby emergency power supply for a 4160 Volt and associated 480 Volt safeguards bus consists of an operable EDG, including all required support systems, and an operable output breaker to that 4160 Volt safeguards bus.

< See LCO 3.8.1 >

The LCOs for the standby emergency power supplies require the redundant standby emergency power supplies to be started within 24 hours of entry into these LCOs. If the standby emergency power supply LCO is exited within 24 hours, then starting of the redundant standby emergency power supplies is not required. If the LCO was entered due to a standby emergency power supply failure and the LCO was exited within 24 hours, then an evaluation must be completed as soon as possible within 24 hours of entry into the LCO to show that the redundant standby power supplies are not susceptible to that failure by common cause or the redundant standby emergency power supplies must be started to prove that failure by common cause does not exist within 24 hours of entry into the LCO.

The EDG starting air system is considered operable when 1) all starting air bottles in each bank are operable, 2) the starting air banks can be maintained at a minimum pressure of 165 psig, 3) the air bank crossconnect valve is shut unless bank pressures are being equalized and an operator is stationed at the valve during pressure equalization, and 4) all four starting air motors and their associated valves and relays are operable.

The EDG fuel oil system is considered operable when 1) 11,000 gal. of fuel oil is initially available in the fuel oil storage tank which supplies the diesel generators [Because the EDGs consume approximately 205 gallons of fuel per hour when fully loaded, the 11,000 gallon fuel supply in the emergency fuel

A.02

tank provides sufficient fuel to operate one EDG at design load for more than 48 hours.], 2) the EDG day tank for that EDG is operable and for G-01 and G-02 the associated motor-operated fill valve is operable, 3) for G-01 and G-02, at least one of the two base-mounted sump tank fuel oil transfer pumps is operable, and 4) the fuel oil transfer system associated with the EDG is operable. However, the fuel oil transfer system is allowed to be out-of-service for four hours for G01 and G-02 due to a combined four-hour supply of fuel oil in the diesel base and day tanks which do not require a fuel oil transfer pump for flow to the associated EDG. The fuel oil transfer system is allowed to be out-of-service for two hours for G-03 and G-04 due to a two-hour supply of fuel oil in the day tank. The transfer system may be out-of-service for longer periods if an appropriate alternate source of fuel is made available to the diesel generators.

A.02

The EDG ventilation system is considered operable when diesel room temperature can be maintained ≤120°F with the diesel engine operating at full load. Temperature will be maintained ≤120°F if 1) all gravity-operated louvers are operable, and 2) both diesel room exhaust fans are operable OR for G-01 and G-02; one diesel room exhaust fan is operable and outside air temperature is ≤80°F; OR for G-03 and G-04, only the large capacity fan (W-183C for G-03, W-184B for G-04) is operable and outside air temperature is <84°F or if the small capacity fan (W-183B for G-03, W-184C for G-04) is operable and outside air temperature is ≤36°F.

< See LCO 3.8.1 >

Normal DC control power must energize all DC circuits for the associated EDG to be operable.

The original AEC Safety Evaluation for PBNP states, "Onsite fuel storage capacity is sufficient for a minimum of seven days' operation of the required safety feature loads which is acceptable." Therefore, to satisfy this requirement, at least 34,500 gallons of fuel oil will be maintained available for the emergency diesel generators at Point Beach at all times when EDG operability is required.

A.02

If only one 345 KV transmission line is in service to the plant switchyard, a temporary loss of this line would result in a reactor trip(s) if the reactor(s) power level were greater than 50%. Therefore, in order to maintain

< See LCO 3.8.1 >

See Insert 3.8.3-1
SR 3.8.3.2

A.01

3. The proper operation of Emergency Lighting, including the automatic transfer switch for DC lights, will be demonstrated during each reactor shutdown for a major fuel reloading. < See LCO 3.8.1 >
4. Each diesel generator shall be given an inspections following the manufacturer's recommendations for this class of stand-by service.
5. Operability of the diesel fuel oil system shall be verified monthly.
6. A diesel fuel oil testing program shall be maintained to test both new fuel oil upon receipt and fuel oil stored in the fuel oil storage tanks which supply the emergency diesel generators on a quarterly frequency in accordance with applicable ASTM standards.

LA.01

The above tests will be considered satisfactory if all applicable equipment operates as designed. < See LCO 3.8.1 >

B. Safety-Related Station Batteries

< See LCO 3.8.6 >

These surveillance specifications are applicable to all four safety-related station batteries: D05, D06, D105, and D106; and the safety-related station swing battery D305.

1. Every month the voltage of each cell (to the nearest 0.05 volt), the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured and recorded.
2. Every 3 months the specific gravity, the height of electrolyte, and the amount of water added, for each cell, and the temperature of every fifth cell, shall be measured and recorded.
3. At each time data is recorded, new data shall be compared with old to detect signs of abuse or deterioration.
4. Each Safety-Related Station Battery shall be demonstrated OPERABLE:
   a. At least once per 18 months (SERVICE TEST) by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle.
   b. At least once per 60 months (PERFORMANCE TEST) by verifying that the battery capacity is at least 80% of the manufacturer's rating. This performance discharge test may be performed in lieu of the battery service test.

TABLE 15.4.1-2 (Continued)

		Test	Frequency
7.	Spent Fuel Pit < See LCO 3.7.15/16 >	a) Boron Concentration b) Water Level Verification	Monthly Weekly
8.	Secondary Coolant < See LCO 3.7.18 >	Gross Beta-gamma Activity or gamma isotopic analysis Iodine concentration	Weekly[6] Weekly when gross Beta-gamma activity equals or exceeds 1.0 mCi/g [6]
9.	Control Rods < See Section 3.1 >	a) Rod drop times of all full length rods [3] b) Rodworth measurement	Each refueling or after maintenance that could affect proper functioning [4] Following each refueling shutdown prior to commencing power operation
10.	Control Rod	Partial movement of all rods	Every 2 weeks [18]
11.	Pressurizer Safety Valves < See Section 3.4 >		Every five years [11]
12.	Main Steam Safety Valves < See LCO		Every five years [11]
13.	Containment Isolation Trip	Functional < See Section 3.7.2>	Each refueling shutdown
14.	Refueling System Interlocks < See Section 3.9 >		Each refueling shutdown
15.	Service Water System < See LCO 3.7.8 >		Each refueling shutdown
16.	Primary System Leakage < See Section 3.4 >		Monthly [6]
17.	Diesel Fuel Supply	Fuel Inventory	Daily
18.	Deleted		
19.	Deleted		
20.	Boric Acid System < See Section 3.5 >	Storage Tank and piping temperatures ³ temperature required by Table 15.3.2-1	Daily[19]

SR 3.8.3.1
See Insert 3.8.3-1

L.1

Insert 3.8.3-1:

3.8 ELECTRICAL POWER SYSTEMS

A.3

3.8.3 Diesel Fuel Oil and Starting Air

LCO 3.8.3 Stored diesel fuel oil shall be within limits and starting air subsystem shall be OPERABLE for each required standby emergency power source.

APPLICABILITY: When associated standby emergency power source is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each standby emergency power source.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more standby emergency power sources with < 11,000 gal in storage tank.	A.1 Declare associated standby emergency power source(s) inoperable.	Immediately
B. One or more standby emergency power sources with stored fuel oil total particulates not within limit.	B.1 Restore fuel oil total particulates within limit.	7 days
C. One or more standby emergency power sources with new fuel oil properties not within limits.	C.1 Restore stored fuel oil properties to within limits.	30 days
D. One or more standby emergency power sources with inoperable starting air system(s).	D.1 Declare associated standby emergency power source(s) inoperable.	Immediately

A.4

M.1

A.5

Insert 3.8.3-1: (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Actions and associated Completion Time of Condition B or C not met. OR One or more standby emergency power source's diesel fuel oil not within limits for reasons other than Condition B or C.	E.1 Declare associated standby emergency power source(s) inoperable.	Immediately

A.4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 11,000 gal of fuel.	31 days
SR 3.8.3.2	Verify fuel oil properties of stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.3	Verify each standby emergency power source air start bottle bank pressure is ≥ 165 psig.	31 days
SR 3.8.3.4	Check for and remove accumulated water from each fuel oil storage tank.	92 days

L.1

A.1

M.2

M.2

Justification For Deviations - NUREG-1431 Section 3.08.03

13-Nov-99

JFD Number	JFD Text
01	NUREG LCO 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," has been modified by deleting all references to lube oil, including deletion of Condition B and SR 3.8.3.2. These deletions also result in the renumbering/re-lettering of subsequent conditions and SRs. Point Beach current licensing basis does not provide limiting conditions for operation or surveillance requirements for lube oil, nor required actions for lube oil not within limits. The effect of omitting the lube oil requirements from ITS is that the DG would be immediately declared inoperable upon discovery of insufficient lube oil, rather than allowing 48 hours to restore the lube oil to its "sufficient" levels. Therefore, the change is consistent with the current requirements which are more restrictive than the NUREG would provide.

ITS:	NUREG:
B 3.08.03	B 3.08.03
LCO 3.08.03	LCO 3.08.03
LCO 3.08.03 COND B	LCO 3.08.03 COND C
LCO 3.08.03 COND B RA B.1	LCO 3.08.03 COND C RA C.1
LCO 3.08.03 COND C	LCO 3.08.03 COND D
LCO 3.08.03 COND C RA C.1	LCO 3.08.03 COND D RA D.1
N/A	LCO 3.08.03 COND B
	LCO 3.08.03 COND B RA B.1
	SR 3.08.03.02
SR 3.08.03.02	SR 3.08.03.03
SR 3.08.03.03	SR 3.08.03.04
SR 3.08.03.04	SR 3.08.03.05

02	LCO 3.8.3, "diesel generator (DG)" has been changed to "standby emergency power source," to be consistent with current Point Beach nomenclature.

ITS:	NUREG:
B 3.08.03	B 3.08.03
LCO 3.08.03	LCO 3.08.03
LCO 3.08.03 COND B	LCO 3.08.03 COND C
LCO 3.08.03 COND C	LCO 3.08.03 COND D

Justification For Deviations - NUREG-1431 Section 3.08.03

13-Nov-99

JFD Number	JFD Text	
03	NUREG LCO 3.8.3, Condition A has been changed to require immediately declaring inoperable any standby emergency power source associated with a fuel oil tank with less than the required fuel volume. Similarly, Condition E has been changed to require immediately declaring inoperable any standby emergency power source associated with the inoperable starting air system. These changes are consistent with the actions that would be required under these conditions, applying the current Point Beach definition of OPERABILITY.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
	LCO 3.08.03 COND A	LCO 3.08.03 COND A
	LCO 3.08.03 COND A RA A.1	LCO 3.08.03 COND A RA A.1
	LCO 3.08.03 COND D	LCO 3.08.03 COND E
	LCO 3.08.03 COND D RA D.1	LCO 3.08.03 COND E RA E.1
	LCO 3.08.03 COND E	LCO 3.08.03 COND F
	LCO 3.08.03 COND E RA E.1	LCO 3.08.03 COND F RA F.1
04	The brackets have been removed and the proper plant specific information has been provided.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
	LCO 3.08.03 COND A	LCO 3.08.03 COND A
	SR 3.08.03.01	SR 3.08.03.01
	SR 3.08.03.03	SR 3.08.03.04
	SR 3.08.03.04	SR 3.08.03.05
05	NUREG SR 3.8.3.4 (ITS SR 3.8.3.3) has been modified by changing, "DG air start receiver" to "standby emergency power source air start bottle bank," to be consistent with current Point Beach nomenclature.	
	ITS:	**NUREG:**
	SR 3.08.03.03	SR 3.08.03.04
06	LCO 3.8.3 Bases contains two references to the FSAR for Design Basis Accidents. The Point Beach FSAR contains this same information in a single FSAR chapter, therefore only a single reference is used in the proposed ITS.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03

Justification For Deviations - NUREG-1431 Section 3.08.03

13-Nov-99

JFD Number	JFD Text	
07	The Bases discussion of LCO 3.8.3, Proposed Condition B, Required Action B.1, has been modified. Proposed Condition B is not entered as a result of a failure to meet the acceptance criteria of SR 3.8.3.5 (Check for and remove accumulated water from each fuel oil storage tank), but rather as a result of a failure to meet the acceptance criteria of SR 3.8.3.2 (Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program).	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
08	LCO 3.8.3 Bases description of new and stored fuel oil properties has been modified. The tests, limits and applicable ASTM standards for new and stored fuel oil will be defined in the Diesel Fuel Oil Testing Program.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
09	The Bases discussion of ITS LCO 3.8.3, Proposed Condition C, Required Action C.1, has been modified. Proposed Condition C is not entered as a result of a failure to meet the acceptance criteria of SR 3.8.3.4 (Verify each standby emergency power source air start bottle bank pressure is greater than or equal to 165 psig), but rather as a result of a failure to meet the acceptance criteria of SR 3.8.3.2 (Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program).	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
10	The Bases discussion of ITS SR 3.8.3.1 has been modified. Per Point Beach licensing basis, the required capacity of fuel oil in the storage tanks is sufficient to place the unit in a safe shutdown condition and bring in replenishment fuel from an offsite location.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03
11	The Bases discussion of ITS SR 3.8.3.3 has been modified. Per Point Beach licensing basis, the specified pressure in the air start bottle bank is the minimum required to ensure the associated standby emergency power source can be started and ready to accept load within 10 seconds from receipt of a start signal, without the aid of the refill compressor.	
	ITS:	**NUREG:**
	B 3.08.03	B 3.08.03

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, ~~Lube Oil,~~ and Starting Air

Replace with Insert 3.8.3-1.

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

NOTE
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with fuel level < [33,000] gal and > [28,285] gal in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. ~~One or more DGs with lube oil inventory < [500] gal and > [425] gal.~~	B.1 ~~Restore lube oil inventory to within limits.~~	~~48 hours~~
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates within limit.	7 days

Declare associated standby emergency power source(s) inoperable.

Immediately

11,000 gal

standby emergency power source

standby emergency power sources

(continued)

standby emergency power sources ← 2

1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more DGs with starting air receiver pressure < [225] psig and > [125] psig.	E.1 Restore starting air receiver pressure to > [225] psig.	48 hours
F. Required Action and associated Completion Time not met. OR One or more DGs diesel fuel oil, ~~lube oil, or starting air subsystem~~ not within limits for reasons other than Condition A, B, C, D, ~~or E.~~	F.1 Declare associated DG inoperable.	Immediately

Replace with Insert 3.8.3-2. ← 3

of Condition B or C ← 3

standby emergency power source(s) ← F.1

standby emergency power sources' ← 2

B or C. ← 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each fuel oil storage tank contains ≥ [33,000] gal of fuel.	31 days

(continued)

11,000 ← 4

1

SURVEILLANCE REQUIRMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.2	~~Verify lubricating oil inventory is ≥ [500] gal.~~	~~31 days~~
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG air start receiver pressure is ≥ [225] psig.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	[31] days
~~SR 3.8.3.6~~	~~For each fuel oil storage tank:~~ ~~a. Drain the fuel oil;~~ ~~b. Remove the sediment; and~~ ~~c. Clean the tank.~~	~~10 years~~

1 → 2

1 → 3 → 4 → 165

standby emergency power source air start bottle bank ← 5

1 → 4

92 ← 4

Approved TSTF-2

3.8.3 Inserts

3.8.3-1

Stored diesel fuel oil shall be within limits and starting air subsystem shall be OPERABLE for each required standby emergency power source.

3.8.3-2

D.	One or more standby emergency power sources with inoperable starting air system(s).	D.1	Declare associated standby emergency power source(s) inoperable.	Immediately

1

B 3.8 ELECTRICAL POWER SYSTEMS

1

B 3.8.3 Diesel Fuel Oil, ~~Lube Oil,~~ and Starting Air

BASES

BACKGROUND

Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section [9.5.4.2] (Ref. 1). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

1

Replace with Insert 3.8.3-3.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to pr ovide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. [The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation.] This supply is sufficient to allow the operator to replenish lube oil from outside sources.

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver(s).

BASES

APPLICABLE SAFETY ANALYSES

The initial conditions of Design B asis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 4) ~~and in the FSAR, Chapter [15] (Ref. 5)~~, assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, ~~lube oil,~~ and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources–Operating," and LCO 3.8.2, "AC Sources–Shutdown."

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, ~~lube oil,~~ and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil ~~lube oil~~.

1

BASES

APPLICABILITY (continued)

and starting air are required to be within limits when the associated DG is required to be OPERABLE.

standby emergency power source

2

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

standby emergency power source

2

A.1

3

Replace with Insert 3.8.3-6.

~~In this Condition, the 7 day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

1

~~B.1~~

~~With lube oil inventory < 500 gal, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete~~

BASES

ACTIONS (continued)

~~restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.5. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

With the new fuel oil properties defined in the Bases for SR 3.8.3.4 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

BASES

ACTIONS (continued)

E.1

With starting air receiver pressure < [225] psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as the receiver pressure is > [125] psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complet e restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

Replace with Insert 3.8.3-5.

E.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, ~~lube oil, or starting air subsystem~~ not within limits for reasons other than addressed by Conditions A through D, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

of Condition B or C

standby emergency power sources'

B or C

standby emergency power source

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support ~~each~~ DG's operation ~~for 7 days at full load. The 7 day period is~~ sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

operation of each standby emergency power source.

The required fuel oil capacity is sufficient

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

~~SR 3.8.3.2~~

~~This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

operation for each DG. The [500] gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.

SR 3.8.3

in the Diesel Fuel Oil Testing Program

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

in accordance with the Diesel Fuel Oil Testing Program

a. Sample the new fuel oil in accordance with ASTM D4057-[ ] (Ref. 6);

b. Verify in accordance with the tests specified in ASTM D975-[ ] (Ref. 6) that the sample has an absolute specific gravity at 60/60 °F of $\geq$ 0.83 and $\leq$ 0.89 or an API gravity at 60 °F of $\geq$ 27° and $\leq$ 39°, a kinematic viscosity at 40 °C of $\geq$ 1.9 centistokes and $\leq$ 4.1 centistokes, and a flash point of $\geq$ 125°F; and

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-[ ] (Ref. 6).

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~to meet the LCO concern since the fuel oil is not added to the storage tanks.~~

~~Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-[ ] (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-[ ] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-[ ] (Ref. 6) or ASTM D2622-[ ] (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.~~

8

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

~~Particulate concentrations should be determined in accordance with ASTM D2276-[ ], Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. [For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks, each tank must be considered and tested separately.]~~

8

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

11

the capability to start and ready the standby emergency power source to accept load in 10 seconds from receipt of a start signal.

SR 3.8.3 4 ← 3 ← 1

2 → standby emergency power source

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of [five] engine start cycles without recharging.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

4 → ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ The pressure specified in this SR is intended to reflect the lowest value at which th e ~~[five]~~ 11

11 → 10 second start → starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.5 ← 4 ← 1

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

4 → 92

2 → standby emergency power source

~~SR 3.8.3.6~~

Approved TSTF-2 → ~~Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. This SR also requires the performance of the ASME Code, Section XI (Ref. 8), examinations of the tanks. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

Approved TSTF-2

~~hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance.~~

REFERENCES

1. FSAR, Section [9.5.4.2] ← 8.8 ← 4
2. Regulatory Guide 1.137.
3. ANSI N195-1976, Appendix B.
4. FSAR, Chapter [6] ← 14 ← 4

6 →

~~5. FSAR, Chapter [15].~~

8 →

~~6. ASTM Standards: D4057 [ ]; D975 [ ]; D4176 [ ]; D1552 [ ]; D2622 [ ]; D2276, Method A.~~

~~7. ASTM Standards, D975, Table 1.~~

Approved TSTF-2 →

~~8. ASME, Boiler and Presser Vessel Code, Section XI.~~

3.8.3 Inserts

3.8.3-3

There are two underground fuel oil storage tanks on site (T -175A/B). Each tank has a capacity of approximately 35,000 gallons. Sufficient fuel is normally maintained between the two tanks to allow one diesel to operate continuously at the required load for 7 days (Ref. 1). At minimum required level, which is 11,000 gallons in each emergency diesel fuel oil storage tank, one tank could provide enough fuel for an emergency diesel generator to operate for over 48 hours.

The onsite fuel oil capacity is sufficient to operate the standby emergency power sources for longer than the time to replenish the onsite supply from outside sources.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one train of standby emergency power sources. The Train A day tanks are normally split and the Train B day tanks are normally split, but can be cross-connected allowing either tank to supply either diesel generator in the same Train.

For proper operation of the standby emergency power sources, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

Each standby emergency power source has an air start system capable of storing sufficient air to roll the associated diesel generator up to starting speed fast enough to complete its starting cycle and be up to final speed and voltage within 10 seconds from receipt of a start signal.

The air start system for each standby emergency power source consists of two separate and redundant starting air banks. Each of the two starting air banks has its own set of three starting air receivers, set of two starting motors, and associated valves and instrumentation.

3.8.3-4

Stored diesel fuel oil is required to have sufficient capacity to support standby emergency power source operation until fuel oil can be delivered from off-site or offsite power can be restored. Onsite storage of fuel oil, in conjunction with an ability to obtain additional fuel oil if required, supports the availability of standby emergency power sources required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power.

Fuel oil is also required to meet specific standards for quality.

Standby emergency power source day tank requirements, as well as fuel oil transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources–Operating," and LCO 3.8.2, "AC Sources–Shutdown."

The starting air system is required to have a minimum capacity such that the standby emergency power source is capable of being started and ready to accept load in 10 seconds from receipt of a start signal.

3.8.3-5

D.1

With one or more standby emergency power sources' starting air system not within limits, the associated standby emergency power source may be incapable of performing its intended function and must be immediately declared inoperable.

3.8.3-6

In this Condition, the minimum required fuel supply for a standby emergency power source is not available. All standby emergency power sources that are associated with any fuel oil storage tank (T-175A or T-175B) that does not meet the 11,000 gallon requirement must be declared inoperable immediately and the applicable Conditions for the associated standby emergency power sources that are declared inoperable must be entered.

1

B 3.8 ELECTRICAL POWER SYSTEMS

1

B 3.8.3 Diesel Fuel Oil, ~~Lube Oil,~~ and Starting Air

BASES

BACKGROUND

Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section [9.5.4.2] (Ref. 1). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

1

Replace with Insert 3.8.3-3.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.

For proper operation of the standby DGs, it is ne cessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. [The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation.] This supply is sufficient to allow the operator to replenish lube oil from outside sources.

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver(s).

BASES

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 4), ~~and in the FSAR, Chapter [15] (Ref. 5),~~ assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, ~~lube oil,~~ and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources–Operating," and LCO 3.8.2, "AC Sources–Shut down."

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, ~~lube oil,~~ and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil ~~lube oil,~~

1

BASES

APPLICABILITY (continued)

and starting air are required to be within limits when the associated DG is required to be OPERABLE.

standby emergency power source

2

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

standby emergency power source

2

3

~~A.1~~

In this Condition, the 7 day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

1

~~B.1~~

With lube oil inventory < 500 gal, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete

BASES

ACTIONS (continued)

~~restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.5. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

With the new fuel oil properties defined in the Bases for SR 3.8.3.4 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

1

BASES

ACTIONS (continued)

3 → Replace with Insert 3.8.3-5.

E.1

With starting air receiver pressure < [225] psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as the receiver pressure is > [125] psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

1 → D → F 1

2 → standby emergency power source's

3 → of Condition A or B

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, ~~lube oil, or starting air subsystem~~ not within limits for reasons other than addressed by Conditions A through D, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

1 → 3

1 → or B

3 →

2 → standby emergency power source

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

2 → operation of each standby emergency power source.

10 → the required fuel oil capacity is sufficient

This SR provides verification that there is a n adequate inventory of fuel oil in the storage tanks to support ~~each~~ DG's operation ~~for 7 days at full load. The 7 day period is~~ sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

2 →

10 →

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

1 → ~~SR 3.8.3.2~~

~~This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~operation for each DG. The [500] gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level.~~

~~A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.~~

SR 3.8.3 [3] [2] [1]

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. ~~The tests, limits, and applicable ASTM Standards are as follows:~~

[8] in accordance with the Diesel Fuel Oil Testing Program

~~a. Sample the new fuel oil in accorda nce with ASTM D4057-[ ] (Ref. 6);~~

[8] ~~b. Verify in accordance with the tests specified in ASTM D975-[ ] (Ref. 6) that the sample has an absolute specific gravity at 60/60 °F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60 °F of ≥ 27° and ≤ 39°, a kinematic viscosity at 40 °C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F; and~~

~~c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-[ ] (Ref. 6).~~

~~Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~to meet the LCO concern since the fuel oil is not added to the storage tanks.~~

~~Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-[ ] (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-[ ] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-[ ] (Ref. 6) or ASTM D2622-[ ] (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.~~

8

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

~~Particulate concentrations should be determined in accordance with ASTM D2276-[ ], Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. [For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks, each tank must be considered and tested separately.]~~

8

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

11

the capability to start and ready the standby emergency power source to accept load in 10 seconds from receipt of a start signal.

SR 3.8.3 4 ← 3 ← 1

2 → standby emergency power source

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of [five] engine start cycles without recharging.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

4 → ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ The pressure specified in this SR is intended to reflect the lowest value at which the ~~[five]~~ starts can be accomplished.

11 → 10 second start

11

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.5 ← 4 ← 1

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

4 → 92

2 → standby emergency power source

~~SR 3.8.3.6~~

Approved TSTF-2

~~Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. This SR also requires the performance of the ASME Code, Section XI (Ref. 8), examinations of the tanks. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

Approved TSTF-2

~~hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance.~~

REFERENCES

1. FSAR, Section [9.5.4.2] ← 8.8 ← 4
2. Regulatory Guide 1.137.
3. ANSI N195-1976, Appendix B.
4. FSAR, Chapter [6] ← 14 ← 4

6 →

~~5. FSAR, Chapter [15].~~

8 →

~~6. ASTM Standards: D4057 [ ]; D975 [ ]; D4176 [ ]; D1552 [ ]; D2622 [ ]; D2276, Method A.~~

~~7. ASTM Standards, D975, Table 1.~~

Approved TSTF-2 →

~~8. ASME, Boiler and Pressur Vessel Code, Section XI.~~

3.8.3 Inserts

3.8.3-3

There are two underground fuel oil storage tanks on site (T -175A/B). Each tank has a capacity of approximately 35,000 gallons. Sufficient fuel is normally maintained between the two tanks to allow one diesel to operate continuously at the required load for 7 days (Ref. 1). At minimum required level, which is 11,000 gallons in each emergency diesel fuel oil storage tank, one tank could provide enough fuel for an emergency diesel generator to operate for over 48 hours.

The onsite fuel oil capacity is sufficient to operate the standby emergency power sources for longer than the time to replenish the onsite supply from outside sources.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one train of standby emergency power sources. The Train A day tanks are normally split and the Train B day tanks are normally split, but can be cross-connected allowing either tank to supply either diesel generator in the same Train.

For proper operation of the standby emergency power sources, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

Each standby emergency power source has an air start system capable of storing sufficient air to roll the associated diesel generator up to starting speed fast enough to complete its starting cycle and be up to final speed and voltage within 10 seconds from receipt of a start signal.

The air start system for each standby emergency power source consists of two separate and redundant starting air banks. Each of the two starting air banks has its own set of three starting air receivers, set of two starting motors, and associated valves and instrumentation.

3.8.3-4

Stored diesel fuel oil is required to have sufficient capacity to support standby emergency power source operation until fuel oil can be delivered from off-site or offsite power can be restored. Onsite storage of fuel oil, in conjunction with an ability to obtain additional fuel oil if required, supports the availability of standby emergency power sources required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power.

Fuel oil is also required to meet specific standards for quality.

Standby emergency power source day tank requirements, as well as fuel oil transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources–Operating," and LCO 3.8.2, "AC Sources–Shutdown."

The starting air system is required to have a minimum capacity such that the standby emergency power source is capable of being started and ready to accept load in 10 seconds from receipt of a start signal.

3.8.3-5

C.1

With one or more standby emergency power source's starting air system not within limits, the associated standby emergency power source may be incapable of performing its intended function and must be immediately declared inoperable.

No Significant Hazards Considerations - NUREG-1431 Section 3.08.03

13-Nov-99

NSHC Number	NSHC Text
A	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change involves reformatting and rewording of the current Technical Specifications. The reformatting and rewording process involves no technical changes to existing requirements. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed), or changes in parameters governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not significantly reduce the margin of safety because it has no impact on any safety analysis assumptions. This change is administrative. As such, there is no technical change to the requirements and, therefore, there is no reduction in the margin of safety.

No Significant Hazards Considerations - NUREG-1431 Section 3.08.03

13-Nov-99

NSHC Number	NSHC Text
L.01	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? This change does not result in any equipment or hardware changes. The proposed change extends the diesel fuel oil inventory surveillance frequency from daily to 31 days. The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, because low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period. The CTS was originally based on maintaining 11,000 gallons in a single 14,000 gallon tank. The fuel oil system was modified in the 1990's to utilize two 35,000 gallon tanks. The capacity and normal inventory in these tanks provides substantial excess capacity that was not previously available. The frequency of surveillance testing is not an initiator of any analyzed event. The proposed frequency is adequate for providing assurance that tank concentration will be maintained thereby, maintaining the equipment in an operable state. Based on the equipment being maintained in an operable state, the consequence for previously evaluated accidents remains unchanged. Accordingly, the probability and consequences of previously evaluated accident is not significantly changed. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, because low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period. The CTS was originally based on maintaining 11,000 gallons in a single 14,000 gallon tank. The fuel oil system was modified in the 1990's to utilize two 35,000 gallon tanks. The capacity and normal inventory in these tanks provides substantial excess capacity that was not previously available. The frequency of surveillance testing is not an initiator of any analyzed event. Based on the above, it has been concluded that increasing the surveillance interval will not result in any significant increase in undetected surveillance failures. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The increased surveillance interval is acceptablelow level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period. The likelihood for an uncontrolled or undetected volume change is insignificant. Based on the above, this change does not represent a significant reduction in a margin of safety.

No Significant Hazards Considerations - NUREG-1431 Section 3.08.03

13-Nov-99

NSHC Number	NSHC Text
LA	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change relocates requirements from the Technical Specifications to the Bases, FSAR, or other plant controlled documents. The Bases and FSAR will be maintained using the provisions of 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specifications Bases are subject to the change process in the Administrative Controls Chapter of the ITS. Plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. Changes to the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of the Bases Control Program in Chapter 5.0 of the ITS, 10 CFR 50.59, or plant administrative processes. Therefore, no increase in the probability or consequences of an accident previously evaluated will be allowed. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any different requirements and adequate control of the information will be maintained. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not reduce a margin of safety because it has no impact on any safety analysis assumptions. In addition, the requirements to be moved from the Technical Specifications to the Bases, FSAR, or other plant controlled documents are as they currently exist. Future changes to the requirements in the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of 10 CFR 50.59, the Bases Control Program in Chapter 5.0 of the ITS, or the applicable plant process, and no reduction in a margin of safety will be allowed.

No Significant Hazards Considerations - NUREG-1431 Section 3.08.03

13-Nov-99

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the mitigation of an accident or transient event. These more restrictive requirements continue to ensure process variables, structures, systems and components are maintained consistent with the safety analyses. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LCO 3.8.3 Stored diesel fuel oil shall be within limits and starting air subsystem shall be OPERABLE for each required standby emergency power source.

APPLICABILITY: When associated standby emergency power source is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each standby emergency power source.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more standby emergency power sources with < 11,000 gal in storage tank.	A.1 Declare associated standby emergency power source(s) inoperable.	Immediately
B. One or more standby emergency power sources with stored fuel oil total particulates not within limit.	B.1 Restore fuel oil total particulates within limit.	7 days
C. One or more standby emergency power sources with new fuel oil properties not within limits.	C.1 Restore stored fuel oil properties to within limits.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more standby emergency power sources with inoperable starting air system(s).	D.1 Declare associated standby emergency power source(s) inoperable.	Immediately
E. Required Action and associated Completion Time of Condition B or C not met. OR One or more standby emergency power sources' diesel fuel oil not within limits for reasons other than Condition B or C.	E.1 Declare associated standby emergency power source(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 11,000 gal of fuel.	31 days
SR 3.8.3.2	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.3	Verify each standby emerg ency power source air start bottle bank pressure is ≥ 165 psig.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.4	Check for and remove accumulated water from each fuel oil storage tank.	92 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil and Starting Air

BASES

BACKGROUND

There are two underground fuel oil storage tanks on site (T-175A/B). Each tank has a capacity of approximately 35,000 gallons. Sufficient fuel is normally maintained between the two tanks to allow one diesel to operate continuously at the required load for 7 days (Ref. 1). At minimum required level, which is 11,000 gallons in each emergency diesel fuel oil storage tank, one tank could provide enough fuel for an emergency diesel generator to operate for over 48 hours.

The onsite fuel oil capacity is sufficie nt to operate the standby emergency power sources for longer than the time to replenish the onsite supply from outside sources.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one train of standby emergency power sources. The Train A day tanks are normally split and the Train B day tanks are normally split, but can be cross-connected allowing either tank to supply either diesel generator in the same Train.

For proper operation of the standby emergency power sources, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

Each standby emergency power source has an air start system capable of storing sufficient air to roll the associated diesel generator up to starting speed fast enough to complete its starting cycle and be up to final speed and voltage within 10 seconds from receipt of a start signal.

The air start system for each standby emergency power source consists of two separate and redundant starting air banks. Each of the two starting air banks has its own set of three starting air receivers, set of two starting motors, and associated valves and instrumentation.

BASES

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 4), assume Engineered Safety Feature (ESF) systems are OPERABLE. The standby emergency power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

LCO

Stored diesel fuel oil is required t o have sufficient capacity to support standby emergency power source operation until fuel oil can be delivered from off-site or offsite power can be restored. Onsite storage of fuel oil, in conjunction with an ability to obtain additional fuel oil if required, supports the availability of standby emergency power sources required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power.

Fuel oil is also required to meet specific standards for quality.

Standby emergency power source day tank requirements, as well as fuel oil transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources-Operating," and LCO 3.8.2, "AC Sources-Shutdown."

The starting air system is required to have a minimum capacity such that the standby emergency power source is capable of being started and ready to accept load in 10 seconds from receipt of a start signal. APPLICABILITY The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil and starting air are required to be within limits when the associated standby emergency power source is required to be OPERABLE.

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating t hat separate Condition entry is allowed for each standby emergency power source. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable standby emergency power source subsystem. Complying with the Required Actions for one inoperable standby emergency power source subsystem may allow for continued operation, and subsequent inoperable standby emergency power source subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1

In this Condition, the minimum required fuel supply for a standby emergency power source is not available. All standby emergency power sources that are associated with any fuel oil storage tank (T-175A or T-175B) that does not meet the 11,000 gallon requirement must be declared inoperable immediately and the applicable Conditions for the associated standby emergency power sources that are declared inoperable must be entered.

B.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.2. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend.

Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated standby emergency power source inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the standby emergency power source fuel oil.

C.1

With the new fuel oil properties defined in the Diesel Fuel Oil Testing Program for SR 3.8.3.2 not within the required limits, a period of 30 days is allowed for restoring the

BASES

ACTIONS (continued)

stored fuel oil properties. This period provides suff icient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a standby emergency power source start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the standby emergency power source would still be capable of performing its intended function.

D.1

With one or more standby emergency power sources' starting air system not within limits, the associated standby emergency power source may be incapable of performing its intended function and must be immediately declared inoperable.

E.1

With a Required Action and associated Completion Time of Condition B or C not met, or one or more standby emergency power source's fuel oil not within limits for reasons other than addressed by Conditions B or C, the associated standby emergency power source may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support operation of each standby emergency power source. The required fuel oil capacity is sufficient to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.2

The tests listed in the Diesel Fuel Oil Testing Program are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted in accordance with the Diesel Fuel Oil Testing Program.

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.3

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each standby emergency power source is available. The system design requirements provide the capability to start and ready the standby emergency power source to accept load in 10 seconds from receipt of a start signal. The pressure specified in this SR is intended to reflect the lowest value at which the 10 second start can be accomplished. The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.4

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the

BASES

SURVEILLANCE REQUIREMENTS (continued)

fuel storage tanks once every 92 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during standby emergency power source operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

REFERENCES

1. FSAR, Section 8.8.

2. Regulatory Guide 1.137.

3. ANSI N195-1976, Appendix B.

4. FSAR, Chapter 14.

Cross-Reference Report - NUREG-1431 Section 3.08.04

ITS to CTS

13-Nov-99

ITS	CTS	DOC
B 3.08.04	15.03.07 OBJ	A.03
	15.04.06 OBJ	A.03
	15.04.06.B.04.b	LA.01
	BASES	A.06
LCO 3.08.04	15.03.07	A.01
	15.03.07 APPL	A.02
	15.03.07.A.01	A.04
	15.03.07.A.01.f	A.05
	15.03.07.A.01.g	A.05
	15.04.06 APPL	A.02
LCO 3.08.04 COND NOTE	15.03.07.B.01.k	A.08
LCO 3.08.04 COND A	15.03.07.B.01.l	A.01
	15.03.07.B.01.L	A.01
LCO 3.08.04 COND A RA A.1	15.03.07.B.01.l	M.01
	15.03.07.B.01.L	A.01
LCO 3.08.04 COND B	15.03.07.B.01.L	A.01
LCO 3.08.04 COND B RA B.1	15.03.07.B.01.L	M.02
LCO 3.08.04 COND B RA B.2	15.03.07.B.01.L	M.02
SR 3.08.04.01	15.04.06.B.01	M.04
SR 3.08.04.02	NEW	M.03
SR 3.08.04.03	NEW	M.03
SR 3.08.04.04	NEW	M.03
SR 3.08.04.05	NEW	M.03
SR 3.08.04.06	NEW	M.03
SR 3.08.04.07	15.04.06.B.04.a	A.01
SR 3.08.04.07 NOTE	15.04.06.B.04.b	M.05
	15.04.06.B.04.c	M.05
SR 3.08.04.08	15.04.06.B.04.b	L.01
	15.04.06.B.04.c	L.01

Cross-Reference Report - NUREG-1431 Section 3.08.04

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.07	LCO 3.08.04	A.01
15.03.07 APPL	LCO 3.08.04	A.02
15.03.07 OBJ	B 3.08.04	A.03
15.03.07.A.01	LCO 3.08.04	A.04
15.03.07.A.01.f	LCO 3.08.04	A.05
15.03.07.A.01.g	LCO 3.08.04	A.05
15.03.07.B.01	DELETED	A.07
15.03.07.B.01.l	LCO 3.08.04 COND A	A.01
	LCO 3.08.04 COND A RA A.1	M.01
15.03.07.B.01.k	LCO 3.08.04 COND NOTE	A.08
15.03.07.B.01.L	LCO 3.08.04 COND A	A.01
	LCO 3.08.04 COND A RA A.1	A.01
	LCO 3.08.04 COND B	A.01
	LCO 3.08.04 COND B RA B.1	M.02
	LCO 3.08.04 COND B RA B.2	M.02
15.04.06 APPL	LCO 3.08.04	A.02
15.04.06 OBJ	B 3.08.04	A.03
15.04.06.B.01	SR 3.08.04.01	M.04
15.04.06.B.04.a	SR 3.08.04.07	A.01
15.04.06.B.04.b	B 3.08.04	LA.01
	SR 3.08.04.07 NOTE	M.05
	SR 3.08.04.08	L.01
15.04.06.B.04.c	SR 3.08.04.07 NOTE	M.05
	SR 3.08.04.08	L.01
BASES	B 3.08.04	A.06

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text
A.01	In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.03.07	LCO 3.08.04
15.03.07.B.01.I	LCO 3.08.04 COND A
15.03.07.B.01.L	LCO 3.08.04 COND A
	LCO 3.08.04 COND A RA A.1
	LCO 3.08.04 COND B
15.04.06.B.04.a	SR 3.08.04.07

A.02 The CTS provides an introductory statement (Applicability) which simply states which systems/components are addressed within a given section. This same information, while worded differently, is contained within the title of each ITS LCO. Accordingly, this change is a change in format with no change in technical requirement.

CTS:	ITS:
15.03.07 APPL	LCO 3.08.04
15.04.06 APPL	LCO 3.08.04

A.03 The CTS provides an introductory statement (Objective) at the beginning of this Section of the Technical Specifications which provide a brief summary of the purpose for this Section. This information is contained in the Bases Section of the ITS. This information does not establish any regulatory requirements for the systems and components addressed within this Section. Accordingly, deletion of this information does not alter any requirement set forth in the Technical Specifications. This change is administrative and consistent with the format and presentation for the ITS as provided in NUREG 1431.

CTS:	ITS:
15.03.07 OBJ	B 3.08.04
15.04.06 OBJ	B 3.08.04

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text
A.04	CTS 15.3.7.A.1 requires the safety related batteries and their associated chargers to be operable/carrying the bus loads for a reactor to be made critical (ITS Modes 1 and 2 with Keff greater than or equal to 1.0). CTS 15.3.7.B.1.i, k, and l provide Actions for inoperable chargers and batteries which would ultimately require the units to be placed into cold shutdown (ITS Mode 5) if the charger or battery is inoperable in excess of the allowable outage time, implying an Applicability of Modes 1, 2, 3, and 4. Proposed LCO 3.8.4 will require the safety related DC power sources (batteries and chargers) to be operable in Modes 1, 2, 3, and 4. This change is considered administrative as it is clarifying an ambiguous relationship between the LCO Applicability and Action Statement. **CTS:** 15.03.07.A.01 **ITS:** LCO 3.08.04

DOC Number	DOC Text
A.05	CTS 15.3.7.A.1.f and g require four of the five safety related batteries and four chargers operable, with the charger carrying the DC loads on each safety related distribution bus. These requirements establish the normal operational configuration for the DC system whenever a unit is operating (above 200 degrees as described in Discussion of Change A.04 of this LCO). Proposed ITS LCO 3.8.4 requires the D01, D02, D03, and D04 electrical power subsystems to be operable. The Point Beach DC power distribution systems consists of four safety related distribution systems, with five batteries and six chargers. One of the five batteries and two of the six chargers are connected to a swing buses which can be aligned to supply DC power to the safety related distribution systems. Stating that the D01, D02, D03, and D04 DC electrical power subsystems are required to be operable, will establish a requirement to maintain one battery and one charger operable for each safety related bus, making the proposed ITS equivalent to the CTS. The requirement for the battery charger to be carrying the DC loads on the distribution bus is a design statement. Proposed ITS SR 3.8.9.1 in combination with the SRs specified in this LCO, require the safety related DC buses to be energized from an operable battery and chargers. The function of the battery chargers is to supply their respective DC loads, while maintaining the batteries at full charge. All of the battery chargers are powered from the 480 VAC ESF system. Transient operations and loss of AC power situations may temporarily result in the charger not carrying the DC loads associated with its respective bus, however operability of the bus is not impaired. The DC distribution system (i.e. DC buses, chargers and batteries), are designed/sized for transient operations/loss of offsite power conditions. The battery chargers are interlocked such that a loss of offsite power combined with a safety injection signal will disconnect the battery chargers from their 480 VAC source. This limits the loading on the standby emergency power supply during the period immediately following a safety injection signal. During this period, the 125 VDC loads are supplied by their associated station battery until such time as power to the chargers is restored. Based on the above information, the proposed ITS is provides a more accurate representation of the safety related DC power sources design basis, consistent with the format contained in NUREG 1431. These changes are administrative. **CTS:** **ITS:** 15.03.07.A.01.f LCO 3.08.04 15.03.07.A.01.g LCO 3.08.04

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text
A.06	The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content of PBNP ITS, consistent with the Standard Technical Specifications for Westinghouse Plants, NUREG-1431. The revised Bases are as shown in the PBNP ITS Bases. **CTS:** BASES **ITS:** B 3.08.04
A.07	The CTS states that during power operation of one or both of the reactors, the requirements of Specification 15.3.7.A.1 (electrical power distribution) may be modified to allow certain defined inoperabilies to exist for a limited period of time. This Specification establishes the structure for the remedial actions in the CTS. The ITS contains specific usage rules for consistent application of the Conditions and Required Actions associated with varying inoperabilities consistent with the format and presentation of NUREG 1431. Accordingly, deletion of a specific Specification directing usage of Actions is unnecessary, as it duplicates the ITS usage rules. This change is administrative. **CTS:** 15.03.07.B.01 **ITS:** DELETED
A.08	CTS 15.3.7.B.1.k requires the applicable LCO Actions to be entered for equipment affected by a deenergized safeguards bus. This Action is consistent with the definition of operability which requires normal and emergency power for a system, subsystem, train, component, or device to be operable. In addition to the proposed ITS Actions to restore inoperable DC power subsystems within 2 hours, the proposed ITS will also require the applicable Conditions and Required Actions of LCO 3.8.9 to be entered if the DC bus is deenergized. LCO 3.8.9 will in turn require that the affected equipment be declared inoperable, resulting in entry into the applicable Required Actions for the inoperable equipment. This allows Condition A of the proposed ITS to provide requirements for the inoperability of a battery or charger, without regard to whether a bus is de-energized, allowing LCO 3.8.9 and the supported systems LCO Actions to provide the appropriate restrictions for a de-energized bus. This proposed Required Action is consistent with the CTS, making this change administrative. **CTS:** 15.03.07.B.01.k **ITS:** LCO 3.08.04 COND NOTE

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text

L.01 The CTS requires battery performance tests to be performed once every 60 months, increasing the frequency of performance to annually, whenever a battery has reached 85% of its expected service life, or if the battery experiences degradation as defined by; battery capacity dropping more than 10% since the last performance, or battery capacity being below 90% of the manufacturers rating.

Battery degradation limits have been moved to licensee control as addressed in Discussion of Change LA.01 of this LCO.

The proposed ITS (SR 3.8.4.8) requires performance of a battery performance discharge test similar to the CTS, with the following relaxations:

A modified battery performance test may be performed in lieu of a performance discharge test. This option is acceptable based on the testing conditions for a modified performance test being more restrictive than performance discharge test.

The frequency for performance discharge (service) test has been relaxed from 12 months to 24 months when a battery has reached 85% of its expected service life providing that the battery is performing to greater than or equal to 100% of the manufacturers rating. This relaxation is considered acceptable based on the recommendations contained in IEEE 450 for batteries that are not exhibiting significant levels of degradation.

CTS:	ITS:
15.04.06.B.04.b	SR 3.08.04.08
15.04.06.B.04.c	SR 3.08.04.08

LA.01 The CTS contains specific limits which define what constitutes battery degradation. These battery degradation limits are used to establish the required frequency for performing battery performance discharge tests. The definition of battery degradation is not necessary to be in the ITS to provide adequate protection of public health and safety. The ITS will continue to retain a requirement to maintain the batteries in an operable state with an increased in testing when battery degradation occurs. The definition of battery degradation exists in the Bases of NUREG 1431 SR 3.8.4.8. These limits are based upon and consistent with those contained in IEEE 450. Changes to these details will be controlled in accordance with the provisions of the Bases Control Program described in Chapter 5 of the Improved Technical Specifications and the 50.59 process as applicable.

CTS:	ITS:
15.04.06.B.04.b	B 3.08.04

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text	
M.01	The CTS allows 24 hours to restore an inoperable battery to operable status before requiring the unit(s) to ultimately be placed into cold shutdown. The proposed ITS will require an inoperable battery to be restored to operable status within 2 hours, before requiring the unit(s) to be placed into Mode 3 within 6 hours and Mode 5 within 36 hours. The reduction in restoration time frame from 24 hours to 2 hours is being made consistent with NUREG 1431. This time frame is adequate to either restore the affected battery to operable status or to place the standby swing battery in service.	
	CTS:	**ITS:**
	15.03.07.B.01.I	LCO 3.08.04 COND A RA A.1
M.02	If an inoperable battery charger is not restored to operable status within 2 hours the CTS will require both units to be shutdown with one unit achieving hot shutdown (ITS Mode 3) within 6 hours and the second unit within 9 hours. Both units are then required to be placed in cold shutdown (ITS Mode 5) within the following 36 hours. The proposed ITS will similarly require the inoperable battery charger to be restored to operable status within 2 hours, or both units must be placed into Mode 3 within 6 hours and Mode 5 within 36 hours. This change will require both units to be placed in Mode 3 and Mode 5 within the same time limits, in addition to requiring Mode 5 to be reached in a shorter time period. These changes are more restrictive than the existing requirements, and are being made consistent with the shutdown time frames contained in the ITS.	
	CTS:	**ITS:**
	15.03.07.B.01.L	LCO 3.08.04 COND B RA B.1 LCO 3.08.04 COND B RA B.2

Description of Changes - NUREG-1431 Section 3.08.04

13-Nov-99

DOC Number	DOC Text

M.03 Five new surveillance have been proposed for incorporation into the Point Beach ITS consistent with the recommendations of NUREG 1431.

SR 3.8.4.2 will require verification of battery connector state through observation of terminal condition or resistance on a 92 day frequency; SR 3.8.4.3 requires a visual verification of battery and battery rack integrity on a 12 month frequency; SR 3.8.4.4 requires the removal of any visible corrosion and coating of the battery terminals with an anti-corrosive on a 12 month frequency; SR 3.8.4.5 verifies battery terminal resistance is within acceptable limits every 12 months; and SR 3.8.4.6 is a battery charger capability check which is performed once every 18 months. .

Each of these surveillance is intended to provide reasonable assurance of continued battery and battery charger operability. These surveillance are being adopted consistent with the recommendations provided in NUREG 1431.

CTS:	ITS:
NEW	SR 3.08.04.02
	SR 3.08.04.03
	SR 3.08.04.04
	SR 3.08.04.05
	SR 3.08.04.06

M.04 The CTS requires battery voltage to be measured and recorded once every month. The proposed ITS will require battery voltage to be verified once every 7 days. Measuring and recording are integral parts of performing this surveillance, and do not have to be stated. The proposed ITS will change the frequency of performing this surveillance from monthly to weekly consistent with the recommendations contained in IEEE 450, as reflected in NUREG 1431.

CTS:	ITS:
15.04.06.B.01	SR 3.08.04.01

DOC Number	DOC Text
M.05	CTS 15.4.6.B.4 allows a battery performance discharge test to be performed in lieu of battery service test. The proposed ITS will only allow a "modified " performance test to be used in lieu of a service test, and will limit this substitution to once every 60 months. Requiring a "modified performance test" in lieu of a "performance test" for a service test is acceptable based on the testing conditions for a modified performance testing being more restrictive that those specified for a performance test. A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load. This will confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. A modified performance discharge test is a simulated duty cycle which consists of only two rates; the one minute rate published for the battery or the largest current load of the duty cycle (service test), followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by the one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising test results for the remainder of the of the discharge test. Limiting substitution of a modified performance test to once per 60 months assures battery testing is performed to the assumed duty cycle, while limiting the number of deep discharges on the battery. **CTS:** — **ITS:** 15.04.06.B.04.b — SR 3.08.04.07 NOTE 15.04.06.B.04.c — SR 3.08.04.07 NOTE

A.1

15.3.7 AUXILIARY ELECTRICAL SYSTEMS

LCO 3.8.4 ← A.2

Applicability

Applies to the availability of off-site and on-site electrical power for plant power operation and for the operation of plant auxiliaries.

A.3

Objective

To define those conditions of electrical power ~~availability~~ necessary (1) to provide for safe reactor operation, ~~and~~ (2) to provide for the continuing availability of engineered safeguards.

Specification

MODES 1, 2, 3, and 4 ← A.4

A.1 Under normal conditions neither one nor both reactors shall be made critical unless the following conditions are met:

a. At least two 345 KV transmission lines are in service.

b. The 345/13.8 KV and the 13.8/4.16 KV station auxiliary transformers associated with the reactor(s) to be taken critical are in service; or one 345/13.8 KV station auxiliary transformer and the associated 13.8/4.16 KV station auxiliary transformer(s) are in service with the gas turbine operating. < See LCO 3.8.1 >

c. 4160 Volt unit supply buses A03 and A04 for the unit to be taken critical are energized from their normal supply.

d. Both units' B03/B04 bus tie-breakers are open with control power remove < See LCO 3.8.9 >

e. A fuel supply of 11,000 gallons is available in each tank which is being relied upon to supply any operable emergency diesel generator(s). < See LCO 3.8.3

f. Four of the five safety-related station batteries and all four of the main DC distribution systems are operable. < See LCO 3.8.9 >

g. Four battery chargers are operable with one charger carrying the DC loads on each main DC distribution bus: D01, D02, D03 and D04.

h. 120 VAC Vital Instrument Buses Y01, Y02, Y03, Y04, Y101, Y102, Y103, and Y104 for the unit(s) to be taken critical are energized from a safety-related inverter. < See LCOs 3.8.7 and 3.8.9 >

i. For one or both units to be made critical, the normal power supply and a standby emergency power supply to all the 4160/480 Volt safeguards buses shall be operable and the buses are energized from their normal supply. < See LCOs 3.8.1 and 3.8.9 >

3.8.4 DC Sources-Operating

LCO 3.8.4 The D-01, D-02, D-03, and D-04 DC electrical power subsystems shall be OPERABLE.

← A.5

A.1

A.7

B.1 During power operation of one or both reactors, the ~~requirements of 15.3.7.A.1~~ may be ~~modified to allow the~~ following arrangements of systems and components:

a. If the 345 KV lines are reduced to only one, any operating reactor(s) must be promptly reduced to, and limited to, 50% power. If all 345 KV lines are lost, any operating reactor(s) will be reduced to supplying its auxiliary load, until one or more 345 KV transmission lines are again available.

b. If both 345/13.8 KV auxiliary transformers are out of service and only the gas turbine is operating, only one reactor will remain operating and it will be limited to 50% power. The second reactor will be placed in the hot shutdown condition.

c. If the 13.8/4.16 KV auxiliary transformers are reduced to only one, the reactor associated with the out of service transformer must be placed in the hot shutdown condition. < See LCO 3.8.1 >

d. With a unit in cold or refueling shutdown or defueled, B03 and B04, for that shutdown unit, may be tied together through their common tie breaker for up to 8 hours provided the required redundant decay heat removal in the shutdown unit and the required redundant shared engineered safety features for the other unit are operable. If the tie breaker cannot be opened or the conditions of 15.3.7.B.1.e met within 8 hours, the operating unit shall be placed in the hot shut-down condition within 6 hours and in cold shutdown within the following 30 hours.

e. With a unit defueled, B03 and B04, for that shutdown unit, may be tied together through their common tie-breaker in excess of 8 hours provided:

1) An evaluation is performed to show that the loads that remain or can be energized by the buses will not cause a potential overload of the associated diesel generator. The applicable Limiting Conditions for Operation of the equipment removed from service shall be entered for the operating unit. < See LCOs 3.8.9 and 3.8.10 >

2) A single train of spent fuel cooling is adequate to cool the spent fuel pool.

3) The required redundant shared engineered safety features for the other unit are operable. < See LCOs 3.8.9 >

f. The normal power supply or standby emergency power supply to Unit 1 A05/B03 or Unit 2 A06/B04 may be out of service for a period not exceeding 7 days provided the required redundant engineered safety features are operable and the required redundant standby emergency power supplies are started within 24 hours before or after entry into this LCO and every 72 hours thereafter. If the normal power supply is out of service, an operable emergency diesel generator is supplying the affected 4160/480 Volt buses. After 7 days, both units will be placed in hot shutdown within the following 6 hours and cold shutdown within 36 hours. < See LCO 3.8.1 >

g. The normal power supply or standby emergency power supply to Unit 1 A06/B04 or Unit 2 A05/B03 or both may be out of service for a period not exceeding 7 days provided the required redundant engineered safety features are operable and the required redundant standby emergency power supplies are started within 24 hours before or after entry into this LCO and every 72 hours thereafter. If the normal power supply is out of service, an operable emergency diesel generator is supplying the affected 4160/480 Volt buses. After 7 days, both units will be placed in hot shutdown within the following 6 hours and cold shutdown within 36 hours.

h. The normal power supply or standby emergency power supply to Unit 1 A05/B03 and Unit 2 A05/B03, or Unit 1 A06/B04 and Unit 2 A06/B04 may be out of service for a period not exceeding 7 days provided the required redundant engineered safety features are operable and the required redundant standby emergency power supplies are started within 24 hours before or after entry into this LCO and every 72 hours thereafter. If the normal power supply is out of service, an operable emergency diesel

generator is supplying the affected 4160/480 Volt buses. After 7 days, both units will be placed in hot shutdown within the following 6 hours and cold shutdown within 36 hours. < See LCO 3.8.1 >

i. One of the four connected safety-related station batteries may be inoperable for a period not exceeding 24 hours provided four battery chargers remain operable with one charger carrying the DC loads of each main DC distribution bus.

j. If an operating safety-related inverter is rendered inoperable and the associated loads transfer to a non-safety-related power source, the loads shall be transferred back to an operable safety-related inverter within 8 hours or be in hot shutdown within an additional 6 hours and cold shutdown within 44 hours of inverter inoperability. < See LCO 3.8.7 >

k. If any safeguards bus is deenergized, the applicable LCOs will be entered for the affected equipment.

l. One of the four connected battery chargers may be inoperable for a period not to exceed 2 hours. If an operable battery charger is not connected to the affected DC distribution bus within 2 hours, the operating unit(s) shall be sequentially placed in hot shutdown within the following 6 hours and 9 hours respectively, and placed in cold shutdown within the following 36 hours.

Basis < See LCO 3.8.1 >

This two unit plant has four 345 KV transmission line interconnections. A 20 MW gas turbine generator, two original and two additional diesel generators are installed at the plant. All of these energy sources will be utilized to provide depth and reliability of service to the Engineered Safeguards equipment through redundant station auxiliary power supply systems.

The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize the plant safety. The 480-volt equipment is arranged on 4 buses per unit. The 4160-volt equipment is supplied from 6 buses per unit.

Two separate outside sources can serve either unit's low voltage station auxiliary transformer. One is a direct feed from the unit's high voltage station auxiliary transformer and the second is from the other unit's high voltage station auxiliary transformer or the gas turbine via the 13,800 volt

Actions Note
See Insert 3.8.4-1

A.8

Cond A and B
See Insert 3.8.4-1

M.01/M.02

system tie bus H01. The normal power supplies for the A05 and A06 buses are the A03 and A04 buses, respectively.

< See LCO 3.8.1 >

Separation is maintained in the 4160-volt system to allow the plant auxiliary equipment to be arranged electrically so that redundant items receive their power from the two different buses. For example, the safety injection pumps are supplied from the 4160 volt buses 1-A05 and 1-A06 for Unit No. 1 and 2-A05 and 2-A06 for Unit No. 2; the six service water pumps are arranged on 480-volt buses as follows: two on bus 1-B03, one on bus 1-B04, one on bus 2-B03 and two on bus 2-B04; the four containment fans are divided between 480-volt buses 1-B03 and 1-B04 for Unit No. 1 and 2-B03 and 2-B04 for Unit No. 2 and so forth. Redundant valves are supplied from motor control centers 1-B32 and 1-B42 for Unit No. 1 and 2-B32 and 2-B42 for Unit No. 2.

The specifications for the 480 volt safeguards buses, B03 and B04, and the 4160 volt safeguards buses, A05 and A06, direct an independent lineup of power distribution, specifically stating that a normal lineup must be achieved (all safeguards buses associated with a unit are powered through their normal supply breaker with all safeguards bus tie-breakers open) prior to taking a unit critical and during subsequent power operation. Operability of the safeguards buses is based on maintaining at least one train of on-site emergency power operable during accident conditions coincident with an assumed loss of offsite power and a single failure in the other train of on-site emergency power. This includes a failure of a tie-breaker to trip, which under certain conditions could result in an overload and a loss of the associated diesel generator. The LCOs permit abnormal electrical distribution lineups for periods of time in order to facilitate such items as maintenance of normal supply breakers or transformers. In such cases, bus independence may be relaxed under the conditions specified in the LCO.

Extended use of safeguards bus tie-breakers is allowed under specified, controlled conditions. For example, when a unit is fully defueled, safeguards and safe shutdown systems and equipment dedicated to that unit are not required. However, spent fuel pool cooling must be maintained. By limiting the loads supplied by the cross-connected buses, the potential for loss of a

< See LCOs 3.8.9 and 3.8.10 >

diesel generator due to overloading caused by the failure of a tie-breaker to open is minimized. Operability of shared safeguards systems such as auxiliary feedwater and service water must be maintained as required by their applicable LCOs. < See LCOs 3.8.9 and 3.8.10 >

The bus tie-breaker specifications have provisions that the required redundant decay heat removal for the shutdown unit and the required redundant shared engineered safety features for the other unit are operable. The specification that applies only to the defueled condition does not have the provision for the required redundant decay heat removal for the shutdown unit. It has provision for verifying the adequacy of a single train of spent fuel pool cooling in lieu of the consideration of decay heat removal for a reactor in cold shutdown.

A.6

The Point Beach DC electrical system has been modified so that each of the four main DC distribution buses, which are shared between the two units, has its own power supplies consisting of a safety-related station battery (D05, D06, D105, D106) and a battery charger. In addition to these bus-specific power supplies, a swing safety-related battery (D305) is installed which is capable of being connected to any one of the four main DC distribution buses. Swing battery chargers are also provided. Under normal circumstances, one battery and one battery charger are connected in each main DC distribution bus. The battery charger normally shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-AC power incident. However, one of the four connected battery chargers may be inoperable for up to two hours to allow the transfer to a standby battery charger or return the inoperable battery charger to service. The 2-hour outage time is based on Regulatory Guide 1.93 and reflects a reasonable time to assess plant status and either connect an operable battery charger to the affected bus or prepare to effect an orderly and safe shutdown of the operating unit(s). Under unusual circumstances, two of the five safety-related batteries may be out of service for a limited period of time provided one of the two out-of-service batteries is returned to service within the time periods specified in Specification 15.3.7.B.1.i. Explicit to Specification 15.3.7.B.1.i is the requirement that the four connected battery chargers remain operable. Implicit to the operability of a battery charger is the quality of its output power. Power quality can only be assured when each charger is connected to a battery that adequately filters the output of the charger. A battery charger is inoperable if its output is not connected to a battery. The connected battery need not meet Technical Specification operability requirements. These limiting conditions

A.1

15.4.6EMERGENCY POWER SYSTEM PERIODIC TESTS

Applicability

LCO 3.8.4 ← A.2

Applies to periodic testing and surveillance requirements of the emergency power system.

A.3

Objective

To verify that the emergency power ~~system~~ will respond promptly and properly when ~~required~~.

Specification

< See LCO 3.8.1 >

The following tests and surveillance shall be performed as stated:

A. Diesel Generators

1. Manually-initiated start of the diesel generator, followed by manual synchronization with other power sources and assumption of load by the diesel generator shall not exceed 2850KW. This test will be conducted monthly with a minimum running time of 30 minutes on each diesel generator. Normal plant operation will not be affected.

2. Automatic start of each diesel generator, load shedding, and restoration to operation of particular vital equipment, initiated by an actual interruption of normal AC station service power supplies to associated engineered safety systems busses together with a simulated safety injection signal. In addition, after the diesel generator has carried its load for a minimum of 5 minutes, automatic load shedding and restoration of vital loads are tested again by manually tripping the diesel generator output breaker. This test will be conducted during reactor shutdown for major fuel reloading of each reactor to assure that the diesel generator will start and assume required load in accordance with the timing sequence listed in FSAR Section 8.2 after the initial starting signal.

See Insert 3.8.4-4
Add new SRs 3.8.4.2, 3.8.4.3, 3.8.4.4, 3.8.4.5, and 3.8.4.6.

M.3

3. The proper operation of Emergency Lighting, including the automatic transfer switch for DC lights, will be demonstrated during each reactor shutdown for a major fuel reloading. < See LCO 3.8.1 >
4. Each diesel generator shall be given an inspections following the manufacturer's recommendations for this class of stand-by service.
5. Operability of the diesel fuel oil system shall be verified monthly.
6. A diesel fuel oil testing program shall be maintained to test both new fuel oil upon receipt and fuel oil stored in the fuel oil storage tanks which supply the emergency diesel generators on a quarterly frequency in accordance with applicable ASTM standards.

< See LCO 3.8.3 >

The above tests will be considered satisfactory if all applicable equipment operates as designed. < See LCO 3.8.1 >

B. Safety-Related Station Batteries < See LCO 3.8.6 >

These surveillance specifications are applicable to all four safety-related station batteries: D05, D06, D105, and D106; and the safety-related station swing battery D305.

1. Every month the voltage of each cell (to the nearest 0.05 volt), the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured and recorded.
2. Every 3 months the specific gravity, the height of electrolyte, and the amount of water added, for each cell, and the temperature of every fifth cell, shall be measured and recorded.
3. At each time data is recorded, new data shall be compared with old to detect signs of abuse or deterioration.
4. Each Safety-Related Station Battery shall be demonstrated OPERABLE:
   a. At least once per 18 months (SERVICE TEST) by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle.
   b. At least once per 60 months (PERFORMANCE TEST) by verifying that the battery capacity is at least 80% of the manufacturer's rating. This performance discharge test may be performed in lieu of the battery service test.

SR 3.8.4.1 See Insert 3.8.4-4

M.04

SR 3.8.4.8 See Insert 3.8.4-3

L.01

SR 3.8.4.7 and Note See Insert 3.8.4-2

M.5

SR 3.8.4.8
See Insert
3.8.4-3

c.
d. Annual performance discharge tests of battery capa given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application.

L.01

LA.01

Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its previous performance test, or is below 90% of the manufacturer's rating. When performance tests are required, they may be performed in lieu of the battery service test.

M.5

Basis

The tests specified are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal AC station service power.

< See LCO 3.8.1 >

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply and starting circuits and controls are continuously monitored and any faults are alarm indicated. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. If a battery cell has deteriorated or if a connection is loose, the voltage under load will drop excessively indicating replacement or maintenance.

< See LCO 3.8.6 >

A Service Test, performed at least every 18 months, demonstrates adequate battery capacity to supply power to loads required during the most demanding duty cycle. *This design duty cycle occurs upon an actuation of safeguards loads in one unit coincident with a loss of off-site power.* The design duty cycle is defined further in FSAR, Section 8.2.

A.06

A.06

A Performance Test will also be conducted at least every 60 months Performance Test is a constant discharge rate capacity test which allows comparison with the manufacturer's rating of the battery. This test is the best indicator of the effects of aging on battery capacity. Provisions are made in these specifications to change the test periodicity to annual when the battery is degraded or when the battery reaches that point in its service life at which capacity degradation with time is accelerated. Operability is satisfactorily demonstrated by achieving a capacity of at least 80% of the manufacturer's rating. Since the Performance Test entirely bounds the battery loads applied during a Service Test, when a Performance Test is conducted, the Service Test for that battery's current test cycle may be omitted.

These surveillance specifications are applicable to all five of the safety-related station batteries: D05, D06, D105, D106 and the swing battery D305.

DC emergency lights are provided in certain safeguards equipment areas which must be attended to during a loss of all AC power. The emergency lighting test verifies that the automatic transfer switch operates properly and provides DC power to the DC emergency lights. < See LCO 3.8.1 >

Reference

FSAR, Section 8.2

A.06

Insert 3.8.4-1:

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

M.01

M.01

Insert 3.8.4-2:

SURVEILLANCE	FREQUENCY
SR 3.8.4.7 ----------NOTES---------- The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months. ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	18 months

M.05

Insert 3.8.4-3:

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

L.01

Insert 3.8.4-4:

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify correct battery terminal voltage is within limits on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at ba ttery terminals and connectors. OR Verify battery connection resistance is within limits.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	12 months
SR 3.8.4.4	Remove visible terminal corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	12 months
SR 3.8.4.5	Verify battery connection resistance is within limits.	12 months
SR 3.8.4.6	Verify each battery charger is capable of supplying rated current and voltage for ≥ 8 hours.	18 months

M.4

M.03

Justification For Deviations - NUREG-1431 Section 3.08.04

13-Nov-99

JFD Number	JFD Text
01	NUREG 1431, LCO 3.8.4, has been modified to reflect the Point Beach design. The Point Beach safety related 125 VDC system consists of four main distribution buses: D01, D02, D03, and D04, in addition to two swing distribution buses (D301 and D302). Each of the swing buses are capable of supplying one of the four safety related 125 VDC buses. Each of the four main distribution buses is powered by a battery charger (D07, D08, D107 and D108) and a station battery (D05, D06, D105, and D106). Two swing battery chargers and one swing battery are capable of being aligned to any one of the four safety related main distribution buses to take the place of the normal battery and charger. The swing battery chargers and battery allow the normally on-line battery chargers and batteries to be removed from service for maintenance and testing that cannot be performed with the battery or charger on-line. **ITS:** — **NUREG:** B 3.08.04 — B 3.08.04 LCO 3.08.04 — LCO 3.08.04
02	A Note has been added to the Actions Table of LCO 3.8.4 which requires entry into the Applicable Conditions and Required Actions of LCO 3.8.9 for any DC bus which is de-energized. The Conditions and Required Action contained in NUREG 1431 LCO 3.8.9 will in turn require that the features supported by any inoperable (deenergized) bus be declared inoperable immediately. Declaring the associated supported features inoperable will require entry into the Required Actions for the associated supported features, directing the appropriate Actions, based on the level of degradation incurred, because the Required Actions will be driven based upon plant conditions and the features which are affected. This deviation is consistent with the CTS definition of operability and the CTS Actions which require the applicable LCO Actions to be entered for equipment affected by deenergized safeguards buses. **ITS:** — **NUREG:** B 3.08.04 — B 3.08.04 LCO 3.08.04 COND NOTE — N/A

Justification For Deviations - NUREG-1431 Section 3.08.04

13-Nov-99

JFD Number	JFD Text
03	NUREG SR 3.8.4.1 requires battery terminal voltage to be verified greater than or equal to a specific value. The CTS requires periodic verification of battery voltage but does not contain a specific limit. Proposed SR 3.8.4.1 will require battery terminal voltage to be verified within limits. This change is necessary to reflect the differing operating voltages for the Point Beach DC buses. The number of individual cells used in the safety related battery banks differ. Float voltage for batteries D05 and D06 is greater than or equal to 128 V and batteries D105 and D106 are greater than or equal to 130.2 V. This deviation is consistent with the CTS.

ITS:	NUREG:
B 3.08.04	B 3.08.04
SR 3.08.04.01	SR 3.08.04.01

JFD Number	JFD Text
04	NUREG 1431 SR 3.8.4.2 and SR 3.8.4.5 specify connector resistance limits which must be met for a battery to be considered operable. The connection resistance limits are to be no more than 20% above the resistance as measured during installation, or not above the ceiling value established by the manufacturer. The current Technical Specification do not contain any tests or limitation for connector resistance, and based on the resistance limit being variable, this limit would be more appropriately controlled by the licensee.

ITS:	NUREG:
B 3.08.04	B 3.08.04
SR 3.08.04.02	SR 3.08.04.02
SR 3.08.04.05	SR 3.08.04.05

JFD Number	JFD Text
05	The brackets have been removed and the proper plant specific information has been provided.

ITS:	NUREG:
B 3.08.04	B 3.08.04
SR 3.08.04.03	SR 3.08.04.03
SR 3.08.04.04	SR 3.08.04.04
SR 3.08.04.05	SR 3.08.04.05
SR 3.08.04.06	SR 3.08.04.06
SR 3.08.04.07	SR 3.08.04.07
SR 3.08.04.08	SR 3.08.04.08

JFD Number	JFD Text
06	ITS SR 3.8.4.6, SR 3.8.4.7 and SR 3.8.4.8 have been revised by the deletion of the Note stating, "This surveillance shall not be performed in MODES 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy the SR." Based on the Point Beach DC distribution system design, as described in JFD 1 of this LCO, Notes restricting performance of specific battery and charger tests to Modes other than 1, 2, 3, and 4 have not been adopted. By aligning a swing charger and battery to a required bus, charger and battery testing can be performed with either or both units operating in Modes 1, 2, 3, and 4 without the potential for causing perturbations to the required portions of the distribution system. The second provision of Note 2 allows credit for unplanned events to satisfy this SR. This is not valid for Point Beach because additional monitoring equipment is needed to collect the required data. TSTF-8, which deletes a portion of the above Notes, is essentially incorporated by this deviation. **ITS:** / **NUREG:** B 3.08.04 / B 3.08.04 N/A / SR 3.08.04.06 NOTE SR 3.08.04.07 NOTE 2 SR 3.08.04.08 NOTE SR 3.08.04.07 NOTE / SR 3.08.04.07 NOTE 1
07	NUREG 1431 SR 3.8.4.6 requires each battery charger to be tested to ensure that it is capable of supplying a specified output for a specified period of time. These limits are based on the design capacity of the chargers. The Point Beach 125 VDC safety related battery chargers are not all of the same design and ratings. Therefore, since this test is based on charger design ratings, it is more appropriate for Point Beach to specify that the chargers be capable of supplying rated current and voltage for a minimum period of time. This presentation allows the licensee to establish the appropriate limits based on charger design, and is consistent with the CTS. **ITS:** / **NUREG:** B 3.08.04 / B 3.08.04 SR 3.08.04.06 / SR 3.08.04.06

Justification For Deviations - NUREG-1431 Section 3.08.04

13-Nov-99

JFD Number	JFD Text	
08	The Point Beach 125 VDC safety related batteries are lead-calcium batteries, and the CTS does not contain any requirements to verify that the battery terminal connectors are clean and tight. According to the reviewers Note contained in the Bases of SR 3.8.4.5, the requirement to verify that terminal connections are clean and tight applies only to nickel cadmium batteries as per IEEE Standard P1106, "IEEE Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel - Cadmium Batteries for Stationary Applications." As such, this requirement has not been adopted in the Point Beach ITS.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04
	N/A	SR 3.08.04.04
09	Reference to the General Design Criteria (GDC) of 10 CFR 50 Appendix A, Reg Guide 1.6, and IEEE 308 has been deleted from the Bases of the Technical Specifications, substituting reference to the appropriate section of the FSAR which specifies the Point Beach design criteria.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04
10	Reference in the Bases to numerous documents (FSAR, IEEE, Reg Guides) have been revised and renumbered as necessary to provide reference to the appropriate location for documentation applicable to Point Beach.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04
11	The Bases of NUREG 1431 LCO 3.8.4 contains two references to the FSAR for Design Basis Accidents. The Point Beach FSAR contains this same information in a single FSAR chapter; therefore, only a single reference is used in the proposed ITS.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04
12	The Bases of NUREG 1431 SR 3.8.4.2 has been revised to include a statement that the presence of visible corrosion does not necessarily represent a failure of the SR, provided battery connection resistance is within limits. This statement clarifies the requirements of the SR, in that the battery terminals and connectors are to be verified free of visible corrosion. If visible corrosion exists, the SR is met, if battery connection resistance is within limits.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04

Justification For Deviations - NUREG-1431 Section 3.08.04

13-Nov-99

JFD Number	JFD Text	
13	The Bases of NUREG 1431, SR 3.8.4.7, has been revised to exclude a statement that the battery service test should be performed during refueling operations, or at some other outage, with intervals between tests not to exceed 18 months. Point Beach design provides a spare battery that allows testing during conditions other than refueling outages. Therefore, this statement has not been retained in ITS.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04
14	LCO 3.8.4, Bases references to "DG" have been changed to "standby emergency power source," to be consistent with current Point Beach nomenclature.	
	ITS:	**NUREG:**
	B 3.08.04	B 3.08.04

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources–Operating

1

The D-01, D-02, D-03, and D-04 DC electrical power subsystems shall be OPERABLE.

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

2

NOTE
Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems–Operating," when any DC bus is de-energized.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3. AND	6 hours
	B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.4.1 Verify battery terminal voltage is ≥ [129] V on float charge.	7 days

(continued)

within limits ← 3

4

is within limits

SURVEILLANCE REQUIREMENTS (continued)

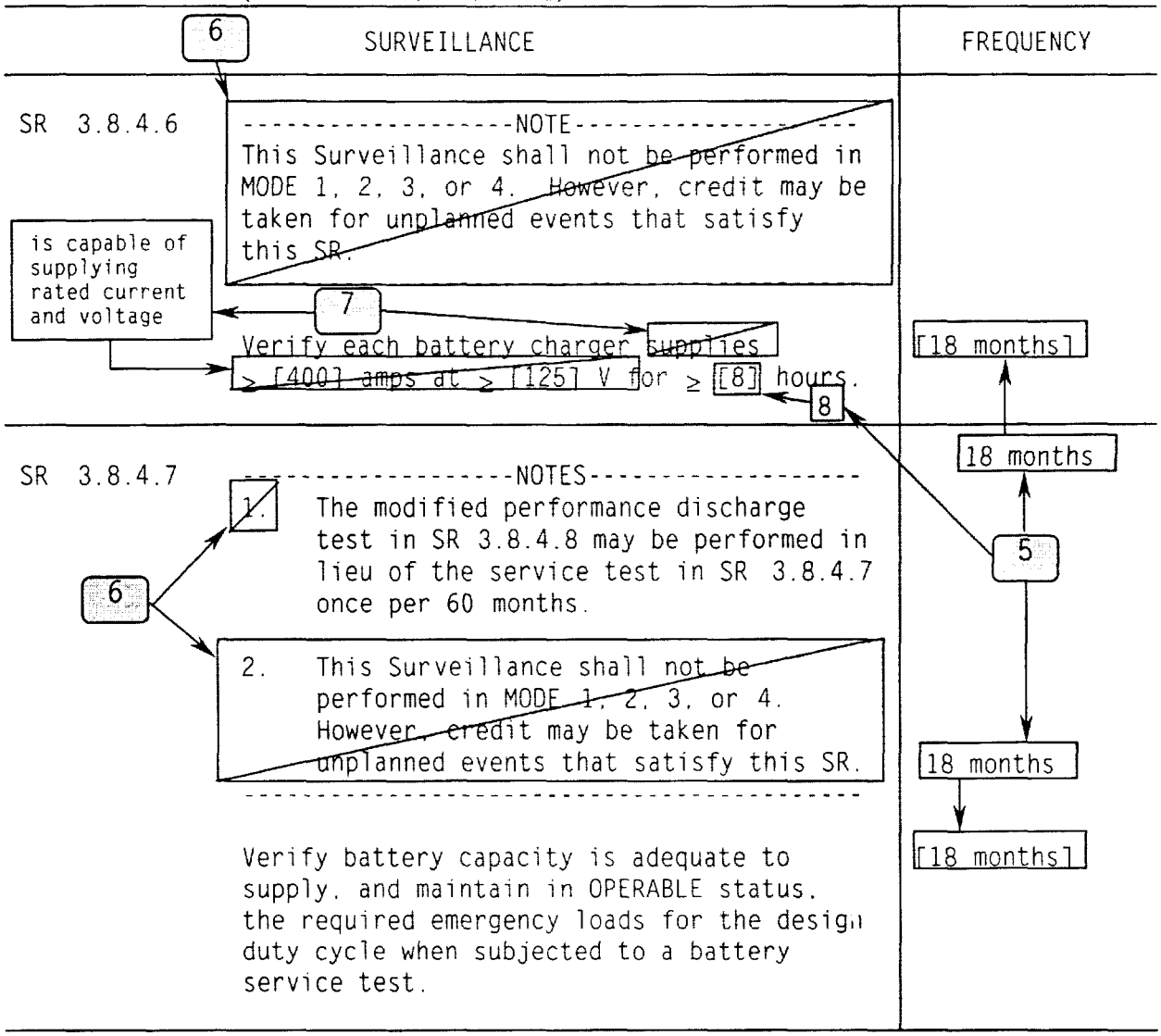
SURVEILLANCE		FREQUENCY
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance [is ≤ [1E-5 ohm] for inter-cell connections, ≤ [1E-5 ohm] for inter-rack connections, ≤ [1E-5 ohm] for inter-tier connections, and ≤ [1E-5 ohm] for terminal connecti ons].	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration. Approved TSTF 38 → that could degrade battery performance	[12] months 5
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material. and 8	[12] months
SR 3.8.4.5	Verify battery connection resistance [is ≤ [1E-5 ohm] for inter-cell connections, ≤ [1E-5 ohm] for inter-rack connections, ≤ [1E-5 ohm] for inter-tier connections, and ≤ [1E-5 ohm] for terminal connections].	[12] months 5

(continued)

is within limits

4

SURVEILLANCE REQUIREMENTS (continued)



(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.4.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----------	
	Verify battery capacity is ≥ [80]% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached [85]% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached [85]% of the expected life with capacity ≥ 100% of manufacturer's rating

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources–Operating

BASES

BACKGROUND

9

Replace with Insert B 3.8.4-1

The station DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital bus power (via inverters).

As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3).

1

Replace with Insert B 3.8.4-2

The [125/250] VDC electrical power system consists of two independent and redundant safety related Class 1E DC electrical power subsystems ([Train A and Train B]). Each subsystem consists of [two] 125 VDC batteries [(each battery [50]% capacity)], the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling.

[The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series. Additionally there is [one] spare battery charger per subsystem, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between subsystems are maintained.]

During normal operation, the [125/250] VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries.

The [Train A and Train B] DC electrical power subsystems provide the control power for its associated Class 1E AC power load group, [4.16] kV switchgear, and [480] V load centers. The DC electrical power subsystems also provide DC electrical power to the inverters, which in turn power the

BASES

BACKGROUND (continued)

1

Replace with Insert B 3.8.4-2

AC vital buses.

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System-Operating," and LCO 3.8.10, "Distribution Systems-Shutdown."

Each battery has adequate storage capacity to carry the required load continuously for at least 2 hours and to perform three complete cycles of intermittent loads discussed in the FSAR, Chapter [8] (Ref. 4).

Each 125 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems, such as batteries, battery chargers, or distribution panels.

The batteries for Train A and Train B DC electrical power subsystems are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. Battery size is based on 125% of required capacity and, after selection of an available commercial battery, results in a battery capacity in excess of 150% of required capacity. The voltage limit is 2.13 V per cell, which corresponds to a total minimum voltage output of 128 V per battery discussed in the FSAR, Chapter [8] (Ref. 4). The criteria for sizing large lead storage batteries are defined in IEEE-485 (Ref. 5).

Each Train A and Train B DC electrical power subsystem has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4).

BASES

5 → 14 ; 10 → 4 ; 11

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 6), and in the FSAR, Chapter [15] (Ref. 7), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation.

11

standby emergency power sources

14

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power; and

b. A worst case single failure.

The DC sources satisfy Criterion 3 of the NRC Policy Statement.

LCO

1

Replace with Insert B 3.8.4-3

The DC electrical power subsystems, each subsystem consisting of [two] batteries, battery charger [for each battery] and the corresponding control equipment and interconnecting cabling supplying power to the associated bus within the train are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any train DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

An OPERABLE DC electrical power subsystem requires all required batteries and respective chargers to be operating and connected to the associated DC bus(es).

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

BASES

LCO (continued)

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 integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources–Shutdown."

ACTIONS

Insert B 3.8.4-4 (2)

A.1

DC Subsystem (1)

Condition A represents one train with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected train. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system train.

(1) any further loss of DC power.

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery charger(s), or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystem has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure would, however, result in the complete loss of the remaining 125 VDC electrical power subsystems with attendant loss of ESF functions, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 8) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

(1) could an additional

10 → 5

BASES

ACTIONS (continued)

B.1 and B.2

If the inoperable DC electrical power subsystem 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. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 8).

10 → 5

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or a battery cell) in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 9).

10 → 6

SR 3.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each inter-cell, inter-rack, inter-tier, and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

12 → The presence of visible corrosion does not necessarily represent a failure of this SR provided battery connection resistance is within limits.

The limits established for this SR must be no more than 20% above the resistance as measured during installation or not above the ceiling value established by the manufacturer.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Approved TSTF 38

The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

[The 12 month Frequency for this SR is consistent with IEEE-450 (Ref. 9), which recommends detailed visual inspection of cell condition and rack integrity on a yearly basis]

5 6 10

SR 3.8.4.4 and SR 3.8.4.5

Visual inspection and resistance measur ements of inter-cell, inter-rack, inter-tier, and terminal connections provide an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anticorrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection. The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR provided visible corrosion is removed during performance of SR 3.8.4.4.

8

Reviewer's Note: The requirement to verify that terminal connections are clean and tight applies only to nickel cadmium batteries as per IEEE Standard P1106, "IEEE Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel - Cadmium Batteries for Stationary Applications." This requirement may be removed for lead acid batteries.

The connection resistance limits for SR 3.8.4.5 shall be no more than 20% above the resistance as measured during

BASES

SURVEILLANCE REQUIREMENTS (continued)

installation, or not above the ceiling value established by the manufacturer.

2 → Insert B 3.8.4-5

[ ] The Surveillance Frequencies of 12 months is consistent with IEEE-450 (Ref. [9]), which recommends cell to cell and terminal connection resistance measurement on a yearly basis. [ ]

5 → 6 ← 10

5 → 1

SR 3.8.4.6

This SR requires that each battery charger be capable of supplying rated current and voltage for ≥ [ ] hours. These requirements are based on the design capacity of the chargers (Ref. [4]). According to Regulatory Guide 1.32 (Ref. [10]), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

10 → 2 → [4]
10 → 7 → [10]

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [ ] [18 months] [ ] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

5

6 → This Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.4.7

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The

BASES

SURVEILLANCE REQUIREMENTS (continued)

discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

10 → 7

5 → 18 months

10 → 8

The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. [10]) and Regulatory Guide 1.129 (Ref. [11]), ~~which state that the battery service test should be performed during refueling operations or at some other outage, with intervals between tests not to exceed [18 months].~~

13

6 → a Note which

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test once per 60 months.

The modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

6 → The reason for Note 2 is that performing the ~~Surveillance~~ would perturb the electrical ~~distribution~~ system and challenge safety ~~systems~~. Credit may be taken for unplanned ~~events that~~ satisfy this SR.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time.

10 → 6 → 3

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9) and IEEE-485 (Ref. 6). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is ≥ [10%] below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9).

10 → 6 ← 5

6 → This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.