SRO NRC EXAM REFERENCES

EOPS - Not provided
SRO 2 TS 3.8.1
SRO 27Power/Flow Map
SRO 50TS 3.3.1.1
SRO 58TS 3.6.1.3
TS 3.6.1.3 Bases
SRO 74ON-117-001
SRO 87TS 3.5.1
TS 1.3
TS 3.0
SRO 91SO-150-002, Attachment A, Data Form (pages 1-4)
SRO 97TS 3.9.7
TS 3.9.7 Bases
TS 3.9.8
TS 3.9.8

RO NRC EXAM REFERENCES

EOPS - Not Provided
RO 18 ON-145-004, Attachment A
RO 26 TS 3.6.2.1
SO-152-002
RO 49 TS 3.3.1.1
RO 56 ADS prints
RO 67 Power/Flow Map
RO 94 SO-134-001
NDAP-QA-0722

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

------------------------------------NOTES------------------------------------

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria in MODES 1, 2, and 3.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. --------------------- One or more penetration flow paths with one PCIV inoperable except for purge valve leakage not within limit.	A.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours except for main steam line AND 8 hours for main steam line
	AND		
			(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------------------	
	Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside primary containment <u>AND</u> Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. --------------------- One or more penetration flow paths with two PCIVs inoperable except for purge valve leakage not within limit.	B.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ---------NOTE--------- Only applicable to penetration flow paths with only one PCIV. --------------------- One or more penetration flow paths with one PCIV inoperable.	C.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	72 hours except for excess flow check valves (EFCVs) AND 12 hours for EFCVs
	AND		
	C.2	--------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. --------------------- Verify the affected penetration flow path is isolated.	Once per 31 days
D. Secondary containment bypass leakage rate not within limit.	D.1	Restore leakage rate to within limit.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limit.	E.1 Restore the valve leakage to within valve leakage limit.	24 hours
F. Required Action and associated Completion Time of Condition A, B, C, D or E not met in MODE 1, 2, or 3.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours
G. Required Action and associated Completion Time of Condition A, B, C, D or E not met for PCIV(s) required to be OPERABLE during MODE 4, 5 or Operations with the potential for draining the reactor vessel (OPDRVs).	G.1 Initiate action to suspend OPDRVs. OR G.2 Initiate action to restore valve(s) to OPERABLE status.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	------------------NOTES------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Not required to be met when the 18 and 24 inch primary containment purge valves are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. -- Verify each 18 and 24 inch primary containment purge valve is closed.	31 days
SR 3.6.1.3.2	------------------NOTES------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. -- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.3	------------------NOTES------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days
SR 3.6.1.3.4	Verify continuity for each of the traversing incore probe (TIP) shear isolation valve explosive charge.	31 days
SR 3.6.1.3.5	Verify the isolation time of each power operated and each automatic PCIV, except for MSIVs, is within limits.	In accordance with the Inservice Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	------------------NOTE------------------ Only required to be met in MODES 1, 2 and 3. -- Perform leakage rate testing for each primary containment purge valve with resilient seals.	184 days
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	24 months
SR 3.6.1.3.9	Verify each reactor instrumentation line EFCV actuates to check flow on a simulated instrument line break.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	24 months on a STAGGERED TEST BASIS
SR 3.6.1.3.11	-------------------NOTES------------------ Only required to be met in MODES 1, 2, and 3. -- Verify the combined leakage rate for all secondary containment bypass leakage paths is ≤ 9 scfh when pressurized to ≥ P_a.	In accordance with the Primary Containment Leakage Rate Testing Program.
SR 3.6.1.3.12	-------------------NOTES------------------ Only required to be met in MODES 1, 2, and 3. -- Verify leakage rate through each MSIV is ≤ 100 scfh and ≤ 300 scfh for the combined leakage including the leakage from the MS Line Drains, when the MSIVs are tested at ≥ 22.5 psig or P_a and the MS Line Drains are tested at P_a.	In accordance with the Primary Containment Leakage Rate Testing Program.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.13	-----------------NOTE------------------ Only required to be met in MODES 1, 2, and 3. --------------------------------------- Verify combined leakage rate through hydrostatically tested lines that penetrate the primary containment is within limits.	In accordance with the Primary Containment Leakage Rate Testing Program.

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Four diesel generators (DGs).

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

When an OPERABLE diesel generator is placed in an inoperable status solely for the purpose of alignment of DG E to or from the Class 1E distribution system, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided both offsite circuits are OPERABLE and capable of supplying the affected 4.16 kV ESS Bus.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One offsite circuit inoperable.	A.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	A.2	Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one 4.16 kV ESS bus concurrent with inoperability of redundant required feature(s).
	<u>AND</u>		(continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3	Restore offsite circuit to OPERABLE status.	72 hours AND 6 days from discovery of failure to meet LCO
B. One required DG inoperable.	B.1	Perform SR 3.8.1.1 for OPERABLE offsite circuits.	1 hour AND Once per 8 hours thereafter
	AND		
	B.2	Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		
	B.3.1	Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR		
	B.3.2	Perform SR 3.8.1.7 for OPERABLE DGs.	24 hours OR 24 hours prior to entering Condition B
	AND		
			(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.4 Restore required DG to OPERABLE status.	72 hours AND 6 days from discovery of failure to meet LCO
C. Two offsite circuits inoperable.	C.1 Restore one offsite circuit to OPERABLE status.	24 hours
D. One offsite circuit inoperable. AND One required DG inoperable.	-----------NOTE----------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems-Operating," when Condition D is entered with no AC power source to any 4.16 kV ESS bus. ------------------------- D.1 Restore offsite circuit to OPERABLE status. OR D.2 Restore required DG to OPERABLE status.	 12 hours 12 hours
E. Two or more required DGs inoperable.	E.1 Restore at least three required DGs to OPERABLE status.	2 hours

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours
G. One or more offsite circuits and two or more required DGs inoperable. OR One required DG and two offsite circuits inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

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

Four DGs are required and a DG is only considered OPERABLE when the DG is aligned to the Class 1E distribution system. DG Surveillance Requirements have been modified to integrate the necessary testing to demonstrate the availability of DG E and ensure its OPERABILITY when substituted for any other DG. If the DG Surveillance Requirements, as modified by the associated Notes, are met and performed, DG E can be considered available and OPERABLE when substituted for any other DG after performance of SR 3.8.1.3 and SR 3.8.1.7.

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.2	Not Used.	
SR 3.8.1.3	-------------------NOTES------------------- 1. DG loading may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.7. 5. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR using the test facility. 6. A single test will satisfy this Surveillance for both units if synchronization is to the 4.16 kV ESS bus for Unit 1 for one periodic test and synchronization is to the 4.16 kV ESS bus for Unit 2 for the next periodic test. However, if it is not possible to perform the test on Unit 2 or test performance is not required per SR 3.8.2.1, then the test shall be performed synchronized to the 4.16 kV ESS bus for Unit 1. --- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3600 kW and ≤ 4000 kW.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each engine mounted day tank fuel oil level is ≥ 420 gallons for DG A-D and ≥ 425 gallons for DG E.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each engine mounted day tank.	31 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tanks to each engine mounted tank.	31 days
SR 3.8.1.7	-------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. -- Verify each DG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8, and after steady state conditions are reached, maintains voltage ≥ 3793 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	31 days
SR 3.8.1.8	----------------NOTE----------------------- The automatic transfer of the unit power supply shall not be performed in MODE 1 or 2. -- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	------------------NOTES------------------ A single test at the specified Frequency will satisfy this Surveillance for both units. --- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 4.5 seconds following load rejection, the voltage is ≥ 3760 V and ≤ 4560 V, and after steady state conditions are reached, maintains voltage ≥ 3793 V and ≤ 4400 V; and c. Within 6 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.10	------------------NOTES------------------ A single test at the specified Frequency will satisfy this Surveillance for both units. --- Verify each DG does not trip and voltage is maintained ≤ 4560 V during and following a load rejection of ≥ 4000 kW.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	-------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2 or 3. -- Verify on an actual or simulated loss of offsite power signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from 4.16 kV ESS buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through individual load timers, 3. maintains steady state voltage ≥ 3793 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected loads for ≥ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR for both units by performance of SR 3.8.1.12.a, b and c using the test facility to simulate a 4.16 kV ESS bus. SR 3.8.1.12.d and e may be satisfied with either the normally aligned DG or DG E aligned to the Class 1E distribution system. --- Verify, on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal, each DG auto-starts from standby condition and: a. In ≤ 10 seconds after auto-start achieves voltage ≥ 3793 V, and after steady state conditions are reached, maintains voltage ≥ 3793 V and ≤ 4400 V; b. In ≤ 10 seconds after auto-start achieves frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the individual load timers from the offsite power system.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	-------------------NOTES------------------- 1. A single test at the specified Frequency will satisfy this Surveillance for both units. 2. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR for both units by using a simulated ECCS initiation signal. -- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the 4.16 kV ESS bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current; and c. Low lube oil pressure.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	------------------NOTES------------------ 1. Momentary transients outside the load ranges do not invalidate this test. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. 3. DG E, when not aligned to the Class 1E distribution system may satisfy this SR by using the test facility. ---	
	Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4400 kW and ≤ 4700 kW for DGs A through D and ≥ 5000 kW and ≤ 5500 kW for DG E; and b. For the remaining hours of the test loaded ≥ 3600 kW and ≤ 4000 kW for DGs A through D and ≥ 4500 kW and ≤ 5000 kW for DG E.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	-------------------NOTES-------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3800 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. --- Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 3793 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	-------------------NOTES------------------- This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	------------------NOTES------------------ This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. --- Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	24 months
SR 3.8.1.18	------------------NOTE------------------ Load timers associated with equipment that has automatic initiation capability disabled are not required to be OPERABLE. --- Verify each sequenced load is within required limits of the design interval.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

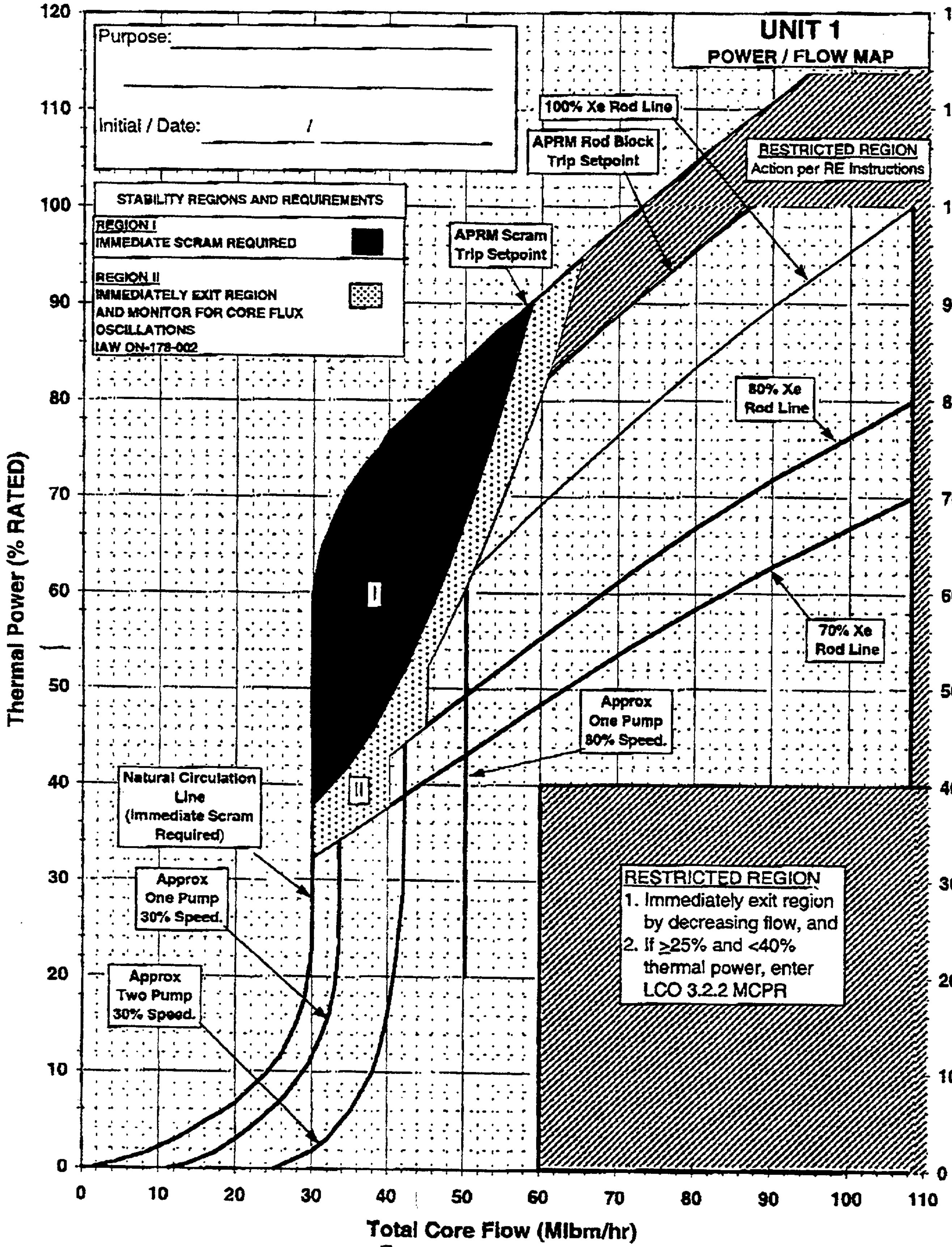
SURVEILLANCE		FREQUENCY
SR 3.8.1.19	------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2 or 3. --- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through individual load timers, 3. achieves steady state voltage ≥ 3793 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR does not have to be performed with DG E substituted for any DG. --- Verify, when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 3793 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years

UNIT ONE. POWER vs. FLOW MAP



3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip. <u>OR</u> A.2 Place associated trip system in trip.	12 hours 12 hours
B. One or more Functions with one or more required channels inoperable in both trip systems.	B.1 Place channel in one trip system in trip. <u>OR</u> B.2 Place one trip system in trip.	6 hours 6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1 Restore RPS trip capability.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channels.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 30% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	-----NOTE----- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ----- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP plus any gain adjustment required by LCO 3.2.4, "Average Power Range Monitor (APRM) Setpoints" while operating at ≥ 25% RTP.	7 days
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	7 days
SR 3.3.1.1.4	-----NOTE----- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to fully withdrawing SRMs from the core.
SR 3.3.1.1.7	------------------NOTE------------------ Only required to be met during entry into MODE 2 from MODE 1. -- Verify the IRM and APRM channels overlap.	 7 days
SR 3.3.1.1.8	Calibrate the local power range monitors.	1000 MWD/MT average core exposure
SR 3.3.1.1.9	------------------NOTE------------------ A test of all required contacts does not have to be performed. -- Perform CHANNEL FUNCTIONAL TEST.	 92 days
SR 3.3.1.1.10	Perform CHANNEL CALIBRATION.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	-------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For Function 1.a and 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	184 days
SR 3.3.1.1.12	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.13	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.1.14	Verify the APRM Flow Biased Simulated Thermal Power—High time constant is ≤ 7 seconds.	24 months
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.16	Verify Turbine Stop Valve—Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.17	------NOTES------ 1. Neutron detectors are excluded. 2. For Function 5 "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. ------------------------------ Verify the RPS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux – High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
	5[(a)]	3	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5[(a)]	3	H	SR 3.3.1.1.5 SR 3.3.2.2.15	NA
2. Average Power Range Monitors					
a. Neutron Flux – High, Setdown	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 20% RTP
b. Flow Biased Simulated Thermal Power – High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 0.58 W + 62% RTP[(b)] and ≤ 115.5% RTP

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) 0.58 W + 57% RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
c. Fixed Neutron Flux - High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 120% RTP
d. Inop	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.15	NA
3. Reactor Vessel Steam Dome Pressure — High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1093 psig
4. Reactor Vessel Water Level — Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≥ 11.5 inches
5. Main Steam Isolation Valve — Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 11% closed
6. Drywell Pressure — High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1.88 psig

(continued)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1.3 Primary Containment Isolation Valves (PCIVs)

BASES

BACKGROUND

The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) to within limits. Primary containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA.

The OPERABILITY requirements for PCIVs help ensure that an adequate primary containment boundary is maintained during and after an accident by minimizing potential paths to the environment. Therefore, the OPERABILITY requirements provide assurance that primary containment function assumed in the safety analyses will be maintained. For PCIVs, the primary containment isolation function is that the valve must be able to close (automatically or manually) and/or remain closed, <u>and</u> maintain leakage within that assumed in the DBA LOCA Dose Analysis. These isolation devices are either passive or active (automatic). Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. The OPERABILITY requirements for closed systems are discussed in Technical Requirements Manual (TRM) Bases 3.6.4. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system.

The drywell vent and purge lines are 24 inches in diameter; the suppression chamber vent and purge lines are 18 inches in diameter. The containment purge valves are normally maintained closed in MODES 1, 2, and 3 to ensure the primary containment boundary is maintained. The outboard isolation valves have 2 inch bypass lines around them for use during normal reactor operation.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The PCIVs LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory, and establishing the primary containment boundary during major accidents. As part of the primary containment boundary, PCIV OPERABILITY supports leak tightness of primary containment. Therefore, the safety analysis of any event requiring isolation of primary containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within primary containment are a LOCA and a main steam line break (MSLB). In the analysis for each of these accidents, it is assumed that PCIVs are either closed or close within the required isolation times following event initiation. This ensures that potential paths to the environment through PCIVs (including primary containment purge valves) are minimized. Of the events analyzed in Reference 1, the MSLB is the most limiting event due to radiological consequences. The closure time of the main steam isolation valves (MSIVs) is a significant variable from a radiological standpoint. The MSIVs are required to close within 3 to 5 seconds since the 5 second closure time is assumed in the analysis. The safety analyses assume that the purge valves were closed at event initiation. Likewise, it is assumed that the primary containment is isolated such that release of fission products to the environment is controlled.

The DBA analysis assumes that within the required isolation time leakage is terminated, except for the maximum allowable leakage rate, L_a.

The single failure criterion required to be imposed in the conduct of unit safety analyses was considered in the original design of the primary containment purge valves. Two valves in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred.

The primary containment purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain closed during MODES 1, 2, and 3 except as permitted under Note 2 of SR 3.6.1.3.1. In this case, the single failure criterion remains applicable to the primary containment purge valve

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

due to failure in the control circuit associated with each valve. The primary containment purge valve design precludes a single failure from compromising the primary containment boundary as long as the system is operated in accordance with this LCO.

PCIVs satisfy Criterion 3 of the NRC Policy Statement. (Ref. 2)

LCO

PCIVs form a part of the primary containment boundary. The PCIV safety function is related to minimizing the loss of reactor coolant inventory and establishing the primary containment boundary during a DBA.

The power operated, automatic isolation valves are required to have isolation times within limits and actuate on an automatic isolation signal. The valves covered by this LCO are listed in Table B 3.6.1.3-1.

The normally closed PCIVs are considered OPERABLE when manual valves are closed or open in accordance with appropriate administrative controls, automatic valves are in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves and devices are those listed in Table B 3.6.1.3-1.

Purge valves with resilient seals, secondary containment bypass valves, MSIVs, and hydrostatically tested valves must meet additional leakage rate requirements. Other PCIV leakage rates are addressed by LCO 3.6.1.1, "Primary Containment," as Type B or C testing.

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

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, most PCIVs are not required to be

(continued)

BASES

APPLICABILITY (continued)

OPERABLE and the primary containment purge valves are not required to be closed in MODES 4 and 5. Certain valves, however, are required to be OPERABLE to prevent inadvertent reactor vessel draindown. These valves are those whose associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow path(s) to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

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

The ACTIONS are modified by Notes 3 and 4. Note 3 ensures that appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable PCIV (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open test return valve). Note 4 ensures appropriate remedial actions are taken when the primary containment leakage limits are exceeded. Pursuant to LCO 3.0.6, these actions are not required even when the associated LCO is not met. Therefore, Notes 3 and 4 are added to require the proper actions be taken.

<u>A.1 and A.2</u>

With one or more penetration flow paths with one PCIV inoperable except for purge valve leakage not within limit,

(continued)

ACTIONS

A.1 and A.2 (continued)

the affected penetration flow paths must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available valve to the primary containment. The Required Action must be completed within the 4 hour Completion Time (8 hours for main steam lines). The Completion Time of 4 hours is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. For main steam lines, an 8 hour Completion Time is allowed. The Completion Time of 8 hours for the main steam lines allows a period of time to restore the MSIVs to OPERABLE status given the fact that MSIV closure will result in isolation of the main steam line(s) and a potential for plant shutdown.

For affected penetrations that have been isolated in accordance with Required Action A.1, the affected penetration flow path(s) must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside containment and capable of potentially being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside primary containment" is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

Condition A is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two PCIVs. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions.

Required Action A.2 is modified by a Note that applies to isolation devices located in high radiation areas, and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is low.

B.1

With one or more penetration flow paths with two PCIVs inoperable except for purge valve leakage not within limit, either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two PCIVs. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions.

C.1 and C.2

With one or more penetration flow paths with one PCIV inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the 72 hour Completion Time. The Completion Time of 72 hours is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. The closed system must meet the requirements of Reference 6. For conditions where the PCIV and the closed system are inoperable, the Required Actions of TRO 3.6.4, Condition B apply. For the Excess Flow Check Valves (EFCV), the Completion Time of 12 hours is reasonable considering the instrument and the small pipe diameter of penetration (hence, reliability) to act as a penetration isolation boundary and the small pipe diameter of the affected penetrations. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to penetration flow paths with only one PCIV. For penetration flow paths with two PCIVs, Conditions A and B provide the appropriate Required Actions.

Required Action C.2 is modified by a Note that applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low.

(continued)

BASES

ACTIONS (continued)

D.1

With the secondary containment bypass leakage rate not within limit, the assumptions of the safety analysis may not be met. Therefore, the leakage must be restored to within limit within 4 hours. Restoration can be accomplished by isolating the penetration that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated, the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time is reasonable considering the time required to restore the leakage by isolating the penetration and the relative importance of secondary containment bypass leakage to the overall containment function.

E.1

In the event one or more containment purge valves are not within the purge valve leakage limits, purge valve leakage must be restored to within limits. The 24 hour Completion Time is reasonable, considering that one containment purge valve remains closed, except as controlled by SR 3.6.1.3.1 so that a gross breach of containment does not exist.

F.1 and F.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS (continued)

G.1 and G.2

If any Required Action and associated Completion Time cannot be met, the unit must be placed in a condition in which the LCO does not apply. If applicable, action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended or valve(s) are restored to OPERABLE status. If suspending an OPDRV would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valve(s) to OPERABLE status. This allows RHR to remain in service while actions are being taken to restore the valve.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1

This SR ensures that the primary containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is also modified by Note 1, stating that primary containment purge valves are only required to be closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves, or the release of radioactive material will exceed limits prior to the purge valves closing. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are allowed to be open. The SR is modified by Note 2 stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. The vent and purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1 (continued)

limited periods of time. The 31 day Frequency is consistent with other PCIV requirements discussed in SR 3.6.1.3.2.

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits.

This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. Since verification of valve position for PCIVs outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the PCIVs are in the correct positions.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in the proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

SR 3.6.1.3.3

This SR verifies that each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.3 (continued)

secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For PCIVs inside primary containment, the Frequency defined as"prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is appropriate since these PCIVs are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing. Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in their proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

SR 3.6.1.3.4

The traversing incore probe (TIP) shear isolation valves are actuated by explosive charges. Surveillance of explosive charge continuity provides assurance that TIP valves will actuate when required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity.

SR 3.6.1.3.5

Verifying the isolation time of each power operated and each automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.6

full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the Final Safety Analyses Report. The isolation time and Frequency of this SR are in accordance with the requirements of the Inservice Testing Program.

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option B, (Ref. 3), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established. The acceptance criteria for these valves is defined in the Primary Containment Leakage Rate Testing Program, 5.5.12.

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SR 3.6.1.3.7

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. This ensures that the calculated radiological consequences of these events remain within 10 CFR 100 limits. The Frequency of this SR is in accordance with the requirements of the Inservice Testing Program.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.8 (continued)

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.5 overlaps this SR to provide complete testing of the safety function. The 24 month Frequency was developed considering it is prudent that some of these Surveillances be performed only during a unit outage since isolation of penetrations could eliminate cooling water flow and disrupt the normal operation of some critical components. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.1.3.9

This SR requires a demonstration that each reactor instrumentation line excess flow check valve (EFCV) is OPERABLE by verifying that the valve actuates to check flow on a simulated instrument line break. As defined in FSAR Section 6.2.4.3.5 (Reference 4), the conditions under which an EFCV will isolate, simulated instrument line break, are at flow rates which develop a differential pressure of between 3 psid and 10 psid. This SR provides assurance that the instrumentation line EFCVs will perform its design function to check flow. No specific valve leakage limits are specified because no specific leakage limits are defined in the FSAR. The 24 month Frequency is based on the need to perform some of these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.1.3.10

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.10 (continued)

design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. The Frequency of 24 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.4).

SR 3.6.1.3.11

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations of Reference 4 are met. The secondary containment leakage pathways and Frequency are defined by the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. A note is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other MODES, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.

SR 3.6.1.3.12

The analyses in References 1 and 4 are based on leakage that is less than the specified leakage rate. Leakage through each MSIV must be $\leq$ 100 scfh for any one MSIV or $\leq$ 300 scfh for total leakage through the MSIVs combined with the Main Steam Line Drains which shall be verified $\leq$ 1.2 scfh. The MSIVs can be tested at either $\geq P_t$ (22.5 psig) or P_a (45 psig). Main Steam Line Drains are tested at P_a (45 psig). A note is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. The Frequency is required by the Primary Containment Leakage Rate Testing Program. If leakage from the MSIVs requires internal work on any MSIV, the leakage will be reduced for the affected MSIV to $\leq$ 11.5 scfh.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.13

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 2 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is 3.3 gpm when tested at 1.1 P_a, (49.5 psig). The combined leakage rates must be demonstrated in accordance with the leakage rate test Frequency required by the Primary Containment Leakage Testing Program.

As noted in Table B 3.6.1.3-1, PCIVs associated with this SR are not Type C tested. Containment bypass leakage is prevented since the line terminates below the minimum water level in the Suppression Chamber. These valves are tested in accordance with the IST Program. Therefore, these valves leakage is not included as containment leakage.

This SR has been modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3, since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.

REFERENCES

1. FSAR, Chapter 15.
2. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
3. 10 CFR 50, Appendix J, Option B.
4. FSAR, Section 6.2.
5. NEDO-30851-P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.
6. Standard Review Plan 6.2.4, Rev. 1, September 1975

Table B 3.6.1.3-1
Primary Containment Isolation Valve
(Page 1 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Containment Atmospheric Control	1-57-193 (d)	ILRT	Manual	N/A
	1-57-194 (d)	ILRT	Manual	N/A
	HV-15703	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15704	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15705	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15711	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15713	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15714	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15721	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15722	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15723	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15724	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15725	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15766 (a)	Suppression Pool Cleanup	Automatic Valve	2.b, 2.d (30)
	HV-15768 (a)	Suppression Pool Cleanup	Automatic Valve	2.b, 2.d (30)
	SV-157100 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157100 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157101 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157101 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157102 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157102 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157103 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157103 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157104	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157105	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157106	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157107	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-15734 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15734 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15736 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15736 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15737	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 2 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Containment Atmospheric Control (continued)	SV-15738	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
	SV-15740 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15740 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15742 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15742 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15750 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15750 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15752 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15752 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15767	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
	SV-15774 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15774 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15776 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15776 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15780 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15780 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15782 A	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15782 B	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15789	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
Containment Instrument Gas	1-26-072 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-074 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-152 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-154 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-164 (d)	Containment Instrument Gas	Manual Check	N/A
	HV-12603	Containment Instrument Gas	Automatic Valve	2.c, 2.d (20)
	SV-12605	Containment Instrument Gas	Automatic Valve	2.c, 2.d
	SV-12651	Containment Instrument Gas	Automatic Valve	2.c, 2.d
	SV-12654 A	Containment Instrument Gas	Power Operated	N/A
	SV-12654 B	Containment Instrument Gas	Power Operated	N/A
	SV-12661	Containment Instrument Gas	Automatic Valve	2.b, 2.d
	SV-12671	Containment Instrument Gas	Automatic Valve	2.b, 2.d
Core Spray	HV-152F001 A (b)(c)	CS Suction Valve	Power Operated	N/A
	HV-152F001 B (b)(c)	CS Suction Valve	Power Operated	N/A
	HV-152F005 A	CS Injection	Power Operated	N/A
	HV-152F005 B	CS Injection Valve	Power Operated	N/A
	HV-152F006 A	CS Injection Valve	Air Operated Check Valve	N/A
	HV-152F006 B	CS Injection Valve	Air Operated Check Valve	N/A
	HV-152F015 A (b)(c)	CS Test Valve	Automatic Valve	2.c, 2.d (80)
	HV-152F015 B (b)(c)	CS Test Valve	Automatic Valve	2.c, 2.d (80)

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 3 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Core Spray (continued)	HV-152F031 A (b)(c)	CS Minimum Recirculation Flow	Power Operated	N/A
	HV-152F031 B (b)(c)	CS Minimum Recirculation Flow	Power Operated	N/A
	HV-152F037 A	CS Injection	Power Operated (Air)	N/A
	HV-152F037 B	CS Injection	Power Operated (Air)	N/A
	XV-152F018 A	Core Spray	Excess Flow Check Valve	N/A
	XV-152F018 B	Core Spray	Excess Flow Check Valve	N/A
HPCI	1-55-038 (d)	HPCI Injection Valve	Manual	N/A
	155F046 (b)(c)(d)	HPCI Minimum Flow Check Valve	Manual Check	N/A
	155F049 (a)(d)	HPCI Turbine Exhaust Valve	Manual Check	N/A
	HV-155F002	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (50)
	HV-155F003	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (50)
	HV-155F006	HPCI Injection Valve	Power Operated	N/A
	HV-155F012 (b)(c)	HPCI Minimum Flow Valve	Power Operated	N/A
	HV-155F042 (b)(c)	HPCI Suction Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (90)
	HV-155F066 (a)	HPCI Turbine Exhaust Valve	Power Operated	N/A
	HV-155F075	HPCI Vacuum Breaker Isolation Valve	Automatic Valve	3.b, 3.d (15)
	HV-155F079	HPCI Vacuum Breaker Isolation Valve	Automatic Valve	3.b, 3.d (15)
	HV-155F100	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (6)
	XV-155F024 A	HPCI Valve	Excess Flow Check Valve	N/A
	XV-155F024 B	HPCI Valve	Excess Flow Check Valve	N/A
	XV-155F024 C	HPCI Valve	Excess Flow Check Valve	N/A
	XV-155F024 D	HPCI Valve	Excess Flow Check Valve	N/A
Liquid Radwaste Collection	HV-16108 A1	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16108 A2	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16116 A1	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16116 A2	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
Demin Water	1-41-017 (d)	Demineralized Water	Manual	N/A
	1-41-018 (d)	Demineralized Water	Manual	N/A
Nuclear Boiler	141F010 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141F010 B (d)	Feedwater Isolation Valve	Manual Check	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 4 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler (continued)	141F039 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141F039 B (d)	Feedwater Isolation Valve	Manual Check	N/A
	141818 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141818 B (d)	Feedwater Isolation Valve	Manual Check	N/A
	HV-141F016	MSL Drain Isolation Valve	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (10)
	HV-141F019	MSL Drain Isolation Valve	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (10)
	HV-141F022 A	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 B	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 C	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 D	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 A	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 B	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 C	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 D	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F032 A	Feedwater Isolation Valve	Power Operated Check	N/A
	HV-141F032 B	Feedwater Isolation Valve	Power Operated Check	N/A
	XV-141F009	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 5 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler (continued)	XV-141F072 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
Nuclear Boiler Vessel Instrumentation	XV-14201	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-14202	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F041	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F043 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F043 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F045 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F045 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F047 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F047 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 6 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler Vessel Instrumentation (continued)	XV-142F053 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F055	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F057	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 E	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 F	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 G	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 H	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 L	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 M	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 N	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 P	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 R	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 S	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 T	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 U	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F061	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
RBCCW	HV-11313	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11314	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11345	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11346	RBCCW	Automatic Valve	2.c, 2.d (30)

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 7 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
RCIC	1-49-020 (d)	RCIC INJECTION	Manual	N/A
	149F021 (b)(c)(d)	RCIC Minimum Recirculation Flow	Manual Check	N/A
	149F028 (a)(d)	RCIC Vacuum Pump Discharge	Manual Check	N/A
	149F040 (a)(d)	RCIC Turbine Exhaust	Manual Check	N/A
	FV-149F019 (b)(c)	RCIC Minimum Recirculation Flow	Power Operated	N/A
	HV-149F007	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (20)
	HV-149F008	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (20)
	HV-149F013	RCIC Injection	Power Operated	N/A
	HV-149F031 (b)(c)	RCIC Suction	Power Operated	N/A
	HV-149F059 (a)	RCIC Turbine Exhaust	Power Operated	N/A
	HV-149F060 (a)	RCIC Vacuum Pump Discharge	Power Operated	N/A
	HV-149F062	RCIC Vacuum Breaker	Automatic Valve	4.b, 4.d (10)
	HV-149F084	RCIC Vacuum Breaker	Automatic Valve	4.b, 4.d (10)
	HV-149F088	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (12)
	XV-149F044 A	RCIC	Excess Flow Check Valve	N/A
	XV-149F044 B	RCIC	Excess Flow Check Valve	N/A
	XV-149F044 C	RCIC	Excess Flow Check Valve	N/A
	XV-149F044 D	RCIC	Excess Flow Check Valve	N/A
RB Chilled Water System	HV-18781 A1	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 A2	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 B1	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 B2	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18782 A1	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 A2	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 B1	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 B2	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18791 A1	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 A2	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 B1	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 B2	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18792 A1	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
	HV-18792 A2	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
	HV-18792 B1	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
	HV-18792 B2	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
Reactor Recirculation	143F013 A (d)	Recirculation Pump Seal Water	Manual Check	N/A
	143F013 B (d)	Recirculation Pump Seal Water	Manual Check	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 8 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Reactor Recirculation (continued)	XV-143F003 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F003 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F004 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F004 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F017 A	Recirculation Pump Seal Water	Excess Flow Check Valve	N/A
	XV-143F017 B	Recirculation Pump Seal Water	Excess Flow Check Valve	N/A
	XV-143F040 A	Reactor Recirculation	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 9 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Reactor Recirculation (continued)	XV-143F040 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F040 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F040 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F057 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F057 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	HV-143F019	Reactor Coolant Sample	Automatic Valve	2.b (9)
	HV-143F020	Reactor Coolant Sample	Automatic Valve	2.b (2)
Residual Heat Removal	HV-151F004 A (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 B (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 C (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 D (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F007 A (b)(c)	RHR-Minimum Recirculation Flow	Power Operated	N/A
	HV-151F007 B (b)(c)	RHR-Minimum Recirculation Flow	Power Operated	N/A
	HV-151F008	RHR - Shutdown Cooling Suction	Automatic Valve	6.a, 6.b, 6.c (52)
	HV-151F009	RHR - Shutdown Cooling Suction	Automatic Valve	6.a, 6.b, 6.c (52)
	HV-151F011 A (b)(d)	RHR-Suppression Pool Cooling/Spray	Manual	N/A
	HV-151F011 B (b)(d)	RHR-Suppression Pool Cooling/Spray	Manual	N/A
	HV-151F015 A	RHR - Shutdown Cooling Return/LPCI Injection	Power Operated	N/A
	HV-151F015 B	RHR - Shutdown Cooling Return/LPCI Injection	Power Operated	N/A
	HV-151F016 A (b)	RHR - Drywell Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F016 B (b)	RHR - Drywell Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F022	RHR - Reactor Vessel Head Spray	Automatic Valve	2.d, 6.a, 6.b, 6.c (30)
	HV-151F023	RHR - Reactor Vessel Head Spray	Automatic Valve	2.d, 6.a, 6.b, 6.c (20)
	HV-151F028 A (b)	RHR - Suppression Pool Cooling/Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F028 B (b)	RHR - Suppression Pool Cooling/Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F050 A	RHR - Shutdown Cooling Return/LPCI Injection Valve	Air Operated Check Valve	N/A
	HV-151F050 B	RHR - Shutdown Cooling Return/LPCI Injection Valve	Air Operated Check Valve	N/A
	HV-151F103 A (b)	RHR Heat Exchanger Vent	Power Operated	N/A
	HV-151F103 B (b)	RHR Heat Exchanger Vent	Power Operated	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 10 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Residual Heat Removal (continued)	HV-151F122 A	RHR - Shutdown Cooling Return/LPCI Injection Valve	Power Operated (Air)	N/A
	HV-151F122 B	RHR - Shutdown Cooling Return/LPCI Injection Valve	Power Operated (Air)	N/A
	PSV-15106 A (b)(d)	RHR - Relief Valve Discharge	Relief Valve	N/A
	PSV-15106 B (b)(d)	RHR - Relief Valve Discharge	Relief Valve	N/A
	PSV-151F126 (d)	RHR - Shutdown Cooling Suction	Relief Valve	N/A
	XV-15109 A	RHR	Excess Flow Check Valve	N/A
	XV-15109 B	RHR	Excess Flow Check Valve	N/A
	XV-15109 C	RHR	Excess Flow Check Valve	N/A
	XV-15109 D	RHR	Excess Flow Check Valve	N/A
RWCU	HV-144F001 (a)	RWCU Suction	Automatic Valve	5.a, 5.b, 5.c, 5.d, 5.f, 5.g (30)
	HV-144F004 (a)	RWCU Suction	Automatic Valve	5.a, 5.b, 5.c, 5.d, 5.e, 5.f, 5.g (30)
	XV-14411 A	RWCU	Excess Flow Check Valve	N/A
	XV-14411 B	RWCU	Excess Flow Check Valve	N/A
	XV-14411 C	RWCU	Excess Flow Check Valve	N/A
	XV-14411 D	RWCU	Excess Flow Check Valve	N/A
	XV-144F046	RWCU	Excess Flow Check Valve	N/A
	HV-14182 A	RWCU Return Isolation Valve	Power Operated	N/A
	HV-14182 B	RWCU Return Isolation Valve	Power Operated	N/A
SLCS	148F007 (a)(d)	SLCS	Manual Check	N/A
	HV-148F006 (a)	SLCS	Power Operated Check Valve	N/A
TIP System	C51-J004 A (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 B (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 C (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 D (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 E (Shear Valve)	TIP Shear Valves	Squib Valves	N/A

Table B 3.6.1.3-1 (continued)
Primary Containment Isolation Valve
(Page 11 of 11)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
TIP System (continued)	C51-J004 A (Ball Valve)	TIP Ball Valves	Automatic Valve	2.a, 2.d (5)
	C51-J004 B (Ball Valve)	TIP Ball Valves	Automatic Valve	2.a, 2.d (5)
	C51-J004 C (Ball Valve)	TIP Ball Valves	Automatic Valve	2.a, 2.d (5)
	C51-J004 D (Ball Valve)	TIP Ball Valves	Automatic Valve	2.a, 2.d (5)
	C51-J004 E (Ball Valve)	TIP Ball Valves	Automatic Valve	2.a, 2.d (5)

(a) Isolation barrier remains water filled or a water seal remains in the line post-LOCA, isolation valve is tested with water. Isolation valve leakage is not included in 0.60 L_a total Type B and C tests.

(b) Redundant isolation boundary for this valve is provided by the closed system whose integrity is verified by the Leakage Rate Test Program.

(c) Containment Isolation Valves are not Type C tested. Containment bypass leakage is prevented since the line terminates below the minimum water level in the Suppression Chamber. Refer to the IST Program.

(d) LCO 3.3.3.1, "PAM Instrumentation", Table 3.3.3.1-1, Function 6, does not apply since these are relief valves, check valves, manual valves or deactivated and closed.

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001-1363 | 2. PAGE 1 OF 3 | 3. PROC. NO. ON-117-001 REV. 19

4. FORMS REVISED - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___

5. PROCEDURE TITLE
Loss of Instrument Bus

6. REQUESTED CHANGE
PERIODIC REVIEW ☒ NO ☐ YES
INCORPORATE PCAFS ☒ NO ☐ YES # ______ # ______ # ______ # ______
REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE
Corrected Typo on Attachment F.

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS
(Refer to Section 6.1.4)
PORC REVIEW REQ'D? ☒ NO ☐ *YES*
ERC REVIEW REQ'D? ☒ NO ☐ *YES*

9. PORC MTG# N/A
10. ERC MTG# N/A

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Hester Justick / 3544 / 4/11/01
PREPARER (Print or Type) ETN DATE

16. COMMUNICATION OF CHANGE REQUIRED?
☒ NO ☐ YES (TYPE) N/A

17. RJ Merrill 4/17/01
RESPONSIBLE SUPERVISOR DATE

SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. N/A
FUM APPROVAL DATE

19. RESPONSIBLE APPROVER
N/A
INITIALS DATE

ENTER N/A IF FUM HAS APPROVAL AUTHORITY

CONTROLLED

RECEIVED
APR 18 2001
DOCUMENT CONTROL SERVICES

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001-1363	2. PAGE 2 OF 3	3. PROC. NO. ON-117-001 REV. 19

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

   a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5) ☐ YES ☒ N/A

   b. 50.59 or 72.48 Safety Evaluation (Note: 50.59 Safety Evaluations prepared on Form NDAP-QA-0726-1 Rev. 5 or earlier also require a 50.59 & 72.48 Screening Determination) ☐ YES ☒ N/A

   Safety Evaluation No. ______________

   c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required ☒ YES ☐ N/A

12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722? ☐ YES ☒ NO

13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.) ☐ YES ☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR		
TECHNICAL REVIEW		
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ______________		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001-4096 | 2. PAGE 1 OF 3 | 3. PROC. NO. ON-117-001 REV. 19

4. FORMS REVISED - ___ R___, - ___ R___, - ___ R___, - ___ R___, - ___ R___, - ___ R___

5. PROCEDURE TITLE
LOSS OF INSTRUMENT BUS

6. REQUESTED CHANGE

PERIODIC REVIEW ☒ NO ☐ YES

INCORPORATE PCAFS ☒ NO ☐ YES # ______ # ______ # ______ # ______

REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE
pg 38, Attachment E, delete item # 32.

The requirement to maintain an operable Loose Parts Monitor has been removed from the SSES Unit 1 and 2 TRM per change request 3258 (Safety Evaluation NL-01-008, PORC Approved Meeting #01-03-22). As a result the existing Loose Parts Monitor will no longer be maintained as an operating plant system.The purpose of DCP 322168 is to defeat the operation of this monitor, and to remove the vibration monitor sensors, where those sensors interfere with vessel nozzle inspections, in SSES Unit 2 for the U210RIO. The remaining Unit2, and all Unit 1, components will be abandoned in-place, pending a future modification for complete removal of the system from each Unit. As such, the Loose Parts Monitoring System is no longer supplied power from Bus 1Y218.

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS
(Refer to Section 6.1.4)
PORC REVIEW REQ'D? ☒ NO ~~☒ YES~~ 4/6/01

ERC REVIEW REQ'D? ☒ NO ☐ YES

9. PORC MTG# N/A

10. ERC MTG# n/a

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Gary J. Treven / 254-3112 / 03/27/01
PREPARER (Print or Type) / ETN / DATE

16. COMMUNICATION OF CHANGE REQUIRED? ☐ NO ☒ YES (TYPE) OPS hot box

17. [signature] 4/2/01
RESPONSIBLE SUPERVISOR / DATE

SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. [signature] 4/3/01
FUM APPROVAL / DATE

19. RESPONSIBLE APPROVER
N/A
INITIALS / DATE

ENTER N/A IF FUM HAS APPROVAL AUTHORITY

RECEIVED
APR 5 2001
DOCUMENT CONTROL SERVICES - SSES

CONTROLLED

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001-4096	2. PAGE 2 OF 3	3. PROC. NO. ON-117-001 REV. 19

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

    a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5) — ☒ YES ☐ N/A

    b. 50.59 or 72.48 Safety Evaluation (Note: 50.59 Safety Evaluations prepared on Form NDAP-QA-0726-1 Rev. 5 or earlier also require a 50.59 & 72.48 Screening Determination) — ☐ YES ☒ N/A

    Safety Evaluation No. ________________

    c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required — ☐ YES ☒ N/A

12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722? — ☐ YES ☒ NO

13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.) — ☐ YES ☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR		
TECHNICAL REVIEW	David W. Clark NSE	03/30/01
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ________		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE COVER SHEET

SUSQUEHANNA STEAM ELECTRIC STATION PP&L	NUCLEAR DEPARTMENT PROCEDURE LOSS OF INSTRUMENT BUS	ON-117-001 Revision 19 Page 1 of 72

QUALITY CLASSIFICATION: (X) QA Program ( ) Non-QA Program	APPROVAL CLASSIFICATION: (X) Plant ( ) Non-Plant ( ) Instruction

EFFECTIVE DATE: 06/29/00

PERIODIC REVIEW FREQUENCY: 2 Years

PERIODIC REVIEW DUE DATE: 6/30/02

RECOMMENDED REVIEWS:

Procedure Owner: Shift Technical Advisor - D Shift

Responsible Supervisor: Shift Supervisor - D Shift

Responsible FUM: Manager-Nuclear Operations

Responsible Approver: Manager-Nuclear Operations

1.0 SYMPTOMS AND OBSERVATIONS

1.1 Any of following alarms on Panel 1C651:

1.1.1 INSTRUMENT AC UPS 1D130/PNL 1Y128 TROUBLE ABNORMAL

1.1.2 INSTRUMENT AC 1Y216 POWER FAILURE

1.1.3 INSTRUMENT AC UPS 1D240 TROUBLE/ABNORMAL

1.1.4 INSTRUMENT AC 1Y218/1Y219 POWER FAILURE

1.1.5 INSTRUMENT AC 1Y226 POWER FAILURE

1.1.6 INSTRUMENT AC 1Y236 POWER FAILURE

1.1.7 INSTRUMENT AC 1Y246 POWER FAILURE

1.1.8 VITAL AC UPS PANEL 1L666 TROUBLE/ABNORMAL

1.2 Instruments failing, loss of equipment and/or functions indicating loss of instrument bus.

2.0 AUTOMATIC ACTIONS

Automatic actions contained in attachments for operator actions.

3.0 OPERATOR ACTION

CHECKED

3.1 On indication of instrument bus trouble, REFER to Attachment A to determine affected bus. ______

3.1.1 If instrument bus 1Y128 trouble, PERFORM section 3.2. ✓______

3.1.2 If instrument bus 1Y216 power failure, PERFORM section 3.3. ______

3.1.3 If instrument bus 1Y218/1Y219 trouble, PERFORM section 3.4. ______

3.1.4 If instrument bus 1Y226 power failure, PERFORM section 3.5. ______

3.1.5 If instrument bus 1Y236 power failure, PERFORM section 3.6. ______

3.1.6 If instrument bus 1Y246 power failure, PERFORM section 3.7. ______

3.1.7 If instrument bus 1Y629 power failure, PERFORM section 3.8. ______

3.1.8 If instrument bus 1Y115 power failure, PERFORM section 3.9. ______

3.1.9 If instrument bus 1Y125 power failure, PERFORM section 3.10. ______

CHECKED

3.2 INSTRUMENT BUS 1Y128 TROUBLE

3.2.1 DETERMINE if 1Y128 energized by actuation of static transfer by checking instruments listed in Attachment B. ______

3.2.2 If 1Y128 not energized:

NOTE: Annunciator INSTRUMENT AC UPS 1D130/PNL 1Y128 TROUBLE/ABNORMAL may alarm momentarily even though battery backup sustained power to panel.

a. If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. ______

b. REFER to Attachment B for functions/instrumentation lost and recommended actions. ______

c. DISPATCH Operator to 120V Instrument AC UPS 1D130 and Panel 1Y128. ______

d. On 1D130, OBSERVE local UPS annunciation panel, front panel controls and indicators to determine cause of power annunciation. REFERENCE OP-157-002 Attachment B for fault indicators and their functions. ______

e. On 1D130, if CB 1, AC input to rectifier, tripped and no local annunciation indicates cause of power failure and UPS not supplying output power, PLACE on Bypass Power as follows: ______

(1) OPEN CB 1.

(2) OPEN CB 3, critical bus AC output to inverter.

(3) On 1D131 External Maintenance UPS Bypass Panel, PLACE UPS 1D130 Bypass Switch to BY-PASS.

CHECKED

(4) On 1D132, OPEN 250V DC Battery Breaker CB 2.

(5) ENSURE restoration of instruments/functions in accordance with Attachment B.

f. If loss of 1Y128 due to fault: ______

(1) OPEN all circuit breakers in Panel 1Y128.

(2) CLOSE Main Breaker inside Panel 1Y128.

(3) CLOSE circuit breakers in Panel 1Y128 one at a time.

(a) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN 1Y128 breaker that caused trip.

(b) RECLOSE Main Breaker and continue restoration.

3.2.3 When condition cleared/corrected, DISPATCH Operator to 120V Instrument AC, UPS 1D130 to restore system to normal in accordance with OP-157-002 placing UPS 1D130 in service. ______

CHECKED

3.3 INSTRUMENT BUS 1Y216 POWER FAILURE

3.3.1 REFER to Attachment C for functions/instrumentation lost and recommended actions. ______

3.3.2 REFER to Attachment D for complete list of components and indications lost when Panel 1Y216 de-energized. ______

3.3.3 ENSURE 1B216093 CLOSED. ______

3.3.4 If 1B216093 closed or if alarm does not clear when breaker closed, CHECK alarm relay 27-1Y216 control power fuses at Panel 1Y216. ______

3.3.5 If loss of 1Y216 due to fault:

a. OPEN all circuit breakers in Panel 1Y216.

b. CLOSE Main Breaker inside Panel 1Y216.

c. CLOSE circuit breakers in Panel 1Y216 one at a time.

(1) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN breaker that caused trip.

(2) RECLOSE Main Breaker and continue restoration.

3.3.6 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. (TS 3.8.7 or 3.8.8) ______

CHECKED

3.4 INSTRUMENT BUS 1Y218/1Y219 TROUBLE

3.4.1 DETERMINE if bus 1Y218/1Y219 energized by actuation of static transfer by checking instruments listed in Attachment E. ______

3.4.2 If 1Y218/1Y219 not energized:

NOTE: Annunciator INSTRUMENT AC UPS 1D240 TROUBLE/ABNORMAL may alarm momentarily even though battery backup sustained power to panel.

a. If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. ______

b. REFER to Attachment E for functions/instrumentation lost and recommended actions. ______

c. DISPATCH Operator to 120V Instrument AC UPS 1D240 and Panel 1Y218/1Y219. ______

d. On 1D240, OBSERVE local UPS annunciation panel, front panel controls and indicators to determine cause of annunciation. REFERENCE OP-157-003 Attachment B for fault indicators and their function. ______

e. On 1D240, if CB 1, AC input to rectifier tripped and no local annunciation indicates cause of power failure and UPS not supplying output power, PLACE on Bypass Power as follows: ______

(1) OPEN CB 1.

(2) OPEN CB 3, critical bus AC output to inverter.

(3) On 1D241 External Maintenance UPS Bypass Panel, PLACE UPS 1D240 Bypass Switch to BY-PASS.

CHECKED

(4) On 1D242, OPEN 250V DC Battery Breaker CB 2.

(5) ENSURE restoration of instruments/functions in accordance with Attachment E.

f. If local annunciation indicates unit shutdown due to fault: ______

(1) OPEN all circuit breakers in Panel 1Y218.

(2) CLOSE Main Breaker inside Panel 1Y218.

(3) CLOSE circuit breakers in Panel 1Y218 one at a time.

(a) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN 1Y218 breaker that caused trip.

(b) RECLOSE Main Breaker and continue restoration.

g. If bus 1Y219 deenergized, ENSURE supply Bkr 1Y218 Bkr 38-40-42 CLOSED. ______

3.4.3 When condition cleared/corrected, DISPATCH Operator to 120V Instrument AC UPS 1D240 to restore system to Normal in accordance with OP-157-003, Placing UPS 1D240 in Service. ______

CHECKED

3.5 INSTRUMENT BUS 1Y226 POWER FAILURE

3.5.1 REFER to Attachment F for functions/instrumentation lost and recommended actions. ______

3.5.2 REFER to Attachment G for complete list of components and indications lost when Panel 1Y226 de-energized. ______

3.5.3 ENSURE 1B226024 CLOSED. ______

3.5.4 If 1B226024 closed or if alarm does not clear when breaker closed, CHECK alarm relay 27-1Y226 control power fuses at Panel 1Y226. ______

3.5.5 If loss of 1Y226 due to fault:

a. OPEN all circuit breakers in Panel 1Y226.

b. CLOSE Main Breaker inside Panel 1Y226.

c. CLOSE circuit breakers in Panel 1Y226 one at a time.

(1) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN breaker that caused trip.

(2) RECLOSE Main Breaker and continue restoration.

3.5.6 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. (TS 3.8.7 or 3.8.8) ______

CHECKED

3.6 INSTRUMENT BUS 1Y236 POWER FAILURE

3.6.1 REFER to Attachment H for function/instrumentation lost and recommended actions. ______

3.6.2 REFER to Attachment I for complete list of components and indications lost when Panel 1Y236 de-energized. ______

3.6.3 ENSURE 1B236093 CLOSED. ______

3.6.4 If 1B236093 closed or if alarm does not clear when breaker closed, CHECK alarm relay 27-1Y236 control power fuses at Panel 1Y236. ______

3.6.5 If loss of 1Y236 due to fault:

a. OPEN all circuit breakers in Panel 1Y236.

b. CLOSE Main Breaker inside Panel 1Y236.

c. CLOSE circuit breakers in Panel 1Y236 one at a time.

(1) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN breaker that caused trip.

(2) RECLOSE Main Breaker and continue restoration.

3.6.6 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. (TS 3.8.7 3.8.8) ______

CHECKED

3.7 INSTRUMENT BUS 1Y246 POWER FAILURE

3.7.1 REFER to Attachment J for functions/instrumentation lost and recommended actions. ______

3.7.2 REFER to Attachment K for complete list of components and indications lost when Panel 1Y246 de-energized. ______

3.7.3 ENSURE 1B246023 CLOSED. ______

3.7.4 If 1B246023 closed or if alarm does not clear when breaker closed, CHECK alarm relay 27-1Y246 control power fuse at Panel 2Y246. ______

3.7.5 If loss of 1Y246 due to fault:

a. OPEN all circuit breakers in Panel 1Y246.

b. CLOSE Main Breaker inside Panel 1Y246.

c. CLOSE circuit breakers in Panel 1Y246 one at a time.

(1) If closing breaker causes Main Breaker to trip, OPEN and leave OPEN breaker that caused trip.

(2) RECLOSE Main Breaker and continue restoration.

3.7.6 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. (TS 3.8.7 or 3.8.8) ______

CHECKED

3.8 INSTRUMENT BUS 1Y629 POWER FAILURE

3.8.1 DETERMINE if 1Y629 energized by static transfer actuation by CHECKING instruments listed in Attachment L.

3.8.2 If 1Y629 not energized:

a. REFER to Attachment L for functions/instrumentation lost and recommended actions. ______

b. DISPATCH Operator to Vital UPS Panel 1D666.

c. If CB-2 System Output Breaker tripped: ______

(1) OPEN all circuit breakers on Panel 1Y629.

(2) CLOSE CB-2 System Output Breaker.

(3) CLOSE circuit breakers on Panel 1Y629 one at a time.

(a) If closing breaker causes CB-2 System Output Breaker to trip, OPEN and leave OPEN 1Y629 breaker that caused trip.

(b) RECLOSE CB-2 System Output Breaker and continue restoration.

(c) RESTORE to normal configuration in accordance with OP-157-001.

d. If "DC On PL17" light EXTINGUISHED and static transfer switch "Inverter Supply PL1" light ILLUMINATED: ______

(1) ENSURE CB-4 Alternate Source AC Input to Static Switch breaker CLOSED.

(2) PRESS Alt. Source to Load PB2.

(3) If static switch does not transfer, OPEN CB-1 Battery Input Breaker.

CHECKED

(4) RESTART inverter in accordance with OP-157-001, Placing Un-interruptible AC System in Service.

e. If unable to restart inverter: ______

(1) OPEN CB-2 System Output Breaker.

CAUTION

FOLLOWING STEPS WILL DISABLE TRANSFER OPERABILITY OF UPS SYSTEM

(2) PLACE Bypass Switch (located in cabinet #3) from NORMAL to BYPASS position.

(3) CLOSE CB-2 System Output Breaker and check power RESTORED.

f. If "DC On PL17" light EXTINGUISHED and "Alternate Supply PL2" light EXTINGUISHED: ______

(1) ENSURE 1B246082 CLOSED.

(2) ENSURE CB-6 Alternate Source AC Input CLOSED.

3.8.3 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. ______

3.8.4 When condition cleared/corrected, DISPATCH Operator to Vital UPS Panel 1D666 to restore system to normal configuration in accordance with OP-157-001. ______

CHECKED

3.9 INSTRUMENT BUS 1Y115 POWER FAILURE

3.9.1 REFER to Attachment M for functions/instrumentation lost and recommended actions.

3.9.2 ENSURE 1D614030 CLOSED.

3.9.3 DISPATCH Operator to 1D115.

a. OBSERVE 1D115 Master Unit Indicating Light ILLUMINATED.

b. OBSERVE 1D115 Slave Unit Indicating Light ILLUMINATED.

3.9.4 IF 1D115 Indicating Lights EXTINGUISHED:

a. At 1C661-A1, PLACE HSE-111505 in ALTERNATE position.

b. At 1C690A, PLACE HSE-111502 in ALTERNATE position.

c. At 1C601-18C, PLACE HSE-111501 in ALTERNATE position.

d. If Attachment M instruments remain deenergized, PROCEED to section 3.3 to determine availability of backup power supply 1Y216.

3.9.5 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised.

CHECKED

3.10 INSTRUMENT BUS 1Y125 POWER FAILURE

3.10.1 REFER to Attachment N for functions/instrumentation lost and recommended actions. ______

3.10.2 ENSURE 1D624030 CLOSED. ______

3.10.3 DISPATCH Operator to 1D125. ______

a. OBSERVE 1D125 Master Unit Indicating Light ILLUMINATED.

b. OBSERVE 1D125 Slave Unit Indicating Light ILLUMINATED.

3.10.4 If 1D125 Indicating Lights EXTINGUISHED:

a. At 1C661-B1, PLACE HSE-112505 in ALTERNATE position. ______

b. At 1C690B, PLACE HSE-112502 in ALTERNATE position. ______

c. At 1C601-22B, PLACE HSE-112501 in ALTERNATE position. ______

d. If Attachment N instruments remain deenergized, PROCEED to section 3.5 to determine availability of backup power supply 1Y226. ______

3.10.5 If bus remains deenergized or if plant conditions begin to degrade unacceptably, Shift Supervision shall EVALUATE plant conditions and take appropriate actions to ensure safety not compromised. ______

3.11 Upon resolution of problem, ENSURE restoration of system alignment in accordance with OP-117-001. ______

3.12 Unit 1 Unit Supervisor comments:

____

____

____

3.13 FORWARD completed ON-117-001 for review and retention as follows:

3.13.1 Unit Supervisor

Signature / Date

3.13.2 Shift Supervisor

Signature / Date

3.13.3 Operations Supervisor-Nuclear

Signature / Date

3.13.4 Manager-Nuclear Operations

Signature / Date

3.13.5 DCS

4.0 REFERENCES

4.1 Electrical Schematic E-10

4.2 Electrical Schematic E-16

4.3 Electrical Schematic E-15

4.4 Electrical Schematic E-25

4.5 Electrical Schematic E-64

4.6 SEA-EE-450 Unit 1 120V AC Loss of Instrument Bus Study

4.7 TS 3.8.7

4.8 TS 3.8.8

5.0 DISCUSSION

Instrument busses provide power for the majority of plant instrument and control loops, as well as power to many solenoid operated components.

This procedure lists those functions affected by loss of each instrument bus which have been identified as having a potential effect on ability to place plant in cold shutdown or significantly affects plant operation. Alternate means of performing affected functions and backup instrumentation to be used is also provided, where possible. No attempt has been made to include all functions and instrumentation lost.

Upon losing an instrument bus, every effort will be made to restore power promptly when cause of loss has been determined and corrected. While doing this, reactor parameters will be closely monitored, and unusual conditions may be a cause for scram.

INSTRUMENTATION/POWER SUPPLY CROSS-REFERENCE

PANEL 1C601

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
TI-11208A	RHRSW PP A DSCH TEMP	1Y21602	
FI-E11-1R602A	RHRSW HX A INLET FLOW	1Y21602	
FI-E11-1R603A	RHR A/C FLOW	1Y21602	
FI-E11-1R607	RHR HEAD CLG FLOW	1Y21602	
PI-E11-1R606A1	INLET PRESS TO HX A	1Y21602	
HS-12661	INSTR GAS TIP INDEX ISO SV-12661	1Y21613	
LI-15776A	SUPP POOL LEVEL	1Y11505	1Y21620
LR-15776A	SUPP POOL LEVEL	1Y11505	1Y21620
LR-14202	RPV LVL DIV 1	1Y11505	1Y21620
LR/PR-14201A	POST ACCIDENT MON RECORDER	1Y11505	1Y21620
PR-15710A	CONTN PRESS	1Y11505	1Y21620
VI-14181A	SRV POSITION INDICATION	1Y21625	
LI-14201A	RPV LVL DIV 1	1Y11501	1Y21633
PI-14202A	RPV PRESS DIV 1	1Y11501	1Y21633
LI-14203A	RPV LVL DIV 1	1Y11501	1Y21633
PI-14204A	RPV PRESS DIV 1	1Y11501	1Y21633
LI-B21-1R605	RPV LVL SHUTDOWN RANGE	1Y21809	
FI-E11-1R608	RHR FLOW	1Y22602	
FI-E11-1R603B	RHR B/D FLOW	1Y22602	
PI-E11-1R606B1	INLET PRESS TO HX B	1Y22602	
FI-E11-1R602B	RHRSW HX B INLET FLOW	1Y22609	
HS-12614	INSTR GAS COMPRESSOR	1Y22614	
HS-12644	INSTR GAS MN STM RV OB ISO SV-12644	1Y22616	
LR-15776B	SUPP POOL LEVEL	1Y12505	1Y22623
LR/PR-14201B	POST ACCIDENT MON RECORDER	1Y12505	1Y22623
PR-15710B	CONTN PRESS	1Y12505	1Y22623
TR-15790A1	CONTAINMENT TEMPERATURE AND CMPTR INPUTS	1Y11501 1Y62925	1Y21633
LI-15775B	SUPP POOL LEVEL	1Y12505	1Y22623
VI-14181B	SRV POSITION INDICATION	1Y22625	
LI-14201B	RPV LVL DIV 2	1Y12501	1Y22623

INSTRUMENTATION/POWER SUPPLY CROSS-REFERENCE

PANEL 1C601 (continued)

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
PI-14202B	RPV PRESS DIV 2	1Y12501	1Y22633
LI-14203B	RPV LVL DIV 2	1Y12501	1Y22633
LI-14205B	RPV LVL DIV 1	1Y12501	1Y22633
PI-14204B	RPV PRESS DIV 2	1Y12501	1Y22633
TR-E41-1R605	HPCI OIL TEMP	1Y24601	
LI/FI-14806	STANDBY LIQUID CTL	1Y62916	
PI-E11-11203A	RHRSW PP A DSCH PRESS	1Y62925	
PI-12612	INSTR GAS HDR PRESS	1Y62925	
PI-12642	INSTR GAS SUPPLY PRESS	1Y62925	
PI-15702	CONTN OR SUPP CHMBR PRESS	1Y62925	
PI-E11-11203B	RHRSW PP B DSCH PRESS	1Y62925	
TI-11208B	RHRSW PP B DSCH TEMP	1Y62925	
FI-15120B	DRYWELL SPRAY FLOW	1Y12501	1Y22633
TI-15127B	RHR HX DISCH TEMP	1Y12501	1Y22633
PI-12649	CIG BOTTLE PRESS	1Y11505	1Y21620
TR-15790B1	DRYWELL TEMP	1Y12505	1Y22623
LI-15775B	SUP POOL LEVEL	1Y12505	1Y22623
LI-15775A	SUP POOL LEVEL	1Y11505	1Y21620
TI-15127A	RHR HX DISCH TEMP	1Y11501	1Y21633
FI-15120A	DRYWELL SPRAY FLOW	1Y11501	1Y21633
TIAH-15751	SPOTMOS	1Y11502	1Y21626
TIAH-15752	SPOTMOS	1Y12502	1Y22626
AR-15746A	CONTAINMENT H_2/O_2	1Y11505	1Y21620
AR-15746B	CONTAINMENT H_2/O_2	1Y12505	1Y22623
RR-15720A	CONTAINMENT RADIATION	1Y11505	1Y21620
RR-15720B	CONTAINMENT RADIATION	1Y12505	1Y22623

INSTRUMENTATION/POWER SUPPLY CROSS-REFERENCE

PANEL 1C651

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
LI-14201A1	RPV LVL DIV 1	1Y11501	1Y21633
PI-14202A1	RPV PRESS DIV 1	1Y11501	1Y21633
C12A-Z4	FULL CORE DISPLAY	1Y21811	
LI-14201B1	RPV LVL DIV 2	1Y12501	1Y22633
PI-14202B1	RPV PRESS DIV 2	1Y12501	1Y22633

PANEL 1C652

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
NR-C51-1R603C	IRM-APRM-RBM FLUX	1Y21811	
		1Y21807	
NR-C51-1R603B	IRM-APRM FLUX	1Y21811	
		1Y21807	
NR-C51-1R603A	IRM-APRM FLUX	1Y21811	
PR-C32-1R609	MAIN STEAM PRESS	1Y21807	
		1Y62927	
LI-B21-1R604	RX WATER LEVEL WR	1Y21809	
NR-C51-1R603D	IRM-APRM-RBM FLUX	1Y21811	
TR-B31-1R650	RECIRC PP SUCT TEMP	1Y21841	
		1Y22602	
LI-C32-1R606A	RX WATER LEVEL A	1Y62927	
PI-C32-1R605	RX PRESS	1Y62927	
		1Y21807	

PANEL 1C690A

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
TX-15751	SPOTMOS	1Y11502	1Y21626

PANEL 1C690B

DEVICE NUMBER	DESCRIPTION	NORMAL POWER SERVICE	ALTERNATE POWER SERVICE
TX-15752	SPOTMOS	1Y12502	1Y22626

INSTRUMENTATION/POWER SUPPLY CROSS-REFERENCE

PANEL 0C653

PI-01107A	ESW LOOP A PP A/C DSCH HEADER PRESS	1Y11505	1Y21620
PI-01107B	ESW LOOP B PP B/D DSCH HEADER PRESS	1Y12505	1Y22623
TI-01106A	ESW LOOP A PP A/C DSCH HEADER TEMP	1Y11505	1Y21620
TI-01106B	ESW LOOP B PP B/D DSCH HEADER TEMP	1Y12505	1Y22623
FI-01109A	ESW LOOP A PP A/C DSCH HEADER FLOW	1Y11505	1Y21620
FI-01109B	ESW LOOP B PP B/D DSCH HEADER FLOW	1Y12505	1Y22623

PANEL 1C668

HS-12500A1	INSTR AIR CMP 1K107A	1Y21614
HS-12500B1	INSTR AIR CMP 1K107B	1Y21614
TIC-10946	TBCCW COOLER TEMP	1Y62923
TIC-11028	RBCCW COOLER TEMP	1Y62923
TI-11305	RBCCW HX DSCH TEMP	1Y62923
TI-11408	TBCCW HX DSCH TEMP	1Y62923
PI-11308	RBCCW HX DSCH PRESS	1Y62925
PI-11409	TBCCW HX DSCH PRESS	1Y62925
PI-12511A	INSTR AIR PRESS	1Y62925
PI-12511B	INSTR AIR PRESS	1Y62925

LOSS OF BUS 1Y128

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

	FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1.	SJAE HV-10701A and B fail shut, and indicating lights go out. Condenser will lose vacuum and Main Turbine will trip if restoration is not done immediately.	Upon power restoration, RESTORE OFFGAS IAW ON-172-001 (restoration of recombiner shutdown).
2.	M-G Sets A and B scoop tube positioners lock and runback signal initiated.	RESET runback prior to resetting scoop tube positioner in accordance with OP-164-001, Reactor Recirculation System.
3.	M-G Sets Ventilation Dampers HD-17401A,B close	Upon power restoration, ENSURE one fan in service with its associated discharge damper OPEN.
4.	FW Heater String A and C Extraction Steam Drain Valves fail open and indication on Panel 1C668 is lost.	FW Heater Strings B still operable. RECLOSE following Extraction Steam After Seat Drain Valves HV-10209A, HV-10218A, HV-10246A for Feedwater Heaters 1-3A,1-4A and 1-5A and HV-10209C, HV10218C, HV10246C for Feedwater Heaters 1-3C, 1-4C, 1-5C by depressing common CLOSE pushbuttons for HTR STRING A and C EXTR LINE DRNS HS-10220A and HS-10220C on Panel 1C668. RECLOSE following Extraction Steam Before Seat Drain Valves HV10204A, HV10205A, HV10220A for Feedwater Heaters 1-3A,1-4A, 1-5A and HV-10204C, HV-10205C, HV-10220C for Feedwater Heaters 1-3C, 1-4C, 1-5C by having Electrical Maintenance re-engergize seal-in relays in Panels 1C101 and 1C103.

LOSS OF BUS 1Y128

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
5. Main Steam After CV Drain Valves for CV-3 and 4 fail open	If Turbine does not Trip, CLOSE HV-10106A and B to prevent dumping steam to Main Condenser.
6. Control Power to 0C532	Upon power restruction, ENSURE one Clarified Water Pump in service supplying Circ. and Serv. Water Pump Seals.
7. Off Gas Delay Line Drain Valve LV-17106 fails closed.	DRAIN delay line using manual valve 1-71-038 when high level alarm received.
8. RFPT A,B,and C Turning Gear will not auto start	Turning Gear must be manually engaged and started.
9. Liquid Radwaste Effluent Rad Monitor RITS-06433	REQUEST Chemistry reset memory, including setpoints, of RITS-06433 located at Panel 0C301.
10. Cooling Tower Makeup Valve LV-11573 fails open.	Control level with Cooling Tower M/U isolation 1-15-091.
11. Offgas Pretreatment Rad Monitors will alarm Downscale/inop.	PLACE Linear Pretreatment Rad Monitor in Standby.
12. Turbine Bldg SPING will alarm on no flow.	Have Chemistry place SPING in Standby for duration of power outage.
13. Cltwr Bldn Flow FR-11503	None
14. Condensate Demin Panel control	None
15. Cooling Tower Sliding Gate Valves HV-11571A,B,C,D fail as is and COLD WEATHER BYPS HV-11571A,B,C,D indication on Panel 1C668 lost.	None
16. Turb Bldg Filtered Exhaust System Filters isolate and auto start of exhaust fans inhibited.	None

LOSS OF BUS 1Y128

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
17. Reactor Feedpump Mist Eliminator de-energizes control power.	None
18. Main Turbine Mist Eliminator 1K105 de-energizes control power.	None
19. Turbine Building HVAC Fans trip.	None
20. Condensate Filtration Bypass FV-10572 fails open, Inlet & Outlet HV-10573A-F & HV-10575A-F fail "as-is". Flow Control Valves FV-10574A-F fail open. CRT screens go blank.	None

LOSS OF BUS 1Y216

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. Containment Instrument Gas Compressors 1K205A,B trip, if running, and INSTR GAS VAC RLF ISO SV-12671 closes.	CROSSTIE Instrument Air to CIG 90 psig header in accordance with OP-125-001.
2. Zone I, II and III Supply, Exhaust and Filter Exhaust A Fans trip and are disabled.	ENSURE B Fans running IAW OP-134(234)-002.
3. 'A' Control Structure Chiller trips on low loop flow.	ENSURE 'B' Chiller running IAW OP-030-001.
4. Drwl/Wetwell Burp Damper HD-17508A	If venting is required, PLACE DRWL/SUPP CHMBR DMP HD-17508A ISO SIGNAL BYPS switch (pnl 1C681) to the DW or SC position to OPEN damper.
5. Suppression Chamber to SGTS IB Iso HV-15703	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.
6. Drywell to SGTS IB Iso HV-15713	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.
7. Reactor Building Closed Cooling Water Emergency Service Water Transfer Valves A control.	USE RBCCW loop B, if required.
8. RWCU, RHR, Main Steam and HPCI Steam Leak Detection System A	Steam Leak Detection System B operable.
9. RHR loop A flow indication FI-E11-1R603A downscale FR-E11-1R608 downscale	USE RHR loop B if required, in accordance with OP-149-002.

LOSS OF BUS 1Y216

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
10. Reactor Vessel pressure indication	
PI-E32-1R656 downscale	PR-C32-1R609 (1C652) PI-C32-1R605 (1C652)
11. Rx Wtr Sample IB ISO HV-143-F019 Closes	Use RWCU Sample Line for RX conductivity monitoring
12. SBLC System B squib valve disabled.	SBLC System A squib valve still functional.
13. H2/02 Analyzer loop A	USE loop B, if required.
14. SRV Acoustic Monitoring	
Div I VISH-14180A	VISH-14180B
15. Suppression Chamber level indication	
LI-15775A* downscale LR-15776A* upscale	LI-15775B (1C601) LR-15776B (1C601)
16. RPV Level Div 1 (Fuel Zone) LR-14202* downscale	LI-14205B RPV Level Div 2 (Fuel Zone)
17. Reactor Water Level	
LI-14201A* Downscale** LI-14201A1* Downscale** LI-14203A* Downscale** LR-14202* Upscale	LI-14201B (1C601) LI-14201B1 (1C651) LI-14203B (1C601) LI-14205B (1C601)
18. Reactor Level and Pressure	
LR/PR-14201A* Downscale	LR/PR-14201B (1C601)

* If powered from alternate supply
** Extended and wide range

LOSS OF BUS 1Y216

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
19. Reactor Pressure	
PI-14202A* Downscale	PI-14202B (1C601)
PI-14202A1* Downscale	PI-14202B1 (1C651)
PI-14204A* Downscale	PI-14204B (1C601)
20. Containment Temperature	
TR-15790A1* (higher than normal)	TR-15790B1 (1C601)
21. Containment Pressure	
PR-15710A* (higher than normal)	PR-15710B (1C601)
22. Suppression Pool Temperature (SPOTMOS)	
TIAH-15751* (Indication Lost)	TIAH-15752 (1C601)
TX-15751* (Indication Lost)	TX-15752 (1C690B)
23. RHR HX Temperature	
TI-15127A* Downscale	TR-E11-1R601 (1C601)
24. ESW Loop A Indication	
TI-01106A* Downscale	Computer Point AETO 1
PI-01107A* Downscale	PI-01104A and C (local)
FI-01109A* Downscale	Computer Point AEF01
25. CIG Bottle Pressure	
PI-12649* Downscale	PI-12643A1 or A2 AND PI-12643B1 or B2 (local)
26. Containment H_2O_2 Indication	
AR-15746A* Upscale	AR-15746B (1C601)
27. Containment Radiation Indication	
RR-15720A* (Higher than Normal)	RR-15720B (1C601)

* If powered from alternate supply

LOSS OF BUS 1Y216

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
28. CRM A, CRM B, and Wetwell Inboard Isolation Valves (SV-157100A, 102A, 100B, 102B, 104, 106) fail closed.	NONE
29. RHR Drywell Spray Flow	
FI-15120A* Downscale	NONE
30. Drywell Sump level/flow	
LR/PR-16102* (Pen As Is, Chart Moves)	NONE
31. Core Spray loop A pressure and flow indication	
FI-E21-1R601A downscale PI-E21-1R600A downscale	None
32. RHR Head Spray flow	
FI-E11-1R607 downscale	None
33. RHRSW Pump A discharge flow FI-1R602A downscale.	None
34. RCIC Steam Line Drip Leg Lvl. Control LSH-E51-1N010	None

* If powered from alternate supply

INSTRUMENT AC 1Y216 LOAD LIST

BKR-01/CONTROL PANEL 0C681

HVAC LOCA and Radiation Trip & Reset Div I
NOTE: With loss of power to HVAC LOCA and Radiation Trip logic the following fans trip and dampers close:
RB Zone I Filtered Exhaust Fan 1V206A
RB Zone I Supply Fan 1V202A
RB Zone I Exhaust Fan 1V205A
RB Zone II Filtered Exhaust Fan 2V206A
RB Zone II Supply Fan 2V202A
RB Zone II Exhaust Fan 2V205A
Unit 1 RB Zone III Filtered Exhaust Fan 1V217A
Unit 1 RB Zone III Exhaust Fan 1V213A
Unit 1 RB Zone III Supply Fan 1V212A
Unit 2 RB Zone III Filtered Exhaust Fan 2V217A
Unit 2 RB Zone III Exhaust Fan 2V213A
Unit 2 RB Zone III Supply Fan 2V212A
Unit 1 Air Lock Iso Dmp HD-17534A,C,D,E,H
Unit 2 Air Lock Iso Dmp HD-27534A,C,D,E,G,H,I
Unit 1 Drywell Burp and Purge Iso HD-17508A
Unit 2 Drywell Burp and Purge Iso HD-27508A

INSTRUMENTATION

SGTS Recirc Sys Inlet Air Flow FI-07557
Chilled Wtr Loop Temp TI-08621A
Chilled Wtr Loop Flow FI-08623A
Emer Cond Wtr Loop Flow FI-08621A

BKR-02/CONTROL PANEL 1C613

RHR Loop A Testable Check Valve HV-E11-1F050A
RHR Loop A Testable Check Bypass HV-E11-1F122A
RHR Loop B Testable Check Valve HV-E11-1F050B
RHR Loop B Testable Check Bypass HV-E11-1F122B
RHR Div I Status Indication
RHR Man Inject HV-E11-1F060A position indication
Core Spray Div I Status Indication

INSTRUMENTATION

SW to RHR HX 1A FI-E11-1R602A
RHR Loop A & B Flow Recorder FR-E11-1R608
RHR Loop A Flow FI-E11-1R603A
Inlet Pressure to RHR HX 1A PI-E11-1R606A1
RHR Temp Recorder TR-E11-1R601
Core Spray Loop A Pressure PI-E21-1R600A
Core Spray Loop A Flow FI-E21-1R601A

INSTRUMENT AC 1Y216 LOAD LIST

BKR-03/CONTROL PANEL 1C291A (CRM Panel)

CRM Analyzer RI-15799A

BKR-04/CONTROL BOX 1CB216A

TBCCW HX 1A/ESW Transfer Valve A Indication
RBCCW HX 1A/ESW Transfer Valve A Control

BKR-06/CONTROL PANEL 1C645

INSTRUMENTATION

HS-12694 Low Level/Hi Drywell Press CIG Bypass (HV-12603)

BKR-07/CONTROL PANEL 1C617A

HPCI Warm-up Isolation Valve HV-E41-1F100
HPCI Div I Status Indication
SLC Squib Valve XV-C41-1F004B
SLC Squib Valve XV-C41-1F004B continuity
SLC Manual Inject Vlv HV-C41-1F008 position indication
Rx Wtr Sample Valve HV-B31-1F019
RHRSW Cross-Tie Drn HV-E11-1F074A

BKR-09/CONTROL PANEL 1C626

Core Spray Testable Check Valve HV-E21-1F006A
Core Spray Testable Check Bypass HV-E21-1F037A
Core Spray Man Inj HV-E21-1F007A position indication

BKR-10/CONTROL PANEL 1C692

Suppression Pool Vacuum Relief Valves Div I
PSV-15704A1 thru PSV-15704E1 control and indication
Excess Flow Check Valves Div I Rows 1 thru 6

INSTRUMENT AC 1Y216 LOAD LIST

BKR-11/CONTROL PANEL 1C614A

RWCU, HPCI, RHR, and Main Steam Div I
Steam Leak Detection System

INSTRUMENTATION

Steam Leak Detection Temperature Indicator TI-14183

BKR-12/24V DC BATTERY CHARGER 1D673-PANEL 1D672

Division I SRM's
Division I IRM's

INSTRUMENTATION

Off Gas Pre-Treat Rad Monitor RIT-1K602
RBCCW Rad Monitor RIT-1K606

BKR-13/CONTROL PANEL 1C661A3

LRW Collection Drywell Floor Drain Inboard Valve and
Equip Drain Tank Iso Valve Div I control logic
Drywell Floor Drain IB Iso Valve HV-16108A1
Drywell Equip Drain Tank IB Iso Valve HV-16116A1
Unit 1 Drywell Purge Supply IB Iso Hv-15722
Unit 1 Suppression Chamber Purge IB Iso HV-15725
Instr Gas Tip Index Iso SV-12661
Instr Gas Vac Relief Iso SV-12671

BKR-14/CONTROL PANEL 1C661A2 (Panel 1C239)

Instrument Gas Compressor 1K205A and 1K205B controls

BKR-15/CONTROL PANEL 1C693

INSTRUMENTATION

High Range Rad Monitor RITS-15720A
High Range Rad Recorder RR-15720A
RX Coolant Press Boundary Leak Detection Recorder RR-15755A

INSTRUMENT AC 1Y216 LOAD LIST

BKR-17/CONTROL PANEL 1C661A3

CAC Atmosphere Monitor OB Valves SV-15742A, SV-15752A, SV-15774A, SV-15734A, SV-15782A (Contn Gas Anlzr Iso Loop A)
CAC Atmosphere Monitor IB Valves SV-15740A, SV-15750A, SV-15776A, SV-15736A, SV-15780A (Contn Gas Anlzr Iso Loop A)
Unit 1 Suppression Chamber to SGTS IB Iso HV-15703
Unit 1 Drywell to SGTS IB Iso Hv-15713
Unit 1 Suppression Pool N2 Makeup Valve SV-15737
Unit 1 Drywell N2 Makeup Valve SV-15767

BKR-18/CONTROL PANEL 1C621

ADS Div I Status Indication
RCIC Div I Status Indication

BKR-19/BYPASS INDICATION SYSTEM PANEL 1B216051

Motor Operated Valve Bypass Indication System (RHR, CS, HPCI, NSSSS)

BKR-20/CONTROL PANEL 1C661A1

Alternate supply to 1Y115-05 (Div 1 ESS Inst. Power)

BKR-21/CONTROL PANEL 1C226A (1C690A)

H2O2 Analyzer System Div I

INSTRUMENTATION

H2 Indicator AI-15745A
O2 Indicator AI-15746A

BKR-22/CONTROL PANEL TB1C018-A1

INSTRUMENTATION

RHR HX A Conductivity CISH-E11-1R001A

INSTRUMENT AC 1Y216 LOAD LIST

BKR-23/CONTROL PANEL 1C243A

CIG Compressor Dryer 1S231A&B

BKR-24/CONTROL PANEL 1C243B

CIG Compressor Dryer 1S223A&B

BKR-25/CONTROL PANEL 1CB2100

RCIC Turb. Steam Line Drain Pot Level Control LSH-E51-1N010

BKR-26/CONTROL PANEL 1C690A

Alternate Supply to Spotmos Div I

INSTRUMENTATION

Safety Relief Valve Flow Monitoring System
SRV Flow Monitor Panel
VI-14180A
VI-14181A

BKR-27/Flow Indication Switch

Fuel Pool Gate Indicating Switch FISH-15303

INSTRUMENT AC 1Y216 LOAD LIST

BKR-30/CONTROL PANEL 1C693

CRM A and CRM B Drywell and Wetwell Sample Panel IB Iso Valve Control SV-157100A, SV-157102A, SV-157100B, SV-157102B, SV-157104, SV-157106

BKR-32/CONTROL PANEL 1C693

CRM A and CRM B Drywell IB Iso Valves SV-157100A, SV-157102A, SV-157100B, SV-157102B

BKR-33/CONTROL PANEL 1C601-18C

Alternate Supply for Reactor Vessel Div I Instruments
- RPV Wide Range Level LI-14201A, LI-14201A1
- RPV Extended Range Level LI-14203A
- RPV Pressure PI-14202A, PI-14202A1, PI-14204A
- LR/PR 14201A

Alternate Supply for RHR Div I Instruments
- RHR HX Dsch Line Temp TI-15127A
- RHR Spray Flow FI-15120A

BKR-34/CONTROL PANEL 1C693

Wetwell Sample Panel IB Iso Valves SV-157104, SV-157106

LOSS OF BUS 1Y218/1Y219

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. RB Chilled Water Compressors trip	PERFORM ON-134-001.
2. Condensate Transfer Pumps OP-155A and B	PLACE Refueling Water Pumps in service to supply Condensate Transfer System, in accordance with OP-037-003. MONITOR ECCS Keepfill pressures.
3. Entire Full Core Display	Call up OD-7, Option 2 from Process Computer for latest scan of all rod positions.
4. CRD Flow Control Valves FV-146-F002A and B fail closed and CRD System flow FI-E12-1R606 indication is lost at Panel 1C601.	TAKE manual control of appropriate Flow Control Valve at local manual/auto station and use local flow indication. Readjust flow as required during depressurization.
5. RWCU INLET OB ISO HV-144-F004 closes, and IB ISO HV-144-F001 will close after a 45 seconds or greater power loss.	Request Chemistry to initiate alternate sampling.
6. Turbine Bldg and Reactor Bldg until power restored.	Have Chemistry perform local sampling until power restored.
7. Reactor Vessel Wide Range level indication (-150 to 60")	
LI-B21-1R604 downscale	LI-14201A,B (1C601) LI-14201A1,B1 (1C651) LI-14203A,B (1C601) LR/PR-14201A,B (1C601)
8. Reactor Vessel Narrow Range level indication (0 to +60")	
LR-C32-1R608 (blue) downscale	LI-C32-1R606B

LOSS OF BUS 1Y218/1Y219

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
9. Reactor Vessel Shutdown Range level indication (0 to +500")	
LI-B21-1R605 downscale	None
10. Reactor Vessel Upset Range level indication (0 to +180")	
LR-C32-1R608 (red) downscale	None
11. Reactor Vessel pressure indication	
PR-C32-1R609 downscale PI-C32-1R605 downscale	PI-14202A,B (1C601) PI-14202,A1,B1 (1C651) LR/PR-14201A,B (1C601) PI-E32-1R660 (1C644) PI-E32-1R656 (1C645) PI-14204A,B (1C601)
12. Reactor Recirc Pp Suct temp TR-B31-1R650 (chart drive only)	Indication still valid
13. Neutron flux monitoring indication fails downscale IRM-APRM FLUX NR-C51-1R603A IRM-APRM FLUX NR-C51-1R603B IRM-APRM-RBM FLUX NR-C51-1R603C IRM-APRM-RBM FLUX NR-C51-1R603D SRM LOG COUNT NR-C51-1R602	Display Control System may be used as alternate indication.
14. Reactor Vessel wall temperature TR-B21-1R006 (downscale and trend) 15. Reactor Vessel flange temperature TR-B21-1R007 (downscale and trend)	Loop temperature can be monitored on Recirc Pp Suct temp TR-B31-1R650 on Panel 1C652. Temporary temperature readout instrumentation for Vessel and flange can be installed locally at TIC junction box to monitor cooldown.
16. Standby Liquid Ctl LI/FI-14806 downscale	System still functional. STANDBY LIQUID TANK HI/LO LEVEL alarm (1C601) and local level indicator LI-1R001 at Panel 1C011.

LOSS OF BUS 1Y218/1Y219

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
17. FW Heater String B Extraction Steam Drain Valves fail open and HTR STRING B EXTR LINE DRNS HS-10220B indication on Panel 1C668 is lost.	FW Heater Strings A and C still operable. RECLOSE following Extraction Steam After Seat Drain Valves HV10209B, HV10218B and HV10246B for Feedwater Heaters 1-3B,1-4B,1-5B by depressing common CLOSE pushbutton for HTR STRING B EXTR LINE DRNS HS-10220B. RECLOSE following Extraction Steam Before Seat Drain Valves HV10204B, HV10205B and HV10220B for Feedwater Heaters 1-3B,1-4B,1-5B by having Electrical Maintenance reenergize seal-in relays in Panel 1C102.
18. Main Steam pressure indication to MSV-4 trend. PR-10101C-A (chart drive only)	Will be isolated from RPV. Indication still valid PI-10101A and PI-10101B (1C651)
19. Scram Discharge Volume Vent and Drain Valve position indicating lights fail.	Valve function can be verified following scram when draining instrument volume.
20. Scram Valve position on Full Core Display	Rods fully inserted following Scram indicate that valves opened as required.
21. RWCU temp TI-G33-1R607 downscale	No backup instrumentation. RWCU FILTER INLET HI TEMP ISO and RWCU FILTER INLET HI TEMP annunciator alarms (1C651) and automatic system isolation on high temperature into Cleanup Filter Demineralizer.
22. Off Gas Pretreatment log radiation indication RR-D12-1R601 downscale	Indication on front panel of log radiation monitor. Off-gas high radiation alarm Portable survey meter.

LOSS OF BUS 1Y218/1Y219

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
23. Main Steam line radiation indication RR-D12-1R603 downscale	Local indicator in log radiation front monitor panel. Trip and alarm functions still operable.
24. CRD Drive Water flow FI-C12-1R604 downscale	Local flow indicator FI-1R003
25. CRD Cooling Water flow FI-C12-1R605 downscale	Local System flow (FI-1R019) normally equivalent to cooling water flow.
26. STM & FW flow FR-C32-1R607 (chart drive only)	Indication still valid
27. Control Rod Drive temperature C12-TR-1R018 (downscale and trend)	High temperature alarm operable.
28. Reactor Building and all other Area radiation indication RR-13701 (downscale)	Local indication in relay room, and portable survey meters may be used. High level alarms still in service.
29. Service Air Compressor disabled by failure of unloader valves	None
30. TIP System Isolates	None
31. Drywell Sumps instrumentation and control. Isolation valves close.	None
32. ~~Loose Parts Monitoring System (0C691)~~	~~None~~
33. Reactor Recirc Vibration Monitoring System (0C630)	None
34. RHRSW Rad Monitors RITS-11216A and B.	REQUEST Chemistry reset memory, including setpoints of both RITS-11216A, on Panel 1CB204A; and RITS-11261B, on Panel 1CB204B.
35. M-G Set A Scoop Tube Positioner locks up.	RESET Scoop Tube Positioner in accordance with OP-164-001, Reactor Recirculation System.

PCAF# 2001-409

LOSS OF BUS 1Y226

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. Instrument Air Compressors 1K107A and 1K107B shutdown, if operating	PERFORM ON-118-001. CROSSTIE to Service Air System in accordance with OP-118-001.
2. Zone I, II and III Supply, Exhaust and Filter Exhaust B Fans trip and disabled.	ENSURE A Fans auto start.
3. 'B' Control Structure Chiller trips on low loop flow	ENSURE 'A' Chiller running IAW OP-030-001
4. RWCU INLET OB ISO HV-144-1F004 closes on loss of signal to TISH-G33-1N008. TRIPS RWCU pumps 1P221A & B.	MONITOR Reactor water conductivity. REFER to AR-101-001.
5. Drwl/Wetwell BURP Damper HD-17508B	If venting is required, PLACE DRWL/ SUPP CHMBR DMP HD-17508B ISO SIGNAL BYPS Switch (pnl 1C681) to the DW or SC position to OPEN Damper.
6. Suppression Chamber Vent HV-15704	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.
7. Containment Vent Line HV-15714	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.
8. SGTS Exh Bypass Suppression Pool HV-15705	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.
9. SGTS Exh Bypass Drywell HV-15711	If venting is required, CONTACT System Engineering to supply temporary power to OPEN valve.

LOSS OF BUS 1Y226

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
10. Reactor Building Closed Cooling Water Emergency Service Water Transfer Valves B control.	USE RBCCW loop A, if required.
11. RWCU, RHR, Main Steam, and HPCI Steam Leak Detection System B	Steam Leak Detection System A operable.
12. RHR loop B flow indication FI-E11-1R603B downscale FR-E11-1R608 downscale	USE RHR loop A if required in accordance with OP-149-002.
13. Reactor Vessel pressure indication PI-E32-1R660 downscale	PI-E32-1R656 (1C645) PI-C32-1R605 (1C652) PR-C32-1R609 (1C652)
14. Recirc PP Suct temp TR-B31-1R650 downscale	No backup except Reactor Vessel coolant temperature.
15. Rx Wtr Sample OB ISO HV-143-F020 closes	Use RWCU Sample Line for Rx conductivity monitoring.
16. H2/O2 Analyzer loop B	USE loop A, if required.
17. SRV Accoustic Monitoring Div II VISH-14180B	VISH-14180A (1C601)
18. Suppression Chamber level indication LI-15775B* Downscale LR-15776B* Upscale	LI-15775A (1C601) LR-15776A (1C601)

LOSS OF BUS 1Y226

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
19. Reactor Water Level	
LI-14201B* Downscale	LI-14201A (1C601)
LI-14201B1* Downscale	LI-14201A1 (1C651)
LI-14203B* Downscale	LI-14203A (1C601)
LI-14205B* Downscale	LR-14202 (1C601)
* If powered from alternate supply.	
20. Reactor Water Level/Pressure	
LR/PR 14201B* (Lower than normal)	LR-14201A (1C601)
21. Reactor Pressure	
PI-14202B* Downscale	PI-14202A (1C601)
PI-14202B1* Downscale	PI-14202A1 (1C601)
PI-14204B* Downscale	PI-14204A (1C601)
22. Containment Temperature	
TR-15790B1* (higher than normal)	TR-15790A1 (1C601)
23. Containment Pressure	
PR-15710B* (higher than normal)	PR-15710A (1C601)
24. Suppression Pool Temperature (SPOTMOS)	
TIAH-15752*	TIAH-15751 (1C601)
TX-15752*	TX-15751 (1C690A)
25. ESW Loop B Indication	
TI-01106B* Downscale	Computer Point AET02
PI-01107B* Downscale	PI-01104B and D (local)
FI-01109B* Downscale	Computer Point AEF02
26. RHR Hx Temperature	
TI-15127B* Downscale	TR-E11-1R601 (1C601)

LOSS OF BUS 1Y226

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
27. Containment H_2O_2 Indication	
AR-15746B* Upscale	AR-15746A (1C601)
28. Containment Radiation Indication	
RR-15720B* (Higher than Normal)	RR-15720A (1C601)
* If powered from alternate supply.	
29. CRM A, CRM B, and Wetwell Sample Rack Outboard Isolation Valves (SV-157101B, 103B, 105, 107) fail closed.	None
30. RHR Drywell Spray Flow	
FI-15120A* Downscale	None
31. RHRSW Pump B discharge flow	None
FI-1R602B downscale	
32. CORE Spray Loop B Pressure and Flow Indication	None
PI-E21-1R600B downscale PI-E21-2R601B downscale	
* If powered from alternate supply.	

INST AC 1Y226 LOAD LIST

BKR-01/CONTROL PANEL 0C681

HVAC LOCA and Radiation Trip & Reset Div II
NOTE: With Loss of power to HVAC LOCA and Radiation Trip logic the following fans trip and dampers close:
RB Zone I Filtered Exhaust Fan 1V206B
RB Zone I Supply Fan 1V202B
RB Zone I Exhaust Fan 1V205B
RB Zone II Filtered Exhaust Fan 2V206B
RB Zone II Supply Fan 2V202B
RB Zone II Exhaust Fan 2V205B
Unit 1 RB Zone III Filtered Exhaust Fan 1V217B
Unit 1 RB Zone III Exhaust Fan 1V213B
Unit 1 RB Zone III Supply Fan 1V212B
Unit 2 RB Zone III Filtered Exhaust Fan 2V217B
Unit 2 RB Zone III Exhaust Fan 2V213B
Unit 2 RB Zone III Supply Fan 2V212B
Unit 1 Drywell Burp and Purge Iso HD-17508B
Unit 2 Drywell Burp and Purge Iso HD-27508B

INSTRUMENTATION

Chilled Wtr Loop Temp TI-08621B
Chilled Wtr Loop Flow FI-08623B
Emer Cond Wtr Loop Flow FI-08621B

BKR-02/CONTROL PANEL 1C612

RHR Div II Status Indication
RHR Man Inject HV-E11-1F060B position indication

INSTRUMENTATION

SW TO RHR HX 1B FI-E11-1R602B
RHR Loop A & B Flow Recorder FR-E11-1R608
RHR Loop B Flow FI-E11-1R603B
Inlet Pressure to RHR HX 1B PI-E11-1R606B1

BKR-03/CONTROL PANEL 1C291B (CRM PANEL)

CRM Analyzer RI-15799B

BKR-04/CONTROL BOX 1CB216B

TBCCW HX 1B/ESW Transfer Valve B Indication
RBCCW HX 1B/ESW Transfer Valve B Control

INST AC 1Y226 LOAD LIST

BKR-05/CONTROL PANEL 1C209B

LRW Collection Drywell Floor Drain Outboard Valve and
Equip Drain Tank Iso Valve Div II control logic
Drywell Floor Drain OB Iso Valve HV-16108A2
Drywell Equip Drain Tank OB Iso Valve HV-16116A2

BKR-06/CONTROL PANEL 1C644

INSTRUMENTATION

LR/TR 15347 Fuel Pool Level/Temp Recorder

BKR-07/CONTROL PANEL TB1C002-A1

RWCU Iso Valve HV-G33-1F004

INSTRUMENTATION

RWCU Hx Discharge Temperature TISH-G33-1N008

BKR-09/CONTROL PANEL 1C618

RCIC Div II Status Indication
Core Spray Div II Status Indication
ADS Div II Status Indication
Rx Wtr Sample Valve HV-B31-1F020
RHRSW Cross-Tie Drn HV-E11-1F074B

INSTRUMENTATION

Core Spray Loop B Pressure PI-E21-1R600B
Core Spray Loop B Flow FI-E21-1R601B

BKR-11/CONTROL PANEL 1C614B

RWCU, HPCI, RHR, and Main Steam Div II
Steam Leak Detection System

INSTRUMENTATION

Steam Leak Detection Temperature Indicator TI-14184

INST AC 1Y226 LOAD LIST

BKR-12/24V DC BATTERY CHARGER 1D683-PANEL 1D682

Division II SRM's
Division II IRM's

INSTRUMENTATION

Service Water Effluent Rad Monitor RIT-1K605

BKR-13/CONTROL PANEL 1C692

Suppression Pool Vacuum Relief Valves Div II
PSV-15704A2 through PSV-15704E2 control and indication
Excess Flow Check Valves Div II Rows 1 through 6

BKR-14/CONTROL PANEL 1C661B2

Instrument Air Panels 1C140A, 1C140B
Inst Air Compr 1K107A, 1K107B Step Unloaders
Auto Cycle Drain Valves SV-12503A, SV-12503B
Auto Cycle Drain Valves SV-12505A, SV-12505B

BKR-15/CONTROL PANEL 1C693

INSTRUMENTATION

CAC Rad Sys Iodine RITS-15775B2
High Range Rad Monitor RITS-15720B
High Range Rad Recorder RR-15720B
RX Coolant Press. Boundary Leak Defection Recorder RR 15755B

INST AC 1Y226 LOAD LIST

BKR-16/CONTROL PANEL 1C661B3

CAC Atmosphere Monitor OB Valves SV-15742B, SV-15752B, SV-15774B, SV-15734B, SV-15782B (Contn Gas Anlzr Iso Loop B)
CAC Atmosphere Monitor IB Valves SV-15740B, SV-15750B, SV-15776B, SV-15736B, SV-15780B (Contn Gas Anlzr Iso Loop B)
Unit 1 SGTS Exh Bypass Suppression Pool Valve HV-15705
Unit 1 SGTS Exh Bypass Drywell Valve HV-15711
Unit 1 Suppression Pool N2 Makeup Valve SV-15738
Unit 1 Drywell N2 Makeup Valve SV-15789
CIG Mn Steam RV OB Iso SV-12644/SV-12643
CIG RV OB Iso SV-12649/SV-12648
CIG Mn Steam RV OB Iso SV-12643 position indication
CIG RV OB Iso SV-12648 position indication

BKR-17/CONTROL PANEL 1C661B3

LRW Collection Drywell Floor Drain Outboard Valve and Equip Drain Tank Iso Valve Div II control logic
Drywell Floor Drain OB Iso Valve HV-16108A2
Drywell Equip Drain Tank OB Iso Valve HV-16116A2
Unit 1 Containment Vent Line HV-15714
Unit 1 Suppression Chamber Vent HV-15704
Unit 1 Nitrogen Purge Iso HV-15721
Unit 1 Suppression Chamber Purge Iso HV-15724
Unit 1 Containment Iso Air Purge HV-15723

BKR-19/BYPASS INDICATION SYSTEM PANEL 1B226041

Motor Operated Valve Bypass Indication System

BKR-21/CONTROL PANEL 1C226B

H2O2 Analyzer System Div II

INSTRUMENTATION

H2 Indicator AI-15745B
O2 Indicator AI-15746B

BKR-22/CONTROL PANEL 1C620 AND 1C627

Core Spray Testable Check Valve HV-E21-1F006B
Core Spray Testable Check Bypass HV-E21-1F037B
Core Spray Man Inj HV-E21-1F007B position indication
HPCI Div II Status Indication

INST AC 1Y226 LOAD LIST

BKR-23/CONTROL PANEL 1C661B1

Alternate Supply to 1Y125-05 (Div 2 ESS Inst. Power)

BKR-24/CONTROL PANEL TB1C021-A1

INSTRUMENTATION

RHR HX B Conductivity CE-E11-1N001B
Radwaste Conductivity CE-E11-1N006

BKR-26/CONTROL PANEL 1C690B

Alternate Supply to Spotmos Div II

INSTRUMENTATION

Safety Relief Valve Flow Monitor System
SRV Flow Monitor Panel
VI-14180B
VI-14181B

BKR-30/CONTROL PANEL 1C693

CRM A and CRM B Drywell and Wetwell Sample Panel OB Iso Valve Control SV-157101A, SV-157103A, SV-157101B, SV-157103B, SV-157105, SV-157107

BKR-32/CONTROL PANEL 1C693

CRM A and CRM B Drywell 1B Iso Valves SV-157101A, SV-157103A, SV-157101B, SV-157103B

BKR-33/CONTROL PANEL 1C601-18B

Alternate Supply for Reactor Vessel Div 2 Instruments
RPV Wide Range Level LI-14201B, LI-14201B1
RPV Extended Range Level LI-14203B
RPV Fuel Zone Level LI-14205B
RPV Pressure PI-14202B, PI-14202B1, PI-14204B

Alternate Supply for RHR Div 1 Instruments
RHR Hx Dsch Line Temp TI-15127B
RHR Spray Flow FI-15120B

Alternate Supply for CIG Bottle Pressue PI-12649

INST AC 1Y226 LOAD LIST

BKR-34/CONTROL PANEL 1C693

- Wetwell Sample Panel OB Iso Valves SV-157105, SV-157107

LOSS OF BUS 1Y236

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. Containment Instrument Gas supply isolated from containment by closure of SV-12651.	ENSURE CIG compressor in service. If CIG compressors inoperable, CROSSTIE Instrument Air to CIG 90 psig header in accordance with OP-125-001. If desired, CONTACT System Engineering to supply temporary power to OPEN valve.
2. RBCW to Recirc pump motor cooler 1E406A valves HV-18791A1 & A2	MONITOR Recirc pump A motor winding temperatures. If temperature reaches 248°F: 1) If both pumps are without cooling, SCRAM reactor and TRIP both Recirc pumps. 2) If cooling restored to other pump, TRIP pump. 3) PERFORM ON-164-002, Loss of Reactor Recirc Flow. If required, CONTACT System Engineering to supply temporary power to OPEN valves.
3. RBCW to Recirc pump motor cooler 1E406B valves HV-18792A1 & A2	MONITOR Recirc pump B motor winding temperatures. If temperature reaches 248°F: 1) If both pumps are without cooling, SCRAM reactor and TRIP both Recirc pumps. 2) If cooling restored to other pump, TRIP pump. 3) PERFORM ON-164-002, Loss of Reactor Recirc Flow. If required, and instrument gas available, CONTACT System Engineering to supply temporary power to OPEN valves.

LOSS OF BUS 1Y236

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
4. RBCW to Loop A Drywell Cooler Iso Valves HV-18781A1 & A2	MONITOR drywell temperature and pressure. If required, CONTACT System Engineering to supply temporary power to OPEN valves to restore A loop of drywell cooling.
5. RBCW to Loop B Drywell Cooler Iso Valves HV-18782A1 & A2	MONITOR drywell temperature and pressure. If required, and instrument gas available, CONTACT System Engineering to supply temporary power to OPEN valves to restore B loop of drywell cooling.
6. Drywell Area Coolers Train A	START Fans in high speed. If LOCA occurs, START fans in low speed.
7. Reactor Building Zone I Train A Ventilation Isolation Dampers fail closed and lose position indication.	IF required and Panel 1Y216 is energized, PLACE transfer switch HSS-0681C inside panel 0C681 to "BYPASS" position. Alternate Power to the isolation dampers is provided via 1Y21601.
8. Reactor Building Zone III Train A Ventilation Isolation Dampers fail closed and lose position indication.	IF required and Panel 1Y216 is energized, PLACE transfer switch HSS-0681C inside panel 0C681 to "BYPASS" position. Alternate Power to the isolation dampers is provided via 1Y21601.
9. Drwl/Wetwell Burp Damper HD-17508A	If venting is required, CONTACT System Engineering to supply temporary power to OPEN damper.
10. Suppression chamber to SGTS IB Iso HV-15703	If venting is required: PLACE HS-15703A, HI-HI RAD ISO OVERRIDE (pnl 1C693) to the OVERRIDE position.

LOSS OF BUS 1Y236

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
11. Drywell to SGTS IB Iso HV-15713	If venting is required: PLACE HS-15713A, HI-HI RAD ISO OVERRIDE (pnl 1C693) to the OVERRIDE position.
12. Battery Rm Exh Vent Chlorine Iso Dmp HD-07871B2	MANUALLY OPEN damper using manual override. START Battery Rm Exhaust Fan OV116B.
13. Control Structure Fresh Air Bypass Iso Dmp HD-07802A	MANUALLY START TRAIN B CREOASS per OP-030-002.
14. Turbine Building Closed Cooling Water Emergency Service Water Valve transfer control loop A	USE TBCCW loop B, if necessary.
15. SBLC System A squib valve disabled.	SBLC System B squib valve still functional.
16. SGTS Filter Train A	Train B operable.
17. Control Structure EOASS Train A	Train B operable.
18. Reactor Building Recirc Fan A	Fan B operable.

INST AC 1Y236 Load List

BKR-01/CONTROL PANEL 1C209A

LRW Collection Drywell Floor Drain Inboard Valve and Equip Drain Tank Iso Valve Div I control logic
Drywell Floor Drain IB Iso Valve HV-16108A1
Drywell Equip Drain Tank IB Iso Valve HV-16116A1.

BKR-02/CONTROL PANEL 1C601-18B

INSTRUMENTATION

RPV Post Accident Wide Range Level LITS-B21-1N026A
RHR A and B Conductivity CR-12351

BKR-03/24V DC BATTERY CHARGER 1D674-PANEL 1D672

Division I SRM's
Division I IRM's

INSTRUMENTATION

Off Gas Pre-treatment Rad Monitor RIT-1K602
RBCCW Rad Monitor RIT-1K606

BKR-04/CONTROL STRUCTURE CHILLER OK112A

Chiller Oil Heater OK112A

BKR-05/CONTROL PANEL OC653-75C

ESW Loop A Supply Header Pressure PI-01107A
ESW Loop A Supply Header Temperature TI-01106A
ESW Loop A Supply Flow FI-01109A

INST AC 1Y236 Load List

BKR-06/CONTROL PANEL 0C876A

Control Structure HI Outside Radiation Div. I
Control Structure Chiller 0K112A
Control Structure Refrig Transfer Pump 0P112A
Creoass Fan A 0V101A
Control Structure Fresh Air Bypass Iso Dmp HD-07802A
Control Structure Emerg Fresh Air Dmp HD-07811A
Control Structure Emerg Fresh Air Dmp HD-07812A
Control Structure Emerg Fresh Air Dmp HD-07813A
Control Structure Emerg Fresh Air Dmp HD-07814A
Control Structure Emerg OA Supply Inlet Dmp FD-07816A
Control Structure Unit 2 Iso Dmp HD-07824A1
Control Structure Emerg OA Chlorine Iso Dmp FD-07833A
Control Structure Lab Area Supply Fan 0V105
Control Structure Toilet Exh Iso Dmp HD-07872A
Control Structure Kitchen Exh Iso Dmp HD-07873A
Battery Room Exhaust Supply Dmp HD-07871A1
Battery Room Exhaust Vent Chlorine Iso Dmp HD-07871B2
Battery Room Exhaust Fan 0V116A
SGTS Equipment Vent Dmp HD-07841A
SGTS Equipment Heating Dmp HD-07842A
Unit 1 Air Lock Iso Dmp HD-17534A,C,D,E,H
Unit 2 Air Lock Iso Dmp HD-27534A,C,D,E,G,H,I
Unit 1 Drywell Area Cooling Flow Div I
Unit 2 Drywell Area Cooling Flow Div I
Unit 1 RB Chiller 1K206A
Unit 1 TB Chiller 1K102A
Unit 2 RB Chiller 2K206A
Unit 2 TB Chiller 2K102A

INSTRUMENT

Control Structure Emerg OA Sys A Air Flow FIC-07816A
Control Structure Emerg OA Sys A Air Flow FR-07816A
Emerg OA Supply Sys Filt Train A Temp Diff TI-07811A
Emerg OA Supply Sys Filt Train A Temp Diff TI-07814A

BKR-07/CONTROL PANEL 1C661A2

TBCCW HX 1A/ESW Transfer Valve A Control
Drywell Cooling Fans Hi Press and Test A Logic
Drywell Cooling Fans Hi Temp A Logic

INST AC 1Y236 Load List

BKR-08/CONTROL PANEL 1C201A (Remote Shutdown Panel)

Instrument Gas to Containment Iso Valve SV-12651
Div I Transfer Sw position indication

INSTRUMENTATION (Remote Shutdown Panel)

RCIC Flow Controller FIC-14903
RCIC Flow Indicator FI-14903
RCIC Speed Indicator SI-15001B
RPV Post Accident Pressure Indicator PI-14262
RPV Post Accident Wide Range Level Indicator LI-14262
Suppression Pool Water Temperature TI-15751

BKR-09/CONTROL PANEL 0C877A

Emerg Swgr Rm Chilled Wtr Return HV-08601A
Emerg Swgr Rm Chilled Wtr Bypass HV-08602A
Emerg Swgr Rm Chilled Wtr Supply HV-08603A
Control Structure Chiller OK112A
Control Structure Chilled Wtr Circ Pump OP162A
Control Room A/C Fan Dmp HD-07801A
Control Room and Computer Room Floor A/C Dampers HD-07821A and HD-07831A
Control Structure Chiller OK112A Loop Wtr Flow Logic
Control Structure Chilled Wtr Fan Clg Mode Div I Logic

INSTRUMENTATION

Emerg Cond Wtr Temperature TIC-08612A
Computer Room Cooling Sys A Air Temp TIC-07821A
Control Room Cooling Sys A Air Temp TIC-07831A
Control Structure H&V Sys A Air Temp
TIC-07801A
TIC-07802A1
TIC-07802A2

INST AC 1Y236 Load List

BKR-10/CONTROL PANEL 1C681

RBCW to Loop A Drywell Clrs SV-18781A1 & SV-18781A2
RBCW to Loop B Drywell Clrs SV-18782A1 & SV-18782A2
RBCW to Recirc A Pump Mtr Clr SV-18791A1 & SV-18791A2
RBCW to Recirc B Pump Mtr Clr SV-18792A1 & SV-18792A2
RBCW Drywell Clg Iso Vlvs LOCA Isolation Logic Div I
RB Zone 1 Recirc Iso Dmp HD-17601A
RB Zone 1 Recirc Iso Dmp HD-17602A
RB Zone 1 Recirc Iso Dmp HD-17657A
RB Zone 1 Iso Dmp HD-17524A
RB Zone 1 Iso Dmp HD-17576A
RB Zone 1 Iso Dmp HD-17586A
RB Zone III Iso Dmp HD-17502A
RB Zone III Iso Dmp HD-17514A
RB Zone III Iso Dmp HD-17564A
Primary Containment Iso Dmp HD-17651
Drywell Burp and Purge Line Iso Dmp HD-17508A
Emerg Swgr Cooling Dmp HD-17603A position indication

BKR-11/CONTROL PANEL OC883A

SGTS Exhaust Fan OV109A
SGTS Heater 1E101A
SGTS A/SGTS B Dmp TD-07560A
SGTS Backup Deluge Solenoid SV-07550A
SGTS Makeup OA Dmp FD-07551A2
SGTS Fan Inlet Dmp HD-07552A
SGTS A Inlet Dmp HD-07553A
SGTS Clg OA Dmp HD-07555A
Recirc Sys/SGTS Dmp PDD-07554A
SGTS Variable Dmp FDM-07551A1
SGTS Charcoal Filter Wtr Valves SV-07551A1 through SV-07551A4
SGTS High Radiation and Pressure Div I
NOTE: With loss of power to SGTS High Radiation and Pressure Div 1 logic the following valves close:
Unit 1 Suppression Chamber to SGTS IB Iso HV-15703
Unit 1 Drywell to SGTS IB Iso HV-15713
Unit 1 Drywell Purge Supply IB Iso HV-15722
Unit 1 Suppression Chamber Purge IB Iso HV-15725
Unit 1 Suppression Pool N2 Makeup valve SV-15737
Unit 1 Drywell N2 Makeup Valve SV-15767
Unit 2 Suppression Chamber to SGTS IB Iso HV-27503
Unit 2 Drywell to SGTS IB Iso HV-25713
Unit 2 Drywell Purge Supply IB Iso HV-25722
Unit 2 Suppression Chamber Purge IB Iso HV-25725
Unit 2 Suppression Pool N2 Makeup Valve SV-25737
Unit 2 Drywell N2 Makeup Valve SV-25767

INST AC 1Y236 Load List

INSTRUMENTATION

SGTS A Outdoor/Zones Pressure Diff
PDI-07554A1,A2,A3
PDIC-07554A

SGTS A Air Flow
FIC-07551A
PDIC-07550A
FR-07553A

SGTS Filter Train A Temp
TIC-07552A
TDIC-07552A
TI-07552A1

SGTS Makeup Outside Air Flow
FI-07555

SGTS Filter Train A Outlet Temp
TI-075551A

BKR-12/CONTROL PANEL 0C681

RB Zone III Recirc Sys to SGTS Dmp HD-07543A
Recirc Fan Dsch Dmp HD-07545A
Alternate power to HVAC LOCA and Radiation Trip
Reset Div 1 HSS-0681A.

BKR-15/CONTROL PANEL 0C888A

SGTS Filter Train A Temperature Detection Circuits

BKR-17/CONTROL PANEL 1C694A

Bypass Indication (BIS) Div I Indicating Lights

BKR-18/MCC 1B217022

Emerg Swgr Cooling Dmp HD-17630A

BKR-19/CONTROL PANE 0CB130A

SGTS Filter Drain Valve SV-08301A

INST AC 1Y236 Load List

BKR-21/CONTROL PANEL 1C617

SLC Squib Valve XV-C41-1F004A
SLC Squib Valve XV-C41-1F004A continuity

BKR-26/CONTROL PANEL 0C877A

Control Strc Chilled Wtr ESW & Cond Mix Vlv TV-08612A
Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08643A

BKR-28/CONTROL PANEL 0C877A

Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08652A
Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08662A

BKR-29/CONTROL PANEL 0C879

Control Strc HVAC Transfer Lights

LOSS OF BUS 1Y246

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. Containment Instrument Gas Compressor suction isolated from containment by closure of SV-12605.	CROSSTIE Instrument Air to CIG 90 psig header in accordance with OP-125-001.
(Closure of SV-12605 TRIPS CIG compressors 1K205A and 1K205B on low suction pressure)	Containment Instrument Gas Accumulator bottles provide instrument air to ADS valves only
2. RBCW to Recirc pump motor cooler 1E406B valves HV-18791B1 & B2	MONITOR Recirc pump B motor winding temperatures. If temperature reaches 248°F: 1) If both pumps are without cooling, SCRAM reactor and TRIP both Recirc pumps. 2) If cooling restored to other pump, TRIP pump. 3) PERFORM ON-164-002, Loss of Reactor Recirc Flow. If required, and instrument gas available, CONTACT System Engineering to supply temporary power to OPEN valves.
3. RBCW to Recirc pump motor cooler 1E406A valves HV-18792B1 & B2	MONITOR Recirc pump A motor winding temperatures. If temperature reaches 248°F: 1) If both pumps are without cooling, SCRAM reactor and TRIP both Recirc pumps. 2) If cooling restored to other pump, TRIP pump. 3) PERFORM ON-164-002, Loss of Reactor Recirc Flow. If required, and instrument gas available, CONTACT System Engineering to supply temporary power to OPEN valves.

LOSS OF BUS 1Y246

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
4. RBCW to Loop B Drywell Cooler Iso Valves HV-18781B1 & B2	MONITOR drywell temperature and pressure. If required, CONTACT System Engineering to supply temporary power to OPEN valves to restore B loop of drywell cooling.
5. RBCW to Loop A Drywell Cooler Iso Valves HV-18782B1 & B2	MONITOR drywell temperature and pressure. If required, and instrument gas available, CONTACT System Engineering to supply temporary power restore A loop of drywell cooling.
6. Drywell Area Coolers Train B	START Fans in high speed. If LOCA occurs, START fans in low speed.
7. Reactor Building Zone I Train B Ventilation Isolation Dampers fail closed and lose position indication.	CONTACT System Engineering to supply temporary power to OPEN dampers, to restore normal HVAC in Zone I.
8. Reactor Building Zone III Train B Ventilation Isolation Dampers fail closed and lose position indication.	IF required, CONTACT System Engineering to supply power to OPEN dampers to restore normal HVAC in Zone III.
9. Drwl/Wetwell Burp Damper HD-17508B	If venting is required, CONTACT System Engineering to supply temporary power to OPEN damper.
10. Suppression Chamber Vent HV-15704	If venting is required: OPEN SGTS Exh Bypass Suppression Pool HV-15705
11. Containment Vent Line HV-15714	If venting is required: OPEN SGTS Exh Bypass Drywell HV-15711
12. SGTS Exh Bypass Suppression Pool HV-15705	If venting is required: PLACE HS-15705B, HI-HI RAD ISO OVERRIDE (pnl 1C693) to the OVERRIDE position.

LOSS OF BUS 1Y246

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
13. SGTS Exh Bypass Drywell HV-15711	If venting is required: PLACE HS-15711B, HI-HI RAD ISO OVERRIDE (pnl 1C693) to the OVERRIDE position.
14. Battery Rm Exh Vent Chlorine Iso Dmp HD-07871A2	MANUALLY OPEN damper using manual override. START Battery Rm Exhaust Fan OV116A.
15. Control Structure Fresh Air Bypass Iso Dmp HD-07802B	MANUALLY START TRAIN A CREOASS per OP-030-002.
16. Turbine Building Closed Cooling Water Emergency Service Water Valve transfer control loop B	USE TBCCW loop A, if necessary.
17. SGTS Filter Train B	Train A operable.
18. Control Structure EOASS Train B	Train A operable.
19. Reactor Building Recirc Fan B	Fan A operable.

INST AC 1Y246 LOAD LIST

BKR-01/CONTROL PANEL 1C601-21B

Outboard MOV Test Status Indication
Nuclear Steam Shutoff Supply System

INSTRUMENTATION

RPV Post Accident Wide Range Level LITS-B21-1N026C
HPCI System Temperature Recorder TR-E41-1R605

BKR-02/CONTROL PANEL OC876B

Control Structure HI Outside Radiation and Chlorine Concentration Div II
Control Structure Chiller OK112B
Control Structure Refrig Transfer Pump OP112B
Creoass Fan B OV101B
Control Structure Fresh Air Bypass Iso Dmp HD-07802B
Control Structure Emerg Fresh Air Dmp HD-07811B
Control Structure Emerg Fresh Air Dmp HD-07812B
Control Structure Emerg Fresh Air Dmp HD-07813B
Control Structure Emerg Fresh Air Dmp HD-07814B
Control Structure Emerg OA Supply Inlet Dmp FD-07816B
Control Structure Unit 2 Iso Dmp HD-07824B1
Control Structure Emerg OA Chlorine Iso Dmp FD-07833B
Control Structure Toilet Exh Iso Dmp HD-07872B
Control Structure Kitchen Exh Iso Dmp HD-07873B
Control Structure Lab Area Supply Fan OV105
Battery Room Exhaust Supply Dmp HD-07871B1
Battery Room Exhaust Vent Chlorine Iso Dmp HD-07871A2
SGTS Equipment Vent Dmp HD-07841B
SGTS Equipment Heating Dmp HD-07842B
Battery Room Exhaust Fan OV116B
Unit 1 Drywell Area Cooling Flow Div II
Unit 2 Drywell Area Cooling Flow Div II
Unit 1 RB Chiller 1K206B
Unit 1 TB Chiller 1K102B
Unit 2 RB Chiller 2K206B
Unit 2 TB Chiller 2K102B

INSTRUMENTATION

Control Structure Emerg OA Sys B Air Flow FIC-07816B
Control Structure Emerg OA Sys B Air Flow FR-07816B
Emerg OA Supply Sys Filt Train B Temp Diff TI-07811B
Emerg OA Supply Sys Filt Train B Temp Diff TI-07814B

INST AC 1Y246 LOAD LIST

BKR-03/24V DC BATTERY CHARGER 1D684-PANEL 1D682

Division II SRM's
Division II IRM's

INSTRUMENTATION

Service Water Effluent Rad Monitor RIT-1K605

BKR-04/CONTROL STRUCTURE CHILLER OK112B

Chiller Oil Heater OK112B

BKR-05/CONTROL PANEL OC653-75C

ESW Loop B Supply Header Pressure PI-01107B
ESW Loop B Supply Header Temperature TI-01106B
ESW Loop B Supply Flow FI-01109B

BKR-07/CONTROL PANEL 1C661B2

TBCCW HX 1B/ESW Transfer Valve B Control
Drywell Cooling Fans Hi Press and Test B Logic
Drywell Cooling Fans Hi Temp B Logic

BKR-08/CONTROL PANEL 1C201B (Remote Shutdown Panel)

Instrument Gas Cmp Suction Iso Valve SV-12605
Div II Transfer Sw position indication

INSTRUMENTATION (Remote Shutdown Panel)

RHRSW System B Flow FI-11207B
RHR System B Flow FI-15105
Containment Temperature TI-15790B2
Containment Pressure PI-15728B
Suppression Pool Air Temperature TI-15725B
Suppression Pool Level LI-15776B2
Suppression Pool Water Temperature TI-15752

INST AC 1Y246 LOAD LIST

BKR-09/CONTROL PANEL OC877B

Emerg Swgr Rm Chilled Wtr Return HV-08601B
Emerg Swgr Rm Chilled Wtr Bypass HV-08602B
Emerg Swgr Rm Chilled Wtr Supply HV-08603B
Control Structure Chiller OK112B
Control Structure Chilled Wtr Circ Pump OP162B
Control Room A/C Fan Dmp HD-07801B
Control Room and Computer Room Floor A/C Dampers
HD-07821B and HD-07831B
Control Structure Chiller OK112B Loop Wtr Flow Logic
Control Strc Chilled Wtr Fan Clg Mode Div II Logic

INSTRUMENTATION

Emerg Cond Wtr Temperature TIC-08612B
Computer Room Cooling Sys B Air Temp TIC-07821B
Control Room Cooling Sys B Air Temp TIC-07831B
Control Structure H&V Sys B Air Temp
TIC-07801B
TIC-07802B1
TIC-07802B2

BKR-10/CONTROL PANEL 1C681

RBCW to Loop B Drywell Clrs SV-18781B1 & SV-18781B2
RBCW to Loop A Drywell Clrs SV-18782B1 & SV-18782B2
RBCW to Recirc B Pump Mtr Clr SV-18791B1 & SV-18791B2
RBCW to Recirc A Pump Mtr Clr SV-18792B1 & SV-18792B2
RBCW Drywell Clg Iso Vlvs LOCA Isolation Logic Div II
RB Zone I Recirc Iso Dmp HD-17601B
RB Zone I Recirc Iso Dmp HD-17602B
RB Zone I Recirc Iso Dmp HD-17657B
RB Zone I Iso Dmp HD-17524B
RB Zone I Iso Dmp HD-17576B
RB Zone I Iso Dmp HD-17586B
RB Zone III Iso Dmp HD-17502B
RB Zone III Iso Dmp HD-17514B
RB Zone III Iso Dmp HD-17564B
Drywell Burp and Purge Line Iso Dmp HD-17508B
Emerg Swgr Cooling Dmp HD-17630B position indication

INST AC 1Y246 LOAD LIST

BKR-11/CONTROL PANEL OC883B

SGTS Exhaust Fan OV109B
SGTS Heater 1E101B
SGTS A/SGTS B Dmp TD-07560B
SGTS Backup Deluge Solenoid SV-07550B
SGTS Makeup OA Dmp FD-07551B2
SGTS Fan Inlet Dmp HD-07552B
SGTS B Inlet Dmp HD-07553B
SGTS Clg OA Dmp HD-07555B
Recirc Sys/SGTS Dmp PDD-07554B
SGTS Variable Dmp FDM-07551B1
SGTS Charcoal Filter Wtr Valves
SV-07551B1 thru SV-07551B4
SGTS High Radiation and Pressure Div II
NOTE: With loss of power to SGTS High Radiation and Pressure Div II logic the following valves close:
Unit I SGTS Exh Bypass Suppression Pool Valve HV-15705
Unit 1 SGTS Exh Bypass Drywell Valve HV-15711
Unit 1 Containment Vent Line HV-15714
Unit 1 Suppression Chamber Vent HV-15704
Unit 1 Nitrogen Purge Iso HV-15721
Unit 1 Suppression Chamber Purge Iso HV-15724
Unit 1 Containment Iso Air Purge HV-15723
Unit 1 Suppression Pool N2 Makeup Valve SV-15738
Unit 1 Drywell N2 Makeup Valve SV-15789
Unit 2 SGTS Exh Bypass Suppression Pool Valve HV-25705
Unit 2 SGTS Exh Bypass Drywell Valve HV-25711
Unit 2 Containment Vent Line HV-25714
Unit 2 Suppression Chamber Vent HV-25704
Unit 2 Nitrogen Purge Iso HV-25721
Unit 2 Suppression Chamber Purge Iso HV-25724
Unit 2 Containment Iso Air Purge HV-25723
Unit 2 Suppression Pool N2 Makeup Valve SV-25738
Unit 2 Drywell N2 Makeup Valve SV-25789

INSTRUMENTATION

SGTS B Outdoor/Zones Pressure Diff
PDI-07554B1,B2,B3
PDIC-07554B
SGTS B Air Flow
FIC-07551B
PDIC-07550B
FR-07553B
SGTS Filter Train B Temp
TIC-07552B
TDIC-07552B
TI-07552B1

INST AC 1Y246 LOAD LIST

SGTS Makeup Outside Air Flow
FI-07555
SGTS Filter Train B Outlet temp
TI-07551B

BKR-12/CONTROL PANEL OC681

RB Zone III Recirc Sys to SGTS Dmp HD-07543B
Recirc Fan Dsch Dmp HD-07545B
Alternate power supply to HVAC LOCA and Radiation Trip
Reset Div 2 HSS-0681B

BKR-14/CONTROL PANEL 1C209

INSTRUMENTATION

Combined Drywell Sump Flow LIT-16102A
Drywell Floor Drain Sump Level LIT-16102B

BKR-15/CONTROL PANEL OC888B

SGTS Filter Train B Temperature Detection circuits

BKR-17/CONTROL PANEL 1C694B

Bypass Indication (BIS) Div II Indicating Lights

BKR-18/MCC 1B227052

Emerg Swgr Cooling Dmp HD-17630B

BKR-19/CONTROL PANEL OCB130B

SGTS Filter Drain Valve SV-08301B

BKR-26/CONTROL PANEL OC877B

Control Strc Chilled Wtr ESW & Cond Mix Vlv TV-08612B
Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08643B

BKR-28/CONTROL PANEL OC877B

Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08652B
Control Strc Chilled Wtr Clg Coil Mix Vlv TV-08662B

LOSS OF BUS 1Y629

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTIONS/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
1. Reactor Feed Pump A, B, and C Recirc flow valves fail open. (Recirc flow indication fails downscale.)	MONITOR RPV Water level if required, PERFORM SCRAM imminent actions, SCRAM Reactor, and TRIP Feedwater pumps.
2. RFP A,B & C Spd Ctl/Demand Signal SIC-C32-1R601A, B & C controllers, Master Recirc Flow Control XY-B31-1R620 and Reactor Recirc Pump A & B SPEED SY-B31-1R621A & B controllers fail. Feedwater flow control and indication for all three loops lost. Pump will lock at flow demand at time power lost. Reactor Vessel high level alarm lost. Recirculation Pumps will also lock at existing speed. Reactor total flow and jet pump flow indications fail downscale. Indication of Recirc loop flow remains, but trend information lost. (Chart drive failure).	To reestablish RPV level control, PERFORM ON-145-001. MAINTAIN constant plant conditions and monitor RPV level, while attempting to restore power to bus. If RPV water level approaches either the low or high alarm points, PERFORM SCRAM imminent actions, SCRAM Reactor, and TRIP Feedwater Pumps.
3. Condenser Vac PR-10502	Not normally required. PI-10502 for LP Condenser (1C668) and Condenser low vacuum alarm
4. TBCCW HX outlet header temperature control, indication and pressure indication. TI-11408 downscale PI-11409 downscale TV-11409	Temperature alarm high/low TAHL-11408(1C668) Pressure alarm low PAL-11405 (1C668) Temperature Control Valve Fails Open
5. Reactor Feedwater Pump A,B, and C recirc flow indication FI-10604A downscale FI-10604B downscale FI-10604C downscale	None

LOSS OF BUS 1Y629

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION
6. Instr Gas Hdr press PI-12612 Instr Gas Sup press PI-12642	INSTRUMENT GAS RECEIVER 1T216A and B LO-LO PRESS and INSTRUMENT GAS BOTTLE LEADER LO PRESS annunciator alarms on Panel 1C601.
7. Instr Air press PI-12511A and B	INSTRUMENT AIR LOOP A and B LO PRESS annunciator alarms.
8. RBCCW HX outlet header temperature control, indication and pressure indication. RBCCW HX Dsch press PI-11308 RBCCW HX Dsch temp TI-11305 RBCCW Cooler temp TIC-11028	RBCCW HEAT EXCHANGERS HEADER LO PRESS and RBCCW HEADER HI TEMP annunciator alarms on Panel 1C668.
9. Containment Drywell and Suppression Chamber pressure indication PI-15702 downscale	CONTAINMENT PRESSURE and PR-15710A,B DRWL/SUPP CHAMBER HI-LO PRESS annunciator alarm on Panel 1C601.
10. Main Steam to MSV-4 pressure indication. PR-10101C-A downscale	Isolated after scram PI-10101A,B (1C651)
11. Unit 1 Main Generator frequency indication XI-10005 downscale DCS Indication downscale	Frequency indicated on Main Generator DCS Format.
12. Hydrogen purity indication AI-10185 downscale	Local indicator and Low purity alarm AISL-10183.
13. BPV 1-5 position indication ZI-10140A-E downscale	None
14. TSI System fails. All meters fail downscale	None
15. CRD insert and withdrawal solenoid valves fail closed, if open.	None

LOSS OF BUS 1Y115

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION (NOTE 1)
NOTE: These instruments are lost, only if on Normal Supply (Alternate is 1Y216)	
1. Reactor Vessel Wide Range level indication (-150 to +60")	
LI-14201A (left) downscale	LI-14201B (1C601)
LI-14201A1 (left) downscale	LI-14201B1 (1C651)
LI-14203A (left) downscale	LI-14203B (1C601)
LR/PR-14201A (red) downscale	LR/PR-14201B (1C601)
	LI-B21-1R604 (1C652)
2. Reactor Vessel Extended Range level indication (-150 to +180")	
LI-14201A (right) downscale	LI-14201B (1C601)
LI-14201A1 (right) downscale	LI-14201B1 (1C651)
LI-14203A (right) downscale	LI-14203B (1C601)
3. Reactor Vessel Fuel Zone Range level indication (-310 to -110")	
LR-14202 downscale	LI-14205B (1C601)
4. Reactor Vessel pressure indication	
PI-14202A downscale	PI-14202B (1C601)
PI-14202A1 downscale	PI-14202B1 (1C651)
PI-14204A downscale	PI-14204B (1C601)
LR/PR-14201A (blue) downscale	LR/PR-14201B (1C601)
5. Containment temperature indication	
TR-15790A1 downscale	TR-15790B1 (1C601)

NOTE 1: TRANSFER control power to Alternate Power supply in accordance with this procedure.

LOSS OF BUS 1Y115

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION (NOTE 1)
6. Suppression Chamber level indication	
LR-15776A upscale LI-15775A downscale	LR-15776B (1C601) LI-15775B (1C601)
7. Drywell pressure indication	
PR-15710A downscale	PR-15710B (1C601) PI-15702 (1C601)
8. Suppression Pool temperature	
TIAH-15751 lost indication TX-15751 lost indication	TIAH-15752 (1C601) TX-15752 (1C690B)
9. RHR Hx Temperature	
TI-15127A downscale	TR-E11-1R601 (1C601)
10. Containment H_2/O_2	
AR-15746A Upscale	AR-15746B
11. Containment Radiation	
RR-15720A (higher than normal)	RR-15720B (1C601)
12. ESW Loop A Indication	
TI-01106A Downscale PI-01107A Downscale FI-01109A Downscale	Computer Point AET01 PI-01104A and C (local) Computer Point AEF01
13. CIG Pressure	
PI-12649 Downscale	PI-12643 A1 or A2 (local) and PI-12643 B1 or B2 (local)

NOTE 1: TRANSFER control power to Alternate Power supply in accordance with this procedure.

LOSS OF BUS 1Y115

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION (NOTE 1)
14. RHR Drywell Spray Flow	
FI-15120A downscale	NONE
15. Drywell Sump Level/Flow	
LR/PR-16102 (Pen as is, Chart Moves)	NONE

NOTE 1: TRANSFER control power to Alternate Power supply in accordance with this procedure.

LOSS OF BUS 1Y125

CAUTION

OTHER FUNCTIONS NOT LISTED WILL BE LOST. PLANT MUST BE MONITORED CLOSELY.

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION (NOTE 1)
NOTE: These instruments are lost only if on Normal Supply (Alternate is 1Y226)	
1. Reactor Vessel Wide Range level indication (-150 to +60")	
LI-14201B (left) downscale	LI-14201A (1C601)
LI-14201B1 (left) downscale	LI-14201A1 (1C651)
LI-14203B (left) downscale	LI-14203A (1C601)
LR/PR-14201B (red) downscale	LR/PR-14201A (1C601)
	LI-B21-1R604 (1C652)
2. Reactor Vessel Extended Range level indication (-150 to +180")	
LI-14201B (right) downscale	LI-14201A (1C601)
LI-14201B1 (right) downscale	LI-14201A1 (1C651)
LI-14203B (right) downscale	LI-14203A (1C601)
3. Reactor Vessel Fuel Zone Range level indication (-310 to -110")	
LI-14205B downscale	LR-14202 (1C601)
4. Reactor Vessel pressure indication	
PI-14202B downscale	PI-14202A (1C601)
PI-14202B1 downscale	PI-14202A1 (1C651)
PI-14204B downscale	PI-14204A (1C601)
LR/PR-14201B downscale	LR/PR-14201A (1C601)
5. Containment temperature indication TR-15790B1 downscale	TR-15790A1 (1C601)
6. Suppression Chamber level indication	
LR-15776B Upscale	LR-15776A (1C601)
LI-15775B Downscale	LI-15775A (1C601)

NOTE 1: TRANSFER control power to Alternate Power supply in accordance with this procedure.

LOSS OF BUS 1Y125

FUNCTION/INSTRUMENTATION LOST	REDUNDANT INSTRUMENTATION/ RECOMMENDED ACTION (NOTE 1)
7. Drywell Pressure indication PR-15710B downscale	PR-15710A (1C601)
8. Suppression Pool temperature	
TIAH-15752 TX-15752	TIAH-15751 (1C601) TX-15751 (1C690A)
9. RHR Heat Exchanger Temperature	
TI-15127B Downscale	TR-E11-1R601 (1C601)
10. Containment H_2O_2	
AR-15746B Upscale	AR-15746A
11. Containment Radiation	
RR-15720B (Higher than Normal)	RR-15720A
12. ESW Loop B Indication	
TI-01106B Downscale PI-01107B Downscale FI-01109B Downscale	Computer Point AET02 PI-01104 B and D (local) Computer Point AEF02
13. RHR Drywell Spray Flow	
FI-15120B Downscale	None

NOTE 1: TRANSFER control power to Alternate Power supply in accordance with this procedure.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS—Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable for reasons other than Condition B.	A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	7 days
B. One LPCI pump in one or both LPCI subsystems inoperable.	B.1	Restore LPCI pump(s) to OPERABLE status.	7 days
C. Required Action and associated Completion Time of Condition A or Condition B not met.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. HPCI System inoperable.	D.1 Verify by administrative means RCIC System is OPERABLE. AND D.2 Restore HPCI System to OPERABLE status.	Immediately 14 days
E. HPCI System inoperable. AND Condition A or Condition B entered.	E.1 Restore HPCI System to OPERABLE status. OR E.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours
F. One ADS valve inoperable.	F.1 Restore ADS valve to OPERABLE status.	14 days
G. One ADS valve inoperable. AND Condition A or Condition B entered.	G.1 Restore ADS valve to OPERABLE status. OR G.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
H. Two or more ADS valves inoperable. OR Required Action and associated Completion Time of Condition D, E, F, or G not met.	H.1 AND H.2	Be in MODE 3. Reduce reactor steam dome pressure to ≤ 150 psig.	12 hours 36 hours
I. Two Core Spray subsystems inoperable. OR One LPCI subsystem inoperable for reasons other than Condition B and One Core Spray subsystem inoperable. OR Two LPCI subsystems inoperable for reasons other than Condition B. OR HPCI System and one or more ADS valves inoperable.	I.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days
SR 3.5.1.2	------------------NOTE------------------ Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) cut in permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable. -- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, and the HPCI flow controller are in the correct position.	31 days
SR 3.5.1.3	Verify ADS gas supply header pressure is ≥ 135 psig.	31 days
SR 3.5.1.4	Verify at least one RHR System cross tie valve is closed and power is removed from the valve operator.	31 days
SR 3.5.1.5	Verify each 480 volt AC swing bus transfers automatically from the normal source to the alternate source on loss of power.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.6	-------------------NOTE------------------- Not required to be performed if performed within the previous 31 days. -- Verify each recirculation pump discharge valve and bypass valve cycles through one complete cycle of full travel or is de-energized in the closed position.	Once each startup prior to exceeding 25% RTP
SR 3.5.1.7	Verify the following ECCS pumps develop the specified flow rate against a system head corresponding to the specified reactor pressure. SYSTEM / FLOW RATE / NO. OF PUMPS / SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF Core Spray / ≥ 6350 gpm / 2 / ≥ 105 psig LPCI / ≥ 12,200 gpm / 1 / ≥ 20 psig	In accordance with the Inservice Testing Program
SR 3.5.1.8	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify, with reactor pressure ≤ 1060 and ≥ 920 psig, the HPCI pump can develop a flow rate ≥ 5000 gpm against a system head corresponding to reactor pressure.	In accordance with the Inservice Testing Program

SR 3.5.1.7 pump table:

SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF
Core Spray	≥ 6350 gpm	2	≥ 105 psig
LPCI	≥ 12,200 gpm	1	≥ 20 psig

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.9	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with reactor pressure ≤ 165 psig, the HPCI pump can develop a flow rate ≥ 5000 gpm against a system head corresponding to reactor pressure.	24 months
SR 3.5.1.10	-------------------NOTE------------------- Vessel injection/spray may be excluded. --- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.11	-------------------NOTE------------------- Valve actuation may be excluded. --- Verify the ADS actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.12	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify each ADS valve opens when manually actuated.	24 months on a STAGGERED TEST BASIS for each valve solenoid

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.13	-------------------NOTE------------------- Instrumentation response time is based on historical response time data. -- Verify the ECCS RESPONSE TIME for each ECCS injection/spray subsystem is within limit.	24 months

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE

The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.

BACKGROUND

Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Times(s).

DESCRIPTION

The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.

If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.

Once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will <u>not</u> result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition.

(continued)

1.3 Completion Times

DESCRIPTION (continued)

However, when a subsequent division, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

a. Must exist concurrent with the first inoperability; and

b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Condition A and B in Example 1.3-3 may not be extended.

1.3 Completion Times (continued)

EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to be in MODE 3 within 12 hours AND in MODE 4 within 36 hours. A total of 12 hours is allowed for reaching MODE 3 and a total of 36 hours (not 48 hours) is allowed for reaching MODE 4 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 4 is the next 30 hours because the total time allowed for reaching MODE 4 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 4 is the next 36 hours.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump inoperable.	A.1 Restore pump to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after LCO 3.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition A.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
C. One Function X subsystem inoperable. AND One Function Y subsystem inoperable.	C.1 Restore Function X subsystem to OPERABLE status. OR C.2 Restore Function Y subsystem to OPERABLE status.	72 hours 72 hours

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

When one Function X subsystem and one Function Y subsystem are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem, starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock". In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more valves are still inoperable, Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLE (continued)

EXAMPLE 1.3-5

ACTIONS

-----------------------------NOTE-----------------------------
Separate Condition entry is allowed for each inoperable valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 3.x.x.x.	Once per 8 hours
	OR	
	A.2 Reduce THERMAL POWER to ≤ 50% RTP.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated. AND A.2 Restore subsystem to OPERABLE status.	1 hour AND Once per 8 hours thereafter 72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1

(continued)

1.3 Completion Times

EXAMPLES	EXAMPLE 1.3-7 (continued) is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.
IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

a. MODE 2 within 7 hours;

b. MODE 3 within 13 hours; and

c. MODE 4 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, and 3.

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This

(continued)

3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)

Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.11, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the

(continued)

3.0 LCO APPLICABILITY

LCO 3.0.6 (continued)	applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.
LCO 3.0.7	Special Operations LCOs in Section 3.10 allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Special Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1

SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be

(continued)

3.0 SR APPLICABILITY

SR 3.0.3 (continued)	declared not met, and the applicable Condition(s) must be entered.
SR 3.0.4	Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with Actions or that are part of a shutdown of the unit. SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

DATA FORM

ACCEPTANCE CRITERIA	AS FOUND	ACCEPTABLE	CONFIRM
<u>Unit 1 TS 5.5.6</u> 1. RCIC Pump Discharge Check 149F014 opening stroke acceptable (step 6.3.1)		YES/NO	______
<u>Unit 1 TS 5.5.6</u> 2. RCIC Pump Suction Check 149F011 opening stroke acceptable (step 6.3.1)		YES/NO	______
<u>Unit 1 SR 3.5.3.3</u> 3. RCIC Pump Flow ≥ 600 GPM (step 6.3.1)	______gpm	YES/NO	______
<u>Unit 1 SR 3.5.3.3</u> 4. RCIC Pump Discharge Pressure ≥ 1140 psig (Step 6.3.2)	______psig	YES/NO	______
<u>Unit 1 SR 3.5.3.3</u> 5. RCIC Turbine Inlet Pressure of ≥ 920 psig and ≤ 1060 psig (Step 6.3.5)	______psig	YES/NO	______
<u>Unit 1 TS 5.5.6</u> 6. RCIC Pump Flow is ≥ 600 gpm and ≤ 620 gpm (step 6.3.8.b)	______gpm	YES/NO	______
<u>Unit 1 TS 5.5.6</u> 7. RCIC Pump ΔP is within 714 to 783 psid (step 6.3.8.e)	______psid	YES/NO	______
<u>Unit 1 TS 5.5.6</u> 8. 1P203 Pump Vibration is within the following limits (step 6.3.8.1)			______
a) Pump 1P203 inboard bearing horizontal ≤ 0.160 ips.	______ips	YES/NO	______
b) Pump 1P203 inboard bearing, vertical ≤ 0.170 ips.	______ips	YES/NO	______
c) Pump 1P203 outboard bearing, horizontal ≤ 0.098 ips.	______ips	YES/NO	______
d) Pump 1P203 outboard bearing, vertical ≤ 0.173 ips.	______ips	YES/NO	______
e) Pump 1P203 outboard (thrust) bearing, axial ≤ 0.115 ips.	______ips	YES/NO	______
<u>Unit 1 TS 5.5.6</u> 9. RCIC LO Return to Pump Suction Check 150F047 opening stroke acceptable (step 6.3.9.a)		YES/NO	______

ACCEPTANCE CRITERIA			AS FOUND	ACCEPTABLE	CONFIRM
Unit 1 TS 5.5.6 10. RCIC Vac Tank Cond Pump Dsch Check 150010 opening stroke acceptable (step 6.3.9.b)				YES/NO	______
Unit 1 TS 5.5.6 11. RCIC Turbine Exhaust Check 149F040 opening stroke acceptable (step 6.3.10)				YES/NO	______
Unit 1 TS 5.5.6 12. RCIC Min Flow Check 149F021 opening stroke acceptable (step 6.3.11)				YES/NO	______
	ACCEPTABLE	LIMIT			
13. TS 5.5.6 5.5.6 HV-150-F046 opening stroke time (step 6.4.11.c)	≥ 17 sec	≤ 29 sec	_____sec	YES/NO	______
14. TS 5.5.6 5.5.6 HV-150-F046 closing stroke time (step 6.4.11.f)	≥ 17 sec	≤ 29 sec	_____sec	YES/NO	______
Unit TS 1 5.5.6 15. RCIC Turbine Trip and Throttling HV-15012 closing stroke acceptable (step 6.5.1.c)				YES/NO	______
Unit 1 TS 5.5.6 16. RCIC Turbine Trip and Throttle HV-15012 opening stroke acceptable (step 6.5.1.d)				YES/NO	______

REQUIRED ACTION		APPLICABLE	CONFIRM
1.	If Acceptance Criteria has not been met, NOTIFY Shift Supervision that SO-150-002 has failed. (Step 6.6)	YES/NO	______
2.	If measured values of vibration or pump ΔP fall outside acceptance criteria but within following ISI limits, Shift Supervision must double surveillance frequency until cause is analyzed. Differential Pressure - 691 to 845 psid. RCIC Pump Vibration at inboard bearing, horizontal ≤ 0.384 ips RCIC Pump Vibration at inboard bearing, vertical ≤ 0.408 ips RCIC Pump Vibration at outboard bearing, horizontal ≤ 0.234 ips RCIC Pump Vibration at outboard bearing, vertical ≤ 0.414 ips RCIC Pump Vibration at outboard (thrust) bearing, vertical ≤ 0.276 ips	YES/NO	______
3.	If measured values of vibration or pump ΔP fall outside limits of 2 above, OR any other acceptance criteria not met. Shift Supervision to confirm following REQUIRED ACTIONS are in effect as applicable.	YES/NO	______
	a. TS 3.5.3 Condition A Actions	YES/NO	______

REQUIRED ACTION	APPLICABLE	CONFIRM
4. For each Acceptance Criteria failure for a power operated valve:		
A. If measured stroke time for any valve fails to meet the "Limiting Value For Full Stroke Time" acceptance criteria listed in the right hand (LIMIT) column, DECLARE that valve INOPERABLE.	YES/NO	________
B. If measured stroke time for any valve fails to meet the acceptance criteria listed in the LEFT-HAND (ACCEPTABLE) column:		
1. On Surveillance Authorization Form, Part VI check that acceptance criteria failed.	YES/NO	________
2. DECLARE that valve INOPERABLE, or RETEST that valve, if able, using a Surveillance Authorization Retest Form.	YES/NO	________
3. For each retested valve:		
a. If measured stroke time for a retested valve fails to meet TS 5.5.6 Acceptance Criteria listed in the left-hand (ACCEPTABLE) column, ANALYZE the data within 96 hours to verify that the new stroke time represents acceptable valve operation, or DECLARE the valve INOPERABLE. (Analysis performed by System Engineer and the 96 hours tracked by US on Surveillance Authorization cover sheet and the US Turnover Sheet.)	YES/NO	________
b. If measured stroke time for a retested valve is within the TS 5.5.6 Acceptance Criteria listed in the left- hand (ACCEPTABLE) column, the test has been successfully completed. Additionally, CONTACT System Engineer for analysis of the cause of the initial deviation.	YES/NO	________

3.9 REFUELING OPERATIONS

3.9.7 Residual Heat Removal (RHR) — High Water Level

LCO 3.9.7 One RHR shutdown cooling subsystem shall be OPERABLE and in operation.

---------------------------NOTE---------------------------
The required RHR shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level ≥ 22 ft above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required RHR shutdown cooling subsystem inoperable.	A.1 Verify an alternate method of decay heat removal is available.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Suspend loading irradiated fuel assemblies into the RPV. AND	Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Initiate action to restore secondary containment to OPERABLE status.	Immediately
	<u>AND</u>		
	B.3	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	<u>AND</u>		
	B.4	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

B 3.9 REFUELING OPERATIONS

B 3.9.7 Residual Heat Removal (RHR)—High Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 5 is to remove decay heat and sensible heat from the reactor coolant, as required by GDC 34. Each of the two shutdown cooling loops of the RHR System can provide the required decay heat removal. Each loop consists of two motor driven pumps, a heat exchanger, and associated piping and valves. Both loops have a common suction from the same recirculation loop. Each pump discharges the reactor coolant, after it has been cooled by circulation through the respective heat exchangers, to the reactor via the low pressure coolant injection path. The RHR heat exchangers transfer heat to the RHR Service Water System. The RHR shutdown cooling mode is manually controlled.

In addition to the RHR subsystems, the volume of water above the reactor pressure vessel (RPV) flange provides a heat sink for decay heat removal.

APPLICABLE SAFETY ANALYSES

With the unit in MODE 5, with RPV water level ≥ 22 feet above the RPV Flange, the RHR System is not required to mitigate any events or accidents evaluated in the safety analyses. The RHR System is required for removing decay heat to maintain the temperature of the reactor coolant.

Although the RHR System shutdown cooling requirements do not meet a specific criterion of the NRC Policy Statement (Ref. 1), it was identified in the NRC Policy Statement as an important contributor to risk reduction. Therefore, the RHR System is retained as a Specification.

LCO

Only one RHR shutdown cooling subsystem is required to be OPERABLE and in operation in MODE 5 with irradiated fuel in the RPV and the water level ≥ 22 ft above the RPV flange. Only one subsystem is required because the volume of water above the RPV flange provides backup decay heat removal capability.

(continued)

BASES

LCO (continued)

An OPERABLE RHR shutdown cooling subsystem consists of an RHR pump with an associated RHRSW pump, a heat exchanger, valves, piping, instruments, and controls to ensure the corresponding flow paths are OPERABLE. In MODE 5, the RHR cross tie valves are not required to be closed; thus, the valve may be opened to allow pumps in one loop to discharge through the opposite loop's injection flow path to make a complete subsystem.

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required. A Note is provided to allow a 2 hour exception to shut down the operating subsystem every 8 hours.

APPLICABILITY

One RHR shutdown cooling subsystem must be OPERABLE and in operation in MODE 5, with irradiated fuel in the reactor pressure vessel and with the water level ≥ 22 feet above the top of the RPV flange, to provide decay heat removal. RHR System requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS); Section 3.5, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems. RHR Shutdown Cooling System requirements in MODE 5 with irradiated fuel in the reactor pressure vessel and with the water level < 22 ft above the RPV flange are given in LCO 3.9.8.

ACTIONS

A.1

With no RHR shutdown cooling subsystem OPERABLE, an alternate method of decay heat removal must be verified available within 1 hour. In this condition, the volume of water above the RPV flange provides adequate capability to remove decay heat from the reactor core. However, the overall reliability is reduced because loss of water level

(continued)

BASES

ACTIONS

A.1 (continued)

could result in reduced decay heat removal capability. The 1 hour Completion Time is based on decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each secondary containment penetration not isolated and required to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a surveillance may need to

(continued)

BASES

ACTIONS

B.1, B.2, B.3, and B.4 (continued)

be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

C.1 and C.2

If no RHR Shutdown Cooling System is in operation, an alternate method of coolant circulation is required to be established within 1 hour. This alternate method may use forced or natural circulation. The Completion Time is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR Shutdown Cooling System), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

This Surveillance demonstrates that the RHR subsystem is in operation and circulating reactor coolant.

The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.

REFERENCE

1. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).

3.9 REFUELING OPERATIONS

3.9.8 Residual Heat Removal (RHR) – Low Water Level

LCO 3.9.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and one RHR shutdown cooling subsystem shall be in operation.

---------------------------NOTE---------------------------
The required operating shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < 22 ft above the top of the RPV flange.

ACTIONS

---------------------------NOTE---------------------------
Separate Condition entry is allowed for each Shutdown Cooling Subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable required RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to restore secondary containment to OPERABLE status. AND	Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	AND		
	B.3	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

B 3.9 REFUELING OPERATIONS

B 3.9.8 Residual Heat Removal (RHR)—Low Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 5 is to remove decay heat and sensible heat from the reactor coolant, as required by GDC 34. Each of the two shutdown cooling loops of the RHR System can provide the required decay heat removal. Each loop consists of two motor driven pumps, a heat exchanger, and associated piping and valves. Both loops have a common suction from the same recirculation loop. Each pump discharges the reactor coolant, after it has been cooled by circulation through the respective heat exchangers, to the reactor via the low pressure coolant injection path. The RHR heat exchangers transfer heat to the RHR Service Water System. The RHR shutdown cooling mode is manually controlled.

APPLICABLE SAFETY ANALYSES

With the unit in MODE 5, the RHR System is not required to mitigate any events or accidents evaluated in the safety analyses. The RHR System is required for removing decay heat to maintain the temperature of the reactor coolant.

Although the RHR System shutdown cooling requirements do not meet a specific criterion of the NRC Policy Statement (Ref. 1), it was identified in the NRC Policy Statement as an important contributor to risk reduction. Therefore, the RHR System is retained as a Specification.

LCO

In MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < 22 ft above the reactor pressure vessel (RPV) flange, two RHR shutdown cooling subsystems must be OPERABLE.

An OPERABLE RHR shutdown cooling subsystem consists of an RHR pump with an associated RHRSW pump, a heat exchanger, valves, piping, instruments, and controls to ensure the corresponding flow paths are OPERABLE. To meet the LCO, both pumps in one loop or one pump in each of the two loops

(continued)

BASES

LCO (continued)

must be OPERABLE. Since the piping and heat exchangers are passive components and assumed not to fail, they are allowed to be common to both subsystems. For each pump required to be OPERABLE on the primary (RHR) side, an associated RHRSW pump must be OPERABLE on the secondary side to transport decay heat to the UHS. Therefore, if two RHR pumps (and one heat exchanger) in the same loop are being used to comprise two shutdown cooling subsystems, the two RHRSW pumps (one from Unit 1 and one from Unit 2) which are capable of servicing the subject heat exchanger must be OPERABLE.

In MODE 5, the RHR crosstie valves are not required to be closed; thus, the valves may be opened to allow pumps in one loop to discharge through the opposite loop's injection flow path to make a complete subsystem.

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required. A Note is provided to allow a 2 hour exception to shut down the operating subsystem every 8 hours.

APPLICABILITY

Two RHR shutdown cooling subsystems are required to be OPERABLE, and one must be in operation in MODE 5, with irradiated fuel in the RPV and with the water level < 22 ft above the top of the RPV flange, to provide decay heat removal. RHR System requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS); Section 3.5, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems. RHR Shutdown Cooling System requirements in MODE 5 with irradiated fuel in the RPV and with the water level ≥ 22 ft above the RPV flange are given in LCO 3.9.7, "Residual Heat Removal (RHR)—High Water Level."

(continued)

BASES

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1

With one of the two required RHR shutdown cooling subsystems inoperable, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore an alternate method of decay heat removal must be verified available. With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be verified available in addition to that verified available for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of this alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed. The method used to remove decay heat should be the most prudent choice based on unit conditions.

(continued)

BASES

ACTIONS (continued)

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each secondary containment penetration not isolated and required to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

C.1 and C.2

If no RHR subsystem is in operation, an alternate method of coolant circulation is required to be established within 1 hour. This alternate method may use forced or natural circulation. The Completion Time is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR Shutdown Cooling System), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This Surveillance demonstrates that one RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability.

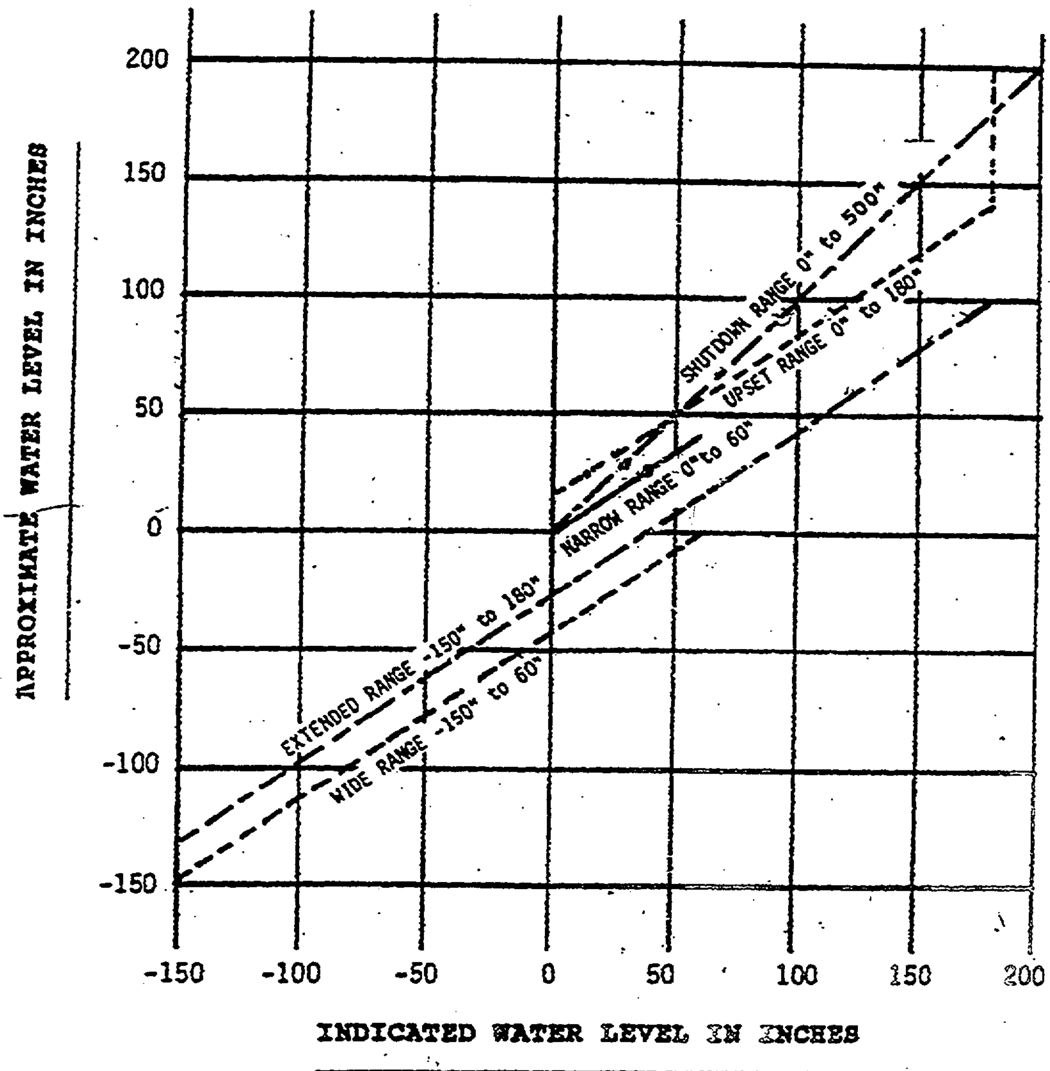
The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystems in the control room.

REFERENCE

1. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).

RO

INDICATED/APPROXIMATE WATER LEVEL FOR < 200 PSIG REACTOR VESSEL PRESSURE



NOTE: WIDE RANGE WILL BE UPSCALE UNLESS ACTUAL WATER LEVEL <0.

PROCEDURE COVER SHEET

	NUCLEAR DEPARTMENT PROCEDURE	
	QUARTERLY HPCI FLOW VERIFICATION	SO-152-002 Revision 26 Page 1 of 40

QUALITY CLASSIFICATION:	APPROVAL CLASSIFICATION:
(X) QA Program ( ) Non-QA Program	(X) Plant ( ) Non-Plant ( ) Instruction

EFFECTIVE DATE: 08/18/00

PERIODIC REVIEW FREQUENCY: N/A

PERIODIC REVIEW DUE DATE: N/A

RECOMMENDED REVIEWS:

Procedure Owner: Shift Technical Advisor 'E' Shift

Responsible Supervisor: Shift Supervisor 'E' Shift

Responsible FUM: Manager-Nuclear Operations

Responsible Approver: Manager-Nuclear Operations

TABLE OF CONTENTS

ATTACHMENTS

1. PURPOSE/SCOPE

1.1 Perform HPCI Auto Quick Start to satisfy TS quarterly surveillance requirements and Station Inservice Test (IST) Program Plan. Test will confirm capability of HPCI turbine and control system and HPCI design flowrate ≥ 5000 gpm (steady state) against a test line pressure ≥ 1140 psig when steam is being supplied to HPCI Turbine at 920-1060 psig.

1.2 An Auto Quick Start is not specifically required by TS but is being performed as station policy to comply with GE and INPO recommended method of meeting TS quarterly surveillance requirements.

2. REFERENCES

2.1 Electrical Schematic E-152

2.2 FSAR Section 6.3

2.3 GE SIL No. 336

2.4 IOM 13

2.5 IOM 33

2.6 NDAP-QA-0722 Surveillance Test Program

2.7 NDAP-QA-0423 Station Pump and Valve Testing Program

2.8 P&ID M-155

2.9 P&ID M-156

2.10 TS 3.5.1

2.11 TS 3.6.1.3

2.12 TS 3.6.2.1

2.13 TS 5.5.6

2.14 TS 3.6.2.2

(1) 2.15 PLA-4677, R. G. Byram, "Relay to a Notice of Violation (50-387/97-03-02)"

3. SPECIAL TOOLS/EQUIPMENT

3.1 Vibration monitoring equipment

3.2 Stopwatch

3.3 Local tachometer

4. PRECAUTIONS

4.1 At no time during this test shall water be allowed to inject into Reactor Coolant System. Injection would result in reportability requirements in accordance with NDAP-QA-0720.

4.2 Suppression Pool temperature must be monitored whenever HPCI turbine is placed in operation to ensure pool temperature limitations are not exceeded.

4.3 Stop testing before Suppression Pool temperature reaches 105°F limit of TS 3.6.2.1 on Suppression Pool RTD's. (Recommend, when possible, a maximum Suppression Pool temperature of 80°F prior to HPCI start to avoid 105°F limit).

4.4 Minimize operation of turbine at speeds less than 2200 rpm to assure shaft and HPCI Auxiliary Oil Pumps are not running at same time.

4.5 If maintenance has been performed on HPCI System that may affect system performance a manual start should be performed in accordance with OP-152-001, High Pressure Coolant Injection (HPCI) system, prior to auto quick start.

4.6 Reactor power should be maintained ≤ 100% power during increase in power caused by HPCI run.

4.7 Suppression Pool Level must be monitored when HPCI is in test mode to ensure compliance with TS 3.6.2.2.

(1) 4.8 The HPCI system shall not be vented OR checked vented for the performance of this surveillance test.

5. PREREQUISITES/LIMITATIONS

NOTE: Preferred pump start for Quarterly HPCI Flow Verification Test should be a Cold Auto Quick Start (HPCI turbine shutdown > 16 previous hours).

5.1 RECORD type of HPCI testing to be performed (Warm Auto Quick Start or Cold Auto Quick Start).

______________ type of testing

______________ CONFIRM

5.2 No HPCI initiation or isolation signals present.

______________ CONFIRM

5.3 No other surveillance testing or maintenance being performed or started during this test on HPCI System.

______________ CONFIRM

5.4 HPCI System aligned for automatic response in accordance with OP-152-001.

______________ CONFIRM

5.5 HPCI oil sump filled to between red line and blue line on sight glass.

______________ CONFIRM

5.6 Reactor Plant in Mode 1,2 or 3 with steam pressure at HPCI turbine at 920-1040 psig.

______________ CONFIRM

5.7 If test being performed to meet Technical Specification quarterly surveillance requirements, Maintenance available to take required vibration data and HPCI turbine speed from local digital tachometer; else NA.

CONFIRM

5.8 ESW available to supply HPCI Room Coolers in accordance with OP-054-001.

CONFIRM

5.9 SGTS available and in standby in accordance with OP-070-001.

CONFIRM

5.10 RHR System available for Suppression Pool Cooling in accordance with OP-149-005.

CONFIRM

5.11 Maintenance personnel (Electrical, Mechanical) available to support testing.

CONFIRM

5.12 Health Physics notified of changing radiological conditions during this test and available for support.

CONFIRM

5.13 Battery 1D660 equalize charge not in progress

CONFIRM

5.14 DETERMINE if SO-152-015 is to be performed in conjunction with this test and Enter YES or NO.

YES/NO ________
CONFIRM

5.15 OPEN HPCI Room LRW Drain 161119 in accordance with OP-169-004 (Rx Building Sump Room Valve Pit 29-645').

____
CONFIRM

5.16 When testing at ≈ 920 psig during unit startup, allow a minimum of approximately one full bypass valve available for HPCI auto quick start testing. HPCI uses ≈ 65% of a bypass valve during initial quick start and ≈ 45% after system stabilization.

____
CONFIRM

5.17 PCC notified that Unit generation will decrease approximately 15 MWE during HPCI run.

____
CONFIRM

5.18 Determine if PM SO665, HPCI Pump and Turbine performance during SO-152-002, is due.

YES/NO ________
CONFIRM

6. PROCEDURE

NOTE (1): Step 6.4 describes both hot and cold auto quick starts

NOTE (2): Steps of test designated by an asterisk (*) immediately to left of step number require entry(ies) to be recorded on Data Form.

NOTE (3): All operations are performed at panel 1C601 unless otherwise specified.

6.1 PLACE HPCI System in test status as follows:

6.1.1 PLACE HPCI DIV 1 MOV OL BYPS HS-E41-1S42 keyswitch to TEST.

____
CONFIRM

6.1.2 CONFIRM HPCI OUT OF SERVICE annunciator ALARMS.

____
CONFIRM

6.1.3 CONFIRM HPCI DIV 1 MOVS IN TEST status light ILLUMINATES.

____
CONFIRM

6.1.4 PLACE HPCI DIV 2 MOV OL BYPS HS-E41-1S41 keyswitch to TEST.

____
CONFIRM

6.1.5 CONFIRM HPCI DIV 2 MOVS IN TEST status light ILLUMINATES.

____
CONFIRM

6.1.6 PLACE HPCI DIV 1 OUT OF SERVICE HS-E41-1S34A switch to INOP.

CONFIRM

6.1.7 CONFIRM HPCI DIV 1 OUT OF SERVICE status light ILLUMINATES.

CONFIRM

6.1.8 PLACE HPCI DIV 2 OUT OF SERVICE HS-E41-1S34B switch to INOP.

CONFIRM

6.1.9 CONFIRM HPCI DIV 2 OUT OF SERVICE status light ILLUMINATES.

CONFIRM

* 6.1.10 RECORD HPCI Pump suction pressure from HPCI PP SUCT PRESS PI-E41-1R606.

6.1.11 PERFORM SO-159-010, Suppression Chamber Average Water Temperature Verification, in conjunction with this test.

CONFIRM

6.1.12 CONFIRM HPCI INJECTION HV-155-F006 CLOSED.

CONFIRM

NOTE: INFORM Shift Supervision next step will place HPCI System in LCO condition in accordance with TS 3.5.1.

6.1.13. OPEN Breaker 1D264061, HPCI Pp Disch Valve 1F006 (28-683') preventing injection upon initiation and RECORD the time.

TIME ____________ CONFIRM ____________ VERIFY ____________

6.1.14 CONFIRM HPCI DIV 2 MOV OL OR PWR LOSS status light ILLUMINATES.

CONFIRM ____________

6.2 TEST HPCI Lube Oil Cooling Water Valve HV-156-F059 as follows:

6.2.1 SIMULTANEOUSLY OPEN HV-156-F059 and COMMENCE stroke timing.

CONFIRM ____________

6.2.2 STOP timing HV-156-F059 when full OPEN indication observed.

CONFIRM ____________

* 6.2.3 RECORD HV-156-F059 opening stroke time.

6.2.4 SIMULTANEOUSLY CLOSE HV-156-F059 and COMMENCE stroke timing.

CONFIRM ____________

6.2.5 STOP timing HV-156-F059 when full CLOSED indication observed.

CONFIRM ____________

* 6.2.6 RECORD HV-156-F059 closure stroke time.

6.3 PLACE HPCI Support Systems in service as follows:

6.3.1 PLACE Standby Gas Treatment System in operation in accordance with OP-070-001.

CONFIRM

6.3.2 PLACE ESW System in service supplying HPCI Room Coolers in accordance with OP-054-001.

CONFIRM

6.3.3 PLACE Suppression Pool Cooling System in service in accordance with OP-149-005, RHR Operation in Suppression Pool Cooling Mode.

CONFIRM

6.4 AUTO QUICK START HPCI Turbine as follows:

6.4.1 If Cold Auto Quick Start (vs. Warm Auto Quick Start) is being performed, ENSURE HPCI Turbine shutdown > 16 previous hours. ENTER present date and time.

Date Time CONFIRM

6.4.2 CHECK HPCI TEST LINE TO CST ISO HV-155-F011 CLOSED.

CONFIRM

NOTE: Lifting leads in following step prevents automatic CLOSURE of HPCI TEST LINE TO CST ISO HV-155-F011 on system initiation.

6.4.3 At HPCI Relay Panel Div 2, 1C620 (12-698'), INSTRUCT qualified work group personnel to LIFT both leads at terminal 3 of Relay E41A-K2 and clamp together.

CONFIRM VERIFY

6.4.4 While moving valve in open direction, POSITION HPCI TEST LINE TO CST ISO HV-155-F008 to 32% OPEN based on local observation.

CONFIRM

6.4.5 OPEN Breaker 1D274081, HPCI Test Byp E41-1F008 (25-683').

CONFIRM VERIFY

6.4.6 EVACUATE personnel from HPCI pump room and CLOSE water tight doors. Once HPCI is operating pump room may be accessed again.

CONFIRM

6.4.7 ROTATE collar on HPCI MAN INIT HS-E41-1S33 push button to ARMED position.

CONFIRM

6.4.8 CONFIRM HPCI MAN INITIATION SWITCH ARMED annunciator ALARMS.

CONFIRM

6.4.9 INSTRUCT on shift STA to START Transient Monitoring System TRA, if desired.

CONFIRM

NOTE (1): Initiation will commence when initiate push button is depressed for HPCI MAN INIT HS-E41-1S33. Measure time from when push button is depressed until HPCI flow greater than 5000 gpm.

NOTE (2): In step 6.4.12 opening HV-155-F011 has been delayed to reduce the probability of discharge piping transient which occurs if the valve is opened too soon after HPCI initiation. If HV-155-F011 open signal is delayed too long after pump discharge pressure is indicated, it may not open due to high differential pressure across the valve. Opening HV-155-F011 promptly upon indication of pump discharge pressure is important to minimize the potential for these conditions. Increasing pump discharge pressure will not occur until at least 10 seconds after initiation.

NOTE (3): TRA data may be used as a stop watch substitute, as needed, for HPCI response timing.

NOTE (4): Steps 6.4.10 through 6.4.15 require planning and close coordination since they occur rapidly and require multiple operator actions and observations.

6.4.10 SIMULTANEOUSLY START stopwatch and

6.4.11 DEPRESS and HOLD HPCI MAN INIT HS-E41-1S33 push button until TURBINE STEAM SUPPLY HV-155-F001 STARTS to OPEN.

CONFIRM

6.4.12 When HPCI pump discharge pressure indicates 100 psig increasing on PI-E41-1R601, PROMPTLY OPEN HPCI TEST LINE TO CST ISO HV-155-F011.

CONFIRM

6.4.13 When flow reaches 5000 gpm as indicated on FI-E41-1R600-1:

a. STOP stopwatch.

CONFIRM

* b. RECORD time.

* c. CONFIRM HPCI successfully actuated by observing flow as indicated on FI-E41-1R600-1, ≥ 5000 gpm.

6.4.14 If HPCI TEST LINE TO CST ISO HV-155-F011 fails to OPEN, PERFORM step 6.4.17; else NA.

CONFIRM

6.4.15 CONFIRM following events occur:

a. HPCI INIT SIG RESET HS-E41-1S17 indicating light ILLUMINATES.

CONFIRM

b. HPCI BARO CDSR VACUUM PP 1P216 STARTS.

CONFIRM

c. HPCI L-O CLG WTR HV-156-F059 OPENS.

CONFIRM

d. HPCI TURBINE STEAM SUPPLY HV-155-F001 OPENS.

CONFIRM

e. HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 CLOSES.

CONFIRM

f. HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 CLOSES.

CONFIRM

g. HPCI BARO CDSR COND PP DSCH DRN HV-156-F026 CLOSES.

CONFIRM

h. HPCI BARO CDSR COND PP DSCH DRN HV-156-F025 CLOSES if open.

CONFIRM

i. HPCI Rm Unit Clr 1V209A(B) STARTS at Panel 1C681.

CONFIRM

6.4.16 If loud banging noise occurred during system initiation, NOTIFY system engineer to evaluate effect on system components.

CONFIRM

6.4.17 If HV-155-F011 fails to open during initial attempt of step 6.4.12, ESTABLISH conditions for reperforming test as follows:

a. MANUALLY REDUCE HPCI Pump flow (speed) with HPCI TURBINE FLOW CONTROL FC-E41-1R600 to ≈ 2200 rpm.

b. RESET HPCI initiation as follows:

(1) RETURN HPCI MAN INIT HS-E41-1S33 push button collar to DISARM position.

____
CONFIRM

(2) CONFIRM HPCI MAN INITIATION SWITCH ARMED annunciator CLEARS.

____
CONFIRM

(3) DEPRESS HPCI INIT SIG RESET HS-E41-1S17 push button.

____
CONFIRM

(4) CONFIRM HPCI INIT SIG RESET HS-E41-1S17 initiating light CLEARS.

____
CONFIRM

c. ENSURE HPCI TEST LINE TO CST ISO HV-155-F011 CLOSED.

____
CONFIRM

d. DEPRESS and HOLD HPCI TURBINE TRIP HS-E41-1S19 push button.

_______ CONFIRM

e. CLOSE HPCI TURBINE STEAM SUPPLY HV-155-F001.

_______ CONFIRM

f. When HV-155-F001 fully closed, RELEASE HPCI TURBINE TRIP HS-E41-1S19 push button.

_______ CONFIRM

g. CONFIRM HPCI L-O CLG WTR HV-156-F059 CLOSED.

_______ CONFIRM

h. STOP HPCI AUXILIARY OIL PP 1P213 approximately 5 minutes after turbine shutdown to allow bearing cooling.

_______ CONFIRM

i. Approximately 15 minutes after stopping HPCI Turbine, STOP HPCI BARO CDSR VACUUM PP 1P216.

_______ CONFIRM

j. RESET HPCI TURBINE FLOW CONTROL FC-E41-1R600 to 5100 gpm and in AUTO.

_______ CONFIRM

k. RECOMMENCE Auto Quick Start, Step 6.4.

CONFIRM

* 6.4.18 CONFIRM full open indication of HPCI TURB STOP FV-15612.

6.4.19 RESET HPCI initiation as follows:

a. RETURN HPCI MAN INIT HS-E41-1S33 push button collar to DISARM position.

CONFIRM

b. CONFIRM HPCI MAN INITIATION SWITCH ARMED annunciator CLEARS.

CONFIRM

c. DEPRESS HPCI INIT SIG RESET HS-E41-1S17 push button.

CONFIRM

d. CONFIRM HPCI INIT SIG RESET HS-E41-1S17 initiating light CLEARS.

CONFIRM

e. CLOSE BREAKER 1D274081, HPCI Test Bypass to CST HV-1F008 (25-683')

CONFIRM IND VFD

CAUTION

BEFORE AVERAGE SUPPRESSION POOL TEMPERATURE REACHES 105°F, TEST MUST BE STOPPED AND TEMPERATURE BROUGHT DOWN TO LESS THAN 90°F PRIOR TO RESUMING TESTING. IF LESS THAN REQUIRED NUMBER OF SUPPRESSION POOL RTD'S ARE OPERABLE, TEST MUST BE STOPPED.

6.5 ESTABLISH following conditions:

6.5.1 ADJUST HPCI flow to at least 5000 gpm (FI-E41-1R600-1) at a Discharge Pressure of at least 1140 psig (PI-E41-1R601) by performing both of the following steps as necessary (Technical Specification Criteria):

a. ALLOW HPCI TURBINE FLOW CONTROL FC-E41-1R600 to control in automatic and

b. THROTTLE HPCI TEST LINE TO CST HV-155-F008

____
CONFIRM

NOTE: Observing 5000 GPM in next step confirms proper opening of HPCI Pump Dsch Check 155F005, and of HPCI Pump Suct Check 155F019.

6.5.2 RECORD following Data:

* a. HPCI FLOW FI-E41-1R600-1

* b. HPCI PP DSCH PRESS PI-E41-1R601

* c. RX STM TO HPCI TURB PRESS PI-E41-1R602

6.5.3 If a quick start is being performed to determine system operability only, GO TO Step 6.6 of this test since ISI data is not required.

NOTE: The following step establishes ISI Test Conditions by adjusting Pump/Turbine speed and flow. Although a wider band is acceptable, it is desirable to establish speed and flow as close as possible to 4100 rpm and 5000 gpm so the data can be used for trending.

6.5.4 ESTABLISH Pump/Turbine speed at 4070-4130 rpm as indicated on local tachometer and flow at 5000-5100 gpm as indicated on FI-E41-1R600-1, as follows:

a. PLACE HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL.

_________ CONFIRM

b. ADJUST turbine speed using HPCI TURBINE FLOW CONTROL FC-E41-1R600

_________ CONFIRM

c. ADJUST HPCI flow by throttling HPCI TEST LINE TO CST HV-155-F008

_________ CONFIRM

NOTE: Steps 6.5.5 and 6.5.6 are to be performed at same time.

6.5.5 With system in operation at rated stable condition for at least 2 minutes, RECORD following parameters:

* a. HPCI FLOW FI-E41-1R600-1

b. HPCI PP DSCH PRESS PI-E41-1R601

_________ psig

_________ CONFIRM

c. HPCI TURB SPEED SI-E41-1R604

__________ rpm __________ CONFIRM

d. REACTOR VESSEL PRESSURE at POST ACCIDENT MON RECORDER LR/PR-14201B

__________ psig __________ CONFIRM

e. RX STM TO HPCI TURB PRESS PI-E41-1R602

__________ psig __________ CONFIRM

f. HPCI PP SUCT PRESS PI-E41-1R606

__________ psig __________ CONFIRM

* g. HPCI Pump delta P (discharge-suction pressure)

h. HPCI TURB DSCH PRESS PI-E41-1R603

__________ psig __________ CONFIRM

* i. HPCI turbine speed from local tachometer

CAUTION

NPO (OR FIELD PERSONNEL) SHALL OBSERVE ALL ENTRY REQUIREMENTS TO HPCI ROOM DURING HPCI OPERATION, INCLUDING REQUIREMENTS FOR RADIATION, STEAM, AND NOISE HAZARDS.

6.5.6 With HPCI in operation at rated stable conditions for at least 2 minutes, using installed pickup mount locations on the following pump bearings, RECORD unfiltered (broadband) vibration (velocity amplitude) readings in perpendicular directions (horizontal perpendicular to shaft, vertical, and horizontal axial (outboard bearings only), in units of inches per second(ips), 0 to peak:

* a. Main Pump Inboard Bearing (driver coupling end)
* b. Main Pump Outboard Bearing (gearbox coupling end)
* c. Booster Pump Inboard Bearing (gearbox coupling end)
* d. Booster Pump Outboard Bearing (free end)

6.5.7 CONFIRM operation of following valves by observing proper operation of HPCI Lube Oil and Vacuum Tank subsystems.

* a. HPCI L-O Return to Pump Suction Check Vlv 156F048 opening.
* b. HPCI L-O Outlet Check Vlv 156F057 opening.
* c. HPCI Vac Tank Cond Pump Dsch Check Vlv 156F052 closing.

* 6.5.8 CONFIRM HPCI Turbine Exhaust Check Valve 155F049 OPENS by observing HPCI turbine not tripped due to high exhaust pressure.

* 6.5.9 RECORD HPCI Pump bearing header oil supply pressure read at local gauge PI-15660/11. (Pressure must be ≥ 20 psig.)

6.5.10 PERFORM PM Activity SO665, HPCI Pump and Turbine performance during SO-152-002, if due.

CONFIRM

6.6 SHUT DOWN HPCI System as follows:

CAUTION

LIMIT OPERATING WITH HPCI MIN FLOW TO SUPP POOL HV-155-F012 OPEN TO PREVENT EXCESSIVE AMOUNT OF WATER ADDED TO SUPPRESSION POOL. MINIMIZE TIME TURBINE OPERATES BELOW 2200 RPM.

NOTE: In order to demonstrate unrestricted flow in minimum flow line through HPCI Min Flow Check Valve 155F046, HPCI MIN FLOW TO SUPP POOL HV-155-F012 will be cycled closed while waiting for increase in pump discharge pressure.

6.6.1 ENSURE HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL.

CONFIRM

NOTE: Be ready to time open stroke of HPCI MIN FLOW TO SUPP POOL HV-155-F012.

6.6.2 REDUCE turbine speed to approximately 2200 rpm using HPCI TURBINE FLOW CONTROL FC-E41-1R600.

CONFIRM

NOTE: Limit Operating with HPCI MIN FLOW TO SUPP POOL HV-155-F012 open to prevent excessive amount of water added to Suppression Pool. Minimize time turbine operates below 2200 rpm.

6.6.3 THROTTLE CLOSE HPCI TEST LINE TO CST ISO HV-155-F008 until HPCI MIN FLOW TO SUPP POOL HV-155-F012 OPENS.

CONFIRM

6.6.4 COMMENCE open stroke timing of HV-155-F012 when valve dual indication observed.

______ CONFIRM

6.6.5 STOP timing when HV-155-F012 full open indication observed

______ CONFIRM

* 6.6.6 RECORD opening stroke time of HV-155-F012.

6.6.7 CONFIRM following events occur:

a. HPCI MIN FLOW TO SUPP POOL HV-155-F012 OPENS.

______ CONFIRM

b. HPCI PUMP DSCH LO FLOW annunciator ALARMS.

______ CONFIRM

* 6.6.8 CONFIRM HPCI Min Flow Check 155F046 OPEN by performing following:

a. CLOSE HPCI MIN FLOW TO SUPP POOL HV-155-F012 while observing HPCI Pump discharge pressure on HPCI PP DSCH PRESS PI-E41-1R601.

______ CONFIRM

b. CONFIRM slight pressure increase when HV-155-F012 CLOSES.

______ CONFIRM

c. CONFIRM HV-155-F012 reopens when full closed position reached.

CONFIRM

NOTE: Be ready to time close stroke of HPCI MIN FLOW TO SUPP POOL HV-155-F012. Approximately 6 second stroke time expected.

6.6.9 CLOSE HPCI TEST LINE TO CST ISO HV-155-F008.

CONFIRM

NOTE: Push button depressed in next step must be maintained until step 6.6.15.

6.6.10 DEPRESS and MAINTAIN HPCI TURBINE TRIP HS-E41-1S19 push button.

CONFIRM

6.6.11 COMMENCE closure stroke timing of HV-155-F012 when valve dual indication observed.

CONFIRM

6.6.12 STOP timing when HV-155-F012 full closed indication observed

CONFIRM

6.6.13 CONFIRM following events occur:

a. HPCI AUXILIARY OIL PP 1P213 STARTS on low oil pressure.

CONFIRM

* b. HPCI TURB STOP FV-15612 CLOSES.

c. HPCI MIN FLOW TO SUPP POOL HV-155-F012 CLOSES.

CONFIRM

d. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator ALARMS.

CONFIRM

e. HPCI TURBINE TRIPPED annunciator ALARMS.

CONFIRM

f. HPCI L-O CLG WTR HV-156-F059 CLOSES.

CONFIRM

6.6.14 CLOSE HPCI TURBINE STEAM SUPPLY HV-155-F001.

CONFIRM

6.6.15 When TURBINE STEAM SUPPLY HV-155-F001 reaches FULL CLOSED position, RELEASE HPCI TURBINE TRIP HS-E41-S19 push button.

CONFIRM

6.6.16 CONFIRM following events occur:

a. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator CLEARS.

CONFIRM

b. HPCI TURB STOP FV-15612 OPENS.

____
CONFIRM

* 6.6.17 RECORD closing stroke time of HV-155-F012.

6.6.18 CONFIRM following HV-155-F001 close events occur:

a. HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 OPENS.

____
CONFIRM

b. HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 OPENS.

____
CONFIRM

c. HPCI BARO CDSR COND PP DSCH DRN HV-156-F025 OPENS if condenser level high.

____
CONFIRM

d. HPCI BARO CDSR COND PP DSCH DRN HV-156-F026 OPENS.

____
CONFIRM

e. HPCI PUMP DSCH LO FLOW annunciator CLEARS.

____
CONFIRM

f. HPCI TURBINE TRIPPED annunciator CLEARS.

____
CONFIRM

g. HPCI Rm Unit Clr 1V209A(B) STOPS at Panel 1C681.

CONFIRM

6.6.19 CLOSE HPCI TEST LINE TO CST ISO HV-155-F011.

CONFIRM

6.6.20 INSTRUCT Onshift STA to STOP Transient Monitoring System (TRA) if running.

CONFIRM

NOTE (1): Step 6.6.21 will manually trip the overspeed trip assembly. HPCI Turbine Stop Valve FV-15612 will close. The following steps exercises HPCI Hydraulic Trip Unit and verifies freedom of movement.

NOTE (2): Step 6.6.23 will release the trip assembly, and HPCI Turbine Stop Valve will open.

NOTE (3): When releasing HPCI Overspeed Manual Trip Knob, do not push on knob, let knob reset on its own.

6.6.21 MANUALLY LIFT and HOLD (must be held until step 6.6.22 is CONFIRMED) Overspeed Manual Trip Knob, located on HPCI turbine.

CONFIRM

6.6.22 CONFIRM HPCI TURB STOP FV-15612 CLOSES.

CONFIRM

6.6.23 RELEASE HPCI Overspeed Trip Knob located on HPCI Turbine.

CONFIRM

6.6.24 CONFIRM HPCI TURB STOP FV-15612 OPENS.

CONFIRM IND VFD

NOTE: If trip assembly shows any signs of binding, contact Maintenance to inspect and repair.

6.6.25 Using installed pickup mount locations on the following pump bearings, RECORD unfiltered (broadband) vibration (velocity amplitude) readings in perpendicular directions (vertical, horizontal perpendicular to shaft, and horizontal axial (outboard bearings only), in units of inches per second(ips), 0 to peak:

* a. Aux Oil Pump inboard bearing (driver coupling end)

* b. Aux Oil Pump outboard bearing (free end)

6.6.26 STOP HPCI AUXILIARY OIL PP 1P213 approximately 5 minutes after turbine shutdown to allow bearing cooling.

CONFIRM

6.6.27 CONFIRM following events occur:

a. HPCI TURB STOP FV-15612 CLOSES.

CONFIRM

b. HPCI TURB CTL FV-15611 CLOSES.

CONFIRM

6.6.28 SHUT DOWN HPCI BARO CDSR VACUUM PP 1P216 approximately 15 minutes following system shutdown.

CONFIRM

6.7 HPCI System Restoration

6.7.1 CLOSE Breaker 1D264061, HPCI Pump Discharge HV-1F006 (28-683').

CONFIRM IND VFD

6.7.2 CONFIRM HPCI INJECTION HV-155-F006 in CLOSED position.

CONFIRM

6.7.3 CONFIRM HPCI DIV 2 MOV OL OR PWR LOSS status light CLEARS.

CONFIRM

6.7.4 If applicable, NOTIFY qualified work group personnel to land both leads, lifted in step 6.4.3, on terminal 3 on relay E41A-K2 at HPCI Relay Panel Div 2, 1C620; else NA.

CONFIRM IND VFD

6.7.5 AFTER two minutes, PLACE HPCI DIV 1 MOV OL BYPS HS-E41-1S42 switch to NORM.

CONFIRM

6.7.6 CONFIRM HPCI DIV 1 MOVS IN TEST status light CLEARS.

CONFIRM

6.7.7 AFTER two minutes, PLACE HPCI DIV 2 MOV OL BYPS HS-E41-1S41 switch to NORM.

CONFIRM

6.7.8 CONFIRM HPCI DIV 2 MOVS IN TEST status light CLEARS.

CONFIRM

6.7.9 PLACE HPCI DIV 1 OUT OF SERVICE HS-E41-1S34A switch to NORM.

CONFIRM

6.7.10 CONFIRM HPCI DIV 1 OUT OF SERVICE status light CLEARS.

CONFIRM

6.7.11 PLACE HPCI DIV 2 OUT OF SERVICE switch HS-E41-1S34B to NORM.

CONFIRM

6.7.12 CONFIRM HPCI DIV 2 OUT OF SERVICE status light CLEARS.

CONFIRM

6.7.13 CONFIRM HPCI OUT OF SERVICE annunciator CLEARS.

CONFIRM

6.7.14 PLACE HPCI TURBINE FLOW CONTROL FC-E41-1R600 in AUTOMATIC set for 5100 gpm and RECORD the time.

TIME CONFIRM

6.7.15 CLOSE HPCI Room LRW Drain 161119. (Rx Building Sump Room Valve Pit 29-645'.)

CONFIRM

6.7.16 CONFIRM HPCI System in STANDBY alignment in accordance with OP-152-001 including fill and vent.

______
CONFIRM

6.7.17 RETURN SGTS to STANDBY alignment in accordance with OP-070-001.

______
CONFIRM

6.7.18 REMOVE Suppression Pool Cooling from service in accordance with OP-149-005.

______
CONFIRM

6.7.19 RETURN ESW to desired alignment in accordance with OP-054-001.

______
CONFIRM

* 6.8 If Acceptance Criteria not met COMPLETE Required Actions Section on Attachment A.

* 6.9 COMPLETE Measurement and Test equipment section on Attachment A.

7. <u>RECORDS</u>

7.1 SURVEILLANCE AUTHORIZATION cover sheet and Data Package shall be forwarded to Shift Supervision who will initiate review process in accordance with NDAP-QA-0722.

7.2 Upon completion of review process, completed record shall be stored by DCS (File R29-6).

7.3 Onshift STA shall forward transient monitoring data (TRA) to HPCI system engineer when recorded.

DATA FORM
SO-152-002
QUARTERLY HPCI FLOW VERIFICATION

ACCEPTANCE CRITERIA		AS FOUND	ACCEPTABLE	CONFIRM
1.	Unit 1 TS 5.5.6 HPCI Pump Suction Pressure is ≥ 18 psig (Step 6.1.10)	_______psig	YES/NO	_______
2.	Unit 1 TS ACCEPTABLE LIMIT 5.5.6 ≥ 18 sec ≤ 28 sec HV-156-F059 opening stroke time (Step 6.2.3)	______secs	YES/NO	_______
3.	Unit 1 TS ACCEPTABLE LIMIT 5.5.6 ≥ 18 sec ≤ 28 sec HV-156-F059 closing stroke time (Step 6.2.6)	______secs	YES/NO	_______
4.	Unit 1 SR 3.5.1.13 (partial #) HPCI System Response Time ≤ 29.5 sec (Step 6.4.13.b)	______secs	YES/NO	_______
5.	Unit 1 SR 3.5.1.10 (partial) HPCI actuates on initiation signal and achieves ≥ 5000 gpm flow (Step 6.4.13.c)		YES/NO	_______
6.	Unit 1 TS 5.5.6 HPCI Turbine Stop Valve FV-15612 opening stroke acceptable (Step 6.4.18)		YES/NO	_______
7.	Unit 1 TS 5.5.6 a. 155F005 opening stroke acceptable (Step 6.5.2.a)		YES/NO	_______

HPCI response time determined by this test is portion of total HPCI System response time of ≤30 seconds.

ACCEPTANCE CRITERIA		AS FOUND	ACCEPTABLE	CONFIRM
	Unit 1 TS 5.5.6 b. 155F019 opening stroke acceptable (Step 6.5.2.a)		YES/NO	______
8.	Unit 1 SR 3.5.1.8 HPCI Pump Flow ≥ 5000 gpm (Step 6.5.2.a)	______gpm	YES/NO	______
9.	Unit 1 SR 3.5.1.8 HPCI Pump Dsch Press ≥ 1140 psig (Step 6.5.2.b)	______psig	YES/NO	______
10.	Unit 1 SR 3.5.1.8 HPCI Turbine Inlet Steam Pressure 920-1060 psig (Step 6.5.2.c)	______psig	YES/NO	______
11.	Unit 1 TS 5.5.6 HPCI Pump Flow is 5000-5100 gpm (Step 6.5.5.a)	______gpm	YES/NO	______
12.	Unit 1 TS 5.5.6 HPCI pump delta P is within 1211 to 1328 psid (Step 6.5.5.g)	______psig	YES/NO	______
13.	Unit 1 TS 5.5.6 HPCI Turbine speed is 4070-4130 rpm (Step 6.5.5.i)	______rpm	YES/NO	______
14.	Unit 1 TS 5.5.6 HPCI Pump vibration within the following limits (Step 6.5.6):			
	(a) Main pump inboard bearing, horizontal ≤ 0.325 ips	______	YES/NO	______
	(b) Main pump inboard bearing, vertical ≤ 0.325 ips	______	YES/NO	______

ACCEPTANCE CRITERIA		AS FOUND	ACCEPTABLE	CONFIRM
(c)	Main pump outboard bearing, horizontal ≤ 0.325 ips	________	YES/NO	_______
(d)	Main pump outboard bearing, vertical ≤ 0.173 ips	________	YES/NO	_______
(e)	Main pump outboard (thrust) bearing, axial ≤ 0.325 ips	________	YES/NO	_______
(f)	Booster pump inboard bearing, horizontal ≤ 0.263 ips	________	YES/NO	_______
(g)	Booster pump inboard bearing, vertical ≤ 0.325 ips	________	YES/NO	_______
(h)	Booster pump outboard bearing, horizontal ≤ 0.240 ips	________	YES/NO	_______
(i)	Booster pump outboard bearing, vertical ≤ 0.325 ips	________	YES/NO	_______
(j)	Booster pump outboard (thrust) bearing, axial ≤ 0.325 ips	________	YES/NO	_______
15.	Unit 1 TS 5.5.6 Check valve 156F048 opening stroke acceptable (Step 6.5.7.a)		YES/NO	_______
16.	Unit 1 TS 5.5.6 Check valve 156F057 opening stroke acceptable (Step 6.5.7.b)		YES/NO	_______
17.	Unit 1 TS 5.5.6 Check valve 156F052 closing stroke acceptable (Step 6.5.7.c)		YES/NO	_______
18.	Unit 1 TS 5.5.6 Check valve 155F049 opening stroke acceptable (Step 6.5.8)		YES/NO	_______
19.	Unit 1 TS 5.5.6 HPCI Pump Bearing header oil supply pressure ≥ 20 psig (Step 6.5.9)	________psig	YES/NO	_______

ACCEPTANCE CRITERIA	AS FOUND	ACCEPTABLE	CONFIRM
20. Unit 1 TS 5.5.6 — ACCEPTABLE ≥ 4 sec, LIMIT ≤ 8 sec HV-155-F012 opening stroke time (Step 6.6.6)	______secs	YES/NO	______
21. Unit 1 TS 5.5.6 155F046 opening stroke acceptable (Step 6.6.8)		YES/NO	______
22. Unit 1 TS 5.5.6 HPCI Turbine Stop Valve FV-15612 closing stroke acceptable (Step 6.6.13.b)		YES/NO	______
23. Unit 1 TS 5.5.6 — ACCEPTABLE ≥ 4 sec, LIMIT ≤ 8 sec HV-155-F012 closing stroke time (Step 6.6.17)	______secs	YES/NO	______
24. Unit 1 TS 5.5.6 Aux Oil Pump vibration within the following limits (Step 6.6.25):			
(a) Pump inboard bearing, horizontal ≤ 0.270 ips	______	YES/NO	______
(b) Pump inboard bearing, vertical ≤ 0.240 ips	______	YES/NO	______
(c) Pump outboard bearing, horizontal ≤ 0.325 ips	______	YES/NO	______
(d) Pump outboard bearing, vertical ≤ 0.325 ips	______	YES/NO	______
(e) Pump outboard (thrust) bearing, axial ≤ 0.325 ips	______	YES/NO	______

REQUIRED ACTION		CONFIRM
If Acceptance Criteria not met, notify Shift Supervision SO-152-002 failed (Step 6.8)		_______
Shift Supervision confirmed following REQUIRED ACTIONS in effect as applicable:	APPLICABLE	CONFIRM
1. TS 3.5.1 Condition D Actions	YES/NO	_______
2. TS 3.6.1.3 Condition A Actions	YES/NO	_______
3. If measured values of vibration or pump delta-P fall outside IST acceptance criteria but within following limits, Shift Supervisor must be notified to double the surveillance frequency until cause is analyzed:	YES/NO	_______

Differential Pressure - 1172 to 1432 psig

Vibration at the following measurement locations:

(a) Main pump inboard bearing, horizontal ≤ 0.70 ips
(b) Main pump inboard bearing, vertical ≤ 0.70 ips
(c) Main pump outboard bearing, horizontal ≤ 0.70 ips
(d) Main pump outboard bearing, vertical ≤ 0.414 ips
(e) Main pump outboard (thrust) bearing, axial ≤ 0.70 ips
(f) Booster pump inboard bearing, horizontal ≤ 0.630 ips
(g) Booster pump inboard bearing, vertical ≤ 0.70 ips
(h) Booster pump outboard bearing, horizontal ≤ 0.576 ips
(i) Booster pump outboard bearing, vertical ≤ 0.70 ips
(j) Booster pump outboard (thrust) bearing, axial ≤ 0.70 ips

REQUIRED ACTION | CONFIRM

(k) Aux Oil Pump inboard bearing, horizontal ≤ 0.648 ips

(l) Aux Oil Pump inboard bearing, vertical ≤ 0.576 ips

(m) Aux Oil Pump outboard bearing, horizontal ≤ 0.70 ips

(n) Aux Oil Pump outboard bearing, vertical ≤ 0.70 ips

(o) Aux Oil Pump outboard (thrust) bearing, axial ≤ 0.70 ips

	APPLICABLE	CONFIRM
4. If measured values of vibration, or pump delta-p fall outside of limits in step 3 above, the pump shall be declared inoperable.	YES/NO	______

REQUIRED ACTION	APPLICABLE	CONFIRM
5. For each Acceptance Criteria failure for a power operated valve:		
A. If measured stroke time for any valve fails to meet the "Limiting Value For Full Stroke Time" acceptance criteria listed in the right hand (LIMIT) column, DECLARE that valve INOPERABLE.	YES/NO	_______
B. If measured stroke time for any valve fails to meet the acceptance criteria listed in the left-hand (ACCEPTABLE) column: 1. On Surveillance Authorization Form, Part VI check that acceptance criteria failed. 2. DECLARE that valve INOPERABLE; or RETEST that valve, if able, using a Surveillance Authorization Retest Form. 3. For each retested valve:	YES/NO	_______
a. If measured stroke time for a retested valve fails to meet TS 5.5.6 Acceptance Criteria listed in the left-hand (ACCEPTABLE) column, ANALYZE the data within 96 hours to verify that the new stroke time represents acceptable valve operation, or DECLARE the valve INOPERABLE. (Analysis performed by System Engineer and the 96 hours tracked by US on Surveillance Authorization cover sheet and US Turnover Sheet).	YES/NO	_______
b. If measured stroke time for a retested valve is within the TS 5.5.6 Acceptance Criteria listed in the left-hand (ACCEPTABLE) column, the test has been successfully completed. Additionally, CONTACT System Engineer for analysis of the cause of the initial deviation.	YES/NO	_______

REMARKS:

MEASUREMENT AND TEST EQUIPMENT
(Step 6.9)

	Identification Number	Type	Calib. Date	Calibration Due Date
1.	______	Vibration Detector	______	______
2.	______	Digital Tachometer	______	______
3.	______	______	______	______

3.6 CONTAINMENT SYSTEMS

3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression pool average temperature shall be:

a. ≤ 90°F when any OPERABLE intermediate range monitor (IRM) channel is > 25/40 divisions of full scale on Range 7 and no testing that adds heat to the suppression pool is being performed;

b. ≤ 105°F when any OPERABLE IRM channel is > 25/40 divisions of full scale on Range 7 and testing that adds heat to the suppression pool is being performed; and

c. ≤ 110°F when all OPERABLE IRM channels are ≤ 25/40 divisions of full scale on Range 7.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool average temperature > 90°F but ≤ 110°F. AND Any OPERABLE IRM channel > 25/40 divisions of full scale on Range 7. AND Not performing testing that adds heat to the suppression pool.	A.1 Verify suppression pool average temperature ≤ 110°F. AND A.2 Restore suppression pool average temperature to ≤ 90°F.	Once per hour 24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER until all OPERABLE IRM channels ≤ 25/40 divisions of full scale on Range 7.	12 hours
C. Suppression pool average temperature > 105°F. AND Any OPERABLE IRM channel > 25/40 divisions of full scale on Range 7. AND Performing testing that adds heat to the suppression pool.	C.1 Suspend all testing that adds heat to the suppression pool.	Immediately
D. Suppression pool average temperature > 110°F.	D.1 Place the reactor mode switch in the shutdown position. AND D.2 Monitor suppression pool average temperature. AND D.3 Be in MODE 4.	Immediately Once per 30 minutes 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Suppression pool average temperature > 120°F.	E.1 Depressurize the reactor vessel to < 200 psig.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify suppression pool average temperature is within the applicable limits.	24 hours AND 5 minutes when performing testing that adds heat to the suppression pool

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip. OR A.2 Place associated trip system in trip.	12 hours 12 hours
B. One or more Functions with one or more required channels inoperable in both trip systems.	B.1 Place channel in one trip system in trip. OR B.2 Place one trip system in trip.	6 hours 6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1 Restore RPS trip capability.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channels.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 30% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	-----NOTE----- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ----- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP plus any gain adjustment required by LCO 3.2.4, "Average Power Range Monitor (APRM) Setpoints" while operating at ≥ 25% RTP.	7 days
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	7 days
SR 3.3.1.1.4	-----NOTE----- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to fully withdrawing SRMs from the core.
SR 3.3.1.1.7	------------------NOTE------------------ Only required to be met during entry into MODE 2 from MODE 1. -- Verify the IRM and APRM channels overlap.	 7 days
SR 3.3.1.1.8	Calibrate the local power range monitors.	1000 MWD/MT average core exposure
SR 3.3.1.1.9	------------------NOTE------------------ A test of all required contacts does not have to be performed. -- Perform CHANNEL FUNCTIONAL TEST.	 92 days
SR 3.3.1.1.10	Perform CHANNEL CALIBRATION.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For Function 1.a and 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	184 days
SR 3.3.1.1.12	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.13	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.1.14	Verify the APRM Flow Biased Simulated Thermal Power—High time constant is ≤ 7 seconds.	24 months
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.16	Verify Turbine Stop Valve—Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.17	-------------------NOTES------------------- 1. Neutron detectors are excluded. 2. For Function 5 "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. --- Verify the RPS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux – High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
	5[(a)]	3	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5[(a)]	3	H	SR 3.3.1.1.5 SR 3.3.2.2.15	NA
2. Average Power Range Monitors					
a. Neutron Flux – High, Setdown	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 20% RTP
b. Flow Biased Simulated Thermal Power – High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 0.58 W + 62% RTP[(b)] and ≤ 115.5% RTP

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) 0.58 W + 57% RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
c. Fixed Neutron Flux - High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 120% RTP
d. Inop	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.15	NA
3. Reactor Vessel Steam Dome Pressure — High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1093 psig
4. Reactor Vessel Water Level — Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≥ 11.5 inches
5. Main Steam Isolation Valve — Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 11% closed
6. Drywell Pressure — High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1.88 psig

(continued)

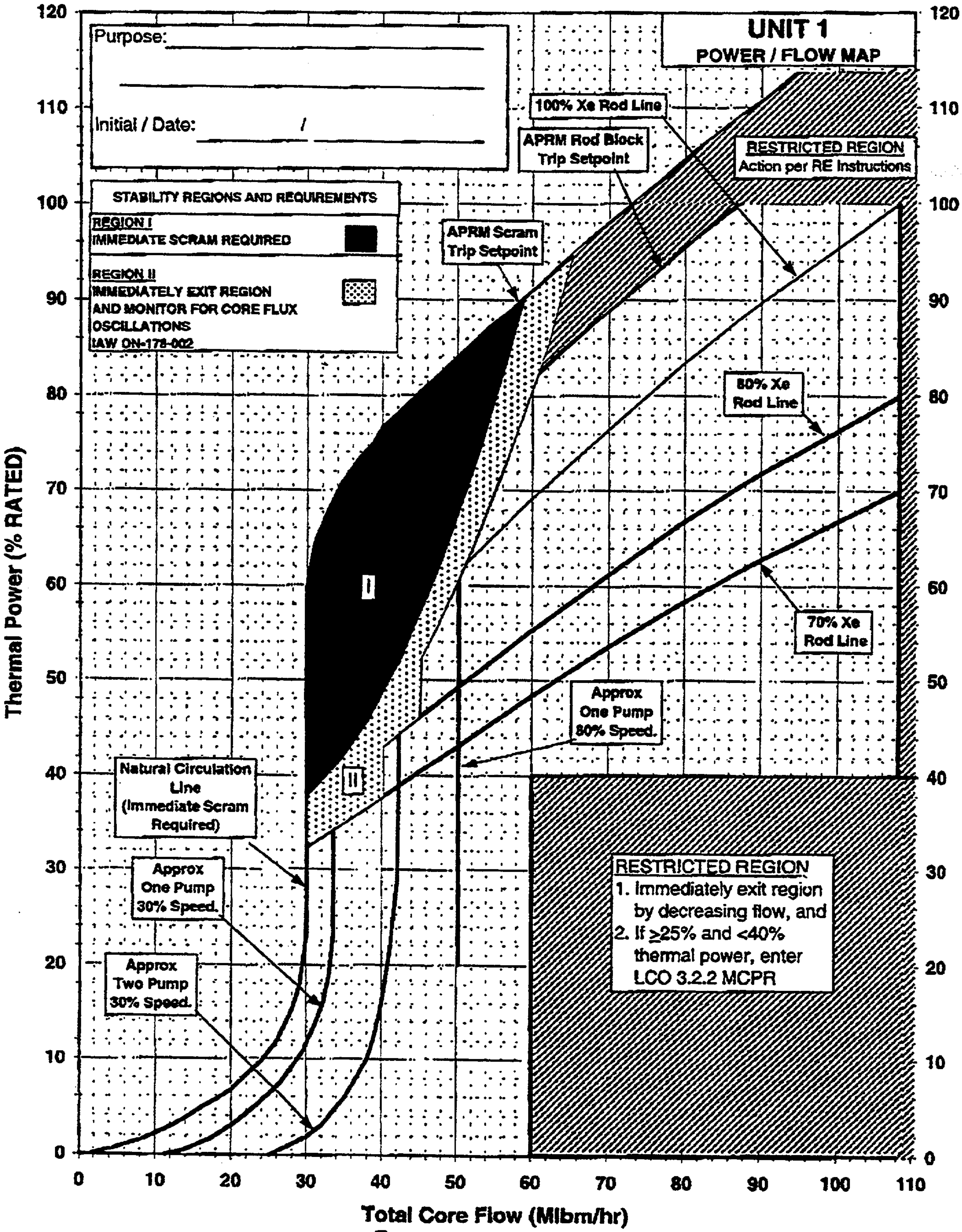
Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level – High					
a. Level Transmitter	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
	5(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
b. Float Switch	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
	5(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
8. Turbine Stop Valve – Closure	≥ 30% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≤ 7% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure – Low	≥ 30% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≥ 460 psig
10. Reactor Mode Switch – Shutdown Position	1,2	2	G	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
	5(a)	2	H	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
11. Manual Scram	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
	5(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.15	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

PCAF # 2001-1213
PAGE 13 OF 16

UNIT ONE, POWER vs. FLOW MAP



PCAF #2000-5676
PAGE 4 OF 6

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000-5915 | 2. PAGE 1 OF 4 | 3. PROC. NO. SO-134-001 REV. 10

4. FORMS REVISED - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___

5. PROCEDURE TITLE
QUARTERLY ZONE I ISOLATION DAMPER TIMING

6. REQUESTED CHANGE
PERIODIC REVIEW ☒ NO ☐ YES
INCORPORATE PCAFS ☒ NO ☐ YES # ______ # ______ # ______ # ______
REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE
Admin change - Remove prerequisite to record damper actuator air regulator pressure settings. The pressure regulator setting is no longer critical to successful completion of the surveillance since the damper stroke time limit was increased to 10 seconds.

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS
PORC REVIEW? (REQ'D FOR PLANT NDAP'S, SICT/E'S, AND FUP'S W/SAFETY EVALUATIONS) ☒ NO ☐ *YES*
ERC REVIEW? (REQ'D FOR QUALITY NON-PLANT NDAP'S) ☒ NO ☐ *YES*

9. PORC MTG# NA
10. ERC MTG# NA

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Eric Miller / 3321 / 11/20/00
PREPARER (Print or Type) ETN DATE

16 TRAINING REQUIRED?
☒ NO ☐ YES (TYPE) NA

17. DERoland 11-20-00
RESPONSIBLE SUPERVISOR DATE
SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. na
FUM APPROVAL DATE

19. RESPONSIBLE APPROVER — ENTER N/A IF FUM HAS APPROVAL AUTHORITY
na
INITIALS DATE

PCAF #2000-5676
PAGE 5 OF 6

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000-5915	2. PAGE 2 OF 4	3. PROC. NO. SO-134-001 REV. 10

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5)	☐ YES	☒ N/A
b. 50.59 or 72.48 Safety Evaluation (Note: 50.59 Safety Evaluations prepared on Form NDAP-QA-0726-1 Rev. 5 or earlier also require a 50.59 & 72.48 Screening Determination) Safety Evaluation No. ______	☐ YES	☒ N/A
c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required	☒ YES	☐ N/A
12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722?	☒ YES	☐ NO
13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.)	☐ YES	☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR		
TECHNICAL REVIEW	B. J. Hearsch	11/20/00
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ______		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE COVER SHEET

SUSQUEHANNA STEAM ELECTRIC STATION PP&L	NUCLEAR DEPARTMENT PROCEDURE QUARTERLY ZONE I ISOLATION DAMPER TIMING	SO-134-001 Revision 10 Page 1 of 12

QUALITY CLASSIFICATION:

(X) QA Program ( ) Non-QA Program

APPROVAL CLASSIFICATION:

(X) Plant ( ) Non-Plant
( ) Instruction

EFFECTIVE DATE: 06/29/00

PERIODIC REVIEW FREQUENCY: N/A

PERIODIC REVIEW DUE DATE: N/A

RECOMMENDED REVIEWS:

Procedure Owner: Dave Borger

Responsible Supervisor: Don Roland

Responsible FUM: Manager-Nuclear Operations

Responsible Approver: General Manager-SSES

TABLE OF CONTENTS

ATTACHMENTS

1. PURPOSE/SCOPE

To confirm Secondary Containment Ventilation System Automatic Isolation Damper timing is within limit specified in TS Table B 3.6.4.2-1. Test is to be performed Quarterly, or following maintenance, repair or replacement work.

2. REFERENCES

2.1 TS 3.6.4.2

2.2 FSAR Section 9.4.2

2.3 NDAP-QA-0722, Surveillance Testing Program

2.4 SO-034-001, Secondary Containment Isolation Damper Quarterly Timing Test - Zone III

2.5 SO-234-001, Secondary Containment Isolation Damper Quarterly Timing Test - Zone II

2.6 OP-134-002 Reactor Building Ventilation

2.7 OP-070-001 Standby Gas Treatment System

2.8 P&ID M-175

2.9 P&ID M-176

([1]) 2.10 CR 96-0072 Unit 2 Zone 3 Ventilation Work Window Schedule Inaccurate

([2]) 2.11 CR 96-0179 Action to Prevent Recurrence #4

([3]) 2.12 CR 98-0033, Zone 1 Supply Fans auto swapped while stroking supply system isolation dampers

3. MEASUREMENT AND TEST EQUIPMENT

Stopwatch

4. PRECAUTIONS

4.1 Do not allow Isolation Dampers to remain closed longer than 5 seconds, when associated fan is running, to prevent damage to duct work or tripping of fan.

4.2 If testing causes loss of Zone I ventilation, restore system to normal operation as soon as possible.

4.3 When cycling dampers, allow 2-3 minutes between individual dampers for system flow to stabilize.

5. PREREQUISITES AND LIMITATIONS

5.1 Reactor Plant is in mode 1, 2, 3, 4 or 5.

CONFIRM

5.2 Reactor Building Ventilation System is in normal operation in accordance with OP-134-002 with Zone I and III Lockout relays reset.

(1) The intent of this prerequisite is to ensure each damper is tested under dynamic conditions, i.e., with flow through the duct.

CONFIRM

(2) 5.3 RECORD the damper actuator air regulator pressure settings below.

NOTE(1): Any "As Found" pressure setting outside the normal range does not preclude performance of this surveillance. Systems Engineering shall be notified if any air pressure settings are found outside the normal range.

NOTE (2): A ladder may be required to access several of the pressure gauges.

		Area/ Elev.	Normal Range	As Found Setting	
5.3.1	HD-17524A (ladder req'd)	28-779'	60 - 70 psig	______	CONFIRM
5.3.2	HD-17524B (ladder req'd)	28-779'	60 - 70 psig	______	CONFIRM
5.3.3	HD-17576A (ladder req'd)	28-779'	45 - 55 psig	______	CONFIRM

PCAF

PCAF # 2000 - 5915
PAGE 4 OF 4

		Area/ Elev.	Normal Range	As Found Setting	
5.3.4	HD-17576B (ladder req'd, inside exhaust room)	28-779'	45 - 55 psig	______	CONFIRM
5.3.5	HD-17586A (ladder req'd)	28-779'	55 - 65 psig	______	CONFIRM
5.3.6	HD-17586B (ladder req'd)	28-779'	55 - 65 psig	______	CONFIRM

PCAF

6. PROCEDURE

NOTE (1): Steps of this procedure designated by an asterisk (*) immediately to left of step number require an entry(ies) to be recorded on Data Sheet.

NOTE (2): All operations are performed at HVAC panel 1C681 unless otherwise specified.

NOTE (3): DAMPER FULL STROKE TIME is that time interval from when the CONTROL SWITCH is placed in the CLOSED POSITION until a FULL CLOSED INDICATION is observed.

6.1 TEST Unit 1 Zone I EXH SYS ISOLATION DMP, HD-17576A, as follows:

6.1.1 CONFIRM HD-17576A OPEN.

CONFIRM

6.1.2 Simultaneously CLOSE HD-17576A AND COMMENCE stroke timing.

CONFIRM

6.1.3 STOP timing HD-17576A when full CLOSED indication is observed.

CONFIRM

* 6.1.4 RECORD closure stroke time of HD-17576A.

6.1.5 OPEN HD-17576A.

CONFIRM

6.2 TEST Unit 1 Zone I EXH SYS ISOLATION DMP, HD-17576B, as follows:

6.2.1 CONFIRM HD-17576B OPEN.

CONFIRM

6.2.2 Simultaneously CLOSE HD-17576B <u>AND</u> COMMENCE stroke timing.

CONFIRM

6.2.3 STOP timing HD-17576B when full CLOSED indication is observed.

CONFIRM

* 6.2.4 RECORD closure stroke time of HD-17576B.

6.2.5 OPEN HD-17576B.

CONFIRM

6.3 TEST Unit 1 Zone I COMPT EXH SYS ISOL DMP, HD-17524A, as follows:

6.3.1 CONFIRM HD-17524A OPEN.

CONFIRM

6.3.2 Simultaneously CLOSE HD-17524A AND COMMENCE stroke timing.

CONFIRM

6.3.3 STOP timing HD-17524A when full CLOSED indication is observed.

CONFIRM

* 6.3.4 RECORD closure stroke time of HD-17524A.

6.3.5 OPEN HD-17524A.

CONFIRM

6.4 TEST Unit 1 Zone I COMPT EXH SYS ISOL DMP, HD-17524B, as follows:

6.4.1 CONFIRM HD-17524B OPEN.

CONFIRM

6.4.2 Simultaneously CLOSE HD-17524B AND COMMENCE stroke timing.

CONFIRM

6.4.3 STOP timing HD-17524B when full CLOSED indication is observed.

CONFIRM

* 6.4.4 RECORD closure stroke time of HD-17524B.

6.4.5 OPEN HD-17524B.

CONFIRM

6.5 TEST Unit 1 Zone I SUPP SYS ISOL DMP, HD-17586A, as follows:

6.5.1 CONFIRM HD-17586A OPEN.

CONFIRM

NOTE: The following action prevents the low flow trip of the operating Zone 1 supply fan and the auto start of the standby Zone 1 supply fan while stroking the isolation damper.

(3) 6.5.2 At Panel 1C275, PLACE/CONFIRM the handswitch for the operating Zone 1 Supply Fan 1V202A(B) in "Auto."

CONFIRM

6.5.3 Simultaneously CLOSE HD-17586A <u>AND</u> COMMENCE stroke timing.

CONFIRM

6.5.4 STOP timing HD-17586A when full CLOSED indication is observed.

CONFIRM

* 6.5.5 RECORD closure stroke time of HD-17586A.

6.5.6 OPEN HD-17586A.

CONFIRM

6.6 TEST Unit 1 Zone I SUPP SYS ISOL DMP, HD-17586B, as follows:

6.6.1 CONFIRM HD-17586B OPEN.

CONFIRM

NOTE: The following action prevents the low flow trip of the operating Zone 1 supply fan and the auto start of the standby Zone 1 supply fan while stroking the isolation damper.

([3]) 6.6.2 At Panel 1C275, PLACE/CONFIRM the handswitch for the operating Zone 1 Supply Fan 1V202A(B) in "Auto."

CONFIRM

6.6.3 Simultaneously CLOSE HD-17586B AND COMMENCE stroke timing.

CONFIRM

6.6.4 STOP timing HD-17586B when full CLOSED indication is observed.

CONFIRM

* 6.6.5 RECORD closure stroke time of HD-17586B.

6.6.6 OPEN HD-17586B.

CONFIRM

6.7 Restore Zone 1 Supply Fans 1V202A(B) to Normal Alignment

6.7.1 At Panel 1C275, PLACE/CONFIRM the handswitch for the operating Zone 1 Supply Fan 1V202A(B) in "Start."

CONFIRM

6.7.2 At Panel 1C275, PLACE/CONFIRM the handswitch for the standby Zone 1 Supply Fan 1V202B(A) in "Auto."

____
CONFIRM

* 6.8 If Acceptance Criteria has not been met, COMPLETE the 'Required Actions' section on Attachment 'A'.

7. RECORDS

7.1 SURVEILLANCE AUTHORIZATION cover sheet and data package shall be forwarded to Shift Supervision who will initiate review process in accordance with NDAP-QA-0722.

7.2 Upon completion of review process, completed record shall be stored by DCS (File R29-6).

DATA FORM
SO-134-001,
SECONDARY CONTAINMENT ISOLATION DAMPER
QUARTERLY TIMING TEST

ACCEPTANCE CRITERIA	AS FOUND	ACCEPTABLE	CONFIRM
Unit 1 SR 3.6.4.2.2 1. HD-17576A closure stroke time ≤10 seconds (step 6.1.4)	________	YES/NO	_______
Unit 1 SR 3.6.4.2.2 2. HD-17576B closure stroke time ≤10 seconds (step 6.2.4)	________	YES/NO	_______
Unit 1 SR 3.6.4.2.2 3. HD-17524A closure stroke time ≤10 seconds (step 6.3.4)	________	YES/NO	_______
Unit 1 SR 3.6.4.2.2 4. HD-17524B closure stroke time ≤10 seconds (step 6.4.4)	________	YES/NO	_______
Unit 1 SR 3.6.4.2.2 5. HD-17586A closure stroke time ≤10 seconds (step 6.5.5)	________	YES/NO	_______
Unit 1 SR 3.6.4.2.2 6. HD-17586B closure stroke time ≤10 seconds (step 6.6.5)	________	YES/NO	_______

REQUIRED ACTION	CONFIRM
If Acceptance Criteria has not been met, NOTIFY Shift Supervision that SO-134-001 has failed (step 6.8)	_______

Shift Supervision has confirmed that following Required Actions are in effect as applicable:

		APPLICABLE Unit 1	APPLICABLE Unit 2	CONFIRM
1.	TS 3.6.4.2 Condition A Actions	YES/NO	YES/NO	_______
2.	TS 3.6.4.2 Condition B Actions	YES/NO	YES/NO	_______

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000- 5721	2. PAGE 1 OF 3	3. PROC. NO. NDAP-QA-0722 REV. 9

4. FORMS REVISED - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___

5. PROCEDURE TITLE
SURVEILLANCE TESTING PROGRAM

6. REQUESTED CHANGE

PERIODIC REVIEW ☒ NO ☐ YES

INCORPORATE PCAFS ☒ NO ☐ YES # ________ # ________ # ________ # ________

REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE

This PCAF is to remove SM-100-003 and SM-200-003 as part of Maintenance and to add under Technology as ST-100-003 and ST-200-003.

This is an Administrative correction

See attached sheet

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS	
PORC REVIEW? (REQ'D FOR PLANT NDAP'S, SICT/E'S, AND FUP'S W/SAFETY EVALUATIONS) ☒ NO ☐ YES	9. *PORC MTG#* N/A
ERC REVIEW? (REQ'D FOR NON-PLANT NDAP'S) ☒ NO ☐ YES	10. *ERC MTG#* N/A

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Pamela J. Davenport / 3801 / 8/23/00
PREPARER (Print or Type) ETN DATE

16 TRAINING REQUIRED?
☒ NO ☐ YES (TYPE) ________

17. [signature] 9/20/00
RESPONSIBLE SUPERVISOR DATE

SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. N/A ________
FUM APPROVAL DATE

19. RESPONSIBLE APPROVER
N/A ________
INITIALS DATE

ENTER N/A IF FUM HAS APPROVAL AUTHORITY

RECEIVED
SEP 22 2000
DOCUMENT CONTROL SERVICES - SSES

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000-5721	2. PAGE 2 OF 3	3. PROC. NO. NDAP-QA-0722 REV. 9

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

   a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5) — ☐ YES ☒ N/A

   b. 50.59 or 72.48 Safety Evaluation (Note: 50.59 Safety Evaluations prepared on Form NDAP-QA-0726-1 Rev. 5 or earlier also require a 50.59 & 72.48 Screening Determination) — ☐ YES ☒ N/A

   Safety Evaluation No. N/A

   c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required — ☒ YES ☐ N/A

12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722? — ☐ YES ☒ NO

13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.) — ☐ YES ☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR	Ann Eustice	8/23/00
TECHNICAL REVIEW	Daniel E C	8/23/2000
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ______		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000-4928	2. PAGE 1 OF 4	3. PROC. NO. NDAP-QA-0722 REV. 9

4. FORMS REVISED - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___

5. PROCEDURE TITLE
Surveillance Testing Program

6. REQUESTED CHANGE

PERIODIC REVIEW ☒ NO ☐ YES

INCORPORATE PCAFS ☒ NO ☐ YES # ________ # ________ # ________ # ________

REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE
This PCAF incorporates actions to support CRA 244597 (CR 229515).
The changes in this PCAF include:
1) Added reference to NDAP-QA-0423 Inservice Testing Program
2) Added statement regarding failed IST components (TS 5.5.6 requirements) to ensure that NDAP-QA-0423 is referenced for corrective action requirements.

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS

PORC REVIEW? (REQ'D FOR PLANT NDAP'S, SICT/E'S, AND FUP'S W/SAFETY EVALUATIONS) ☐ NO ☒ *YES*

9. PORC MTG# 00-05-11

ERC REVIEW? (REQ'D FOR NON-PLANT NDAP'S) ☒ NO ☐ *YES*

10. ERC MTG# ________

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Becky Mattern / 3453 / 5/05/00
PREPARER (Print or Type) / ETN / DATE

16 TRAINING REQUIRED?
☒ NO ☐ YES (TYPE) ________

17. [signature] 5/5/00
RESPONSIBLE SUPERVISOR / DATE

SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. Richard D [signature] 5-5-00
FUM APPROVAL / DATE

19. RESPONSIBLE APPROVER

ENTER N/A IF FUM HAS APPROVAL AUTHORITY

~~N/A~~ ~~ggl 5/5/00~~ [signature] 5/17/00
INITIALS / DATE

RECEIVED
MAY 22 2000
DOCUMENT CONTROL SERVICES - SSES

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2000-4928	2. PAGE 2 OF 4	3. PROC. NO. NDAP-QA-0722 REV. 9

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

    a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5) ☒ YES ☐ N/A

    b. 50.59 and 72.48 Screening Determination and 50.59 or 72.48 Safety Evaluation ☐ YES ☒ N/A

    Safety Evaluation No. ____________

    c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required ☐ YES ☒ N/A

12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722? ☐ YES ☒ NO

13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.) ☐ YES ☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR		
TECHNICAL REVIEW	Lori L. Fuller	5-5-00
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ____________		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001- 1030	2. PAGE 1 OF 3	3. PROC. NO. NDAP-QA-0722 REV. 9

4. FORMS REVISED - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___ , - ___ R___

5. PROCEDURE TITLE
Surveillance Testing Program

6. REQUESTED CHANGE

PERIODIC REVIEW ☐ NO ☒ YES

INCORPORATE PCAFS ☒ NO ☐ YES # ________ # ________ # ________ # ________

REVISION ☐ PCAF ☒ DELETION ☐ (CHECK ONE ONLY)

7. SUMMARY OF / REASON FOR CHANGE

Administrative correction - Changed procedure owner. Revised Periodic Review Due Date to 9/15/2001 to allow for processing of Revision 10. Revision 9 to NDAP-QA-0722 is technically correct. PORC added as a Recommended Reviewer in accordance with Rev. 13 of NDAP-QA-0002.

Continued ☐

8. DETERMINE COMMITTEE REVIEW REQUIREMENTS (Refer to Section 6.1.4) PORC REVIEW REQ'D? ☒ NO ☐ ***YES***	***9. PORC MTG#*** N/A
ERC REVIEW REQ'D? ☒ NO ☐ ***YES***	***10. ERC MTG#*** N/A

BLOCKS 11 THRU 14 ARE ON PAGE 2 OF FORM

15. Lori L. Fuller / 3858 / 5/29/01
PREPARER (Print or Type) / ETN / DATE

16. COMMUNICATION OF CHANGE REQUIRED?
☒ NO ☐ YES (TYPE) ________

17. J R Bunyak [signature] 5/29/01
RESPONSIBLE SUPERVISOR / DATE

SIGNATURE ATTESTS THAT RESPONSIBLE SUPERVISOR HAS CONDUCTED QADR AND TECHNICAL REVIEW UNLESS OTHERWISE DOCUMENTED IN BLOCK 14 OR ATTACHED REVIEW FORMS. CROSS DISCIPLINE REVIEW (IF REQUIRED) HAS BEEN COMPLETED BY SIGNATURE IN BLOCK 14 OR ATTACHED REVIEW FORMS.

18. N/A
FUM APPROVAL / DATE

19. RESPONSIBLE APPROVER — ENTER N/A IF FUM HAS APPROVAL AUTHORITY

N/A
INITIALS / DATE

RECEIVED
MAY 29 2001
DOCUMENT CONTROL

PROCEDURE CHANGE PROCESS FORM

1. PCAF NO. 2001-1030	2. PAGE 2 OF 3	3. PROC. NO. NDAP-QA-0722 REV. 9

11. A 50.59 and 72.48 Evaluation per NDAP-QA-0726 is required to be attached or referenced for all procedure changes except Expedited Reviews and Administrative Corrections. Either 11a, b, or c must be checked "YES" and the appropriate form attached or referenced.

a. 50.59 and 72.48 Screening Determination (Form NDAP-QA-0726-5) ☐ YES ☒ N/A

b. 50.59 or 72.48 Safety Evaluation (Note: 50.59 Safety Evaluations prepared on Form NDAP-QA-0726-1 Rev. 5 or earlier also require a 50.59 & 72.48 Screening Determination) ☐ YES ☒ N/A

Safety Evaluation No. ______________________

c. Expedited Review/Administrative Correction- 50.59 and 72.48 Evaluation not Required ☒ YES ☐ N/A

12. Is a Surveillance Procedure Review Checklist required per NDAP-QA-0722? ☐ YES ☒ NO

13. Is a Special, Infrequent or Complex Test/Evolution Analysis Form required per NDAP-QA-0320? (SICT/E form does not need to be attached.) ☐ YES ☒ NO

14. Reviews may be documented below or by attaching Document Review Forms NDAP-QA-0101-1.

REVIEW	REVIEWED BY WITH NO COMMENTS	DATE
QADR		
TECHNICAL REVIEW		
REACTOR ENGINEERING/NUCLEAR FUELS *		
IST **		
OPERATIONS		
NUCLEAR SYSTEMS ENGINEERING		
NUCLEAR MODIFICATIONS		
MAINTENANCE		
HEALTH PHYSICS		
NUCLEAR TECHNOLOGY		
CHEMISTRY		
OTHER ______________		

* Required for changes that affect, or have potential for affecting core reactivity, nuclear fuel, core power level indication or impact the thermal power heat balance. ([58])

** Required for changes to Section XI Inservice Test Acceptance Criteria.

PROCEDURE COVER SHEET

PCAF 2001-1030
PAGE 3 OF 3

PPL SUSQUEHANNA, LLC	NUCLEAR DEPARTMENT PROCEDURE	
SURVEILLANCE TESTING PROGRAM		NDAP-QA-0722 Revision 9 Page 1 of 73

QUALITY CLASSIFICATION:

☒ QA Program ☐ Non-QA Program

APPROVAL CLASSIFICATION:

☒ Plant ☐ Non-Plant
☐ Instruction

EFFECTIVE DATE: 6-4-1999

PERIODIC REVIEW FREQUENCY: 2 YEARS

PERIODIC REVIEW DUE DATE: 9-15-2001

RECOMMENDED REVIEWS:

OPS, NSE, Scheduling, Maint, Chemistry, HP, Licensing, NAS, PORC

Procedure Owner: Lori L. Fuller

Responsible Supervisor: NSE Supervisor - P&T

Responsible FUM: Manager - Nuclear Systems Engineering

Responsible Approver: General Manager - SSES

PROCEDURE REVISION SUMMARY

TITLE: SURVEILLANCE TESTING PROGRAM

1) Incorporate PCAFs 1-98-6840, 1-98-7093, 1-98-7438, 99-6554.

2) Deleted requirement for highlighted drawings.

3) Removed grey shading.

4) Added responsibilities for Procedure owners and SR/TRS owners. Moved some FUM responsibilities to these groups (Sections 4.6 and 4.7).

5) Revised preconditioning definition (step 5.6).

6) Revised preconditioning section to better reflect NRC guidance (Section 6.2).

7) Added step to allow use of surveillance procedure for activity not contained in TS or TRM (step 6.3.25).

8) Added responsibility for procedure owners to notify surveillance requirement owners when procedure changes affect the scope of testing for Logic System Functional Tests (LSFT) (step 6.5.3).

9) Revised SPRC and added SR/TRS owner review and signature for SPRC (Attachment C).

10) Added instructions to identify the SR/TRS owner (Attachment I).

11) Deleted Attachment J, Specific Procedural Guidance, since the information has been superseded by Tech Specs, moved elsewhere, or no longer applies.

12) Moved LSFT clarifications to Section 6.6.

13) Made Changes as result of the work management NIMS 4.0 changes. Changes include:

- New SA coversheet (Attachment E)
- Changed PMIS to NIMS or Admin-Work Management
- Changed Status WA to ZWO
- Changed WA to PCPR or PCWO
- Eliminated "yellow copy" of SA coversheet
- Changed "pink copy" to operations copy of SA coversheet.
- Deleted Surveillance Action Requests (SARs)

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

ATTACHMENTS

1. PURPOSE

This procedure establishes the administrative controls for the Surveillance Testing Program.

2. DISCUSSION/POLICY

The surveillance testing program was created to satisfy the surveillance requirements in the Susquehanna Technical Specifications and Technical Requirements Manual.

3. REFERENCES

3.1 NDAP-QA-0002, Nuclear Department Procedure Program

3.2 NDAP-QA-0543, Surveillance Activities Control

(1) 3.3 PLAS-342, Licensee Event Report 88-015-00

(12) 3.4 PLAS-411, Licensee Event Report 90-008-00

(2) 3.5 PLAS-449, Licensee Event Report 90-010-00

(3) 3.6 PLAS-582, Licensee Event Report 93-016-00

(10) 3.7 PLA-3950, Reply to Notice of Violation 388/93-01-01

(4) 3.8 FSAR Section 18.2.26.3

(11) 3.9 NRC SER for Tech Spec Amendment 97, Unit 1, and Amendment 65, Unit 2

(8) 3.10 NRC Information Notice 97-16, Preconditioning of Plant Structures, Systems, and Components Before ASME Code Inservice Testing or Technical Specification Testing

(5) 3.11 SOOR 93-393, Portions of Degraded Grid Modifications were not Incorporated into Surveillance Program

(6) 3.12 PORC Action Item 91-017

(7) 3.13 NQA Audit Recommendation 93-072-10

(13) 3.14 NQA Audit Recommendation 94-038-4

(9) 3.15 NQA Audit Recommendation 92-066-7

(15) 3.16 CR 98-0427

(16) 3.17 TS Bases SR Sections on Channel Checks

(17) 3.18 *NDAP-QA-0423, Station Pump and Valve Testing Program*

PCAF

4. RESPONSIBILITIES

4.1 Functional Unit Managers

4.1.1 Implement the Surveillance Testing program for assigned surveillance activities.

4.1.2 Request calibration of instruments and computer points in accordance with this procedure.

4.1.3 Schedule the following surveillance procedures:

- Non-routine procedures
- Routine procedures with a frequency of 7 days or less.

4.1.4 Update NIMS surveillance activities as necessary to ensure accuracy.

4.1.5 Ensure that the surveillances are properly scheduled on the station schedule.

4.1.6 Request SA coversheets for surveillances performed ahead of schedule.

4.1.7 Perform assigned surveillance activities in accordance with approved procedures.

4.1.8 Notify Shift Supervision about a failed surveillance.

4.1.9 Initiate a CR for a failed surveillance.

4.1.10 Initiate a CR when a surveillance activity is not performed prior to its violation date.

4.1.11 Forward updates for the TS/TR Matrix to the Supervisor-P&T.

4.1.12 Schedule work activities and surveillances such that unacceptable preconditioning does not occur.

4.2 Shift Supervision

4.2.1 Authorize the commencement of surveillance activities. Attachment F contains a list of surveillances that do not require authorization.

4.2.2 Approve the commencement of retest activities.

4.2.3 Enter and exit LCO/TRO actions required during surveillance testing.

4.2.4 Enter and exit LCO/TRO actions as a result of failed acceptance criteria.

4.3 Supervisor - Programs & Testing (P&T)

4.3.1 Coordinate the Surveillance Testing Program.

4.3.2 Maintain the TS/TR Matrix.

4.3.3 Ensure that each surveillance activity in the TS/TR Matrix is assigned to a lead functional unit.

4.3.4 Maintain this procedure.

4.4 Manager - NAS

([12]) 4.4.1 Include in the scope of Independent NAS Audit, surveillance and assessments activities that:

a. Check a sample of surveillances for timely completion.

b. Compare a sample of surveillance procedures with the following documents:

- Technical Specifications/Technical Requirements Manual
- TS/TR Cross Reference Matrix

c. Check a sample of completed surveillance procedures for data versus acceptance criteria and procedure completeness.

4.4.2 Maintain a record of the above reviews including contents of the review and the results of the review.

4.5 Supervisor - DCS

Retain the surveillance program records.

4.6 Procedure Owners / Procedure Writers

4.6.1 Generate and revise surveillance procedures in accordance with this procedure.

4.6.2 Complete an SPRC for surveillance activity procedure changes in accordance with Section 6.4.

4.6.3 Ensure that surveillance procedures do not unacceptably precondition SSCs.

4.6.4 Ensure that the procedure meets the TS/TR surveillance requirements.

4.6.5 Notifying the SR/TRS owner, when other than the procedure owner, for a procedure change that makes up part of the SR/TRS requirement.

4.6.6 Review the TS/TR Matrix for changes as a result of a procedure change.

4.7 SR/TRS Owners

4.7.1 Ensure that the procedures listed in the TS/TR Matrix for their SR/TRS completely meet the SR/TRS requirement(s).

4.7.2 For LSFT requirements, ensure that overlap exists among the procedures.

4.7.3 Review procedure changes for changes in scope that might affect the ability to completely meet the SR/TRS requirement.

4.7.4 Use a desired tool (such as a database or drawing mark-ups) to support steps 4.7.1 to 4.7.3.

5. DEFINITIONS / ACRONYMS

5.1 Acceptance Criteria - A set of quantitative or qualitative criteria. The criteria is detailed in the plant Technical Specifications or the Technical Requirements Manual. The criteria must be met in order to confirm that a given SSC is/remains operable.

5.2 Agreement Criteria - Quantitative criteria which is used when performing channel checks. These criteria may be based on an assessment of the channel instrument uncertainties as identified by manufacturer's specifications or periodic calibration data.

5.3 Allotted Performance Time - The short period of time allowed by TS/TR to remove equipment from service for required surveillances without entering the LCO/TRO actions.

5.4 Channel Check - The qualitative assessment, by observation, of channel behavior during operation and is performed to ensure gross failure of a channel has not occurred.

([15]) 5.5 Logic System Functional Test - The TS definition is as follows:

A logic system functional test shall be a test of all logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device to verify operability. The logic system functional test may be performed by any series of sequential, overlapping or total system steps such that the entire logic system is tested.

([8]) 5.6 Preconditioning - The alteration, variation, manipulation, or adjustment of the physical condition of an SSC before TS surveillance or ASME Code testing. Any activity that could affect the outcome of the test. (See Section 6.2 for further definition.)

5.7 Responsible Individual - An individual as designated by the responsible FUM who is responsible for the following items:

- processing the surveillance authorization coversheet
- performing the surveillance procedure
- confirming that the acceptance criteria is met.

5.8 Single Channel Channel Check - The qualitative assessment, by observation, of channel behavior during operation where comparison to other instruments is not meaningful or possible.

5.9 Surveillance Activity - An activity that meets specific TS and TR surveillance requirements.

5.10 Surveillance Procedure - An approved implementing procedure written for specific surveillance activities.

5.11 TS/TR Matrix - A table that identifies the appropriate implementing procedures for a particular TS/TR surveillance requirement.

5.12 Acronyms

5.12.1 APT - Allotted Performance Time

5.12.2 SA - Surveillance Authorization

5.12.3 TS - Technical Specification

5.12.4 TR - Technical Requirement

5.12.5 TRM - Technical Requirements Manual

5.12.6 TS/TR Matrix - Technical Specification/Technical Requirement Cross Reference Matrix

5.12.7 NIMS - Nuclear Information Management System

5.12.8 SPRC - Surveillance Procedure Review Checklist

5.12.9 RFC/D - Request for In-Plant Instrumentation Calibration/Deletion

5.12.10 SSC - Structure, System, or Component

5.12.11 OOS - Out-of-Service

5.12.12 OOM - Out-of-Mode

5.12.13 FUM - Functional Unit Manager

5.12.14 M&TE - Measurement and Test Equipment

5.12.15 DCS - Document Control Services

5.12.16 CL - Check Off List

5.12.17 CR - Condition Report

5.12.18 CTE - Chemistry Test Equipment

5.12.19 LSFT - Logic System Functional Test

5.12.20 SR - TS Surveillance Requirement

5.12.21 TRS - TRM Surveillance Requirement

5.12.22 PCPR - Plant Component Problem Report

5.12.23 PCWO - Plant Component Work Order

5.12.24 ZWO- Status Work Order

6. WRITING / REVISING A SURVEILLANCE PROCEDURE

6.1 Format

6.1.1 For procedures with performance intervals of greater than 7 days, the following guidelines apply:

a. As a minimum, format the procedure in accordance with Attachment A.

b. If a section outlined on Attachment A does not apply, include the section in the procedure and type 'NONE' under the section title.

c. Additional sections may be included if agreed to by the responsible FUM.

6.1.2 For procedures with performance intervals of 7 days or less, the following guidelines apply:

a. The format of Attachment A is recommended, but not required.

b. The responsible FUM determines the format, if different from Attachment A.

6.1.3 For data forms and data attachments, the following guidelines apply:

a. Number and control data forms/attachments in accordance with NDAP-QA-0002.

b. Attachment B provides an optional data form.

c. Data attachments are not required to have a form/revision number in the lower left hand corner.

(8) 6.2 Preconditioning

6.2.1 TS/TR surveillance and ASME Code testing is performed to verify SSC operability which ensures that the SSC will function as designed during an accident.

6.2.2 A PCWO written to fix a broken component does not constitute preconditioning.

6.2.3 Preconditioning can be classified as either acceptable or unacceptable.

6.2.4 Acceptable preconditioning

a. Acceptable preconditioning is the alteration, variation, manipulation, or adjustment of the physical condition of an SSC before testing for the purpose of protecting personnel or equipment or to meet the manufacturer's recommendations.

b. The performance of maintenance prior to a regularly scheduled surveillance test may be acceptable preconditioning and should be evaluated prior to performing the surveillance activity.

c. The benefits of acceptable preconditioning should outweigh the benefits gained by testing the SSC in the as-found condition.

d. Examples of acceptable preconditioning:

(1) Preconditioning that is documented and approved in the Technical Specifications or Technical Requirements Manual.

(2) Periodic venting of pumps may occasionally be performed before surveillance testing if it is not routinely scheduled to be performed prior to the surveillance testing. The venting operation must have proper controls and the results evaluated (i.e., the amount of gas vented would not have adversely affected pump operation).

(3) Steam supply lines may be drained prior to surveillance testing. The draining operation must have proper controls and the results evaluated (i.e., the amount of condensate drained would not have adversely affected turbine operation).

(4) The performance of equipment readiness checks, such as checking oil level or equipment temperature or pressure, is acceptable and requires no further evaluation.

NOTE: As long as the activity only checks the status of the equipment parameters and does not alter the state of the system or equipment.

(5) Maintenance work may occasionally occur prior to a regularly scheduled surveillance. Maintenance activities cannot be performed prior to the scheduled surveillance on a routine basis.

(6) Unavoidable preconditioning that is a direct result of the performance of the surveillance such as removing a breaker from the cubicle to install a test stand, installation of a jumper, or installation of hydraulic or pneumatic connections, is acceptable.

6.2.5 Unacceptable preconditioning

a. Unacceptable preconditioning is the alteration, variation, manipulation, or adjustment of the physical condition of an SSC before or during testing that alters one or more SSC for any reason other than those allowed per Section 6.2.4.

b. The performance of valve stroking or SSC manipulation to influence test results on an SSC required to be as-found tested by NUREG 1482 (Guidelines for In-Service Testing at Nuclear Power Plants) is unacceptable preconditioning .

c. The performance of maintenance activities prior to a surveillance test with the intent of ensuring favorable test results is unacceptable preconditioning.

d. Routinely scheduling and performing maintenance activities prior to the regularly scheduled surveillance test is unacceptable preconditioning.

e. The restoration of an SSC parameter identified as "out of specification" while performing a readiness check is unacceptable preconditioning.

f. For a parameter found out of specification when performing a readiness check, perform the following steps:

   (1) Write a CR to address the operability of the as-found condition.

   (2) Restore the out of specification parameter to prevent damage to the SSC.

   (3) Perform the surveillance test.

g. Specific examples of unacceptable preconditioning:

   (1) Removing electrical loads prior to breaker load surveillance testing.

   (2) Always inspecting, cleaning, and lubricating breakers prior to as-found testing.

   (3) Always lubricating valve stems prior to as-found stroke time testing.

   (4) Stroking a valve prior to as-found stroke time testing.

   (5) Operating a component immediately before performing the as-found surveillance test.

   (6) The practice of venting the RHR pumps immediately before performing the surveillance test.

   (7) Performing a series of different HPCI/RCIC tests in sequence without sufficient cooldown time between tests.

(8) Checking and adjusting parameters, such as reagent gas flow, before obtaining as-found calibration data.

6.2.6 The following questions should be considered when evaluating the acceptability of preconditioning:

- Does the activity ensure that the SSC will meet the surveillance acceptance criteria?
- Would the SSC have failed the surveillance if the activity was not performed?
- Does the activity bypass or mask the as-found condition?
- Is the preventative maintenance activity routinely performed just before the surveillance test?
- Is the preventative maintenance activity performed prior to the routine surveillance only for scheduling convenience?

If a question is answered "Yes" and the activity meets the guidelines of Section 6.2.5, then the preconditioning is unacceptable.

6.2.7 Any activity classified as "Unacceptable Preconditioning" is prohibited.

6.2.8 Any activity classified as "Acceptable Preconditioning" is permitted but should be minimized.

6.2.9 Write procedures with the goal of ensuring that the SSCs are not preconditioned prior to testing.

6.2.10 If a procedure contains preconditioning, the procedure should contain the evaluation of that preconditioning within the procedure (Example: Add a Discussion Section to the procedure) or reference the preconditioning evaluation in the Reference Section.

6.3 Surveillance Procedure Requirements

6.3.1 Surveillance procedures shall meet the requirements of this procedure.

6.3.2 Surveillance procedure changes shall meet the requirements of NDAP-QA-0002.

6.3.3 Write the procedure such that all required functions are tested. The failure of component A is not to be masked by the success of component B (the redundant or diverse counterpart).

6.3.4 For LSFT requirements, overlap between surveillance procedures is required.

6.3.5 A surveillance procedure may refer to another approved Nuclear Department technical procedure to perform a specific activity. (e.g., breaker setting)

6.3.6 When another procedure is used to gather data and record data for the acceptance criteria, provide a sign-off step in the surveillance procedure to document completion.

6.3.7 When a calculation is used as a basis for the acceptance criteria in a surveillance procedure, the calculation shall meet the following requirements:

a. The calculation shall be approved and retrievable.

b. The calculation shall be included in the reference section of the procedure.

6.3.8 If the procedure contains a step that requires entry into an LCO/TRO action, the procedure shall contain one of the following requirements:

a. The step shall be performed by Operations. OR

(6) b. The step shall be preceded by a step that requires the following:

(1) Notification to shift supervision that the next step will require entry into an LCO/TRO action. AND

(2) Operations or individual making notification sign-off for the step.

6.3.9 If the procedure contains a step that clears an LCO/TRO action, the procedure shall contain one of the following requirements:

a. The step shall be performed by Operations. OR

b. The step shall be followed by a step that requires the following:

(1) Notification to shift supervision that the previous step cleared an LCO/TRO action. AND

(2) Operations or the individual making notification sign-off for the step.

6.3.10 Each surveillance activity is to be contained within an approved surveillance procedure(s).

6.3.11 If a procedure complies with Section 8.1 of this procedure, the surveillance activity does not need to be in an approved surveillance procedure.

6.3.12 For procedures that use APTs, see Section 9.4 of this procedure for procedure requirements.

6.3.13 The surveillance procedure shall contain a place to record the following information for each M&TE or CTE used:

a. M&TE or CTE identification number

b. calibration date

c. calibration due date or calibration expiration date

6.3.14 Confirmation and verification sign-offs should be shown as a blank line for initials/signature and date.

6.3.15 If a sign-off is required to be made by an individual outside of the responsible work group, specify the work group/job title for the individual.

6.3.16 Confirmation and verification sign-offs and data entries may be made within the procedure body or on a data form/attachment.

6.3.17 If confirmation, verification, and data entries are to be made on the data form, the following note is to be entered immediately prior to the first step requiring data entry:

> "Those steps of this procedure designated by an asterisk (*) immediately to the left of the step number require entries to be recorded on the data form."

6.3.18 Sign-offs shall be provided for the following items:

a. System/component restoration

b. Reference to another procedure that gathers/records data that must be performed

c. Steps that document required verifications

d. Data obtained to satisfy the acceptance criteria

e. Any step that the procedure writer determines needs a sign-off.

6.3.19 Provide a space to record the data obtained to satisfy the acceptance criteria.

6.3.20 A space may be provided to obtain other data during the procedure performance. Example: data for performance monitoring.

6.3.21 When identifying a component, the following criteria should be used:

a. Use the complete component number (e.g., HV149F013, PSH-C72-1N002A).

b. Include the component noun name. If the component is in NIMS, the component name should be the name in NIMS.

c. Include the component location. If the component is in NIMS, the component location should be the location in NIMS.

d. If the component is in a panel, include the panel number and panel location.

6.3.22 The acceptance criteria section of the procedure shall contain the following items for each acceptance criteria:

a. An acceptance criteria statement that directly reflects the TS/TR surveillance requirement.

b. The location and source of the information used to obtain the data, if applicable. Example: step 6.4.4

c. If the acceptance criteria is quantitative, provide space(s) to record the result(s).

d. If the acceptance criteria is qualitative, provide the appropriate choices to be circled. Example: YES / NO, SAT / UNSAT.

e. Provide a sign-off for the acceptance criteria.

f. If as-found and as-left acceptance criteria is required to be obtained, ensure that the appropriate spaces exist.

6.3.23 The required action section should follow the acceptance criteria section.

6.3.24 The required action section shall contain the following items:

a. A statement that says "Notify Shift Supervision that SX-XXX-XXX has failed."

b. A listing of LCO/TRO actions

c. Any actions required beyond the LCO/TRO actions

d. A space for Shift Supervision signature/initial and date

6.3.25 Surveillance procedures may be developed and used for testing not contained in the TS or TRM, particularly if one or more of the following apply:

a. Activity must be performed at a specific frequency.

b. NRC commitment.

c. Activity contains Acceptance Criteria that affects system operability if not met.

6.4 Surveillance Procedure Review Checklist Requirements

6.4.1 For each surveillance procedure change except for an expedited review or an admin change per NDAP-QA-0002, complete a SPRC, Form NDAP-QA-0722-7 (Attachment C).

6.4.2 The SPRC is to be completed by the work group responsible for the procedure change.

6.4.3 A special case requiring use of the SPRC form that is described in detail in another section of this procedure is:

a. Routine use of Other SSES Procedures to meet Surveillance Procedure Requirements.

6.4.4 The SPRC is to be included in each surveillance procedure review package.

6.4.5 After the procedure change review is complete, the procedure change preparer shall give the procedure change package to the SR/TRS owner for review.

6.4.6 After review of the procedure change, the SR/TRS owner shall complete items 11 and 12 on the SPRC and sign the SPRC.

6.4.7 If there are any TS/TR matrix changes, forward a copy of the SPRC along with the changes to the Supervisor - P&T.

6.5 Surveillance Procedure Review

6.5.1 Surveillance testing procedures must meet the requirements for formal review of quality-related documents as specified in NDAP-QA-0101.

6.5.2 Surveillance procedures must comply with the review provisions as stated in NDAP-QA-0002.

6.5.3 When procedure changes affect the scope of testing for LSFTs, the procedure shall be sent to the SR/TRS owner as a level 1 reviewer.

6.6 Logic System Functional Test Scope

6.6.1 The LSFT scope includes all relevant inputs or permissives to the logic circuit.

6.6.2 For an input or permissive that has multiple conditions, each of the conditions must be tested as part of the LSFT if that condition is required for the TS/TR function.

Example: If a pump start is dependent on a power available permissive which has multiple inputs, then the LSFT must include the complete power available permissive circuit (including all of the contacts/logic of the multiple inputs).

6.6.3 The LSFT scope does not include outputs to other features where an LSFT is not required.

Example: RHR provides a start signal to the D/Gs. While RHR has an LSFT requirement, the D/Gs do not. Therefore, the scope of the LSFT for RHR does not include the D/G start circuitry within the D/G panel. The D/G TS requirements govern D/G testing.

6.6.4 The LSFT scope for a specific system LSFT TS requirement does not include outputs to other features in other systems even if the other system does not require an LSFT. These outputs are tested when relevant as inputs or permissives under the LSFT requirements for the other system.

Example: RHR provides an input to the isolation logic for a HPCI vacuum breaker isolation valve. This is required to be a part of the HPCI LSFT not the RHR LFST (although the actual testing may be contained in either system's procedure).

7. <u>SCHEDULING</u>

7.1 Surveillance Scheduling

7.1.1 The responsible individual for a surveillance activity is to ensure that the activity is included on the station schedule (P3).

7.1.2 The following is a list of the mechanisms used to notify the responsible work group that a routine surveillance activity is to be performed (i.e., surveillance is due):

a. the surveillance activity schedule (SV2)

b. a SA coversheet

c. a retest coversheet.

7.1.3 The responsible work group is to use the SA coversheet to control the performance of non-routine surveillance activities.

(11) 7.1.4 It is the station policy to schedule and perform surveillance activities prior to their due date.

7.1.5 For scheduling purposes, surveillance activities are divided into the following 3 categories:

a. routine surveillance activities with a performance interval of greater than 7 days

b. routine surveillance activities with a performance interval of 7 days or less

c. non-routine surveillance activities.

7.1.6 Routine surveillance activities with a performance interval of greater than 7 days

a. These activities are to be scheduled by NIMS in accordance with NDAP-QA-0543.

b. A surveillance activity schedule (SV2) will be provided to each responsible work group on a weekly basis.

c. The schedule will identify the surveillance activities due to be performed during the next 2 weeks.

d. The schedule will provide the due date for each surveillance activity.

e. The surveillance activity schedule is to be updated weekly.

f. The schedule update is to include changes due to completion of surveillance activities within the last week.

g. NIMS will identify the surveillance activities that are past their due date. (PMAU-22).

h. NIMS will identify the surveillance activities that are past their violation date. (PMAU-23)

NOTE: For some surveillance activities, the due and violation dates are the same.

7.1.7 Routine surveillance activities with a performance interval of 7 days or less

a. These activities are to be scheduled by the responsible work group for the surveillance activity.

b. The responsible FUM shall assure that a scheduling system is established, implemented, and controlled for assigned surveillance activities.

7.1.8 Non-routine surveillance activities

a. These activities are to be scheduled by the responsible work group for the surveillance activity.

b. Typically, this is accomplished by identifying the surveillance activity in a procedure appropriate to the circumstances.

Examples:
- General operating procedure
- Off-normal procedure

c. When these activities are required due to changing plant conditions, the controlling procedure (ON, GO, etc.) shall contain the following information:

(1) The procedure is to have a step to identify the need to perform a surveillance activity.

(2) The step identifying the surveillance activity shall specify the allotted time.

(3) The procedure is to have a sign-off step to indicate that the surveillance activity is complete.

d. The responsible work group shall identify where to place the steps in the controlling procedure.

e. When the controlling procedure is an operations procedure, Operations shall notify the responsible work group that the surveillance activity is required to be performed.

f. If a non-routine activity is required due to equipment maintenance, the activity shall be identified and initiated in accordance with the following:

(1) NDAP-QA-0502, Work Authorization System, and

(2) the applicable implementing procedure.

g. Other non-routine activities shall have a positive scheduling mechanism.

7.1.9 The guidance on preconditioning in Section 6.2 needs to be used when scheduling a surveillance.

7.2 Past Due Surveillance

7.2.1 SR 3.0.2 allows a surveillance activity to be performed within 1.25 times the interval specified in the frequency. This is known as "grace."

7.2.2 Individual surveillance requirements will identify if the provisions of SR 3.0.2 do not apply.

7.2.3 The use of grace is to be minimized. The standard is to schedule the surveillance activity prior to its due date.

7.2.4 If the plant mode or system configuration does not allow scheduling prior to the due date, the surveillance activity may be scheduled within the grace period.

7.2.5 The responsible work group is to track each surveillance activity that is past due or "in grace."

7.2.6 The responsible work group is to ensure that a TS/TR surveillance requirement is not violated.

7.2.7 If necessary, a surveillance activity may be taken out-of-service or out-of-mode per Section 7.5 of this NDAP and NDAP-QA-0543. This will extend the violation date.

7.3 Surveillance Past the Violation Date

7.3.1 If a surveillance activity is not performed prior to its violation date, the corresponding equipment is considered inoperable.

7.3.2 The responsible FUM shall ensure initiation of a CR for any surveillance activity that exceeds its violation date.

7.3.3 The responsible FUM shall notify Shift Supervision of any surveillance activity that exceeds its violation date.

7.3.4 The notification shall include the reason(s) or condition(s) restraining the performance of the surveillance activity.

7.3.5 Shift Supervision shall take the appropriate LCO/TRO action.

7.3.6 If it is discovered that a surveillance activity was missed, SR 3.0.3 and TRS 3.0.3 allow for a delay in the entry of the LCO/TRO action to perform the surveillance activity.

7.3.7 The delay in LCO/TRO entry starts from the time of discovery of the missed surveillance up to 24 hours or up to the limit of the specified frequency, whichever is less.

7.4 Post Maintenance/Modification Testing

7.4.1 Post maintenance/modification testing shall include surveillance activities if the work activities invalidated the current surveillance of record.

7.4.2 The determination of whether a surveillance activity has been invalidated is a decision made by Unit Coordination/System Engineer in accordance with NDAP-QA-0482.

7.4.3 Post modification testing shall include surveillance activities if the modification added a new TS/TR related component.

7.4.4 If a surveillance is required post maintenance/modification, the work group that performs the work activity shall initiate the SA coversheet.

7.4.5 Per TS 3.0.5 and TR 3.0.5, equipment that was removed from service or declared inoperable to comply with LCO/TRO actions may be returned to service under administrative controls as follows:

a. to perform testing required to demonstrate its operability

b. to perform testing required to demonstrate the operability of other equipment.

7.5 Out-of-Service/Out-of-Mode Surveillances

7.5.1 If a surveillance activity is declared out-of-service (OOS) per NDAP-QA-0543, then the responsible work group shall complete the following steps:

(1) a. Generate a ZWO that indicates that a surveillance is required for system operability.

b. If multiple systems are affected, generate a ZWO for each system.

c. In PART V of the SA coversheet, enter "OOS on (date), ZWO No. _____on file."

d. In PART IV of the SA coversheet, check the Out of Service block.

e. In PART IV of the SA coversheet, confirm that the system is OOS by signature of the responsible supervisor or work group foreman.

f. Track OOS surveillances.

g. Ensure that the OOS surveillance is performed prior to declaring the system operable.

h. Retain the SA coversheet until the surveillance is complete.

7.5.2 If a surveillance activity is taken out-of-mode (OOM) per NDAP-QA-0543, then the responsible work group shall complete the following steps:

(2) a. Ensure that the second level of review is performed prior to taking a surveillance OOM.

b. In PART IV of the SA coversheet, check the Out of Mode block.

c. In PART IV of the SA coversheet, confirm that the system is OOM by signature of the responsible supervisor or work group foreman.

(1) d. Generate a ZWO that indicates that a surveillance is required for system operability.

e. Ensure that the OOM surveillance is performed prior to entering an operational mode where the equipment is required to be operable.

f. Retain the SA coversheet until the surveillance is complete.

7.6 Waiving an SA Coversheet

7.6.1 If an SA coversheet is printed and the surveillance activity is not required to be performed at that time, the SA coversheet may be waived.

7.6.2 Waiving an SA coversheet does not change the surveillance activity due and violation dates.

7.6.3 TS/TR surveillance requirement frequencies must be adhered to.

7.6.4 Complete the SA coversheet as follows to waive the coversheet:

NOTE: Steps a. through g. may be completed in NIMS using the existing RTSV record.

a. In PART II, check the other block.

b. In PART III, check the waive block.

c. In PART IV, enter the following information:

(1) N/A for the Shift Supervision signature

(2) the current date and time.

d. In PART V, document the following information:

(1) the reason why the SA coversheet was waived

(2) why the TS/TR surveillance requirement frequency is not violated by the waive

e. In PART VI, check the operable block.

f. In PART VII, check the following blocks:

(1) operable block

(2) N/A block

g. In PART VIII, enter the current date and time.

NOTE: The date and time can be the same as the date and time entered in PART IV.

h. In PART IX, sign and date the responsible individual space.

7.6.5 Forward the SA coversheet to the responsible supervisor or foreman for review.

7.6.6 When the review has been completed satisfactorily, the responsible supervisor or foreman shall sign and date the appropriate space in PART IX of the SA coversheet.

7.6.7 Forward the SA coversheet to the Admin-Work Management Group to update the NIMS system.

7.7 Deleting an SA Coversheet

7.7.1 The responsible work group may desire to delete an SA coversheet.

7.7.2 Deleting an SA coversheet does not change the surveillance activity due and violation dates.

7.7.3 The delete option may be used for the following coversheets:

a. Non-scheduled print SA coversheets

b. SA coversheet that exists for a surveillance requirement that has been deleted.

7.7.4 Complete the SA coversheet as follows to delete the coversheet:

NOTE: Steps a. through g. may be completed in NIMS using the existing RTSV record.

a. In PART II, check the other block.

b. In PART III, check the delete block.

c. In PART IV, enter the following information:

(1) N/A for the Shift Supervision signature

(2) the current date and time.

d. In PART V, document the reason why the SA coversheet was deleted.

e. In PART VI, check the operable block.

f. In PART VII, check the following blocks:

(1) operable block

(2) N/A block

g. In PART VIII, enter the current date and time.

NOTE: The date and time can be the same as the date and time entered in PART IV.

h. In PART IX, sign and date the responsible individual space.

7.7.5 Forward the SA coversheet to the responsible supervisor or foreman for review.

7.7.6 When the review has been completed satisfactorily, the responsible supervisor or foreman shall sign and date the appropriate space in PART IX of the SA coversheet.

7.7.7 Forward the SA coversheet to the Admin-Work Management Group to update the NIMS system.

7.8 Combination of Partial SA Coversheets

7.8.1 If two or more partial surveillance tests were performed that make up a complete surveillance test, credit for a complete surveillance may be taken.

7.8.2 To take credit for the complete surveillance perform the following steps:

NOTE: Steps a. through h. may be completed in NIMS using the existing RTSV record or a new RTSV record if one does not exist.

a. In PART I, enter the following information:

(1) the surveillance procedure number

(2) the procedure title

(3) the WO number

(4) the surveillance activity number

(5) the surveillance activity due date

b. In PART II, check the appropriate block.

c. In PART III, check the Complete block.

d. In PART IV, enter the following information:

(1) N/A for the Shift Supervision signature.

(2) the date and time from the SA coversheet of the first partial test being credited.

e. In PART V, document the WO number for each partial test being credited. If the partial tests do not have individual WO numbers, attach the partial tests to this SA coversheet.

f. In PART VI, check the appropriate block.

g. In PART VII, check the appropriate blocks.

h. In PART VIII, enter the date and time from the SA coversheet of the last partial test being credited.

i. In PART IX, sign and date on the Responsible Individual line.

8. USE OF OTHER DOCUMENTS TO MEET SURVEILLANCE ACTIVITY REQUIREMENTS

8.1 Routine Use of Other Procedures to Meet Surveillance Requirements

8.1.1 The responsible work group may use non-surveillance procedures to meet surveillance activity requirements.

8.1.2 To use a non-surveillance procedure routinely to meet a surveillance activity, all of the following criteria must be met:

a. The procedure must be PORC approved.

b. The procedure must meet the review requirements of this procedure.

c. The procedure must specify record retention in accordance with a surveillance activity record.

8.1.3 Operations log sheets may be retained in the Control Room while in use. Forward the log sheets to DCS in accordance with the Operations procedure when complete.

8.1.4 The procedure shall clearly identify the acceptance criteria. The acceptance criteria should reference the appropriate TS/TR.

8.1.5 The procedure shall record the pertinent data to verify compliance with the acceptance criteria.

8.1.6 Preconditioning per Section 6.2 of this procedure needs to be considered.

8.1.7 The Reference Section of the procedure shall identify the TS/TR surveillance requirement that the procedure fulfills.

8.1.8 The procedure shall include a Required Action with the following items:

a. A place for Shift Supervision signature that documents the operations notification of the failed surveillance activity.

b. A list of appropriate LCO/TRO actions by TS/TR number.

8.1.9 The procedure shall include a sign-off to document the review of the results by the responsible supervisor or foreman.

(9) 8.1.10 An SPRC must be completed in accordance with the guidance in Section 6.4 of this procedure.

8.1.11 The procedure shall be scheduled in accordance with Section 7.1 of this procedure.

8.1.12 An SA coversheet is not required to be completed for surveillance activities performed under the guidance of this section.

8.1.13 Some Operations procedures, such as OPs, do not need to comply with steps 8.1.4, 8.1.5, 8.1.7, and 8.1.8. However, these procedures shall meet the following criteria:

a. The procedure must clearly specify the surveillance requirement being met.

b. The procedure must provide clear guidance on what to do if the surveillance requirement is not met.

c. The pertinent data and any actions taken must be recorded in the Unit Log or a functional unit procedure.

8.2 Performance of one Surveillance Procedure in Lieu of Another Surveillance Procedure

8.2.1 The responsible work group may use a different surveillance procedure to meet surveillance activity requirements to eliminate duplicate testing.

8.2.2 The following is a listing of example situations where a different surveillance may be used:

a. Performance of an instrument calibration in lieu of a channel functional test.

b. Performance of a quarterly test that encompasses the requirements of the monthly test.

8.2.3 When evaluating the equivalency of the acceptance criteria, the affects of preconditioning need to be considered.

8.2.4 For the surveillance activity that is not being performed, the responsible individual shall complete the SA coversheet as follows:

NOTE: Steps a. through h. may be completed in NIMS using the existing RTSV record or a new RTSV record if one doesn't exist.

a. In PART I, enter the following information:

(1) the surveillance procedure number

(2) the procedure title

(3) the WO number

(4) the surveillance activity number

(5) the surveillance activity due date

b. In PART II, check the appropriate block.

c. In PART III, check the Complete or Partial block.

d. In PART IV, enter the following information:

(1) N/A for the Shift Supervision signature

(2) the date and time that the alternate testing commenced. This is usually taken from the SA coversheet of the alternate test performed.

e. In PART V, document the following information:

(1) the surveillance procedure number that performed the testing

(2) why the alternate testing is acceptable

(3) the extent of testing performed.

f. In PART VI, check the appropriate block.

g. In PART VII, check the appropriate blocks.

h. In PART VIII, enter the date and time when the alternate testing was successfully completed. This is usually taken from the SA coversheet of the alternate test performed.

i. In PART IX, sign and date on the Responsible Individual line.

8.2.5 The completed SA coversheet shall be given to the responsible supervisor or foreman for review and closure.

8.3 Use of Other Documents to Meet Surveillance Requirements

8.3.1 The responsible work group may use other documents, such as a TP, MT, or PCWO, to meet surveillance activity requirements.

8.3.2 If an alternate document is used, the following criteria must be met:

a. the testing must be equivalent

b. the testing must be completed satisfactorily

c. the testing must be completed within the surveillance activity frequency.

8.3.3 When evaluating the equivalency of the testing, the affects of preconditioning need to be considered.

8.3.4 When credit for an alternate document is desired, obtain one of the following two approvals:

a. PORC approval of the alternate testing prior to the performance of the alternate document

b. PORC approval of the alternate testing after the performance of the alternate document

8.3.5 The pre-test approval ensures that the alternate testing is adequate and agreed to in advance.

8.3.6 The SA coversheet shall be the document used to obtain PORC approval.

8.3.7 For pre-test approval, the SA coversheet shall be submitted to PORC along with the document that will be used for alternate testing.

8.3.8 For post-test approval, the SA coversheet shall be submitted to PORC along with the alternate document test results.

(5) 8.3.9 Attachment D shall be used to document the justification for alternate testing.

8.3.10 Complete Attachment D and attach it to the completed SA coversheet.

8.3.11 If the answer to step 4 on Attachment D is YES, complete the following steps:

a. Create/revise the procedure or generate an Action Item.

b. If an Action Item is generated, the Action Item should contain the following information:

(1) The surveillance procedure that needs to be revised or issued.

(2) A brief description of the required changes.

8.3.12 Enter the PORC meeting number on Attachment D after PORC approval has been received.

8.3.13 The responsible individual shall complete the SA coversheet as follows:

NOTE (1): For pre-test approval, steps a, b, c, and e.1) below shall be completed for PORC.

NOTE (2): For post-test approval, complete all steps for PORC.

NOTE (3): Steps a. through h. may be completed in NIMS using the existing RTSV record or a new RTSV record if one doesn't exist.

a. In PART I, enter the following information:

   (1) the surveillance procedure number

   (2) the procedure title

   (3) the WO number

   (4) the surveillance activity number

   (5) the surveillance activity due date

b. In PART II, check the appropriate block.

c. In PART III, check the Complete or Partial block.

d. In PART IV, enter the following information:

   (1) N/A for the Shift Supervision signature

   (2) the date and time that the alternate testing commenced.

e. In PART V, document the following information:

   (1) a reference to Attachment D

   (2) a summary of the alternate testing results.

f. In PART VI, check the appropriate block.

g. In PART VII, check the appropriate blocks.

h. In PART VIII, enter the date and time when the alternate testing was successfully completed.

i. In PART IX, sign and date on the Responsible Individual line.

8.3.14 When the alternate testing has been completed for a surveillance activity that received pre-test approval, complete the remainder of the SA coversheet per step 8.3.13.

8.3.15 The LCO/TRO cannot be cleared until the alternate testing is successfully completed and PORC approval of the alternate testing has been received.

8.3.16 The completed SA coversheet shall be given to the responsible supervisor or foreman for review and closure.

9. SURVEILLANCE PERFORMANCE

9.1 SA Form Initiation

9.1.1 When the need to perform a surveillance activity is identified, initiate an SA coversheet using Form NDAP-QA-0722-1 (Attachment E) on green paper.

9.1.2 The SA coversheet is to be initiated by one of the following methods:

a. NIMS for routine surveillance activities with a performance interval of greater than 7 days

b. the responsible work group for the following surveillance activities:

(1) routine surveillance activities with a performance interval of 7 days or less

(2) non-routine surveillance activities

(3) post maintenance/modification testing

9.1.3 Complete PARTs I, II, and III of the SA coversheet as follows:

a. In PART I, enter the following information:

(1) the surveillance procedure number

(2) the procedure title

(3) the WO number

(4) the surveillance activity number

(5) the surveillance activity due date

(6) the surveillance activity violation date

b. In PART II, check the appropriate block based on the following information:

(1) Routine - the normally scheduled surveillance.

(2) Event or Condition Initiated - a non-routine surveillance that is performed due to changing plant conditions such as a mode change.

(3) Post Maint/Mod Test - a surveillance that is performed to verify that a component, subsystem, or system which was out of service is operable. In PART V of the SA coversheet, enter the PCWO, or mod number that required the testing.

(4) LCO Action Statements - a surveillance that is performed on operable equipment due to an LCO action requirement. Example: starting an operable diesel generator when one is inoperable.

(5) TRO Action Statements - a surveillance that is performed on operable equipment due to a TRO action requirement. Example: starting an operable diesel generator when one is inoperable.

(6) Other - describe the reason in PART V of the SA coversheet.

c. In PART III, check the appropriate block based on the following information:

(1) Complete - this block indicates one of the following:

(a) all the testing within the scope of the procedure will be performed at this time.

(b) two or more partial SA coversheets are being combined for a complete surveillance.

(2) Partial - this block indicates that only a portion of the testing within the procedure will be performed at this time. Enter the portion of testing to be performed in PART V of the SA coversheet.

9.1.4 For SA coversheets generated by NIMS, PART I of the coversheet is preprinted.

9.1.5 For routine surveillance activities with a performance interval of 7 days or less, several performances of the surveillance activity may be processed under one SA coversheet as long as the following criteria is met:

a. the surveillance procedure or data form shall have a responsible individual sign-off

b. the surveillance procedure or data form shall have a responsible supervisor or foreman review sign-off

c. the package contains in chronological order all surveillance activities performed since the last SA coversheet was processed.

d. an SA coversheet is processed at least once every 7 days.

9.1.6 For surveillance activities performed to meet TRS 3.11.4.1.1 and 3.11.4.1.2, an SA coversheet may be processed annually, as long as the procedure has acceptance criteria to cover each sample/analysis required by the TRS.

9.2 Surveillance Performance

9.2.1 The responsible work groups should adhere to the plant schedule for surveillance activities to be performed on a particular day.

9.2.2 Obtain Shift Supervision approval to perform a surveillance activity immediately prior to commencement.

9.2.3 Shift Supervision shall indicate approval by signing and entering the date and time on PART IV of the SA coversheet.

9.2.4 Attachment F lists the procedures that are "exempt" from Shift Supervision approval.

9.2.5 For procedures exempt from approval, complete PART IV of the SA coversheet as follows:

a. Enter "exempt" for the Shift Supervision signature.

b. Enter the date and time that the testing commenced.

9.2.6 The responsible individual shall make a copy of the SA coversheet (on white paper) and give it to Shift Supervision. (Not applicable for "exempt" procedures.)

9.2.7 Shift Supervision shall place the operations copy of the SA coversheet in the appropriate "Surveillance in Progress" folder. (Not applicable for "exempt" procedures.)

9.2.8 The responsible work group shall perform the appropriate sections of the surveillance procedure.

9.2.9 Notify shift supervision of any delay in testing. (Not applicable for "exempt" procedures.)

9.2.10 Notify Shift Supervision immediately prior to restarting a test. (Not applicable for "exempt" procedures.)

9.2.11 Initial or sign the steps within the procedure or on the data form that have a sign-off space.

(7) 9.2.12 Enter N/A on the sign-off space for any step that was not performed.

9.2.13 Immediately notify the responsible individual for either of the following conditions:

a. the acceptance criteria is not met

b. conditions indicate that the equipment may be inoperable.

9.2.14 If the acceptance criteria is not met or the equipment is determined to be inoperable, process the surveillance in accordance with Section 10 of this procedure.

9.2.15 For channel checks, evaluate the procedure performance in accordance with Section 9.7.

9.2.16 If the surveillance procedure contains multiple components where one or more, but not all of the components fail, process the surveillance in accordance with Section 9.5 of this procedure.

9.2.17 Close out the surveillance in accordance with Section 9.6 of this procedure.

9.3 Initial Performance of a Surveillance Activity

9.3.1 Initial surveillance activities include pre-service tests and original IST baseline data collection.

9.3.2 When performing an initial surveillance activity, the as-found acceptance criteria may not be applicable.

9.3.3 If the as-found acceptance criteria is not applicable, follow the following guidelines:

a. Do not follow the associated TS/TR action statements.

b. Indicate in PART V of the SA coversheet that this performance is the initial surveillance activity.

c. Indicate in PART V of the SA coversheet that the as-found acceptance criteria is not applicable.

9.4 Allotted Performance Times (APTs)

9.4.1 Various instrument/relay TS/TR include notes that allow allotted performance times.

9.4.2 A surveillance procedure that uses the APT must have a prerequisite with a sign-off to verify that the TS/TR requirements are maintained. Example: A prerequisite that states "Verify that at least one operable channel in the same trip system that monitors the same parameter is maintained."

9.4.3 APTs can only be applied to those instruments that are being tested within the surveillance procedure.

9.4.4 If the entire surveillance procedure is to be performed, APTs for each instrument may be applied as follows:

a. At the start of each section of the surveillance procedure OR

b. At the point within the surveillance procedure at which time the surveilled instrument(s)' function(s) are taken out of service.

9.4.5 If a partial surveillance is to be performed, APTs can only be applied to those instruments that are being surveilled by the partial surveillance.

9.4.6 When instruments other than the instruments being tested are isolated/bypassed, enter the LCO/TRO actions for the "other" isolated/bypassed instruments.

([10]) 9.4.7 The APT start and stop times are controlled as follows:

a. For a surveillance procedure with only 1 channel, the APT starts when the procedure is signed by Operations in PART IV of the SA coversheet.

b. For a surveillance procedure with more than 1 channel, the APT times are tracked per channel.

c. For multiple channels in a procedure, track APT times individually as follows:

(1) The responsible work group is to notify Shift Supervision when an APT is about to begin.

(2) The work group and Operations are to record the channel number and the start date and time for the APT in PART V of their copy of the SA coversheet.

(3) When the work is complete, the responsible work group is to notify Shift Supervision that the APT is complete.

(4) The work group and Operations are to record the channel number and the stop date and time for the APT in PART V of their copy of the SA coversheet.

(5) The work group moves to the next channel and repeats steps 1) to 4) until all channels are complete.

9.4.8 The responsible work group is accountable to assure that the surveillance activity for a channel is completed within the APT.

9.4.9 Operations is responsible to assure that the APT is not exceeded.

9.4.10 If for any reason the instrument is not restored at the end of the APT, the work group shall immediately notify Shift Supervision.

9.4.11 If Operations is notified that the APT has run out and the instrument is not restored, Operations shall enter the appropriate LCO/TRO action.

9.4.12 If an LCO/TRO action is entered, the LCO/TRO time is measured from the end of the APT.

9.4.13 If during the performance of the surveillance it is determined that the as-found acceptance criteria is not met for a channel, then perform one of the following steps:

a. If the condition can and will be corrected within the surveillance procedure in use, then the following applies:

(1) The work group may continue to work on the channel up to the end of the APT without entering the LCO/TRO action.

(2) In PART VI of the SA coversheet check the inoperable block.

(3) Close out the surveillance activity in accordance with Section 9.6 of this procedure.

b. If the condition requires work outside the scope of the surveillance procedure in use, then the following applies:

(1) The APT is no longer valid.

(2) Notify Shift Supervision of the inoperable channel.

(3) Operations shall immediately enter the appropriate LCO/TRO action.

(4) Complete the surveillance procedure in accordance with Section 10 of this procedure.

c. If the channel has multi-functions with one or more functions inoperable, then the following applies:

(1) The work group may continue testing the other functions of the channel for the remainder of the APT.

(2) The work group may restore the inoperable function(s) per step a above.

(3) If work outside the procedure in use is required, then perform the following

(a) Notify Shift Supervision of the inoperable function(s).

(b) Operations shall immediately enter the appropriate LCO/TRO action for the inoperable function(s).

(4) If the APT runs out and the channel is still removed from service, then the following applies:

(a) All functions of the channel are considered inoperable.

(b) Enter the appropriate LCO/TRO actions.

(c) Complete the surveillance procedure in accordance with Section 10 of this procedure.

9.5 Surveillance Procedure with Multiple Components

9.5.1 A surveillance procedure may perform multiple surveillance activities.

9.5.2 A surveillance procedure may perform a surveillance activity on multiple components.

9.5.3 If a component within the surveillance procedure must be declared inoperable, perform the following steps:

a. Immediately notify Shift Supervision of the inoperable component(s). Do not wait until the entire surveillance is complete.

b. Enter the appropriate LCO/TRO actions for the inoperable component(s).

c. Restore the inoperable component to a safe operating condition.

d. Generate a PCWO to repair the inoperable component.

e. Generate a ZWO, if necessary, to require performance of the specific portion of the surveillance procedure prior to declaring the inoperable component(s) operable.

f. Complete the surveillance for the remainder of the components to be tested.

g. Identify in PART V of the SA coversheet that the surveillance was satisfactorily completed except for (inoperable components).

h. In PART VI of the SA coversheet check the inoperable block.

i. In PART VII of the SA coversheet check the operable block.

NOTE: The inoperable component(s) is being tracked by the LCO/TRO log and the system status file.

j. Close the surveillance procedure in accordance with Section 9.6 of this procedure.

9.5.4 When a surveillance is performed that contains surveillance testing for a previously declared inoperable component, the following conditions apply:

a. The portion of surveillance for the inoperable component does not need to be performed.

b. If all of the other components within the surveillance are tested satisfactorily, check the operable block in PART VI of the SA coversheet.

c. If all of the other components within the surveillance are tested satisfactorily, complete the surveillance in accordance with Section 9.6 of this procedure.

9.6 Surveillance Closure

9.6.1 The responsible individual shall perform a comprehensive review of the entire surveillance procedure package.

9.6.2 As a minimum, the review shall include the following items:

a. A controlled manual or user-controlled copy of the surveillance procedure was used.

b. All of the required signoffs were properly completed.

c. All of the data forms and attachments were properly completed.

d. The acceptance criteria was met.

e. All of the information in the procedure was documented neatly and legibly.

f. If necessary, the retesting was properly completed.

g. The surveillance activity was completed prior to the violation date.

h. Appropriate information was entered in PART V of the SA coversheet.

9.6.3 When the review is complete, the responsible individual shall notify Shift Supervision that the surveillance is complete. (Not applicable for "exempt" procedures.)

9.6.4 The responsible individual shall obtain the operations copy of the SA coversheet from Shift Supervision. (Not applicable for "exempt" procedures.)

9.6.5 The responsible individual shall complete the original (green) SA coversheet as follows:

a. In PART VI, check the appropriate block as follows.

(1) If the acceptance criteria was met in the as-found condition, check the operable block.

(2) If the acceptance criteria was not met in the as-found condition, check the inoperable block.

b. In PART VII, complete the blocks as follows:

(1) Check the operable block.

(2) If a retest was performed, check the yes block.

(3) If a retest was not performed, check the N/A block.

c. In PART VIII, enter the completion date and time for the surveillance activity.

NOTE: If a retest was performed, the completion date and time is the date and time entered in PART V of the Retest coversheet.

d. In PART IX, complete the following information:

(1) Check the shift supervision notified block.

(2) Sign and date the responsible individual space.

(3) If a complete retest was performed, check the block and enter the commencement date from the Retest coversheet.

9.6.6 The responsible individual shall perform one of the following steps:

a. On the Operations copy of the SA coversheet, complete PARTs VI, VII, VIII, and IX with the same information entered on the original SA coversheet.

b. Make a copy of the original SA coversheet with Parts VI through IX completed. Discard the earlier Operations copy.

9.6.7 Give the Operations copy of the SA coversheet to Shift Supervision. (This is applicable for "exempt" procedures.)

9.6.8 When Operations receives the completed Operations copy of the SA coversheet, Shift Supervision shall perform the following steps:

a. Exit any LCO/TRO actions that were entered to perform the surveillance.

b. Update or close out any ZWOs associated with an OOS/OOM surveillance activity.

c. Verify surveillance reflects completion in system status file.

9.6.9 Operations is to place the Operations copy of the SA coversheet in the Surveillance File.

NOTE: The Operations copy of the SA coversheet is the documentation of the surveillance activity completion.

9.6.10 Operations shall remove from the surveillance file and discard any Operations copies of SA coversheets beyond the last 2 performances of the surveillance.

9.6.11 When the SA coversheet is complete, the responsible individual shall forward the surveillance procedure package to the responsible supervisor or foreman.

9.6.12 The responsible supervisor or foreman shall perform a comprehensive review of the entire surveillance procedure package.

9.6.13 When the review has been completed satisfactorily, the responsible supervisor or foreman shall sign and date the appropriate space in PART IX of the SA coversheet.

9.6.14 If the review indicates that the surveillance performance was not satisfactory, the responsible work group shall complete the following steps:

a. Immediately notify Shift Supervision.

b. Process the procedure in accordance with Section 10 of this procedure.

9.6.15 For surveillance activities that are tracked by NIMS, the responsible supervisor or foreman shall ensure that the following information is entered into NIMS:

a. commencement date

b. completion date

c. proper completion code (see NDAP-QA-0543).

9.6.16 If the extent of testing (PART III of the SA coversheet) is complete, the first space in PART X of the SA coversheet may be initialed by the responsible work group.

9.6.17 After the information is entered into NIMS, forward the surveillance procedure package to the Admin-Work Management group.

9.6.18 The Admin-Work Management group shall update NIMS as necessary.

9.6.19 If the extent of testing (PART III of the SA coversheet) is complete, the second space in PART X of the SA coversheet may be initialed by the Admin-Work Management group.

9.6.20 When the information in NIMS is correct, forward the surveillance procedure package to the Supervisor DCS-SSES.

([16]) 9.7 Channel Checks

9.7.1 A channel check assessment should include a comparison of the channel indication and status to independent instrument channel indications or status.

9.7.2 The independent instrument channels shall measure the same parameter. It is assumed that the independent instrument channel will read approximately the same value unless a gross failure has occurred.

9.7.3 For single channel checks where comparison cannot be made to an independent instrument channel, the channel indication shall be consistent with current plant and system conditions.

9.7.4 Historical data may be used as an aide in performing single channel channel checks.

9.7.5 All channel checks for each instrument use agreement criteria as described in the TS Bases.

9.7.6 The agreement criteria should include consideration for the instrument indication range and readability.

9.7.7 If an instrument channel is found outside of its agreement criteria, it does not necessarily mean that the channel is inoperable. It may be an indication that the instrument has drifted outside its limit.

9.7.8 An LCO is not required until actions in step 9.7.9 direct LCO entry.

9.7.9 If the entry criteria is not met, the following actions shall be taken:

a. Initiate a PCPR to investigate the instrument response.

b. Record the PCPR and/or PCWO number, nature of problem, date and time on the coversheet of the applicable surveillance.

c. The investigation shall be completed within 24 hours of discovery that the instrument channel is outside the agreement criteria.

d. If the investigation is not completed within 24 hours, both channels shall be declared inoperable.

e. Based on the results of the investigation, determine the channel operability (one or both inoperable) and complete an operability screening.

f. If at any time during the investigation the channel is determined to be inoperable, the appropriate TS LCO shall be entered and the corresponding actions taken.

g. If the agreement criteria is in error, generate a CR to correct the error and document the error on the appropriate turnover sheet or add a note to the surveillance.

10. SURVEILLANCE IS UNSUCCESSFUL

10.1 Unsuccessful Surveillance

10.1.1 The responsible individual shall verify that the acceptance criteria has not been met.

10.1.2 Notify Shift Supervision that the surveillance has failed.

10.1.3 The responsible work group shall generate a CR.

10.1.4 If the unacceptable condition can be corrected within the procedure, perform the following steps:

a. Correct the condition.

b. Close the surveillance procedure in accordance with Section 9.6 of this procedure.

10.1.5 The responsible individual shall evaluate the unacceptable condition and its effect on the plant. The evaluation should include the effect of the following items on the plant:

a. abnormal system alignment

b. installed jumpers

c. lifted leads

d. opened states links

10.1.6 Discuss the evaluation with Shift Supervision.

PCAF # 2000-4928
PAGE 4 OF 4

10.1.7 Shift Supervision shall enter the appropriate LCO/TRO actions.

10.1.8 The responsible individual shall process a Retest coversheet in accordance with Section 10.2 of this procedure.

10.1.9 Restore the system to a safe operating condition following steps within the procedure if possible.

10.1.10 In PART V of the SA coversheet, document the following information:

a. the unacceptable condition

b. the restoration steps performed.

10.1.11 As required, generate a PCPR or PCWO to correct the problem.

10.1.12 Perform the retest in accordance with Section 10.3 of this procedure.

(17) *10.1.13 If the failed acceptance criteria are TS 5.5.6 requirements and the failure results in inoperable components, consult NDAP-QA-0423, Station Pump and Valve Testing Program, for required corrective actions.* PCAF

10.2 Retest Coversheet

10.2.1 If the acceptance criteria is not met, a retest coversheet should be used to perform the retest.

10.2.2 When the need to perform a retest is identified, initiate a Retest coversheet using Form NDAP-QA-0722-2 (Attachment G).

10.2.3 The responsible individual shall complete PART I of the Retest coversheet. The information should come from PART I of the SA coversheet.

10.2.4 Take the Retest coversheet to Shift Supervision.

10.2.5 Shift Supervision shall complete PART II of the Retest coversheet as follows:

a. When the Required Action section of the surveillance procedure is complete for all failed acceptance criteria including the appropriate LCO/TRO actions taken, check the required action yes block.

b. Complete the log blocks as follows:

(1) If an LCO/TRO was entered and the log has been updated, check the yes block.

(2) If no LCO/TRO actions are required to be taken, check the NA block.

c. When the CR has been initiated, check the CR block.

NOTE: The CR number is not required to be entered at this point.

d. When steps a through c are complete, sign and date the Shift Supervision space.

10.2.6 The responsible individual shall complete PART III of the Retest coversheet prior to the performance of the retest.

10.2.7 Document the following information in PART III of the Retest coversheet:

a. On the corrective actions line, reference all documents used to correct the condition including PCWOs, DCPs, bypasses, etc.

b. On the retest requirements line, specify the surveillance procedure number(s) required to be performed. If only part of the procedure is required, specify the sections of the surveillance procedure required to be performed.

10.2.8 The responsible individual shall enter the CR number in PART II of the Retest coversheet, if not already entered.

10.3 Retest Performance

10.3.1 When the corrective actions are complete, the retest(s) specified in PART III of the Retest coversheet shall be performed.

10.3.2 Obtain Shift Supervision approval to perform the retest. (Not applicable for "exempt" procedures.)

10.3.3 Shift Supervision shall indicate approval by signing and entering the date and time on PART IV of the Retest coversheet. (Not applicable for "exempt" procedures.)

10.3.4 Perform the appropriate prerequisites and resign/initial and date the steps for the retest. Enter N/A on the prerequisites not performed.

10.3.5 If the use of the originally performed procedure for the retest causes confusion or calls to question the chronology of events, obtain a new copy of the surveillance procedure for the retest.

10.3.6 Perform the appropriate section(s) of the procedure. If a complete retest is required, perform all sections of the procedure.

10.3.7 Initial or sign the steps within the procedure or on the data form that have a sign-off space.

(7) 10.3.8 Enter N/A on the sign-off space for any step that was not performed.

10.3.9 If the retest fails, process the surveillance in accordance with Section 10.1 of this procedure.

10.3.10 When the retest is completed satisfactorily, the responsible individual shall sign and enter the date and time in PART V of the Retest coversheet.

10.3.11 Attach the Retest coversheet and the retest surveillance procedure to the original surveillance procedure package.

10.3.12 Close out the surveillance package in accordance with Section 9.6 of this procedure.

11. SUPPORTING REQUIREMENTS

11.1 Instrumentation Requirements

11.1.1 Installed plant instrumentation that is used to verify satisfaction of the acceptance criteria shall be calibrated in accordance with one of the following procedures:

a. CH-AD-005, Control of Chemistry Standards and Test Equipment

b. MT-AD-605, Maintenance and Calibration of Installed Plant Instrumentation (IPI)

c. NDAP-QA-0515, Control and Calibration of Plant Measuring and Test Equipment (M&TE)

d. NDAP-QA-0540, Preventative Maintenance Scheduling System

e. NDAP-00-0622, Health Physics Instrumentation Program

11.1.2 For equipment calibrated by I&C, submit a request for in-plant instrumentation calibration/deletion (RFC/D) via Form MT-AD-605-2 to I&C Supervision.

11.1.3 For equipment calibrated by a work group other than I&C, submit an RFC/D via Form NDAP-QA-0722-10 (Attachment H) to the appropriate supervisor.

11.1.4 When submitting an RFC/D, include the following information:

a. the instrument number

b. for an addition, the procedure number that uses the instrument to determine the acceptance criteria

c. for a deletion, the procedure number that deleted the use of the instrument to determine the acceptance criteria.

11.1.5 The supervisor receiving an RFC/D shall ensure that each instrument listed on the RFC/D is added to/deleted from the In Plant Instrumentation Calibration Program.

11.1.6 If the supervisor does not add/delete the instrument in the In Plant Instrumentation Calibration Index, the supervisor shall perform the following:

a. Document the reason for not adding/deleting the instrument.

b. Notify the originator.

11.1.7 Each supervisor that can receive an RFC/D shall establish and maintain a logging and filing system for the RFC/Ds.

([13]) 11.1.8 Each supervisor that can receive an RFC/D shall have a method for notifying the requesting group when the following conditions occur:

a. an instrument fails its calibration AND

b. the instrument failure could have detrimentally effected the surveillances that used the instrument.

11.2 Technical Specification/Technical Requirement Cross Reference Matrix

11.2.1 The TS/TR Matrix consists of the following matrices:

a. The Unit 1 Technical Specification cross reference matrix

b. The Unit 2 Technical Specification cross reference matrix

c. The Unit 1 Technical Requirements cross reference matrix

d. The Unit 2 Technical Requirements cross reference matrix

11.2.2 As a minimum, each matrix shall contain the following information:

a. each TS/TR surveillance requirement

b. a description of the surveillance requirement

c. the work group responsible for the surveillance requirement or SR/TRS owner

d. a list of surveillance procedures that satisfy the surveillance requirement

11.2.3 The SR/TRS owner identified in the TS/TR Matrix has the overall responsibility of ensuring proper overlap of testing.

11.2.4 The TS/TR matrix is a reference document.

11.2.5 The TS/TR matrix does not supersede the requirements of any TS/TR or any other license document.

11.2.6 The TS/TR matrix is maintained as a controlled database.

11.2.7 The database is available to all nuclear department personnel on a read only basis on the PP&L computer network.

11.2.8 The NSE-P&T group will utilize the appropriate security controls to ensure data input accuracy.

11.2.9 The NSE-P&T group will control the personnel authorized to make changes to the data in the database.

11.2.10 The official copy of the TS/TR matrix is the read only database on the PP&L computer network.

11.2.11 Changes to the TS/TR matrix may be identified by anyone.

11.2.12 If a change is identified, mark up a copy of the record and forward the change to the Supervisor-P&T.

11.2.13 The NSE-P&T group will provide training on accessing the TS/TR matrix on an as requested basis.

11.2.14 Attachment I gives instructions on how to identify the SR/TRS owner(s) for a given procedure.

12. TRANSMITTAL/RECORDS

12.1 Surveillance Procedure Changes

12.1.1 Transmit procedure changes to DCS in accordance with NDAP-QA-0002.

12.1.2 The original of the SPRC shall be transmitted to DCS with the surveillance procedure change.

12.2 Completed Surveillances

12.2.1 The complete record of the performance of a surveillance activity consists of the following items:

a. the SA coversheet

b. any Retest coversheets

c. the completed surveillance procedure or the completed data form.

12.2.2 DCS shall retain and store the complete record of the surveillance activity in accordance with QA Program Requirements and Nuclear Records procedures.

12.2.3 If all the entries (e.g., sign-offs, remarks, data) for a procedure are contained in the attachments, the surveillance package transmitted to DCS does not need to include the entire procedure.

12.2.4 The surveillance package transmitted to DCS must include the attachments that contain the signoffs, data, and acceptance criteria. (e.g., data sheets, CLs, etc.)

13. PROCEDURE TRANSITION

13.1 For forms, except SA coversheets, that have already been completed and are being processed, the old forms may be used.

13.2 For any form, except on SA coversheet, that is completed starting 1 week after the effective date of this procedure, the new forms shall be used.

13.3 For SA coversheets, the new form shall be used for surveillance commencement after 9/30/99.

13.4 Form NDAP-QA-0722-1, Rev. 2, may be used until 9/30/99. The pink and yellow sheets shall be removed and discarded prior to release of surveillance.

13.5 The term "acceptance criteria" may be used in channel check surveillance procedures in place of the term "agreement criteria" until the next revision or periodic review (whichever comes first) of the channel check surveillance procedure.

13.6 For preconditioning within a procedure, the requirement of step 6.2.10 is to be met by the next periodic review of the surveillance procedure.

STANDARD FORMAT FOR SURVEILLANCE PROCEDURES

1. PURPOSE/SCOPE

This section should contain the following information:

- a short, clear, concise statement of what the procedure does
- what components/systems are tested
- the surveillance activity frequency

Example: This procedure describes how to perform the LLRT for the Liquid Radwaste Penetration Number X-72B. The frequency is 30 months.

2. REFERENCES

This section should list the following information:

- the TS/TR that contains the surveillance requirement (e.g., TS 3.6.1.1)
- the SR/TRS number that is satisfied by the procedure (e.g., SR 3.6.1.1.1)
- the drawing numbers used to create the procedure (e.g., E-102 Sh. 11)
- the appropriate FSAR section numbers (e.g., FSAR Section 6.2.6)
- any upper-tier document procedures used to prepare the procedure (e.g., NDAP-QA-0412)
  NOTE: NDAP-QA-0002 and NDAP-QA-0722 do not need to be listed.
- any CLs used to prepare the procedure (e.g., CL-169-0041)
- any commitment documents

3. SPECIAL TOOLS/EQUIPMENT

- Required Measurement and Test Equipment

  This section shall contain a listing of all M&TE used in the performance of the surveillance. (e.g., Volumetrics leak rate monitor)

- Additional Tools and Equipment

  This section should contain a listing of the other equipment used in the performance of the surveillance. (e.g., drain hoses, jumpers, ladders, etc.)

4. PRECAUTIONS

This section should contain the following information:

- constraining conditions that may be encountered during the performance of the surveillance
- cautions that are in the surveillance body

STANDARD FORMAT FOR SURVEILLANCE PROCEDURES

5. PREREQUISITES/LIMITATIONS

This section should contain the following information:

- the plant conditions that are required (e.g., plant mode, pump not in service, etc.)
- procedures that must be complete prior to the performance of the surveillance
- any test requirements or limitations necessary to ensure that unacceptable preconditioning does not occur
- (4) a check of the operability of the redundant system/component, if the surveillance activity is performed in a mode where system/component operability is required. NOTE: This is only required if the tested system/component is removed from service.

If a Prerequisite is only applicable to a certain section of the procedure, the prerequisite shall identify the procedure section that it applies to.

6. PROCEDURE

This section contains the sequential steps necessary to complete the surveillance activity.

7. RECORDS

This section should consist of the following statements:

- When the surveillance activity is complete, forward this procedure and the SA coversheet to the responsible supervisor or foreman. The supervisor or foreman will initiate the review process in accordance with the Surveillance Testing Program.

- Upon completion of the review process, the completed record shall be stored by DCS according to the surveillance procedure number.

ATTACHMENTS

The attachments can contain the following items:

- data form
- drawings
- calculations
- test alignments
- any additional information that assists in the understanding or performance of the surveillance activity.

SAMPLE DATA FORM

DATA FORM
(procedure title)

ACCEPTANCE CRITERIA	AS FOUND	CONFIRM
Unit X SR X.X.X.X		
≥ 2500 gpm @ FI-02238	_______ gpm	_______
123 to 127 psig @ PI-02250	_______ psig	_______
Valve Position Check Sheet completed and attached		
Bkr 52-XXXXX Closed		

REQUIRED ACTION (Acceptance Criteria not met)

Notify Shift Supervision that SX-XXX-XXX has failed.

Applicable LCO / TRO:

TS 3.6.1.4 Action C

TR 3.6.2

_____________________ / __________
Shift Supervision

MEASUREMENT AND TEST EQUIPMENT

Identification Number	Type	Calibration Date	Calibration Due Date

FORM SX-XXX-XXX-1, Rev. Z, Page 1 of 2

SAMPLE DATA FORM

PREREQUISITES COMPLETED		AS FOUND	CONFIRM
5.1	RHRSW Loop B Operable	YES/NO	______
5.2	CL OP-16-001-1 complete	YES/NO	______

PROCEDURAL STEPS PERFORMED		CONFIRM
6.2.8	Start pump.....	______
6.2.9	Record discharge pressure _____ psig @ PI-XXXX	
6.4.9	Reset logic train	______
6.5.1	RHRSW Loop A returned to Operable	______

SURVEILLANCE PROCEDURE REVIEW CHECKLIST

Procedure No.: ____________________ Revision No.: ______

Review Type: New Issue: ☐ Revision: ☐ Deletion: ☐ PCAF: ☐

SURVEILLANCE PROCEDURE REVIEW CRITERIA

1. Are Installed Plant Instruments used to satisfy ACCEPTANCE CRITERIA maintained in an In Plant Instrumentation Calibration Program? ☐ YES ☐ NO ☐ NA

2. If question #1 is yes, does the In Plant Instrument Calibration Program reference this surveillance? ☐ YES ☐ NO ☐ NA

3. Has a Request for In-Plant Instrument Calibration/Deletion been forwarded to the appropriate Supervisor (Form NDAP-QA-0722-10 or MT-QA-605-2)? (Answer must be yes if answer to question #2 was No) ☐ YES ☐ NA

4. Are changes to the TS / TR Matrix necessary? ☐ YES ☐ NO

5. Have changes to the TS / TR Matrix been completed and forwarded to the Supervisor-P&T? ☐ YES ☐ NA

6. For calibration surveillances, are calibration setpoints specified which meet the TS / TR trip setpoints and allowable values (with correction factors)? ☐ YES ☐ NA

7. Does this procedure incorporate changes to the Plant's Technical Specifications or Technical Requirements Manual: ☐ YES ☐ NO

   If YES, answer a. and b. (one response should be Yes)

   a. Is the change to the TS / TR approved? ☐ YES ☐ NO

   b. If NO to a. above, is procedure allowed to be approved prior to Amendment Approval per NDAP-QA-0731, Technical Specification Changes? ☐ YES ☐ NO

8. Does this procedure comply with the ISI Program Requirements NDAP-QA-0423, Station Pump and Valve Testing Program? ☐ YES ☐ NA

9. If this procedure requires addition, change or deletion of a NIMS RTSV surveillance activity number, has a Surveillance Activity Input Form (Form NDAP-QA-0543-1) been initiated? (Forward to Admin-Work Management group via work group coordinator after procedure approval.) ☐ YES ☐ NA

SURVEILLANCE PROCEDURE REVIEW CHECKLIST

Procedure No.: ____________________ Revision No.: ________

Review Type: New Issue: ☐ Revision: ☐ Deletion: ☐ PCAF: ☐

SURVEILLANCE PROCEDURE REVIEW CRITERIA

10. Does this procedure contain any preconditioning activities? (Ref: Section 6.2) If YES, the evaluation is in the procedure or referenced in the procedure. ☐ YES ☐ NO

Prepared By: ______________________________ / ______________
Date

The following questions are to be completed by the SR/TRS owner:

(3) 11. Does this procedure (including but not limited to all procedure changes) in conjunction with other procedures completely meet the testing requirements of TS / TR. ☐ YES ☐ NA

12. If this procedure deletes or reduces scope of testing, is testing adequately covered by other procedures or the requirement no longer exists? ☐ YES ☐ NA

SR/TRS Owner: ______________________ / ____________
Date

ALTERNATE TESTING JUSTIFICATION

1. Identify the surveillance activity being met.

2. Identify the alternate testing.

3. Justification for use of alternate testing:

   NOTE: A separate listing is required for each applicable TS / TR.

   a. TS / TR surveillance requirement number:

   b. TS / TR acceptance criteria:

   c. Describe how the alternate testing is equivalent to the surveillance test.

   d. If the acceptance criteria used in the alternate testing is different from the surveillance acceptance criteria, explain how the surveillance acceptance criteria is met by the alternate testing.

4. Does a surveillance procedure need to be revised / created?

   ☐ YES ☐ NO

5. If step 4 above is checked YES, enter the surveillance procedure number.
   Surveillance Procedure Number: ____________________

6. If step 4 above is checked YES, enter the Action Item Number.
   Item No. ____________________

7. PORC meeting No. ____________ Date ____________

SURVEILLANCE AUTHORIZATION

PART I. GENERAL INFORMATION

PROCEDURE NUMBER:

PROCEDURE TITLE:

WO Number:
Activity Number:
Due Date:
Violation Date:

PART II. REASON FOR PERFORMANCE

☐ Routine

☐ LCO Action Statements

☐ Event or Condiiton Initiated (Described in Remarks)

☐ TRO Action Statements

☐ Post Maint/Mod Test (Described in Remarks)

☐ Other (Described in Remarks)

PART III. EXTENT OF TESTING

☐ Complete ☐ Partial ☐ Delete ☐ Waive

PART IV. AUTHORIZATION TO COMMENCE

Shift Supervision Signature:________________ Date:__________ Time:________
(Reference any LCO or TRO Actions Entered in Remarks)

Surveillance was: Supervisor/Foreman Signature:________________ Date: ________
☐ Out of Service ☐ Out of Mode

PART V. REMARKS

PART VI. AS-FOUND OPERABILITY (Systems/Components were found:)

☐ OPERABLE and Acceptance Criteria passed

☐ INOPERABLE or Acceptance Criteria failed (Notify Shift Supervision)

PART VII. AS-LEFT OPERABILITY

☐ OPERABLE

RETEST ATTACHED: ☐ YES ☐ N/A

PART VIII. COMPLETION

ACTUAL COMPLETION DATE: ____________ TIME: ________

PART IX. CLOSURE

☐ Shift Supervision Notified

Responsible Individual: ________________ ☐ A Complete Retest was Performed

Supervisor Signature:________________ Commencement Date: ____________

PART X. FINAL CLOSURE

_____ Work Group closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to Admin-Work Management)

_____ Admin-Work Management final closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to DCS)

SURVEILLANCE PROCEDURES EXEMPT FROM SHIFT SUPERVISION AUTHORIZATION

Chemistry

SC-111-107	Unit 1 Service Water or SDHR Service Water Sampling and Analysis
SC-211-107	Unit 2 Service Water or SDHR Service Water Sampling and Analysis
SC-013-001	Fire Pump Diesel Fuel Oil Storage Tank Viscosity, Water and Sediment
SC-116-105	Unit 1 RHR Service Water Sampling and Analysis
SC-216-105	Unit 2 RHR Service Water Sampling and Analysis
SC-023-002	New Diesel Fuel Oil Receipt Analyses
SC-023-003	31 Day Particulate Analysis and Water Check on 'A' EDG Fuel Oil Storage Tank
SC-023-004	31 Day Particulate Analysis and Water Check on 'B' EDG Fuel Oil Storage Tank
SC-023-005	31 Day Particulate Analysis and Water Check on 'C' EDG Fuel Oil Storage Tank
SC-023-006	31 Day Particulate Analysis and Water Check on 'D' EDG Fuel Oil Storage Tank
SC-023-007	31 Day Particulate Analysis and Water Check on 'E' EDG Fuel Oil Storage Tank
SC-133-103	Unit 1 Turbine Building Vent Quarterly Strontium and Gross Alpha Composite Sample
SC-133-109	Unit 1 Turbine Building Vent Quarterly Strontium and Gross Alpha Analysis
SC-233-103	Unit 2 Turbine Building Vent Quarterly Strontium and Gross Alpha Composite Sample
SC-233-109	Unit 2 Turbine Building Vent Quarterly Strontium and Gross Alpha Analysis
SC-134-103	Unit 1 Reactor Building Vent Quarterly Strontium and Gross Alpha Composite Sample
SC-134-109	Unit 1 Reactor Building Vent Quarterly Strontium and Gross Alpha Analysis
SC-234-103	Unit 2 Reactor Building Vent Quarterly Strontium and Gross Alpha Composite Sample
SC-234-109	Unit 2 Reactor Building Vent Quarterly Strontium and Gross Alpha Analysis
SC-143-101	Unit 1 Main Condenser Air Ejector Monthly Noble Gas Activity
SC-143-103	Unit 1 Offgas Sampling and Analysis for Hydrogen
SC-243-101	Unit 2 Main Condenser Air Ejector Monthly Noble Gas Activity
SC-243-103	Unit 2 Offgas Sampling and Analysis for Hydrogen
SC-153-101	Chemistry Surveillance of Unit 1 Standby Liquid Control System
SC-253-101	Chemistry Surveillance of Unit 2 Standby Liquid Control System
SC-068-002	Solid Waste Sample Test Solidification Evaluation for In-container Solidification
SC-069-001	Liquid Radwaste Sampling and Pre-Release Analysis
SC-069-003	Radioactive Liquid Waste Composite Sample Collection - Monthly Tritium and Gross Alpha
SC-069-004	Radioactive Liquid Waste Composite Sample Collection Quarterly Sr-89, Sr-90, and Fe-55

Chemistry (CONTINUED)

SC-069-007	Radioactive Liquid Waste Analysis - Monthly Tritium
SC-069-008	Radioactive Liquid Waste Post-Release Analysis Quarterly Sr-89, Sr-90 and Fe-55
SC-069-009	Radioactive Liquid Waste Analysis - Monthly Gross Alpha
SC-070-003	Standby Gas Treatment Vent Quarterly Gross Strontium and Alpha Composite Sample
SC-070-009	Standby Gas Treatment Vent Quarterly Gross Strontium and Alpha Analysis
SC-176-101	Unit 1 Reactor Coolant Conductivity
SC-276-101	Unit 2 Reactor Coolant Conductivity
SC-176-102	Unit 1 Primary Coolant Specific Activity Dose Equivalent I-131
SC-276-102	Unit 2 Primary Coolant Specific Activity Dose Equivalent I-131
SC-176-105	Annual Operating Hours above a Reactor Coolant Chemistry Limiting Condition for Operation
SC-276-105	Unit II Annual Operating Hours above a Reactor Coolant Chemistry Limiting Condition for Operation
SC-176-106	Unit 1 Reactor Coolant Chloride and pH Determination
SC-276-106	Unit 2 Reactor Coolant Chloride and pH Determination

Health Physics

SH-000-001	Semi-Annual Radioactive Source Leak Test
SH-000-002	Special Nuclear Material Leak Testing

Reactor Engineering

SR-131-001	Validating Rod Worth Minimizer Sequences
SR-231-001	Validating Rod Worth Minimizer Sequences
SR-100-006	Reactivity Anomaly Check
SR-200-006	Reactivity Anomaly Check
SR-155-004	Scram Time Measurement of Control Rods
SR-255-004	Scram Time Measurement of Control Rods
SR-178-012	LPRM Calibration Validation
SR-278-012	LPRM Calibration Validation

Maintenance

SI-079-237	Quarterly Functional Test of the SGTS Monitoring System Effluent and Sample Flow Rate Monitor
SI-179-234	Quarterly Functional Test of the Turbine Building Ventilation Monitoring System Effluent and Sample Flow Rate Monitor
SI-179-235	Quarterly Functional Test of the Reactor Building Ventilation Monitoring System Effluent and Sample Flow Rate Monitor
SI-183-450	24 Month Time Response Test of ECC/RPT
SI-279-234	Quarterly Functional Test of the Turbine Building Ventilation Monitoring System Effluent and Sample Flow Rate Monitor
SI-279-235	Quarterly Functional Test of the Reactor Building Ventilation Monitoring System Effluent and Sample Flow Rate Monitor
SI-283-450	24 Month Time Response Test of ECC/RPT
SM-013-005	Diesel Driven Fire Pump Batteries: 7 day, 92 day and 18 month checks
~~SM-100-003~~	~~18 Month Snubber Operating History Review~~
SM-102-001	125 Volt DC Station Batteries: Weekly Electrical Parameter Check - Unit I
SM-175-001	± 24 Volt Station Battery: Weekly Electrical Parameter Check - Unit I
SM-188-001	250 Volt Station Battery: Weekly Electrical Parameter Check - Unit I
~~SM-200-003~~	~~18 month Snubber Operating History Review~~
SM-202-001	125 Volt DC Station Batteries: Weekly Electrical Parameter Check - Unit II
SM-275-001	± 24 Volt DC Station Battery: Weekly Electrical Parameter Check - Unit II
SM-288-001	250 Volt Station Battery: Weekly Electrical Parameter Check - Unit II

Technical

SE-000-016	Ground Water Monitoring
SE-013-004	Monthly Functional Test of the Fire Door Supervision System

Technology

ST-099-001	Performance of Dose Calculations for Gaseous and Liquid Pathways in Support of Radiological Effluent Technical Specification Surveillance Requirements
ST-099-002	Preparation of Annual Effluent and Waste Disposal Report
ST-099-003	Performance of REMP Quarterly TS/TRM Surveillances for Special Reporting Requirement Determinations
ST-099-004	Performance of REMP Annual and Non-Routine TS/TRM Surveillances
ST-100-003	18 Month Snubber Operating History Review
ST-200-003	18 month Snubber Operating History Review

SURVEILLANCE AUTHORIZATION RETEST

PART I. GENERAL INFORMATION

Procedure Number: ______________________________

Procedure Title: ______________________________

WO Number: ________________________ Activity Number: ____________________

PART II. DEFICIENCY ACTIONS (check appropriate blocks)

Required Action section completed. ☐ YES

Appropriate systems/equipment entered into LCO/TRO log. ☐ YES ☐ N/A

A CR was initiated. CR No. ____________________ ☐ YES

Shift Supervision: ______________________________ / ____________
Signature / Date

PART III. RESOLUTION

Corrective actions taken: (Reference PCWO's, PMR's, etc., as appropriate)

____

____

Retest requirements: (Specify procedure number, specify sections required)

____

____

____

PART IV. AUTHORIZATION TO COMMENCE RETEST

Shift Supervision: ______________________________ / ____________ / ____________
Signature / Date / Time

PART V. RETEST COMPLETION

Retesting is complete and Systems/components were left OPERABLE and Acceptance Criteria were passed.

Responsible Individual: ______________________________ / ____________ / ____________
Signature / Date / Time

REQUEST FOR IN-PLANT INSTRUMENTATION CALIBRATION / DELETION

TO: H. P. SUPV. ________ CHEMISTRY SUPV. ________ MAINT SUPV. ________

PART I. (to be completed by originator)

Please add/delete (circle one) the following instruments in NIMS for calibration:

INSTR. NO.	DESCRIPTION	PROCEDURE #	JUSTIFICATION

Requested by:: ____________________ / ________
Signature Date

PART II. (to be completed by Appropriate Section) RFC/D No.: ________

The following action has been taken with regard to above listed instruments:

INSTR. NO.	ADDED / DELETED NIMS ACTIVITY NO.	REASON FOR REJECTION OF CHANGE

Appropriate Supervisor: ____________________ / ________
Signature Date

Copy sent to Originator: Date ________

Instructions to Identify SR/TRS Owner

The identification of the SR/TRS owner is maintained in the TS/TR Matrix database. To determine the SR/TRS owner(s) for a given procedure, perform the following steps:

1. From the PP&L standard desktop, select Major Business Applications.
2. Select Nuclear Data.
3. Select CTS to SR Procedures. This will open Access and the TS/TR Matrix.
4. Click on the 'Drawing and Procedures' button.
5. Click on the 'TS & TRM List by Procedure' button.
6. With the cursor in the 'Procedure No.' field, click the binoculars (find) icon.
7. In the 'Find What' field, enter the procedure number and click the 'Find First' or 'Find Next' button.
8. Click the 'Close button.
9. Write down the TS and/or TRM number(s) and the Unit(s). [Or click the 'Print' button for a printout of the record.] There could be more than 1 surveillance requirement met for an individual procedure.
10. Click the 'Close' button on that screen and the next screen.

TS requirements (SRs)

11. Click the 'Tech Spec Cross Reference Matrices' button.
12. Click the Unit 1 Tech Spec Cross Reference Matrix' button for Unit 1 SRs or the 'Unit 2 Tech Spec Cross Reference Matrix' button for Unit 2 SRs.
13. With the cursor in the 'Tech Spec Number' field, click the binoculars (find) icon.
14. In the 'Find What' field, enter the SR number or part of the number; in the 'Match' field, select 'Any Part of Field'; and click the 'Find First' or 'Find Next' button.
15. Click the 'Close' button.
16. The responsible owner for the SR is identified in the upper right field titled 'Owner.'
17. Click the 'Close' button on that screen and the next screen.

TR requirements (TRSs)

11. Click the 'Technical Requirements Manual Cross References Matrices' button.
12. Click the 'Unit 1 TRM Cross Reference Matrix' button for Unit 1 TRSs or the 'Unit 2 TRM Cross Reference Matrix' button for Unit 2 TRSs.
13. With the cursor in the 'TRM Number' field, click the binoculars (find) icon.
14. In the 'Find What' field, enter the TRS number or part of the number; in the 'Match' field, select 'Any Part of Field'; and click the 'Find First' or 'Find Next' button.
15. Click the 'Close' button.
16. The responsible owner for the TRS is identified in the upper right field titled 'Owner.'
17. Click the 'Close' button on that screen and the next screen.