Enclosure 1
Marked-Up TS and Bases Pages Reflecting Extended DG AOT

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)
	AND		
	A.3	Restore required offsite circuit to OPERABLE status.	72 hours AND 14 days from discovery of failure to meet LCO
B. One DG inoperable.	B.~~1~~ 2	Verify SAT available.	1 hour AND Once per 8 hours thereafter
	AND		
	B.~~2~~ 3	Perform SR 3.8.1.1 for the required offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
	B.1	Verify calendar date does not fall on or within July 15 through November 15.	1 hour
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.~~3~~ 4	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		
	B.~~4~~.1 5	Determine OPERABLE DG is not inoperable due to common cause failure.	24 hours
	OR		
	B.~~4~~.2 5	Perform SR 3.8.1.2 for OPERABLE DG.	24 hours
	AND		
	B.~~5~~ 7	Restore DG to OPERABLE status.	14 days from discovery of failure to meet LCO
	B.6.1	Verify an enhanced black-start combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency.	72 hours (continued) OR Within 72 hours prior to entry into Condition B
	OR		
	B.6.2	Start and run at least one CTG while in Condition B.	72 hours OR Prior to entry into Condition B for preplanned maintenance
	AND		

and the black start diesel generator

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions B.1, B.2, and associated Completion Time not met.	C.1 Restore DG to OPERABLE status.	72 hours
D. Two required offsite circuits inoperable.	D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND D.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition D concurrent with inoperability of redundant required features 24 hours
E. One required offsite circuit inoperable. AND One DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems — Operating," when Condition E is entered with no AC power source to one or more trains. ---------- E.1 Restore required offsite circuit to OPERABLE status. OR E.2 Restore DG to OPERABLE status.	 12 hours 12 hours

B.6.1, or B.6.2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Two DGs inoperable.	F.1	Restore one DG to OPERABLE status.	2 hours
G. One automatic load sequencer inoperable.	G.1	Restore automatic load sequencer to OPERABLE status.	12 hours
H. Required Action and Associated Completion Time of Condition A, C, D, E, F, or G not met. OR Required Action B.4, B.5, B.5.1, B.5.2, or B.3 and associated Completion Time not met.	H.1 AND H.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
I. Three or more required AC sources inoperable.	I.1	Enter LCO 3.0.3.	Immediately

BASES

LCO (continued)

train. For the DGs, separation and independence are complete.

For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus while the bus is being transferred to the other circuit.

APPLICABILITY

The AC sources and sequencers 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

A Note prior to the ACTIONS table prompts the user that when the SAT is being applied in accordance with LCO 3.8.1 as an offsite circuit for an ESF bus or to meet the requirements of an LCO 3.8.1 Condition (SAT available) for an ESF bus, it is not "available" for any of the other three 4.16 kV ESF buses during that time. The SAT is available when it is:

- Operable in accordance with plant procedures;
- Not being applied to any of the four 4.16 kV ESF buses for Units 1 and 2 in accordance with Specification 3.8.1 as either an offsite source or to meet the requirements of an LCO 3.8.1 Condition; and,
- Not providing power to the other unit when that unit is in MODE 5 or 6 or defueled.

(continued)

BASES

ACTIONS (continued)

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition E, for two offsite circuits inoperable, is entered.

A.2

Required Action A.2, which only applies if the train cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function of critical redundant required features. These features are powered from the redundant AC electrical power train. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, may not be included.

The Completion Time for Required Action A.2 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 train has no offsite power supplying it loads; and

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

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

Discovering no offsite power to one train of the onsite Class 1E Electrical Power Distribution System coincident with one or more inoperable required support or supported

(continued)

BASES

ACTIONS

A.3 (continued)

initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 3 days, or 14 days depending on SAT availability, 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 A and B are entered concurrently. The "AND" connector between the 72 hour and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

Tracking the 14 day Completion Time is a requirement for beginning the Completion Time "clock" that is in addition to the normal Completion Time requirements. With respect to the 14 day Completion Time, the "time zero" is specified as commencing at the time LCO 3.8.1 was initially not met, instead of at the time Condition A was entered. This results in the requirement when in this Condition to track the time elapsed from both the Condition A "time zero" and the "time zero" when LCO 3.8.1 was initially not met.

INSERT FOR NEW REQUIRED ACTION B.1

B.1.2

The 13.8/4.16 kV Standby Auxiliary Transformer (SAT) is a qualified offsite circuit that may be connected to the onsite Class 1E distribution system independently of the RATs and may be utilized to meet the LCO 3.8.1 requirements for an offsite circuit. Its availability permits an extension of the allowable out-of-service time for a DG to 14 days from the discovery of failure to meet LCO 3.8.1. The SAT is available when it is:

- Operable in accordance with plant procedures;
- Not being applied to any of the four 4.16 kV ESF buses for Units 1 and 2 in accordance with Specification 3.8.1 as either an offsite source or to meet the requirements of an LCO 3.8.1 Condition; and,

(continued)

Insert for New Required Action B.1

B.1

Required Action B.1 addresses the concern that there may be an increased potential for weather-related events that could cause electrical system grid disturbances and/or damage to the switchyard or electrical service to the switchyard during the period of time from July 15 through November 15. If at any time while in Condition B Required Action B.1 cannot be met, then Condition C becomes applicable, and the DG must be restored to OPERABLE status within 72 hours from entry into Condition C. Note that while the Completion Time of 72 hours begins upon entry into Condition C, the total time to restore an inoperable DG cannot exceed 14 days (per the Completion Time of Required Action B.7). Therefore, due to the constraint of Required Action B.1, a DG will not be voluntarily removed from service for maintenance that would require an extended Completion Time during the period from July 15 through November 15.

BASES

ACTIONS

B.2 (continued)

- Not providing power to the other unit when that unit is in MODE 5 or 6 or defueled.

When one or more of these criteria are not satisfied, the SAT is not available. These criteria are structured to ensure that the SAT is available as an alternate offsite source to support the extended DG Completion Time of 14 days. Therefore, when a DG is inoperable, it is necessary to verify the availability of the SAT within one hour and once per 8 hours thereafter. If Required Action B.2 is not met or the status of the SAT changes after Required Action B.2 is initially met, Condition C must be entered concurrently.

B.3

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

B.4

Required Action B.4 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG.

The Completion Time for Required Action B.4 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also

(continued)

BASES

ACTIONS

B.4 (continued)

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 DG exists; and

b. A required feature on the other train (Train A or Train B) is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, 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 DG 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.

B.5.1 and B.5.2

Required Action B.5.1 provides an allowance to avoid unnecessary testing of the OPERABLE DG. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on the

(continued)

BASES

ACTIONS

B.5.1 and B.5.2 (continued)

other DG, the other DG would be declared inoperable upon discovery and Condition F of LCO 3.8.1 would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.5.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.5.1 or B.5.2, the applicable plant procedures will continue to require the evaluation of the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DG is not affected by the same problem as the inoperable DG.

INSERT FOR NEW REQUIRED ACTIONS B.6.1 and B.6.2

B.7

The availability of the SAT provides an additional AC source which permits operation to continue for a period not to exceed 14 days from discovery of failure to meet the LCO.

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 14 day Completion Time takes into account the enhanced reliability and availability of offsite sources due to the SAT, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The Completion Time for Required Action B.7 also 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 B is entered while, for instance, an offsite circuit is inoperable, the LCO may already have been not met for up to 72 hours. If the offsite circuit is restored within the required 72 hours, this could lead to a total of

(continued)

Insert for New Required Actions B.6.1 and B.6.2

B.6.1 and B.6.2

Required Action B.6.1 provides assurance that an enhanced black-start combustion turbine generator (CTG) is functional when a DG is out of service for greater than 72 hours. Required Action B.6.1 is only applicable provided that the two enhanced black-start CTGs have a combined reliability of ≥ 95 % based on a minimum of 20 tests per enhanced black-start CTG and quarterly testing thereafter. This quarterly testing will subject each enhanced black-start CTG to a start and load-run test. The black-start diesel generator will also be tested quarterly, but separately from the enhanced black-start CTGs. Required Action B.6.1 may be met by starting either of the enhanced black-start CTGs and the black-start diesel generator and verifying that it achieves steady state voltage and frequency. The black-start diesel generator may be started separately.

If a DG is to be removed from service voluntarily for greater than 72 hours, it may be advantageous to test an enhanced black-start CTG prior to taking the DG out of service. In such cases where advance notice of removing a DG from service is available, Required Action B.6.1 may be performed up to 72 hours prior to entry into Condition B. In other cases, Required Action B.6.1 must be performed within 72 hours after entry into Condition B. If the reliability of the enhanced black-start CTGs has not been demonstrated or maintained ≥ 95 %, the option of starting and running any one of the six CTGs while in Condition B is available in the form of Required Action B.6.2. In the event of preplanned maintenance that would exceed 72 hours, any one of the six CTGs must be started prior to entry into Condition B and allowed to run for the duration of Condition B. Otherwise, any one of the six CTGs must be started within 72 hours (and allowed to run) after entry into Condition B. If the running CTG should fail while in Condition B, any one of the remaining CTGs must be started within 1 hour. If one of the six CTGs cannot be started within 1 hour, Condition C becomes applicable. Note that Required Action B.6.1 requires that one of the two enhanced black-start CTGs be started, but any one of the six CTGs could be started to satisfy Required Action B.6.2. Since a CTG is started and running while the DG is inoperable, it is not necessary that the CTG have enhanced black-start capability.

BASES

ACTIONS

B.7 (continued)

17 days, since initial failure to meet the LCO, to restore compliance with the LCO (i.e., restore the DG). However, 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 A and B (and consequently Condition E) are entered concurrently.

Tracking the 14 day Completion Time is a requirement for beginning the Completion Time "clock" that is in addition to the normal Completion Time requirements. With respect to the Completion Time, the "time zero" is specified as commencing at the time LCO 3.8.1 was initially not met, instead of at the time Condition B was entered. This results in the requirement when in this Condition to track the time elapsed from both the Condition B "time zero" and the "time zero" when LCO 3.8.1 was initially not met.

C.1

or if no CTG meets the requirements of either Required Action B.6.1 or B.6.2

If the DG inoperability falls on or within July 15 through November 15 in accordance with Required Action B.2, or

If the availability of the SAT cannot be verified and/or maintained in accordance with Required Action B.2, the DG must be restored to OPERABLE status within 72 hours. The 72-hour Completion Time begins upon entry into Condition C. However, the total time to restore an inoperable DG cannot exceed 14 days (per the Completion Time of Required Action B.5).

The Completion Time of 72 hours (in the absence of the SAT) is consistent with Regulatory Guide 1.93 (Ref. 6). The 72-hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and low probability of a DBA occurring during this period.

D.1 and D.2

Required Action D.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The

(continued)

BASES

ACTIONS

F.1 (continued)

According to Reference 6, with both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

G.1

The sequencer(s) is an essential support system to both the offsite circuit and the DG associated with a given ESF bus. Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus. The sequencers are required to provide the system response to both an SI signal and a loss of or degraded ESF bus voltage signal. Therefore, loss of an ESF bus sequencer affects every major ESF system in the train. The 12 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.

H.1 and H.2

or Required Actions B.3, B.4, B.5.1, or B.5.2 cannot be met,

If the inoperable AC electric power sources or an automatic load sequencer 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.

I.1

Condition I corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses

(continued)

Enclosure 2
Evaluation of Risk Impact Due to Extended DG AOT

Enclosure 2

EVALUATION OF RISK IMPACT DUE TO EXTENDED DG AOT

The following are the calculations and quantitative PRA results due to the AOT extension with and without credit taken for compensatory actions (or plant improvements) not credited in the IPE submitted to the NRC in response to GL 88-20.

Change in average CDF (Δm(CDF)):

$m(CDF)$ = average CDF (per year)

$m_2(CDF)$ = The conditional m(CDF) with the proposed 14 day AOT in place

$m_1(CDF)$ = The original m(CDF) with the current 3 day AOT in place

Therefore, $\Delta m(CDF) = m_2(CDF) - m_1(CDF)$

Without SAT/CTGs,

$m_2(CDF) = 3.675E\text{-}05\ yr^{-1}$

$m_1(CDF) = 3.211E\text{-}05\ yr^{-1}$

$\Delta m(CDF) = 3.675E\text{-}05\ yr^{-1} - 3.211E\text{-}05\ yr^{-1}$

$\Delta m(CDF) = 4.637E\text{-}06\ yr^{-1}$

With SAT/CTGs,

$m_2(CDF) = 2.176E\text{-}05\ yr^{-1}$

$m_1(CDF) = 2.092E\text{-}05\ yr^{-1}$

$\Delta m(CDF) = 2.176E\text{-}05\ yr^{-1} - 2.092E\text{-}05\ yr^{-1}$

$\Delta m(CDF) = 8.416E\text{-}07\ yr^{-1}$

Change in instantaneous CDF (ΔCDF_i):

$CDF_i(2)$ = The conditional CDF when the plant is in the AOT

$CDF_i(1)$ = The CDF when the plant is <u>not</u> in the AOT

i = AOT configuration with one EDG unavailable

Therefore, $\Delta CDF_i = CDF_i(2) - CDF_i(1)$

<u>Without</u> SAT/CTGs,

$CDF_i(2) = 1.366E\text{-}04\ yr^{-1}$

$CDF_i(1) = 2.217E\text{-}05\ yr^{-1}$

$\Delta CDF_i = 1.366E\text{-}04\ yr^{-1} - 2.217E\text{-}05\ yr^{-1}$

$\Delta CDF_i = 1.145E\text{-}04\ yr^{-1}$

<u>With</u> SAT/CTGs,

$CDF_i(2) = 5.372E\text{-}05\ yr^{-1}$

$CDF_i(1) = 1.605E\text{-}05\ yr^{-1}$

$\Delta CDF_i = 5.372E\text{-}05\ yr^{-1} - 1.605E\text{-}05\ yr^{-1}$

$\Delta CDF_i = 3.767E\text{-}05\ yr^{-1}$

Change in conditional core damage probability ($\Delta CCDP$):

CCDP(2) = The CCDP while the plant is in the AOT

CCDP(1) = The CCDP while the plant is <u>not</u> in the AOT

Therefore, $\Delta CCDP = CCDP(2) - CCDP(1)$

Without SAT/CTGs,

$\Delta CCDP_{14days}$ was calculated in our risk analysis (PSA-V-96-011) with the following result:

$$\Delta CCDP_{14days} = 4.523E\text{-}06$$

With SAT/CTGs,

$\Delta CCDP_{14days}$ was calculated in our risk analysis (PSA-V-96-011) with the following result:

$$\Delta CCDP_{14days} = 8.142E\text{-}07$$

Change in average large early release frequency (ΔLERF):

LERF(2) = LERF with proposed AOT in place

LERF(1) = LERF with current AOT in place

Therefore, ΔLERF = LERF(2) - LERF(1)

A review of the first 500 sequences of revision 1 of the VEGP model reveals that no LOSP initiating event results in a large early release. Therefore within the limits of our analyses, we can conclude that there is no increase in LERF due to a DG in maintenance.

RISK ANALYSIS CALCULATION RESULTS AND KEY ASSUMPTIONS :

- The risk analysis is based on the top 180 most frequent core damage sequences from the Rev. 1 Vogtle IPE .
- The SAT is able to supply any two of four 4160-V class 1-E switchgear (2/4).
- Single unit LOSP (assume Unit 1), one DG fails (assume DG-1A): In this scenario, core damage might occur if some of the equipment on train 1B fails. The operator could recover train 1A power and cool down the unit in the following ways:
  - If the CTG switchyard were available, an operator would be able to align the SAT to train 1A, or
  - If the CTG switchyard were not available, one operator would be able to black-start one-of-two CTGs and another operator would be able to align the SAT to train 1A or

to cross-tie one of three diesels (2A, 2B, or 1B) and cool down Unit 1 using train 1A equipment.

- Single unit LOSP (assume Unit 1), both DG-1A and 1B fail: In this scenario core damage might occur,

  - If offsite power is not recovered , or

  - If offsite power is recovered and subsequently some of the equipment fails or an operator action fails.

  The operator is assumed to recover only one train of power (even though he could recover two) and cool down Unit 1 in the following ways:

  - If the CTG switchyard were available, an operator would be able to align the SAT to one Unit 1 train, or

  - If the CTG switchyard were not available, one operator would be able to black-start one of two CTGs and another operator would be able to align the SAT to one Unit 1 train or to cross-tie one of two diesels from the other unit and cool down the unit using either train A or train B equipment.

- Dual unit LOSP, one DG fails on Unit 1 (assume DG-1A): In this scenario core damage might occur if some of the equipment on train 1B fails. The operator could recover train 1A power and cool down the unit in the following ways:

  - If the CTG switchyard were available, an operator would be able to align the SAT to train 1A (and align either train 2A or 2B to the SAT, if necessary);

  - If the CTG switchyard were not available, one operator would be able to black-start one of two CTGs and another operator would be able to align the SAT to train 1A or to cross-tie one of three diesels (2A, 2B, or 1B) and cool down Unit 1 using train 1A equipment. These recovery actions include cool down of both units with SAT/CTG or a single diesel generator.

- Dual unit LOSP, both DGs fail on Unit 1: In this scenario core damage might occur,

  - If offsite power is not recovered , or

  - If offsite power is recovered and subsequently some of the equipment fails or an operator action fails.

The operator is assumed to recover only one train of power (even though he could recover two) and cool down Unit 1 in the following ways:

- If the CTG switchyard were available, an operator would be able to align the SAT to train 1A or 1B, or

- If the CTG switchyard were not available, one operator would be able to black-start one of two CTGs and another operator would be able to align the SAT to train 1A or 1B or to cross-tie one of two diesels from Unit 2 and cool down Unit 1 using train 1A or 1B equipment. These recovery actions include cool down of both units with SAT/CTG or a single diesel generator.

- In the event of a station blackout event, a source of power is assumed to be available that can be cross-tied from a single diesel generator or aligned from the SAT. The failure of four of four diesels and SAT/CTG is considered highly unlikely. The CTG switchyard has historically been available about 364 days per year. The probability of failure to black-start one of two CTGs is approximately 0.1 (or lower if an operator is stationed at the CTG site).

- A conditional probability was calculated for the event that train A is reconnected with power, but core damage still occurs due to failure of other train A equipment. This conditional CDF is 0.0017.

- A conditional probability was calculated for the event that train B is reconnected with power, but core damage still occurs due to failure of other train B equipment. This conditional CDF is 0.0031.

- It is assumed for an LOSP event in which either AA02 or BA03 has power recovered, the conditional probability used is the average of the train A and B values above or 0.0024.

- Station blackout frequencies were calculated for various seismic frequency intervals using a best estimate for the seismic fragility of insulators in the switchyard and a conservative estimate for the fragility of diesel generators.

- A tornado frequency was calculated based on historical data to estimate the change in risk due to high winds for the new design.

- The following HRA factors were calculated by a THERP analysis for use in the calculation:

DESCRIPTION	HEP
LOSP, 1 DG in maintenance, operator aligns 1 bus (SAT or cross-tie 1 hr)	4.96E-02
LOSP, 1 DG in maintenance, operator aligns 1 bus (SAT or cross-tie 4 hr)	4.73E-03
LOSP, no DG maintenance, operator aligns 1 bus (SAT or cross-tie 1 hr)	6.20E-02
LOSP, no DG maintenance, operator aligns 1 bus (SAT or cross-tie 4 hr)	7.39E-03

The results of the dCDP analysis are driven by the absolute values of the single and dual unit initiating event frequencies and by sequences where the offsite power is recovered and subsequently some of the equipment fails or an operator action fails. The impact on dCDP is insignificant when the SAT/CTG and DG cross-tie recovery factors are changed by a factor of 2. Therefore, changing the recovery factors for the fraction of LOSP events which involve a fault in the switchyard that would disable the SAT or DG cross-tie recovery would have little impact on the dCDP.

Enclosure 3
Miscellaneous Editorial Corrections

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)		AND Once per 7 days thereafter
	AND A.4 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition.	Prior to increasing THERMAL POWER above the limit of Required Action A.1 and A.2.2
	AND A.5 --------NOTE--------- Perform Required Action A.5 only after Required Action A.4 is completed. ---------- Calibrate excore detectors to show QPTR = 1.00.	Prior to increasing THERMAL POWER above the limit of Required Action A.1 and A.2.2
	AND A.6 --------NOTE--------- Perform Required Action A.6 only after Required Action A.5 is completed. ---------- Perform SR 3.2.1.1 and SR 3.2.2.1.	-----NOTE---- Only one of the following Completion Times, whichever becomes applicable first, must be met. ----------

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(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)		Within 24 hours after reaching RTP OR Within 48 hours after increasing THERMAL POWER above the limit of Required Action A.1 and A.2.2
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to ≤ 50% RTP.	4 hours

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.4.1	----------NOTE---------- With one power range channel inoperable, the remaining three power range channels can be used for calculating QPTR. --- Verify QPTR is within limit by calculation.	7 days AND Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable
SR 3.2.4.2	----------NOTE---------- Only required to be performed if one power range channel is inoperable with THERMAL POWER ≥ 75% RTP. --- Confirm that the normalized symmetric power distribution is consistent with QPTR.	Once within 12 hours AND 12 hours thereafter

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Table 3.3.1-1 (page 5 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
14. Turbine Trip						
a. Low Fluid Oil Pressure	1(j)	3	Q	SR 3.3.1.10 SR 3.3.1.16	≥ 500 psig	≥ 580 psig
b. Turbine Stop Valve Closure	1(j)	4	P	SR 3.3.1.10 SR 3.3.1.14	≥ 96.7% open	≥ 96.7% open
15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Q	SR 3.3.1.13	NA	NA
16. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(d)	2	R	SR 3.3.1.11 SR 3.3.1.12	≥ 6E-11 amp	≥ 1E-10 amp
b. Low Power Reactor Trips Block, P-7	1	1 per train	S	SR 3.3.1.5	NA	NA
c. Power Range Neutron Flux, P-8	1	4	S	SR 3.3.1.11 SR 3.3.1.12	≤ 50.3% RTP	≤ 48% RTP
d. Power Range Neutron Flux, P-9	1	4	S	SR 3.3.1.11 SR 3.3.1.12	≤ 52.3% RTP	≤ 50% RTP
e. Power Range Neutron Flux, P-10	1,2	4	R	SR 3.3.1.11 SR 3.3.1.12	≥ 27% ~~≤ 10.3%~~ RTP	≥ 10% ~~≤ 8%~~ RTP
f. Turbine Impulse Pressure, P-13	1	2	S	SR 3.3.1.10 SR 3.3.1.12	≤ 12.3% Impulse Pressure Equivalent turbine	≤ 10% Impulse Pressure Equivalent turbine

(continued)

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(j) Above the P-9 (Power Range Neutron Flux) interlock.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Cold Overpressure Protection Systems (COPS)

LCO 3.4.12 A COPS shall be OPERABLE with all safety injection pumps incapable of injecting into the RCS and the accumulators isolated and either a or b below.

a. Two RCS relief valves, as follows:

1. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, or

2. Two residual heat removal (RHR) suction relief valves with setpoints ≥ 440 psig and ≤ 460 psig, or

3. One PORV with a lift setting within the limits specified in the PTLR and one RHR suction relief valve with a setpoint within specified limits.

b. The RCS depressurized and an RCS vent of ≥ 2.14 square inches (baed on an equivalent length of 10 feet of pipe).

(5)

APPLICABILITY: MODE 4,
MODE 5,
MODE 6 when the reactor vessel head is on.

----------NOTE----------

1. Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

2. The safety injection pumps are not required to be incapable of injecting into the RCS until 4 hours after entering MODE 4 from MODE 3 provided the temperature of one or more RCS cold legs has not decreased below 325°F.

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems — Operating

LCO 3.8.9 The required AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

NOTE

The redundant emergency buses of 4160 V switchgear 1/2AA02 and 1/2BA03 may be manually connected within the unit by tie breakers in order to allow transfer of preferred offsite power sources provided SR 3.8.1.1 is successfully performed within 12 hours prior to the interconnection. The interconnection shall be implemented without adversely impacting the ability to simultaneously sequence both trains of LOCA loads.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystems inoperable.	A.1 Restore AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
B. One or more AC vital bus electrical power distribution subsystems inoperable.	B.1 Restore AC vital bus electrical power distribution subsystems to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status. AND	Immediately
	A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	7 days

Table 5.5.9-2 (page 1 of 1)
Steam Generator Tube Inspection

1ST SAMPLE INSPECTION			2ND SAMPLE INSPECTION		3RD SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per SG	C-1	None	NA	NA	NA	NA
	C-2	Plug defective tubes and inspect additional 2S tubes in this SG	C-1	None	NA	NA
			C-2	Plug defective tubes and inspect additional 4S tubes in this SG	C-1	None
					C-2	Plug defective tubes
					C-3	Perform action for C-3 result of first sample
			C-3	Perform action for C-3 result of first sample	NA	NA
	C-3	Inspect all tubes in this SG, plug defective tubes, and inspect 2S tubes in each other SG Notification to NRC pursuant to §50.72 (b)(2) of 10 CFR Part 50	All other SGs are C-1	None	NA	NA
			Some SGs are C-2, but no additional SGs are C-3	Perform action for C-2 result of second sample	NA	NA
			Additional SG is C-3	Inspect all tubes in each SG and plug defective tubes. Notification to NRC pursuant to §50.72 (b)(2) of 10 CFR Part 50	NA	NA

$S = 3\frac{N}{n}$

Where N is the number of steam generators in the unit, and n is the number of steam generators inspected during an inspection.

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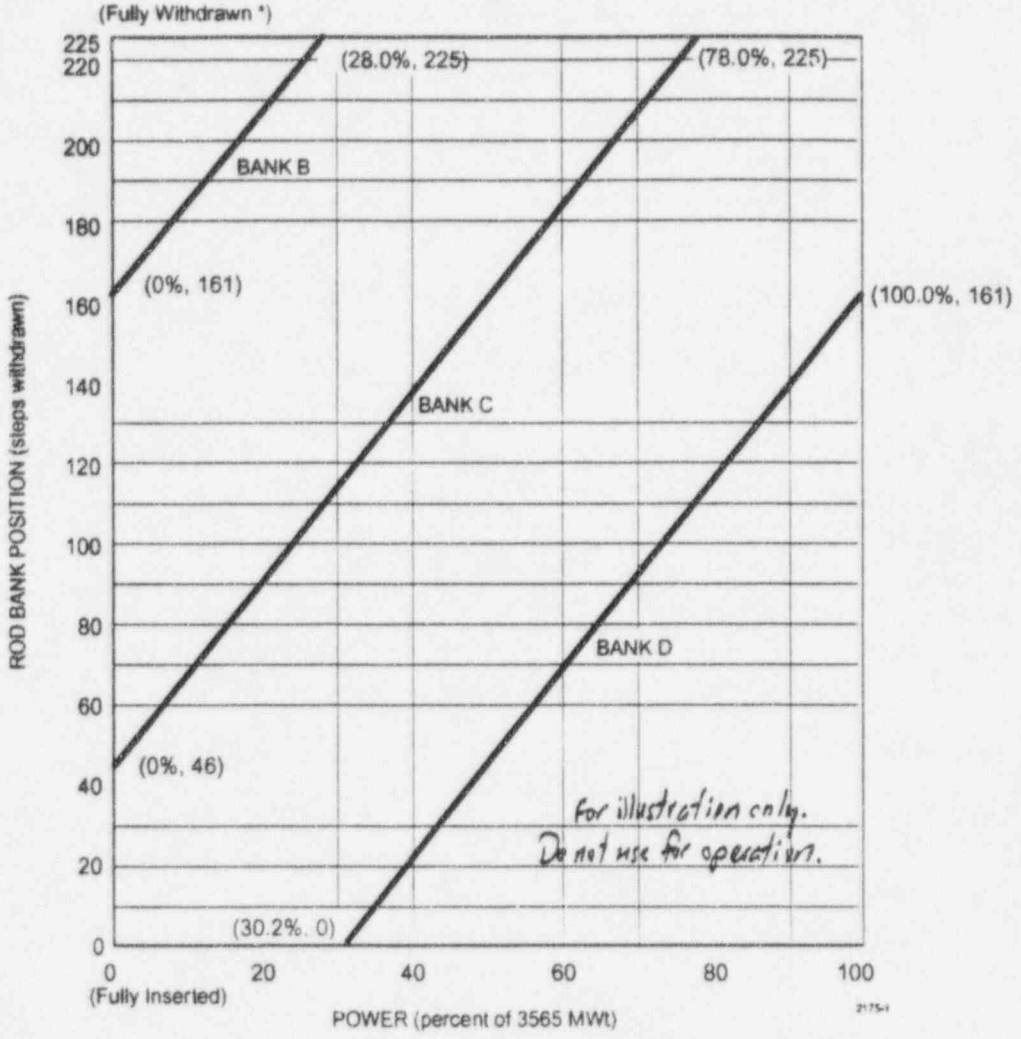

* Fully withdrawn shall be the condition where control rods are at a position within the interval ≥225 and ≤231 steps withdrawn.

Note: The rod bank insertion limits are based on the control bank withdrawal sequence A,B,C,D and a control bank tip-to-tip distance of 115 steps.

~~Figure 3.1.4-3~~
Figure B 3.1.6-1 (page 1 of 1)
Rod Bank Insertion Limits vs. Thermal Power

Enclosure 4
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