Technical Requirements Manual

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T1.0 Use and Application

1.1 Definitions

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

1. The defined terms of this section appear in capitalized type and are applicable throughout the Technical Requirements Manual.
2. Refer to Palo Verde Nuclear Generating Station Units 1, 2 and 3 Improved Technical Specifications for additional definitions applicable to the Technical Requirements Manual.

Term	Definition
MODE 1	In addition to the defining conditions specified in the ITS for MODE 1, the temperature of the Cold Leg (T_{cold}) shall be ≥ 350° F.
MODE 2	In addition to the defining conditions specified in the ITS for MODE 2, the temperature of the Cold Leg (T_{cold}) shall be ≥ 350° F.
MODE 6	In addition to the defining conditions specified in the ITS for MODE 6, the temperature of the Cold Leg (T_{cold}) shall be ≤ 135°F. and the Reactivity Condition (K_{eff}) shall be ≤ 0.95.
ITS	Palo Verde Nuclear Generating Station Units 1, 2 and 3 Improved Technical Specifications.
TRM	Palo Verde Nuclear Generating Station Units 1, 2 and 3 Technical Requirements Manual.
TLCO	TRM Limiting Conditions for Operability. TLCO's contain requirements that have been approved by the NRC to be relocated as part of technical specification amendment number 117, dated May 20, 1998.
TSR	TRM Surveillance Requirements. TSR's are requirements related to test, calibration or inspection that have been approved by the NRC to be relocated as part of technical specification amendment number 117, dated May 20, 1998.

T1.0 USE AND APPLICATION

1.2 Logical Connectors

Refer to PVNGS Improved Technical Specification 1.2.

T1.0 USE AND APPLICATION

1.3 Completion Times

Refer to PVNGS Improved Technical Specification 1.3.

T1.0 USE AND APPLICATION

1.4 Frequency

Refer to PVNGS Improved Technical Specification 1.4.

T2.0 Safety Limits

Refer to PVNGS Improved Technical Specification 2.0.

T3.0 TRM LIMITING CONDITION FOR OPERATION (TLCO) APPLICABILITY

TLCO 3.0.100.1 TLCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in TLCO 3.0.100.2.

TLCO 3.0.100.2 Upon discovery of a failure to meet a TLCO, the Required Actions within the TRM of the associated Conditions shall be met, except as provided in TLCO 3.0.100.5.

Failure to meet a TLCO may require initiation of an operability determination to determine the impact of the failure on equipment contained within the Technical Specifications.

If the TLCO 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.

TLCO 3.0.100.3 When a TLCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, action shall be initiated immediately to communicate the situation to the Shift Manager and document the condition in accordance with the PVNGS corrective action program. An initial decision on whether the unit can continue to operate with the condition shall be completed within 7 hours. Further actions shall be as required by the corrective action disposition and as deemed necessary by plant management.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the TLCO or ACTIONS, completion of the actions required by TLCO 3.0.100.3 is not required.

TLCO 3.0.100.3 is only applicable in MODES 1, 2, 3, and 4.

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TLCO 3.0.100.4 When a TLCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. 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; or

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This 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.

TLCO 3.0.100.5 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 TLCO 3.0.100.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

TRM SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR 3.0.100.1 TSRs shall be met during the MODES or other specified conditions in the Applicability for individual TLCOs, unless otherwise stated in the TSR. Failure to meet a TSR, whether such failure is experienced during the performance of the TSR or between performances of the TSR, may require initiation of an operability determination to determine the impact of the failure on equipment contained within the Technical Specifications. Failure to perform a TSR within the specified Frequency shall be failure to meet the TLCO except as provided in TSR 3.0.100.3. TSR's do not have to be performed on inoperable equipment or variables outside specified limits.

TSR 3.0.100.2 The specified Frequency for each TSR is met if the TSR 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.

TSR 3.0.100.3 If it is discovered that a TSR was not performed within its specified Frequency, then compliance with the requirement to declare the TLCO 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 greater. This delay period is permitted to allow performance of the TSR. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

(continued)

TRM SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY (continued)

TSR 3.0.100.3 (continued)	If the TSR is not performed within the delay period, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered When the TSR is performed within the delay period and the Surveillance is not met, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered.
TSR 3.0.100.4	Entry into a MODE or other specified condition in the Applicability of an TLCO shall only be made when TSR's have been met within their specified Frequency, except as provided by TSR 3.0.100.3. When a TLCO is not met due to Surveillances not having been met, entry into a MODE or other Specified Condition in the Applicability shall only be made in accordance with TLCO 3.0.100.4. 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.

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.100 Flow Paths - Shutdown

TLCO 3.1.100 As a minimum, one of the following boron injection flow paths shall be OPERABLE:

a. If only the spent fuel pool in TLCO 3.1.104.a. is OPERABLE, a flow path from the spent fuel pool via a gravity feed connection and a charging pump to the Reactor Coolant System.

b. If only the refueling water tank in Specification 3.1.104.b. is OPERABLE, a flow path from the refueling water tank via either a charging pump, a high pressure safety injection pump, or a low pressure safety injection pump to the Reactor Coolant System.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. None of the above flow paths OPERABLE.	A.1 Suspend CORE ALTERATIONS	Immediately
	AND	
	A.2 Suspend positive reactivity changes.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.100.1	At least one of the above required flow paths shall be demonstrated OPERABLE by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.	31 days

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.101 Flow Paths - Operating

TLCO 3.1.101 At least two of the following three boron injection flow paths shall be OPERABLE:

a. A gravity feed flow path from either the refueling water tank or the spent fuel pool through CH-536 (RWT Gravity Feed Isolation Valve) and a charging pump to the Reactor Coolant System,

b. A gravity feed flow path from the refueling water tank through CH-327 (RWT Gravity Feed/Safety Injection System Isolation Valve) and a charging pump to the Reactor Coolant System,

c. A flow path from either the refueling water tank or the spent fuel pool through CH-164 (Boric Acid Filter Bypass Valve), utilizing gravity feed and a charging pump to the Reactor Coolant System.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required boron injection flow path inoperable.	A.1 Restore the required boron injection flow paths to OPERABLE.	72 hours

(continued)

ACTIONS (continued)

B. Required Action and associated completion time of Condition A not met.	B.1 Enter TLCO 3.0.100.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.101.1	Verify that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.1.101.2	-----------------NOTE----------------- The provisions of TLCO 3.0.100.4 are not applicable for entry into MODE 3 or MODE 4 to perform the surveillance testing of TSR 3.1.101.2 provided the testing is performed within 24 hours after achieving normal operating pressure in the reactor coolant system. -------------------------------------- Verify that the flow paths required by Specification 3.1.101 deliver at least 26 gpm for 1 charging pump and 68 gpm for two charging pumps to the Reactor Coolant System when the Reactor Coolant System is at normal operating pressure.	18 months

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.102 Charging Pumps - Shutdown

TLCO 3.1.102 At least one charging pump or one high pressure safety injection pump or one low pressure safety injection pump in the boron injection flow path required OPERABLE pursuant to TRM Specification 3.1.100 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With no charging pump or high pressure safety injection pump or low pressure safety injection pump OPERABLE or capable of being powered from an OPERABLE emergency power source.	A.1 Suspend CORE ALTERATIONS AND A.2 Suspend positive reactivity changes.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specifications LCO 5.5.8.	

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.103 Charging Pumps - Operating

TLCO 3.1.103 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required charging pump inoperable.	A.1 Restore at least two charging pumps to OPERABLE status.	72 hours
B. Required Action and associated completion time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Restore at least two charging pumps to OPERABLE status	6 hours 7 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 5.	30 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specifications LCO 5.5.8.	

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.104 Borated Sources - Shutdown

TLCO 3.1.104 As a minimum, one of the following borated water sources shall be OPERABLE:

a. The spent fuel pool

b. The refueling water tank

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With no borated water sources OPERABLE	A.1 Suspend CORE ALTERATIONS AND A.2 Suspend positive reactivity changes.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.104.1 --------------------NOTE------------------- Only required to be performed when the refueling water tank is the borated water source and the outside air temperature is outside the 60°F to 120°F range. -- Verify that the refueling water tank solution temperature is ≥ 60°F and ≤ 120°F.	 24 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
TSR 3.1.104.2 --------------------NOTE------------------- Only required to be performed when the spent fuel pool is the borated water source and irradiated fuel is present in the pool. --- Verify that the spent fuel pool solution temperature is ≥ 60°F and ≤ 180°F.	24 hours
TSR 3.1.104.3 Verify that the boron concentration of the borated water source is ≥ 4000 ppm and ≤ 4400 ppm.	7 days
TSR 3.1.104.4 Verify that the contained volume of the borated water source is ≥ 33,500 gallons.	7 days

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.105 Borated Sources - Operating

TLCO 3.1.105 The spent fuel pool shall be OPERABLE

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel pool inoperable.	A.1 Restore to OPERABLE status.	72 hours
B. Required Action and associated completion time of Condition A not met.	B.1 Enter TLCO 3.0.100.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.105.1 --------------------NOTE------------------- Only required to be performed when irradiated fuel is present in the pool. -- Verify spent fuel pool solution temperature is ≥ 60°F and ≤ 180°F.	24 hours
TSR 3.1.105.2 Verify spent fuel pool borated water volume is greater than or equal to the minimum required volume in Figure 3.1.105-1.	7 days
TSR 3.1.105.3 Verify that the spent fuel pool boron concentration is ≥ 4000 ppm and ≤ 4400 ppm.	7 days

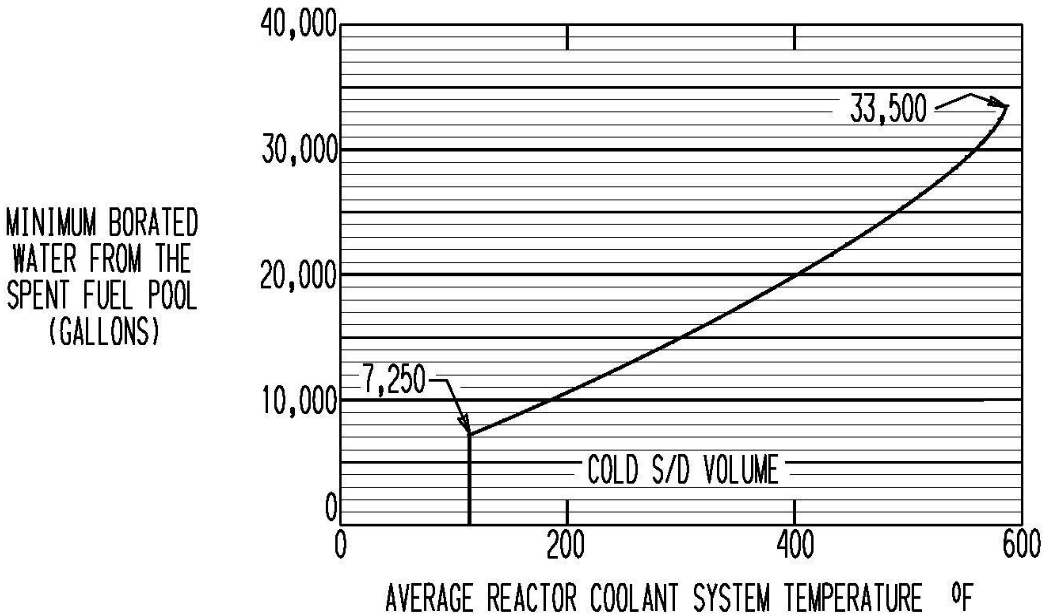

FIGURE 3.1.105-1.
Minimum Borated Water Volume

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.200 Shutdown Margin - Reactor Trip Breakers Closed

TLCO 3.1.200 Refer to PVNGS Improved Technical Specification 3.1.2.

APPLICABILITY: Refer to PVNGS Improved Technical Specification 3.1.2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.1.200.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.200.1 With the reactor trip breakers closed and the CEA drive system capable of CEA withdrawal, the SHUTDOWN MARGIN shall be determined to be greater than or equal to that specified in the CORE OPERATING LIMITS REPORT by:	
a. Verifying that the predicted critical CEA position is within the limits of PVNGS ITS LCO 3.1.7.	Prior to achieving reactor criticality
b. Comparison of the SHUTDOWN MARGIN consideration factors with the CEA groups at the Transient Insertion Limits of PVNGS ITS LCO 3.1.7.	Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading

TRM specification number 3.1.201 is not utilized and this page is intentionally left blank.

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.202 Control Element Assembly - Alignment

TLCO 3.1.202 At least one CEA Reed Switch Position Transmitter indicator channel shall be OPERABLE for each shutdown, regulating or part strength CEA not fully inserted.

APPLICABILITY: MODES 3, 4, and 5 (with the reactor trip breakers closed).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Less than the above required position indicator channels(s) OPERABLE in MODES 3 or 4.	A.1 Enter TLCO 3.0.100.3	Immediately
B. Less than the above required position indicator channel(s) OPERABLE in MODE 5	B.1 Action shall be initiated immediately to communicate the situation to the Shift Manager and document the condition in accordance with the PVNGS corrective action program. An initial decision on whether the unit can continue	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	to operate with the condition shall be completed within 7 hours. Further actions shall be as required by the corrective action disposition and as deemed necessary by plant management.	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.202.1	--------------------NOTE------------------- TSR 3.1.202.1 has a different applicability than ITS SR 3.1.5.4 --- Perform a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter channel.	18 months

T3.1 REACTIVITY CONTROL SYSTEMS

T3.1.203 Control Element Assembly - Drop Time

TLCO 3.1.203 The individual full strength (shutdown and regulating) CEA drop time, from a fully withdraw position, shall be ≤ 4 seconds. Time is measured from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches its 90% insertion position with:

- Tcold greater than or equal to 550 degrees F
- All reactor coolant pumps operating

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drop time exceeds limit.	A.1. Restore to within limit.	Prior to proceeding to MODE 1 or 2.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.203.1 Verify that the full strength CEA drop time is ≤ 4.0 seconds for specifically affected individual CEAs.	------NOTE------ Refer to PVNGS ITS SR 3.1.5.5 ---------------- Following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs.

T3.2 POWER DISTRIBUTION LIMITS

T3.2.200 Azimuthal Power Tilt - T_q

TLCO 3.2.200 Refer to PVNGS Improved Technical Specifications LCO 3.2.3

APPLICABILITY: Refer to PVNGS Improved Technical Specifications LCO 3.2.3

ACTIONS

-----NOTE-----
Refer to PVNGS Improved Technical Specifications LCO 3.2.3 for additional requirements.

CONDITION	REQUIRED ACTION	COMPLETION TIME
-----NOTE----- Condition A is due to a misalignment of either a part strength or full strength CEA. ----- A. Measured T_q not within the limit in the COLR with COLSS in service. <u>OR</u> Measured $T_q > 0.03$ with COLSS out of service	A.1 Verify that the Core Operating Limit Supervisory system (COLSS) (When COLSS is being used to monitor the core power distribution per PVNGS Improved Technical Specifications 3.2.1 and 3.2.4) is detecting the misalignment.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specifications LCO 3.2.3.	

T3.3 INSTRUMENTATION

T3.3.100 Supplementary Protection System (SPS) Instrumentation

TLCO 3.3.100 Three RPS Supplementary Protection System (Pressurizer Pressure - High) channels shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One of the required SPS trip channels inoperable.	A.1 Restore an inoperable channel to OPERABLE status	48 hours
B. Required Action and associated Completion Time not met.	B.1 Enter TLCO 3.0.100.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.100.1 Perform a CHANNEL CHECK on each channel.	12 hours
TSR 3.3.100.2 Perform a CHANNEL FUNCTIONAL TEST with setpoint allowable value ≤ 2414 psia.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.3.100.3	Perform a CHANNEL CALIBRATION on each channel.	18 months
TSR 3.3.100.4	Verify RPS RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS.

T3.3 INSTRUMENTATION

T3.3.101 Radiation Monitoring Instrumentation

TLCO 3.3.101 The Radiation Monitoring Instrumentation shall be OPERABLE with the minimum number of channels according to Table 3.3.101-1.

APPLICABILITY: According to Table 3.3.101-1

ACTIONS

-----------------------------------NOTE-----------------------------------
The provisions of Specification 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more radiation monitoring channel alarm/trip setpoint(s) exceed the value shown in Table 3.3.101-1	A.1 Adjust the setpoint(s) to within the limit.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Declare the channel inoperable.	Immediately

(continued)

ACTIONS (continued)

C. Main Steam Line Area channels inoperable.	C.1 Restore the inoperable channel(s) to OPERABLE status.	72 hours
	<u>OR</u>	
	C.2.1 Initiate the preplanned alternative program to monitor the appropriate parameter(s).	72 hours
	<u>AND</u>	
	C.2.2 Initiate a corrective action to evaluate the action taken, the cause of the inoperability, and plans and schedule for restoring the channel to OPERABLE status.	In accordance with the PVNGS corrective action program.

(continued)

ACTIONS (continued)

D. New Fuel Area Monitor RU-19 channel inoperable.	D.1 Perform area surveys of the monitored area with portable monitoring instrumentation.	Once per 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.101.1 Perform a CHANNEL CHECK on the New Fuel Area monitor, and Main Steam Line monitors.	12 hours
TSR 3.3.101-2 Deleted	
TSR 3.3.101.3 Perform a CHANNEL FUNCTIONAL TEST on the New Fuel Area monitor and Main Steam Line monitors and verify that their setpoints meet the requirements of Table 3.3.101-1.	92 days
TSR 3.3.101.4 Perform a CHANNEL CALIBRATION.	18 months

Table 3.3.101-1 (Page 1 of 1)
Radiation Monitoring Instrumentation

Radiation Monitoring Instrument	Applicable MODES	Minimum Channels OPERABLE	Alarm/Trip Setpoint	Measurement Range
Area Monitor RU-19 (New Fuel Area)	With fuel in the storage pool or building	1	≤15 mR/hr	10 E-1 to 10 E4 mR/hr
Main Steam Line Area Monitors RU-139 A & B	1,2,3,4	1	Three (3) times background in Rem/hr	1.5 E0 to 1.0 E7 mR/hr
Main Steam Line Area Monitors RU-140 A & B	1,2,3,4	1	Three (3) times background in Rem/hr	1.5 E0 to 1.0 E7 mR/hr

T3.3 INSTRUMENTATION

T3.3.102 Incore Detectors

TLCO 3.3.102 The Incore Detection System shall be OPERABLE with:

a. ≥ 75% of incore locations, and

b. ≥ 75% of all incore detectors with at least one incore detector in each quadrant at each level, and

c. Sufficient OPERABLE incore detectors to perform at least six tilt estimates with at least one tilt estimate at each of three levels, and,

d. All 4x4 arrays of fuel assemblies that contain 16 fuel assemblies must contain at least one OPERABLE incore location.

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

1. The Incore Detection System contains 53 incore locations with 5 detectors in each fixed detector string.
2. An OPERABLE incore location consists of a fixed detector string with a minimum of three OPERABLE rhodium detectors.

APPLICABILITY: When the Incore Detection System is used for monitoring:

a. AZIMUTHAL POWER TILT,

b. Radial Peaking Factors,

c. Local Power Density,

d. DNB Margin

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE----------- The provisions of Specification 3.0.100.3 are not applicable. ------------------------- A. Incore Detection System inoperable per TLCO 3.3.102.a, b, or c above.	A.1 Do not use the Incore Detection System for monitoring or calibration functions.	Immediately
B. Incore Detector System inoperable per TLCO 3.3.102.d prior to initial power ascension above 30% power.	B.1.1 Evaluate the ability of the incore detector system to detect average power asymmetry of at least 10% between quadrant 4x4 groups of assemblies with the actual operable incore detector pattern, <u>AND</u> B.1.2 Make suitable adjustments to COLSS and CPCS to assure conservative indications of the DNBR and Peak Linear Heat Rate margins.	Prior to initial power ascension above 30% power

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Incore Detector System inoperable per TLCO 3.3.102.d after initial power ascension above 30% power.	C.1.1 Evaluate the ability of the incore detector system to detect average power asymmetry of at least 10% between quadrant 4x4 groups of assemblies with the actual operable incore detector pattern, <u>AND</u> C.1.2 Make suitable adjustments to COLSS and CPCS to assure conservative indications of the DNBR and Peak Linear Heat Rate margins.	Within 7 EFPD
D. Required Action and/or associated Completion Time of condition B or C not met.	D.1 Enter TLCO 3.0.100.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.102.1 Perform a CHANNEL CHECK.	Within 7 days prior to use
TSR 3.3.102.2 -------------------NOTE------------------- Neutron Detectors may be excluded from the CHANNEL CALIBRATION but all electronic components shall be included. Fixed incore neutron detectors shall be calibrated prior to installation in the reactor core. --- Perform a CHANNEL CALIBRATION.	18 months

T3.3 INSTRUMENTATION

T3.3.103 Seismic Monitoring

TLCO 3.3.103 The Seismic Monitoring Instrumentation shown in Table 3.3.103-1 shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

-----NOTE-----
The provisions of Specification 3.0.100.3 are not applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Seismic Monitoring Instruments of Table 3.3.103-1 inoperable.	A.1 Restore the required instrumentation to OPERABLE status.	30 days
B. Required Action and associated completion time of Condition A not met.	B.1 Initiate a corrective action to evaluate the action taken, cause of the inoperability, and plans for restoring the instrument to OPERABLE status.	In accordance with the PVNGS corrective action program.

(continued)

ACTIONS (continued)

C. Seismic event (≥ 0.02g)	C.1	Perform TSR 3.3.103.2 on each seismic monitoring instrument actuated	5 days
	AND		
	C.2	Retrieve data from actuated instruments and perform analysis to determine the magnitude of the vibratory ground motion.	Immediately
	AND		
	C.3	Initiate a corrective action to evaluate the magnitude, frequency spectrum, and resultant effect upon facility features important to safety.	In accordance with the PVNGS corrective action program.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.103.1	-------------------NOTE------------------ Applicable to Digital Recorders of Table 3.3.103-1 only. --- Perform a CHANNEL CHECK.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.3.103.2 Perform a CHANNEL FUNCTIONAL TEST.	6 months
TSR 3.3.103.3 Perform a CHANNEL CALIBRATION.	18 months

Table 3.3.103-1 (Page 1 of 1)
Seismic Monitoring Instrumentation

	INSTRUMENTS AND SENSOR LOCATIONS		MINIMUM INSTRUMENTS OPERABLE
1.	Force Balance Accelerometer Unit		
	a. Tendon Gallery Floor, 55' level		1
	<u>Trigger Threshold Setpoint</u>:	0.010 g	
	b. Containment Building floor, 140' level		1
	<u>Trigger Threshold Setpoint</u>:	0.020 g	
	c. Containment Building floor, 80' level		1
	<u>Trigger Threshold Setpoint</u>:	0.020 g	
	d. Control Building floor, 74' level		1
	<u>Trigger Threshold Setpoint</u>:	0.010 g	
	e. Control Building floor, 160' level		1
	<u>Trigger Threshold Setpoint</u>:	0.020 g	
	f. 25' E. of Turbine Bldg. W. side x 189' 9" S. of Turbine Bldg. S. Side on ground (Ref. Plant N.)		1
	<u>Trigger Threshold Setpoint</u>:	0.010 g	
2.	Digital Recorders:		
	a. Control Room Area, 140' level		1
	b. Control Room Area, 140' level		1
	c. Control Room Area, 140' level		1
	d. Control Room Area, 140' level		1
	e. Control Room Area, 140' level		1
	f. Control Room Area, 140' level		1

T3.3 INSTRUMENTATION

T3.3.104 Meteorological Instrumentation

TLCO 3.3.104 The meteorological monitoring instrumentation channels shown in Table 3.3.104-1 shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

-----------------------------------NOTE-----------------------------------
The provisions of Specification 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required meteorological monitoring channels inoperable.	A.1 Restore the channels to OPERABLE status.	7 days
B. Required Action and associated completion time not met.	B.1 Initiate a corrective action to evaluate the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.	In accordance with the PVNGS corrective action program.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.104.1	Perform a CHANNEL CHECK	24 hours
TSR 3.3.104.2	------------------NOTE------------------ Windspeed Sensors are excluded from CHANNEL CALIBRATION. -- Perform a CHANNEL CALIBRATION	6 months

Table 3.3.104-1 (Page 1 of 1)
Meteorological Monitoring Instrumentation

INSTRUMENT	LOCATION	MINIMUM OPERABLE
1. WIND SPEED		
a. 0[1] to 50 mph	Nominal Elev. 35 feet	1
b. 0[1] to 50 mph	Nominal Elev. 200 feet	1
2. WIND DIRECTION		
a. 0° - 360° - 180°	Nominal Elev. 35 feet	1
b. 0° - 360° - 180°	Nominal Elev. 200 feet	1
3. AIR TEMPERATURE - DELTA T		
a. -6°F to 6°F	Nominal Elev. 35 feet - 200 feet	1

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

1. Wind speeds less than 0.6 MPH will be reported as 0.

T3.3 INSTRUMENTATION

T3.3.105 Post Accident Monitoring Instrumentation

TLCO 3.3.105 The post-accident monitoring instrumentation channels shown in Table 3.3.105-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With the number of OPERABLE channels one less than the Required number of Channels in Table 3.3.105-1.	A.1 Restore the inoperable channel(s) to OPERABLE status.	30 days
B. Required Action and associated completion time not met.	B.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately
C. With the number of OPERABLE channels two less than the Required number of Channels in Table 3.3.105-1.	C.1 Restore the inoperable channel(s) to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

D. Required Action and associated completion time not met.	D.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.105.1 Perform a CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
TSR 3.3.105.2 Perform a CHANNEL CALIBRATION	18 months

Table 3.3.105-1 (Page 1 of 1)
Post-Accident Monitoring Instrumentation

FUNCTION	REQUIRED NUMBER OF CHANNELS
1. Refueling Water Storage Tank Water Level	2
2. Auxiliary Feedwater Flow Rate	2
3. Pressurizer Safety Valve Position Indicator	1 per valve
4. Containment Water Level (Narrow Range)	2
5. Containment Hydrogen Monitor	2

T3.3 INSTRUMENTATION

T3.3.106 Loose-Part Detection Instrumentation

TLCO 3.3.106 The loose-part detection system shall be OPERABLE with all sensors specified in Table 3.3.106-1.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

The provisions of Specification 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. With one or more loose-part detection system channels inoperable.	A.1	Restore the inoperable channel(s) to OPERABLE status.	30 days
B. Required Action and associated completion time not met.	B.1	Initiate a corrective action to evaluate the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.	In accordance with the PVNGS corrective action program.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.106.1	Perform a CHANNEL CHECK.	24 hours
TSR 3.3.106.2	Perform a CHANNEL FUNCTIONAL TEST	31 days
TSR 3.3.106.3	Perform a CHANNEL CALIBRATION	18 months

Table 3.3.106-1 (Page 1 of 1)
Loose Parts Sensor Locations

INSTRUMENT NUMBER	LOOSE PARTS SENSOR LOCATIONS
JSVNYE-1	Upper Vessel A
JSVNYE-2	Upper Vessel B
JSVNYE-3	Lower Vessel A (Incore Nozzle)
JSVNYE-4	Lower Vessel B (Incore Nozzle)
JSVNYE-5	SG-1A
JSVNYE-6	SG-1B
JSVNYE-7	SG-2A
JSVNYE-8	SG-2B

T3.3 INSTRUMENTATION

T3.3.107 Explosive Gas Monitoring System

TLCO 3.3.107 Two explosive gas monitoring instrumentation Oxygen Monitoring channels shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of T3.10.201 are not exceeded. This includes the following instruments:

a. Oxygen monitor (surge tank)
b. Oxygen monitor (waste gas header)

APPLICABILITY: During Gaseous Radwaste System Operation.

ACTIONS

-----NOTE-----
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Explosive gas monitoring instrumentation channel alarm/trip setpoint less conservative than required.	A.1 Declare the channel inoperable.	Immediately
B. One required channel inoperable	B.1. Obtain and analyze grab samples. AND B.2 Restore the inoperable channel to OPERABLE status	Daily 30 days

(continued)

ACTIONS (continued)

C. Required Action and associated Completion Time of Condition B not met.	C.1 Initiate a corrective action to evaluate why this inoperability was not corrected in a timely manner.	In accordance with the PVNGS corrective action program.
D. Two channels inoperable	D.1 Obtain and analyze grab samples.	Every 4 hours during degassing operations <u>AND</u> Daily during other operations

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.107.1 Perform a CHANNEL CHECK.	24 hours
TSR 3.3.107.2 Perform a CHANNEL FUNCTIONAL TEST.	31 days
TSR 3.3.107.3 Perform a CHANNEL CALIBRATION[1] on each channel	92 days

-------------------------------------NOTE-------------------------------------
The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:
1. One volume percent oxygen, balance nitrogen, and
2. Four volume percent oxygen, balance nitrogen.

T3.3 INSTRUMENTATION

T3.3.108 Fuel Building Essential Ventilation Actuation Signal (FBEVAS)

TLCO 3.3.108 One FBEVAS channel shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel in the fuel building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Actuation Logic, Manual Trip or radiation monitor inoperable.	A.1 Place one OPERABLE Fuel Building Essential Ventilation train in operation. OR A.2 Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

------------------------------------NOTE------------------------------------
Surveillance Requirements for RU-145 are specified in the ODCM.

SURVEILLANCE	FREQUENCY
TSR 3.3.108.1 Perform a CHANNEL CHECK on RU-31.	12 hours
TSR 3.3.108.2 Perform a CHANNEL FUNCTIONAL TEST on RU-31 to include that the setpoint is ≤ 15 mR/hr and the measurement range is 10E-1 to 10E+4 mR/hr.	92 days
TSR 3.3.108.3 --------------------NOTE-------------------- Testing of Actuation Logic shall include verification of the proper operation of each actuation relay. --- Perform a CHANNEL FUNCTIONAL TEST on required FBEVAS Actuation Logic channel.	18 months on a STAGGERED TEST BASIS
TSR 3.3.108.4 Perform a CHANNEL FUNCTIONAL TEST on required FBEVAS Manual Trip logic.	18 months on a STAGGERED TEST BASIS
TSR 3.3.108.5 Perform a CHANNEL CALIBRATION on RU-31.	18 months

T3.3 INSTRUMENTATION

T3.3.200 RPS Instrumentation - Operating

TLCO 3.3.200 Refer to PVNGS Improved Technical Specifications 3.3.1.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.3.1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more core protection calculator (CPC) channels with a valid cabinet high temperature alarm.	A.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC(s). AND A.2 Perform CHANNEL FUNCTIONAL TEST on affected CEACs.	12 hours 12 hours
B. Requirements of Condition A or the following NOTE not met.	B.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY

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

When performing ITS SR 3.3.1.4, between 20% and 80% of RATED THERMAL POWER, compare the linear power level, the CPC delta T power and the CPC nuclear power signals to the calorimetric calculation, and:

a. If any signal is within -0.5% to 10% of the calorimetric then do not calibrate except as required during initial power ascension after refueling and except as otherwise noted in item d.
b. If any signal is less than the calorimetric calculation by more than 0.5%, then adjust the affected signals(s) to agree with the calorimetric calculation.
c. If any signal is greater than the calorimetric calculation by more than 10%, then adjust the affected signal(s) to agree with the calorimetric calculation within 8% to 10%.
d. During any power ascension from below 80% to above 80% RTP, the calibration requirements of ITS SR 3.3.1.4 must be met (except during PHYSICS TESTS, as allowed by the Note in SR 3.3.1.4). This is accomplished by performing SR 3.3.1.4 between 75% and 80% RTP during power ascension with an acceptance criteria of -0.5% to <2% to bound the requirements for both below and above 80% RTP.

T3.3 INSTRUMENTATION

T3.3.201 ESFAS Logic and Manual Trip

TLCO 3.3.201 Refer to PVNGS Improved Technical Specifications 3.3.6.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.3.6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two or more ESFAS subgroup relay failures per unit in a 12 month period.	A.1 Perform an evaluation to determine the adequacy of the interval for SR 3.3.6.2. The evaluation should consider the design, maintenance, and testing of all ESFAS subgroup relays. If it is determined that the SR interval is inadequate for detecting a single relay failure, the SR interval should be decreased. The revised interval should be such that an ESFAS subgroup relay failure can be detected prior to occurrence of a second failure.	In accordance with the PVNGS corrective action program.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specification 3.3.6	

T3.4 REACTOR COOLANT SYSTEM (RCS)

T3.4.100 Auxiliary Spray System

TLCO 3.4.100 Both auxiliary spray valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One auxiliary spray valve inoperable.	A.1 Restore valve to OPERABLE status.	72 hours
B. Both auxiliary spray valves inoperable.	B.1 Restore at least one valve to OPERABLE status.	6 hours
C. Required Action and associated completion time of condition A or B not met.	C.1 Enter TLCO 3.0.100.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.4.100.1 Verify that power is available to each auxiliary spray valve.	24 hours
TSR 3.4.100.2 Verify CH-HV-524 and CH-HV-532 are locked open.	31 days
TSR 3.4.100.3 Cycle the auxiliary spray valves.	18 months

T3.4 Reactor Coolant System (RCS)

T3.4.101 RCS Chemistry

TLCO 3.4.101 The Reactor Coolant System chemistry shall be maintained within the limits specified in Table 3.4.101-1.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE----------- Condition A is applicable during MODES 1, 2, 3, and 4 only. ------------------------- One or more chemistry parameter in excess of its Steady State Limit but within its Transient Limit while in MODES 1, 2, 3, and 4.	A.1 Restore the parameter to within its Steady State Limit.	24 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more chemistry parameters in excess of its Transient Limit while in MODES 1, 2, 3, and 4.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

(continued)

ACTIONS (continued)

C. ----------NOTE----------- Condition C is applicable at all times other than during MODES 1, 2, 3 and 4. ------------------------- Concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Steady State Limit	C.1 Restore the parameter to within its Steady State Limit.	24 hours
D. Required Action and associated Completion Time of Condition C not met. OR Concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Transient Limit while other than during MODES 1, 2, 3 and 4.	D.1 Reduce the pressurizer pressure to ≤ 500 psia, if applicable. AND D.2 Perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System. AND D.3 Determine that the Reactor Coolant System remains acceptable for continued operation.	Immediately In accordance with the PVNGS corrective action program Prior to increasing the pressurizer pressure above 500 psia or prior to proceeding to MODE 4.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.4.101.1 The Reactor Coolant System chemistry shall be determined to be within the limits by sample and analysis of those parameters specified in Table 3.4.101-1.	72 hours

Table 3.4.101-1 (Page 1 of 1)
RCS Chemistry Limits Surveillance Limits.

PARAMETER	STEADY STATE LIMIT	TRANSIENT LIMIT
Dissolved Oxygen[1]	≤ 0.10 ppm	≤ 1.00 ppm
Chloride	≤ 0.15 ppm	≤ 1.50 ppm
Fluoride	≤ 0.10 ppm	≤ 1.00 ppm

-----NOTE-----
1. Limits for Dissolved Oxygen are not applicable with T_{cold} ≤ 250°F.

T3.4 REACTOR COOLANT SYSTEM (RCS)

T3.4.102 Pressurizer Heatup and Cooldown Limits

TLCO 3.4.102 The pressurizer temperature shall be limited to:

a. A maximum heatup rate of 200°F per hour, and

b. A maximum cooldown rate of 200°F per hour.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer temperature limits in excess of specified values.	A.1 Restore temperature to within limits.	30 minutes
	<u>AND</u>	
	A.2 Perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer	In accordance with the PVNGS corrective action program.
	<u>AND</u>	
	A.3 Determine pressurizer remains acceptable for continued operation.	In accordance with the PVNGS corrective action program.

(continued)

ACTIONS (continued)

B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Reduce pressurizer pressure to < 500 psig.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.4.102.1 --------------------NOTE-------------------- Only required to be performed during pressurizer heatup and cooldown operations. -- Verify that pressurizer heatup and cooldown rates are within the specified limits:	30 minutes
TSR 3.4.102.2 The spray water temperature differential shall be determined for use.	Each cycle of main spray when less than 4 reactor coolant pumps are operating and for each cycle of auxiliary spray operation.

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T3.4 REACTOR COOLANT SYSTEM (RCS)

T3.4.104 RCS Vents (Reactor Head Vents)

TLCO 3.4.104 Four reactor vessel head vent paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3
MODE 4 with RCS pressure $\geq$ 385 psia.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two or three required reactor vessel head vent paths inoperable.	A.1 Restore required vent path(s) to OPERABLE status.	72 hours
B. All reactor vessel head vent paths inoperable.	B.1 Restore at least one path to OPERABLE status.	6 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter TLCO 3.0.100.3	Immediately

SURVEILLANCE REQUIREMENTS

-----------------------------------NOTE-----------------------------------
Perform TSR 3.4.104.1, TSR 3.4.104.2 and TSR 3.4.104.3 when in MODE 5 or 6.

SURVEILLANCE		FREQUENCY
TSR 3.4.104.1	Verify all manual isolation valves in each vent path are locked in the open position.	18 months
TSR 3.4.104.2	Cycle each vent valve through at least one complete cycle from the control room. In any Mode, partial surveillance tests can be performed for post-maintenance testing under site procedural controls that ensure the valve being tested is isolated from RCS pressure.	18 months
TSR 3.4.104.3	Verify flow through the reactor coolant system vent paths during venting.	18 months

T3.4 REACTOR COOLANT SYSTEM (RCS)

T3.4.200 RCS Pressure and Temperature (P/T) Limits

TLCO 3.4.200 Refer to PVNGS Improved Technical Specifications 3.4.3.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.4.3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Requirements of TSR 3.4.200.1 not met.	A.1	Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

-----------------------------------NOTE-----------------------------------
Changes to the reactor vessel surveillance specimen withdrawal schedule that meet the applicable ASTM standard must be submitted to the NRC with technical justification for approval prior to implementation (the NRC must verify compliance with the ASTM standard) in accordance with 10 CFR 50, Appendix H, paragraph III.B.3. Changes to the withdrawal schedule that do not meet the applicable ASTM standard must be submitted to the NRC for approval as a license amendment with information required by 10 CFR 50.91 and 50.92 (see NRC Administrative Letter 97-04 dated September 30, 1997).

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.200.1	The reactor vessel material irradiation surveillance specimens shall be removed and examined to determine changes in material properties at the intervals required by 10 CFR 50, Appendix H in accordance with PVNGS UFSAR section 5.3.1.6.6 “Withdrawal Schedule”. The results of these examinations shall be used to update the PTLR.	Refer to PVNGS UFSAR Section 5.3.1.6.6 “Withdrawal Schedule”

T3.4 REACTOR COOLANT SYSTEM (RCS)

T3.4.201 Pressurizer

TLCO 3.4.201 Refer to PVNGS Improved Technical Specifications 3.4.9.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.4.9.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.4.201.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.4.201.1 The emergency power supply for the pressurizer heaters shall be demonstrated OPERABLE by verifying that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power: The pressurizer heaters are automatically shed from the emergency power sources and; The pressurizer heaters can be reconnected to their respective buses manually from the control room.	18 months on a STAGGERED TEST BASIS

T3.4 REACTOR COOLANT SYSTEM

T3.4.202 Pressurizer Vents

TLCO 3.4.202 Refer to PVNGS Improved Technical Specifications 3.4.12.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.4.12.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.4.202.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.4.202.1 Verify all manual isolation valves in each vent path are locked in the open position (when in MODE 5 or 6).	18 months

T3.4 REACTOR COOLANT SYSTEM

T3.4.203 RCS Operational LEAKAGE

TLCO 3.4.203 Refer to PVNGS Improved Technical Specification 3.4.14.

APPLICABILITY: Refer to PVNGS Improved Technical Specification 3.4.14.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.4.203.1 or 3.4.203.2 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.203.1	Monitor the containment sump inventory and discharge.	12 hours
TSR 3.4.203.2	Monitor the reactor head flange leakoff system.	24 hours

T3.4 REACTOR COOLANT SYSTEM

T3.4.204 RCS PIV Leakage

TLCO 3.4.204 Refer to PVNGS Improved Technical Specifications LCO 3.4.15.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications LCO 3.4.15.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.4.204.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.204.1	-------------------NOTE--------------------- The provisions of this TSR are not applicable for valves UV-651, UV-652, UV-653 and UV-654 due to position indication of valves in the control room. --- Each reactor Coolant System pressure isolation valve shall be demonstrated OPERABLE by verifying leakage to be within its limit.	Within 72 hours following a system response to an Engineered Safety Feature actuation signal.

T3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

T3.5.200 Safety Injection Tanks

TLCO 3.5.200 Refer to PVNGS Improved Technical Specifications LCOs 3.5.1 and 3.5.2

APPLICABILITY: Refer to PVNGS Improved Technical Specifications LCOs 3.5.1 and 3.5.2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.5.200.1, 3.5.200.2, 3.5.200.3, 3.5.200.4 or 3.5.200.5 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.5.200.1	-------------------NOTE------------------ Nitrogen vent valves may be cycled as necessary to maintain the required nitrogen cover pressure in accordance with PVNGS Improved Technical Specifications 3.5.1 and 3.5.2. --- Verify the required safety injection tank nitrogen vent valves are closed when pressurizer pressure is ≥ 430 psia.	12 hours
TSR 3.5.200.2	-------------------NOTE------------------ Nitrogen vent valves may be cycled as necessary to maintain the required nitrogen cover pressure in accordance with PVNGS Improved Technical Specifications 3.5.1 and 3.5.2. --- Verify that power is removed from the required nitrogen vent valves when pressurizer pressure is ≥ 1500 psia.	31 days
TSR 3.5.200.3	Verify that the SIT nitrogen vent valves can be opened when the SITS are isolated.	18 months
TSR 3.5.200.4	Verify that each safety injection tank isolation valve opens automatically under each of the following conditions: 1. Prior to exceeding an actual or simulated RCS pressure signal of 515 psia, and 2. Upon receipt of a safety injection actuation (SIAS) test signal	18 months 18 months on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.5.200.5	Verify OPERABILITY of RCS-SIT differential pressure alarm by simulating RCS pressure greater than 715 psia with SIT pressure less than 600 psig.	18 months

T3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

T3.5.201 Shutdown Cooling System

TLCO 3.5.201 Two independent shutdown cooling subsystems shall be OPERABLE, with each subsystem comprised of:

a. One OPERABLE low pressure safety injection pump, and

b. An independent OPERABLE flow path capable of taking suction from the RCS hot leg and discharging coolant through the shutdown cooling heat exchanger and back to the RCS through the cold leg injection lines.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One shutdown cooling subsystem inoperable.	A.1 Restore the inoperable subsystem to OPERABLE STATUS	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Continue action to restore the required subsystems to OPERABLE status. AND B.2 Verify the functionality of the inoperable subsystem	Immediately 1 hour
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3 AND C.2 Be in MODE 4	7 hours 13 hours

(continued)

ACTIONS (continued)

D. Both shutdown cooling subsystems inoperable.	D.1 Restore one subsystem to OPERABLE status.	6 hours
E. Required Actions and associated Completion time of Condition D not met.	E.1 Continue action to restore the required subsystems to OPERABLE status. AND E.2 Verify the functionality of one inoperable subsystem.	Immediately 1 hour
F. Required Actions and associated Completion time of Condition E not met.	F.1 Be in MODE 3 AND F.2 Be in MODE 4	7 hours 13 hours
G. Both shutdown cooling subsystems inoperable and both reactor coolant loops inoperable.	G.1 Initiate action to restore the required subsystems to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.5.201.1 Establish shutdown cooling flow (during shutdown) from the RCS hot legs, through the shutdown cooling heat exchangers, and returning to the RCS cold leg.	18 months
TSR 3.5.201.2 Verify shutdown cooling system suction piping is full of water.	31 days

T3.5.202 ECCS - Operating

TLCO 3.5.202 Refer to PVNGS Improved Technical Specifications 3.5.3.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.5.3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ECCS actuates and injects water into the Reactor Coolant System.	A.1	Initiate a corrective action to evaluate the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected injection nozzle shall be provided in this corrective action whenever its value exceeds 0.70.	In accordance with the PVNGS corrective action program.
B. Requirements of TSR 3.5.202.1, 3.5.202.2 3.5.202.3 or 3.5.202.4 not met.	B.1	Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.5.202.1	Conduct a visual inspection to verify that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions.	Prior to establishing containment OPERABILITY, for all accessible areas of the containment. AND Daily and during the final entry, for areas in containment affected by a containment entry, when the containment is OPERABLE.
TSR 3.5.202.2	Conduct a flow balance test and verify that the flow rates meet the requirements listed in Table 3.5.202-1.	------NOTE------ Perform during shutdown. ---------------- Following completion of modifications (that alter the subsystem flow characteristics) to the ECCS subsystems.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.5.202.3 Verify the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves: <u>LPSI System Valve Number</u> 1. SIB-UV 615, SIA-HV 306 2. SIB-UV-625, SIB-HV 307 3. SIA-UV 635 4. SIA-UV 645 <u>Hot Leg Injection Valve Number</u> 1. SIC-HV-321 2. SID-HV 331	Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE
TSR 3.5.202.4 Verify ECCS pump suction piping is full of water	31 days

Table 3.5.202-1 (Page 1 of 1)
ECCS Flow Rates

SOURCE	PARAMETER	REQUIRED FLOWRATE
HPSI System Single Pump	Injection Lines - Sum of the flow rates, excluding the highest flow rate	≥ 816 gpm
LPSI System Single Pump	Injection Loop 1 - Total flow	4800 ± 200 gpm
	Injection Legs 1A and 1B - When tested individually, with the other leg isolated	Within 200 gpm of each other
	Injection Loop 2 - Total flow	4800 ± 200 gpm
	Injection Legs 2A and 2B - When tested individually, with the other leg isolated	Within 200 gpm of each other.
Simultaneous Hot Leg and Cold Leg Injection - Single Pump	Hot Leg	≥ 525 gpm.
	Cold Leg - Sum of flowrates	≥ 525 gpm.
	Total Pump Flowrate	≤ 1200 gpm.

T3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

T3.5.203 ECCS - Shutdown

TLCO 3.5.203 Refer to PVNGS Improved Technical Specifications 3.5.4.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.5.4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ECCS actuates and injects water into the Reactor Coolant System.	A.1	Initiate a corrective action to evaluate the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected injection nozzle shall be provided in this corrective action whenever its value exceeds 0.70.	In accordance with the PVNGS corrective action program.
B. Requirements of TSR 3.5.203.1 not met.	B.1	Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.5.203.1 The following TSRs are applicable: TSR 3.5.202.1 TSR 3.5.202.2 TSR 3.5.202.3 TSR 3.5.202.4	In accordance with applicable TSRs

T3.6 CONTAINMENT SYSTEMS

T3.6.100 Hydrogen Purge Cleanup System

TLCO 3.6.100 A containment hydrogen purge cleanup system, shared among the three units, shall be OPERABLE and capable of being powered from a minimum of one OPERABLE emergency bus.

APPLICABILITY: MODES 1 and 2 with less than two hydrogen recombiners OPERABLE.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment hydrogen purge cleanup system inoperable and only one hydrogen recombiner OPERABLE.	A.1 Restore the hydrogen purge cleanup system to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Enter TLCO 3.0.100.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.100.1	Initiate flow through the HEPA filters and charcoal adsorbers and verify that the system operates for at least 15 minutes.	31 days
TSR 3.6.100.2	Perform required hydrogen purge cleanup system filter testing in accordance with the TRM Ventilation Filter Testing Program (VFTP) (Reference TRM 5.0.500.11).	In accordance with the TRM VFTP

T3.6 CONTAINMENT SYSTEMS

T3.6.200 Pre-Stressed Concrete Containment Tendon Surveillance

TLCO 3.6.200 The acceptance criteria of the Pre-Stressed Concrete Containment Tendon Surveillance Program shall be met.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Acceptance criteria not met (except for the average of all measured pre-stressing forces requirements).	A.1 Restore containment vessel to the required level of integrity. AND A.2 Perform an Engineering Evaluation of the containment vessel structural integrity.	15 days In accordance with the PVNGS corrective action program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Acceptance criteria not met for the average of all measured pre-stressing forces requirements.	B.1 Restore containment vessel to the required level of integrity.	72 hours
	<u>AND</u>	
	B.2 Perform an engineering evaluation of the containment vessel structural integrity	In accordance with the PVNGS corrective action program
C Required Action and associated Completion Time not met.	C.1 Be in MODE 3	6 hours
	<u>AND</u>	
	C.2 Be in MODE 5	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.6.200.1 Testing shall be performed in accordance with the Pre-Stressed Concrete Containment Tendon Surveillance Program (Reference TRM 5.0.500.6).	In accordance with the Pre-Stressed Concrete Containment Tendon Surveillance Program

T3.6 CONTAINMENT SYSTEMS

T3.6.201 Containment Spray Systems

TLCO 3.6.201 Refer to PVNGS Improved Technical Specifications 3.6.6

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.6.6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.6.201.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.6.201.1 Verify containment spray system suction piping is full of water.	31 days

T3.6 CONTAINMENT SYSTEMS

T3.6.300 Hydrogen Recombiners

TLCO 3.6.300 Two hydrogen recombiners shared among the three units shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

All three PVNGS Units (Units 1, 2, and 3) shall simultaneously comply with the REQUIRED ACTION(s) when the shared portion of the hydrogen recombiner(s) is the cause of a CONDITION.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 Restore hydrogen recombiner to OPERABLE status.	30 days
B. Two hydrogen recombiners inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained. AND B.2 Restore one hydrogen recombiner to OPERABLE status.	1 hour AND Every 12 hours thereafter 7 days
C. Required Action and associated Completion Time not met.	C.1 Enter TLCO 3.0.100.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.300-1	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	6 months
TSR 3.6.300-2	Perform a functional test for each hydrogen recombiner.	6 months
TSR 3.6.300-3	Perform a CHANNEL CALIBRATION to include a System Functional Test for each hydrogen recombiner.	12 months

T3.7 PLANT SYSTEMS

T3.7.100 Steam Generator Pressure and Temperature Limitations

TLCO 3.7.100 The temperature of the secondary coolant in the steam generators shall be greater than 120°F in Units 1 and 3, or 70°F in Unit 2, when the pressure of the secondary coolant in the steam generator is greater than 230 psig in Units 1 and 3, or 650 psig in Unit 2.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With the requirements of the above specification not satisfied.	A.1 Reduce the steam generator pressure to less than or equal to 230 psig in Units 1 and 3, or 650 psig in Unit 2.	30 minutes
	AND	
	A.2 Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation	Prior to increasing its temperature above 200°F.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.100.1 Verify that the pressure in the secondary side of the steam generators is less than 230 psig in Units 1 and 3, or 650 psig in Unit 2.	Once per 12 hours when the temperature of the secondary coolant is less than 120°F in Units 1 and 3, or 70°F in Unit 2.

T3.7 PLANT SYSTEMS

T3.7.101 Snubbers

TLCO 3.7.101 All hydraulic and mechanical snubbers shall be able to perform their associated safety function(s). The only snubbers excluded from this requirement are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

APPLICABILITY: MODES 1, 2, 3 and 4.
MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more snubbers unable to perform their associated safety function(s).	A.1.1 Enter TS LCO 3.0.8 IF the restrictions for utilizing TS LCO 3.0.8 described in the LCO 3.0.8 TS Bases are met.	Immediately
	<u>OR</u>	
	A.1.2 Declare the supported system inoperable and follow the appropriate ACTION statement for that system.	Immediately
	<u>AND</u>	
	A.2 Upon failure to meet the functional test acceptance criteria, perform an engineering evaluation on the attached component.	72 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.101.1	Each snubber shall be demonstrated able to perform their associated safety function(s) in accordance with the requirements of the ASME OM Code 2001 Edition and ASME OMb CODE-2003 Addenda, Subsection ISTD. “Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants,” and approved relief requests. Preservice and inservice examinations must be performed using the VT-3 visual examination method described in IWA-2213.	In accordance with the requirements of the ASME OM Code. Subsection ISTD.

T3.7 PLANT SYSTEMS

T3.7.102 Sealed Source Contamination

TLCO 3.7.102 Each sealed source containing radioactive material either in excess of 100 microcuries of beta and/or gamma emitting material or 5 microcuries of alpha emitting material shall be free of greater than or equal to 0.005 microcuries of removable contamination.

APPLICABILITY: At all times.

ACTIONS

-----------------------------------NOTE-----------------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With a sealed source having removable contamination in excess of the above limit.	A.1 Withdraw the sealed source from use.	Immediately
	<u>AND</u>	
	A.2.1 Decontaminate and repair the sealed source.	Prior to returning the sealed source to use
	<u>OR</u>	
	A.2.2 Dispose of the sealed source.	In accordance with Commission Regulations

SURVEILLANCE REQUIREMENTS

------------------------------------NOTE------------------------------------
Each category of sealed sources (excluding startup sources and fission detectors previously subjected to core flux) shall be tested for leakage and/or contamination, at the frequencies described below, by the licensee or other persons specifically authorized by the Commission or an Agreement State. The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample.

SURVEILLANCE	FREQUENCY
TSR 3.7.102.1 SOURCES IN USE - Leakage or contamination test sealed sources containing radioactive material:	
a. With a half-life greater than 30 days (excluding Hydrogen 3), and	6 months
b. In any form other than gas.	6 months
TSR 3.7.102.2 STORED SOURCES NOT IN USE - Each sealed source and fission detector shall be leakage or contamination tested.	Prior to use or transfer to another licensee unless tested within the previous 6 months. AND Prior to use if received without a certificate indicating the last test date

(continued)

SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.102.3	Startup source and fission detectors shall be leakage or contamination tested.	Within 31 days prior to being subjected to core flux or installed in the core AND Following repair or maintenance to the source or detector.
TSR 3.7.102.4	A report shall be prepared and submitted to the Commission if sealed source or fission detector leakage tests reveal the presence of greater than or equal to 0.005 microcuries of removable contamination.	Annually

T3.7 PLANT SYSTEMS

T3.7.200 Atmospheric Dump Valves (ADVs)

TLCO 3.7.200 Refer to PVNGS Technical Specification LCO 3.7.4.

APPLICABILITY: Refer to PVNGS Technical Specification LCO 3.7.4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Requirements of TSR 3.7.200.1 not met.	A.1	Document the condition in the corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.200.1	Verify that the nitrogen accumulator tank is at a pressure $\geq$ 615 PSIG indicated.	24 hours

T3.7 PLANT SYSTEMS

T3.7.201 AFW System

TLCO 3.7.201 Refer to PVNGS Improved Technical Specifications 3.7.5.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.7.201.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.201.1 Verify that all manual valves in the suction lines from the primary AFW supply tank (condensate storage tank CTE-T01) to each essential AFW pump, and the manual discharge line valve of each AFW pump are locked, sealed or otherwise secured in the open position.	31 days

T3.7 PLANT SYSTEMS

T3.7.202 Essential Cooling Water (EW) System

TLCO 3.7.202 Refer to PVNGS Improved Technical Specifications 3.7.7.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.7.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.7.202.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.202.1 Verify that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is locked, sealed, or otherwise secured in position, is in its correct position.	------NOTE------ Perform during shutdown. ---------------- 18 months

T3.7 PLANT SYSTEMS

T3.7.203 Essential Spray Pond System (ESPS)

TLCO 3.7.203 Refer to PVNGS Improved Technical Specifications 3.7.8.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.8.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.7.203.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.203.1 Verify that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is locked, sealed, or otherwise secured in position, is in its correct position.	------NOTE------ Perform during shutdown. ---------------- 18 months

T3.7 PLANT SYSTEMS

T3.7.204 Essential Chilled Water (EC) System

TLCO 3.7.204 Refer to PVNGS Improved Technical Specifications 3.7.10.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.10.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.7.204.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.204.1 Verify that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is locked, sealed, or otherwise secured in position, is in its correct position.	------NOTE------ Perform during shutdown. ---------------- 18 months

T3.7 PLANT SYSTEMS

T3.7.205 Control Room Emergency Air Temperature Control System (CREATCS)

TLCO 3.7.205 The control room air temperature shall be maintained less than or equal to 80°F.

APPLICABILITY: All MODES

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control room air temperature greater than 80°F.	A.1 Reduce the air temperature to less than or equal to 80°F.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODES 1, 2, 3, or 4.	B.1 Enter TLCO 3.0.100.3.	Immediately
C. Required Action and associated Completion Time of Condition A not met in MODE 5, MODE 6,	C.1 Action shall be initiated immediately to communicate the situation to the Shift Manager and document the condition in accordance with the PVNGS corrective action program. An initial decision on whether the unit	Immediately

(continued)

ACTION

CONDITION	REQUIRED ACTION	COMPLETION TIME
	can continue to operate with the condition shall be completed within 7 hours. Further actions shall be as required by the corrective action disposition and as deemed necessary by plant management.	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.205.1 Verify that the control room air temperature is less than or equal to 80°F.	12 hours

T3.7 PLANT SYSTEMS

T3.7.206 Fuel Storage Pool Water Level

TLCO 3.7.206 Refer to PVNGS Improved Technical Specifications 3.7.14.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.14.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required Action and associated Completion Time of ITS 3.7.14 Condition A not met.	----------NOTE--------- TLCO 3.0.100.3 is not applicable. ----------------------- A.1 Suspend crane operations with loads in the fuel storage areas.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specifications LCO 3.7.14.	

T3.7 PLANT SYSTEMS

T3.7.207 Secondary Specific Activity

TLCO 3.7.207 Refer to PVNGS Improved Technical Specifications 3.7.16.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.7.16.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.7.207.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.207.1 Verify that the gross activity of the secondary coolant system is within the limit by performing a Gross Activity Determination	72 hours

T3.8 ELECTRICAL POWER SYSTEMS

T3.8.100 Cathodic Protection

TLCO 3.8.100 The Cathodic Protection System associated with the Diesel Generator Fuel Oil Storage Tanks shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

-------------------------------------NOTE-------------------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Cathodic Protection System Inoperable.	A.1 Restore to OPERABLE	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate a corrective action to evaluate the cause of the malfunction and the plans for restoring the system to OPERABLE status.	In accordance with the PVNGS corrective action program.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.100.1	Verify that the Cathodic Protection rectifiers are OPERABLE and have been inspected in accordance with Regulatory Guide 1.137.	61 days
TSR 3.8.100.2	Verify that the Cathodic Protection is OPERABLE and providing adequate protection against corrosion in accordance with Regulatory Guide 1.137.	12 months

T3.8 ELECTRICAL POWER SYSTEMS

T3.8.101 Containment Penetration Conductor Overcurrent Protection Devices

TLCO 3.8.101 Primary and backup containment penetration conductor overcurrent protective devices associated with each containment electrical penetration circuit shall be OPERABLE.

---------------------------NOTE----------------------------
The scope of these protective devices excludes those circuits for which credible fault currents would not exceed the electrical penetration design rating.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required containment penetration conductor overcurrent protective devices inoperable.	A.1 Restore the protection device(s) to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Deenergize the circuit(s) and declare the affected system or component inoperable.	72 hours
	<u>AND</u>	
	A.2.2 Verify the backup circuit breaker to be tripped or the inoperable circuit breaker racked out.	At least once per 7 days
B. Required Action and Associated Completion Time not met.	B.1 Enter TLCO 3.0.100.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.8.101.1 Perform a CHANNEL CALIBRATION of the protective relays associated with the medium voltage (4-15 KV) circuit breakers by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level.	18 months
TSR 3.8.101.2 Perform an integrated system functional test[1] of medium and lower voltage circuit breakers by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level[2].	18 months

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

1. An integrated system functional test includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed.

2. For each circuit breaker found inoperable during these functional tests, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

   For lower voltage circuit breakers, testing of these circuit breakers shall consist of injecting a current with a value equal to 300% of the setpoint (pickup) of the long-term delay trip element, 150% of the setpoint (pickup) of the short-time delay trip element, and verifying that the circuit breaker operates within the time delay band width for that current specified by the manufacturer. The instantaneous element shall be tested

(continued)

----------------------------------NOTE----------------------------------
(continued)

by injecting a current for a frame size of 250 amps or less with tolerances of +40%/-25% and a frame size of 400 amps or greater of ±25% and verifying that the circuit breaker trips instantaneously with no apparent time delay.

Molded case circuit breaker testing shall also follow this procedure except that generally no more than two trip elements, time delay and instantaneous, will be involved. Circuit breakers found inoperable during functional testing shall be restored to OPERABLE status prior to resuming operation.

T3.8 ELECTRICAL POWER SYSTEMS

T3.8.102 MOV Thermal Overload Protection and Bypass Devices

TLCO 3.8.102 The thermal overload protection and bypass devices, integral with the motor starter, of each valve used in safety systems shall be OPERABLE.

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With the thermal overload protection for one or more of the required valves not bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device.	A.1 Take administrative action to continuously bypass the thermal overload.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Declare the affected valve(s) inoperable and apply the appropriate REQUIRED ACTION(s) for the affected valves.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.8.102.1 Perform a CHANNEL FUNCTIONAL TEST of the bypass circuitry for those thermal overloads which are normally in force during plant operation and bypassed under accident conditions.	18 months on a STAGGERED TEST BASIS AND Following maintenance on the valve motor starter
TSR 3.8.102.2 Verify that the thermal overload protection is bypassed for those thermal overloads which are continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing.	18 months AND Following maintenance on the valve motor starter AND Following any periodic testing during which the thermal overload device was temporarily placed in force.

T3.8 ELECTRICAL POWER SYSTEMS

T3.8.200 AC Sources

TLCO 3.8.200 Refer to PVNGS Improved Technical Specifications 3.8.2.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.8.2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of PVNGS ITS LCO 3.8.2 not met.	A.1 Suspend all crane operation with loads over the fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Refer to PVNGS Improved Technical Specifications LCO 3.8.2.	

T3.9 REFUELING OPERATIONS

T3.9.100 Decay Time

TLCO 3.9.100 The reactor shall be subcritical for at least 100 hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor subcritical for less than 100 hours.	A.1 Suspend all operations involving movement of irradiated fuel in the reactor pressure vessel.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.9.100.1 Verify (by date and time of subcriticality) that the reactor has been subcritical for at least 100 hours.	Prior to movement of irradiated fuel in the reactor pressure vessel

T3.9 REFUELING OPERATIONS

T3.9.101 Communications

TLCO 3.9.101 Direct communications shall be maintained between the control room and personnel at the refueling station.

APPLICABILITY: During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Direct communications between the control room and personnel at the refueling station cannot be maintained.	A.1 Suspend all CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.9.101.1 Demonstrate direct communication between the control room and personnel at the refueling machine.	12 hours <u>AND</u> Within 1 hour prior to the start of CORE ALTERATIONS.

T3.9 REFUELING OPERATIONS

T3.9.102 Refueling Machine

TLCO 3.9.102 The refueling machine shall be used for movement of fuel assemblies and shall be OPERABLE with:

a. A minimum capacity of 3590 pounds, and

b. An overload cut off limit of ≤ 1600 pounds.

APPLICABILITY: During movement of fuel assemblies within the refueling cavity.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The requirements for the refueling machine OPERABILITY not satisfied.	A.1 Suspend use of the refueling machine from operations involving the movement of fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.102.1	The refueling machine used for movement of fuel assemblies shall be demonstrated OPERABLE by performing a load test of at least 3590 pounds and demonstrating an automatic load cut off when the refueling machine load exceeds 1600 pounds.	Within 72 hours prior to the start of movement of fuel assemblies.

T3.9 REFUELING OPERATIONS

T3.9.103 Crane Travel - Spent Fuel Pool Storage Building

TLCO 3.9.103 Loads in excess of 2000 pounds shall be prohibited from travel over fuel assemblies in the storage pool.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the above specification not satisfied.	A.1 Place the crane load in a safe condition.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.103.1	-------------------NOTE-------------------- Applicable only during crane operation --- Crane interlocks and physical stops which prevent crane travel with loads in excess of 2000 pounds over fuel assemblies shall be demonstrated OPERABLE.	7 days

T3.9 PLANT SYSTEMS

T3.9.104 Fuel Building Essential Ventilation System (FBEVS)

TLCO 3.9.104 Two FBEVS trains shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One FBEVS train inoperable.	A.1 Verify the OPERABLE FBEVS is capable of being powered from an emergency power source.	Immediately
	AND	
	A.2 Restore FBEVS train to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

B. Required Action and associated Completion Time of Condition A not met.	B.1 Place OPERABLE FBEVS train into operation. <u>OR</u> B.2 Suspend all operations involving movement of irradiated fuel assemblies in the fuel building.	Immediately Immediately
C. Two FBEVS inoperable.	C.1 Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.104.1	Operate each FBEVS train for at least 15 minutes.	31 days
TSR 3.9.104.2	Perform required Fuel Building Essential Ventilation filter testing in accordance with the TRM Ventilation Filter Testing Program (VFTP) (Reference TRM 5.0.500.11).	In accordance with the TRM VFTP
TSR 3.9.104.3	Verify each FBEVS train actuates on an actual or simulated signal and directs it exhaust bank through the HEPA filters and charcoal adsorber banks.	18 months on a STAGGERED TEST BASIS
TSR 3.9.104.4	Verify one FBEVS train can maintain a measurable negative pressure with respect to atmospheric pressure, during operation.	18 months on a STAGGERED TEST BASIS.

T3.9 REFUELING OPERATIONS

T3.9.200 Boron Concentration

TLCO 3.9.200 Refer to PVNGS Improved Technical Specification LCO 3.9.1.

APPLICABILITY: Refer to PVNGS Improved Technical Specification LCO 3.9.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.9.200.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.9.200.1 Determine that the boron concentration is within the limits specified in the COLR.	Prior to removing or unbolting the reactor vessel head AND Prior to withdrawal of any full strength CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel

T3.9 REFUELING OPERATIONS

T3.9.201 Containment Penetrations

TLCO 3.9.201 Refer to PVNGS Improved Technical Specifications 3.9.3.

APPLICABILITY: Refer to PVNGS Improved Technical Specifications 3.9.3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of TSR 3.9.201.1 not met.	A.1 Document the condition in accordance with the PVNGS corrective action program and initiate an operability determination, as necessary, to determine the impact on equipment in the technical specifications.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.9.201.1 Verify that each of the containment penetrations required by PVNGS ITS LCO 3.9.3 is in its required status.	Within 72 hours prior to the start of CORE ALTERATIONS <u>AND</u> Within 72 hours prior to the start of movement of irradiated fuel in the containment building.

T3.10 RADIOACTIVE EFFLUENTS

T3.10.200 Liquid Holdup Tanks

TLCO 3.10.200 The quantity of radioactive material contained in each outside temporary tank and the reactor makeup water tank shall be limited to less than or equal to 60 curies, excluding tritium and dissolved or entrained noble gases.

APPLICABILITY: At all times.

ACTIONS

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

The provisions of Specifications 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The quantity of radioactive material in any outside temporary tank or the reactor makeup water tank exceeds the above limit.	A.1 Suspend all additions of radioactive material to the tank.	Immediately
	<u>AND</u>	
	A.2 Reduce the tank contents to within the limit.	48 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.10.200.1 Verify the quantity of radioactive material contained in each outside temporary tank and the reactor makeup water tank is within the limit by analyzing a representative sample of the tanks contents when radioactive materials are being added to the tank.	7 days

T3.10 RADIOACTIVE EFFLUENTS

T3.10.201 Explosive Gas Mixture

TLCO 3.10.201 The concentration of oxygen in the waste gas holdup system shall be limited to ≤ 2% by volume.

APPLICABILITY: Whenever waste gas holdup system is in service.

ACTIONS

-----NOTE-----
The provisions of Specifications 3.0.100.3 and 3.0.100.4 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of oxygen in the waste gas holdup system > 2% by volume but ≤ 4% by volume.	A.1 Reduce the oxygen concentration to within the limit.	48 hours
B. Concentration of oxygen > 4% by volume.	B.1 Suspend all additions of waste gases to the system.	Immediately
	<u>AND</u>	
	B.2 Reduce concentration of oxygen to ≤ 4% by volume.	6 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.10.201.1	Verify the concentration of oxygen in the waste gas holdup system is within the limit by continuously monitoring the waste gases in the waste gas holdup system using the instruments required OPERABLE by TRM specification T3.3.107.	Continuously

T3.10 RADIOACTIVE EFFLUENTS

T3.10.202 Gas Storage Tanks

TLCO 3.10.202 The quantity of radioactivity contained in each gas storage tank shall be limited to less than or equal to 170,000 curies noble gases (considered as Xe-133).

APPLICABILITY: At all times.

ACTIONS

-----------------------------------NOTE-----------------------------------
The provisions of Specification 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Quantity of radioactive material in any gas storage tank exceeds limit.	A.1 Suspend all additions of radioactive material to the tank.	Immediately
	AND	
	A.2 Reduce tank contents to within the limit.	48 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.10.202.1 Verify the quantity of radioactive material contained in each gas storage tank is within the limit:	
1. When radioactive materials are being added to the tank and the quantity of radioactivity contained in the tank is greater than one-half of the specified limit	24 hours
2. When radioactive materials are being added to the tank and the quantity of radioactivity contained in the tank is less than or equal to one-half of the specified limit	7 days

T3.11 FIRE PROTECTION

T3.11.100 Fire Detection Instrumentation (formerly TS 3.3.3.7)

TLCO 3.11.100 As a minimum, the fire detection instrumentation for each Fire Protection Evaluation Report (FPER) detection zone shown in Table 3.11.100-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the fire detection instrument is required to be OPERABLE.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any, but not more than one-half of the Function X fire detection instruments in any fire zone shown in Table 3.11.100-1 inoperable.	A.1 Restore the inoperable instrument(s) to OPERABLE status.	14 days
B. Required Action and Completion Time of Condition A not met.	------------NOTE----------- Required Action B.1 is not applicable if the instrument(s) are located inside containment. --------------------------	
	B.1 Establish a fire watch patrol to inspect the zone(s) with the inoperable instruments OR	Within 1 hour and at least once per hour thereafter. (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	------------NOTE------------ Required Actions B.2.1, B.2.2 and B.2.3 are applicable for instrument(s) located inside containment. ---------------------------	
	B.2.1 Establish a fire watch patrol to inspect the Containment zone(s) with the inoperable instrument(s).	Within 1 hour and at least once per 8 hours thereafter
	<u>OR</u>	
	B.2.2 Monitor the containment air temperature using the locations listed in the Bases for Technical Specification SR 3.6.5.1.	Within 1 hour and at least once per hour thereafter.
	<u>OR</u>	
	B.2.3 Monitor the containment air temperature using the locations listed in Bases for Technical Specification SR 3.6.5.1 with the plant computer, multi-point recorder and audio annunciator.	Within 1 hour and continuously thereafter.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. More than one-half of the Function X fire detection instruments in any fire zone shown in Table 3.11.100-1 inoperable. OR Any Function Y fire detection instruments shown in Table 3.11.100-1 inoperable. OR Any two or more adjacent fire detection instruments shown in Table 3.11.100-1 inoperable.	------------NOTE------------ Required Action C.1 is not applicable if the instrument(s) are located inside containment. ----------------------------	
	C.1 Establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s).	Within 1 hour and at least once per hour thereafter.
	OR	
	------------NOTE----------- Required Action C.2.1, C.2.2, and C.2.3 are applicable for instrument(s) located inside containment. ----------------------------	
	C.2.1 Establish a fire watch patrol to inspect that Containment Zone with the inoperable instrument(s).	Within 1 hour and at least once per 8 hours thereafter.
	OR	
	C.2.2 Monitor the containment air temperature using the locations listed in the Bases for Technical Specification SR 3.6.5.1.	Within 1 hour and at least once per hour thereafter.
	OR	
	C.2.3 Monitor the containment air temperature using the locations listed in the Bases for Technical Specification SR 3.6.5.1 with the plant computer, multi-point recorder and audio annunciator.	Within 1 hour and continuously thereafter.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.100.1	Perform a CHANNEL FUNCTIONAL TEST of each of the required fire detection instruments which are accessible during plant operation.	12 months
TSR 3.11.100.2	Perform a CHANNEL FUNCTIONAL TEST of each of the required fire detection instruments which are not accessible during plant operation.	Each COLD SHUTDOWN, unless performed in the previous 12 months.
TSR 3.11.100.3	Demonstrate that the NFPA Standard 72D supervised circuits supervision associated with the detector alarms of each of the required fire detection instruments is OPERABLE.	12 months

Table 3.11.100-1 (Formerly TS Table 3.3-11) (Page 1 of 5)

FIRE DETECTION INSTRUMENTS

FIRE ZONE	ELEVATION	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS*		
			HEAT (X/Y)	FLAME (X/Y)	SMOKE (X/Y)
		BUILDING - CONTROL			
1	74’	Essential Chiller Rm. Train A			24/0
2	74'	Essential Chiller Rm. Train B			21/0
3A	74’	Cable Shaft - Train A			1/0
3B	74’	Cable Shaft - Train B			1/0
86A	74-156’ 4"	Deadspace Compartment Train A	0/1		0/3
86B	74-156’ 4"	Deadspace Compartment Train B	0/1		0/3
4A	100'	Cable Shaft- Train A			1/0
4B	100'	Cable Shaft - Train B			1/0
5A	100'	ESF Switchgear Room Train A	0/5		0/5
5B	100'	ESF Switchgear Room Train B	0/5		0/5
6A	100'	DC Equip. Rm. - Train A (Channel C)			2/0
6B	100'	DC Equip. Rm. - Train B (Channel D)			2/0
7A	100'	DC Equip. Rm. - Train A (Channel A)			2/0
7B	100'	DC Equip. Rm. - Train B (Channel B)			2/0
8A	100'	Battery Rm. Train A (Channel C)	0/2		0/2
8B	100'	Battery Rm. Train B (Channel D)	0/2		0/2
9A	100’	Battery Rm. - Train A (Channel A)	0/2		0/2
9B	100’	Battery Rm. - Train B (Channel B)	0/2		0/2
10A	100’	Remote Shutdown Rm. Train A	0/1		1/1
10B	100’	Remote Shutdown Rm. Train B	0/1		1/1
11A	120’	Cable Shaft - Train A			1/0
11B	120’	Cable Shaft - Train B			1/0
14	120’	Lower Cable Spreading Rm.			
		System 1	0/1		0/6
		System 2	0/1		0/6
		System 3	0/1		0/8
		System 4	0/1		0/8
		System 5	0/1		0/8
		System 6	0/1		0/8

Table 3.11.100-1 (Formerly TS Table 3.3-11)(Continued) (Page 2 of 5)

BUILDING – CONTROL (Continued)

15A	140’	Cable Shaft - Train A			1/0
15B	140’	Cable Shaft - Train B			1/0
17	140’	Control Rm. MCB's & Relay Cabinets			116/0
18A	160’	Cable Shaft - Train A			1/0
18B	160’	Cable Shaft - Train B			1/0
20	160’	Upper Cable Spreading Rm.			
		System 1	0/1		0/12
		System 2	0/1		0/8
		System 3	0/1		0/8
		System 4	0/1		0/8
		System 5	0/1		0/8

BUILDING - DIESEL GENERATOR

21A	100’	Diesel Generator - Train A	0/3	0/4	
21B	100’	Diesel Generator - Train B	0/3	0/4	
22A	100’	Diesel Generator Control Rm. – Train A			1/0
22B	100’	Diesel Generator Control Rm. – Train B			1/0
24A	115’	Combustion Air Intake Rm. - Train A			1/0
24B	115’	Combustion Air Intake Rm. - Train B			1/0
23A	131’	Fuel Oil Day Tank Train A	0/1		
23B	131’	Fuel Oil Day Tank Train B	0/1		
25A	131’	Exhaust Silencer Rm. Train A		3/0	
25B	131’	Exhaust Silencer Rm. Train B		3/0	

BUILDING – FUEL

28	100’	Spent Fuel Pool Cooling and Cleanup Pump Areas			3/0

Table 3.11.100-1 (Formerly TS Table 3.3-11)(Continued) (Page 3 of 5)

BUILDING - AUXILIARY

88A	51'-6" & 87A'	West Corridors			6/0
88B	51'-6" & 87B'	East Corridors			6/0
32A	51'-6" & 40'	LPSI Pump Rm. – Train A			0/2
32B	51'-6" & 40'	LPSI Pump Rm. – Train B			0/2
34A	70'	ECW Pump Rm. – Train A			2/0
34B	70'	ECW Pump Rm. – Train B			2/0
35A	70'	Shutdown Cooling Hr. x Chgr. Train A			4/0
35B	70'	Shutdown Cooling Hr. x Chgr. Train B			4/0
36	70'	Reactor Makeup and Boric Acid Makeup Room			1/0
37C	70' & 88'	Piping Penetration Rm. - Train A			5/0
37D	70' & 88'	Piping Penetration Rm. - Train B			4/0
37B	70'	Corridors – East			11/0
37A	70'	Corridors – West			11/0
39A	88'	Pipeways - Train A			8/0
39B	88'	Pipeways - Train B			8/0
42A	100'	Elect. Penetration Rm. - Tr. A (Chan. C)	0/1		0/25
42B	100'	Elect. Penetration Rm. - Tr. B (Chan. B)	0/1		0/24
42C	100'	Corridors - East & Southeast	0/2		3/35
42D	100'	Corridor – West	0/1		2/29
46A	100'	Charging Pump and Valve Gallery Rm. - Train A			0/3
46B	100'	Charging Pump and Valve Gallery Rm. - Train B			0/3
46E	100'	Charging Pump and Valve Gallery Rm. – Train E			0/3

Table 3.11.100-1 (Formerly TS Table 3.3-11)(Continued) (Page 4 of 5)

BUILDING – AUXILIARY (Continued)

47A	120’	Elect. Penetration Rm. - Tr. A (Chan. A)	0/1		0/28
47B	120’	Elect. Penetration Rm. - Tr. B (Chan. D)	0/1		0/24
48	120’	ECW Surge Tanks Corridor – Tr. A & B			3/0
50B	120’	Valve Gallery			1/0
51B	120’	Spray Chemical Storage Tk. Rm.			1/0
52A	120’	Central corridor – West	0/1		5/17
52D	120’	Central Corridor- East	0/1		7/18
54	120’	Reactor Trip Switchgear Rm.	1/0		6/0
56B	140’	Storage and Elect. Equip. Rm. – East			6/0
57J	140’	Radiation Protection Offices, Locker Rooms.			18/0

BUILDING – CONTAINMENT**

66A & 66B	100’ & 120’	Southwest and Southeast Perimeter	1/0		
67A & 67B	100’	Northwest and Northeast Perimeter	1/0		
66A	120’	Southwest Perimeter	1/0		
66B	120’	Southeast Perimeter	1/0		
67A & 67B	120’	Northwest and Northeast Perimeter	1/0		
63A	120'	No. 1 RCPs and SG Area			6/0
63B	120'	No. 2 RCPs and SG Area			6/0
66A & 66B 67A & 67B	140'	Southwest, Southeast, Northwest, and Northeast Perimeters	1/0		
63A	140'	No. 1 RCPs and SG Area			5/0
63B	140'	No. 2 RCPs and SG Area			5/0
70	140'	Refueling Pool and Canal Area			4/0
71A	140'	North Preaccess Normal AFU			2/0
71B	140'	South Preaccess Normal AFU			2/0

Table 3.11.100-1 (Formerly TS Table 3.3-11)(Continued) (Page 5 of 5)

MAIN STEAM SUPPORT STRUCTURE

72	80'	Turbine Driven Aux. Feedpump Rm.			0/3
73	80'	Motor Driven Aux. Feedpump Rm.			1/1
74A	100', 120' & 140'	Main Steam Isol. & Dump Valve Area North	0/6		
74B	100', 120' &140'	Main Steam Isol. & Dump Valve Area South	0/6		

OUTSIDE AREAS

83		Condensate Storage Tank Pump House			2/0
84A		Spray Pond Pump House – Train A			2/0
84B		Spray Pond Pump House – Train B			2/0

** The fire detection instruments located within the containment are not required to be OPERABLE during the performance of Type A containment leakage rate tests.

*(x/y): x is the number of instruments associated with early fire detection and notification only.

y is the number of instruments associated with actuation of fire suppression systems and early fire detection and notification.

T3.11 FIRE PROTECTION

T3.11.101 Fire Suppression Water System (formerly TS 3.7.11.1)

TLCO 3.11.101 The fire suppression water system shall be OPERABLE with:

a. Three 50% capacity fire suppression pumps, each with a capacity of at least 1350 gpm, with their discharge aligned to the fire suppression header

b. Two separate water supply tanks, each with a minimum contained volume of 300,000 gallons (23 feet, 1.5 inches), and

c. An OPERABLE flow path capable of taking suction from the T01-A tank and the T01-B tank and transferring the water through distribution piping with OPERABLE sectionalizing control or isolation valves to the yard hydrant curb valves, the last valve ahead of the water flow alarm device on each sprinkler or hose standpipe, and the last valve ahead of the deluge valve on each deluge or spray system required to be OPERABLE per Specifications T3.11.102, T3.11.104, and T3.11.105.

APPLICABILITY: At all times.

ACTIONS

------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump and/or one water supply inoperable.	A.1 Restore the inoperable equipment to OPERABLE status. OR	7 days (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2 Provide an alternate backup pump or water supply.	7 days
B. The fire suppression water system inoperable for reason other than Condition A.	B.1 Establish a backup fire suppression water system.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.101.1	Verify the contained water supply volume of the fire suppression water system.	7 days
TSR 3.11.101.2	Verify that the electrolyte level of each fire pump diesel starting 24-volt battery is above the plates.	7 days
TSR 3.11.101.3	Verify that the overall voltage of each fire pump diesel starting 24-volt battery is greater than or equal to 24 volts.	31 days
TSR 3.11.101.4	Start the electric motor-driven pump for the fire suppression water system and operate it for at least 15 minutes on recirculation flow.	31 days
TSR 3.11.101.5	Verify that each valve (manual, power operated, or automatic) in the flow path of the fire suppression water system (except the hydrant street isolation [CURB] valves) is in its correct position, when required to be OPERABLE.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.11.101.6	Verify that the diesel fuel oil day storage tanks for the fire pump diesel engines each contain at least 290 gallons (3/4 level) of fuel.	31 days on a STAGGERED TEST BASIS
TSR 3.11.101.7	Verify that the fire pump diesel engines start from ambient conditions and operate for at least 30 minutes on recirculation flow.	31 days on a STAGGERED TEST BASIS
TSR 3.11.101.8	Verify that the specific gravity of each fire pump diesel starting 24-volt battery is appropriate for continued service of the battery.	92 days
TSR 3.11.101.9	Verify that a sample of diesel fuel from the fuel storage tank for the fire pump diesel engines, obtained in accordance with ASTM-D4057-81, is within the acceptable limits specified in Table 1 of ASTM D975-89a when checked for viscosity, water, and sediment.	92 days
TSR 3.11.101.10	Deleted	
TSR 3.11.101.11	Verify that each hydrant street isolation [CURB] valve (manual power operated, or automatic) in the flow path of the fire suppression water system is in its correct position, when required to be OPERABLE.	12 months
TSR 3.11.101.12	Cycle each testable valve in the flow path of the fire suppression water system through at least one complete cycle of full travel.	12 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
TSR 3.11.101.13 Deleted	
TSR 3.11.101.14 Deleted	
TSR 3.11.101.15 Perform a system functional test which includes simulated automatic actuation of the fire suppression water system throughout its operating sequence. AND Verify that each fire suppression water system pump develops at least 1350 gpm at an indicated differential pressure of 125 psid by recording readings for at least 3 points on the test curve. AND Cycle each fire suppression water system valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel. AND Verify that each fire suppression water system pump starts sequentially to maintain the fire suppression water system pressure greater than or equal to 85 psig.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
TSR 3.11.101.16 Perform a flow test of the fire suppression water system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association.	3 years

T3.11 FIRE PROTECTION

T3.11.102 Spray and/or Sprinkler Systems (formerly TS 3.7.11.2)

TLCO 3.11.102 The Spray and/or Sprinkler Systems listed in Table 3.11.102-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the Spray/Sprinkler System is required to be OPERABLE.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the required spray and/or sprinkler systems inoperable in areas in which redundant systems or components could be damaged.	A.1 Establish a continuous fire watch with backup fire suppression equipment.	1 hour
B. One or more of the required spray and/or sprinkler systems inoperable in areas in which no redundant systems or components could be damaged.	B.1 Establish an hourly fire watch patrol.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.102.1	Verify that each valve (manual, power operated, or automatic) in the flow path of each of the required spray and/or sprinkler systems is in its correct position.	31 days
TSR 3.11.102.2	Cycle each testable valve in the flow path of each of the required spray and/or sprinkler systems through at least one complete cycle of full travel.	12 months
TSR 3.11.102.3	Perform a system functional test of each of the required spray and/or sprinkler systems which includes simulated automatic actuation of the system, and: Verify that the automatic valves in the flow path actuate to their correct positions on a thermal/smoke test signal, and: Cycle each valve in the flow path that is not testable during plant operations through at least one complete cycle of full travel.	18 months
TSR 3.11.102.4	Visually inspect the dry pipe spray and sprinkler headers of each of the required spray and/or sprinkler systems to verify their integrity.	18 months
TSR 3.11.102.5	Visually inspect each of the required spray and/or sprinkler systems nozzle's spray area to verify the spray pattern is not obstructed.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.11.102.6	Perform an air flow test through each open head spray/sprinkler header of each of the required spray and/or sprinkler systems and verify that each open head spray/sprinkler nozzle is unobstructed.	5 years

Table 3.11.102-1 (Formerly TS Table 3.7-3)
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SPRAY AND/OR SPRINKLER SYSTEMS

1. Lower Cable Spreading Room Zone 14 - Control Building 120 ft Elevation
   a. System 1
   b. System 2
   c. System 3
   d. System 4
   e. System 5
   f. System 6
2. Upper Cable Spreading Room Zone 20 - Control Building 160 ft Elevation
   a. System 1
   b. System 2
   c. System 3
   d. System 4
   e. System 5
3. Diesel Generator Room, Train A, Zone 21A - Diesel Generator Building 100 ft Elevation
4. Diesel Generator Room, Train B, Zone 21B - Diesel Generator Building 100 ft Elevation
5. Fuel Oil Day Tank Vault, Train A, Zone 23A - Diesel Generator Building 131 ft Elevation
6. Fuel Oil Day Tank Vault, Train B, Zone 23B - Diesel Generator Building 131 ft Elevation
7. Low Pressure Safety Injection Pump Room, Train A, Zone 32A Auxiliary Building 40ft and 51ft 6 inch Elevation
8. Low Pressure Safety Injection Pump Room Train B, Zone 32B – Auxiliary Building 40ft
   and 51ft 6 inch Elevation
9. Electrical Penetration Room, Train A (Channel C) Zone 42A - Auxiliary Building 100 ft Elevation
10. Electrical Penetration Room, Train B (Channel B) Zone 42B - Auxiliary Building 100 ft Elevation
11. Charging Pumps A, B, and E Zones 46A,46B AND 46E East Corridors, Zone 42C Auxiliary Building 100 ft Elevation
12. West Corridors, Zone 42D Auxiliary Building 100 ft Elevation
13. Electrical Penetration Room, Train A (Channel A) Zone 47A - Auxiliary Building 120 ft Elevation
14 Electrical Penetration Room, Train B (Channel D) Zone 47B - Auxiliary Building 120 ft Elevation
15. Central Corridors, Zone 52A - Auxiliary Building 120 ft Elevation
16. Central Corridors, Zone 52D - Auxiliary Building 120 ft Elevation

Table 3.11.102-1 (Formerly TS Table 3.7-3)
Page 2 of 2

17. Turbine Driven Auxiliary Feed Pump Room Zone 72 Main Steam Support Structure 81 ft Elevation.
18. Train A Compartments between Auxiliary & Control Buildings, 74 ft & 156 ft 4 inch Elevation Zone 86A
19. Train B Compartments between Auxiliary & Control Buildings, 74 ft & 156 ft 4 inch Elevation on Zone 86B
20. Train A and Train B Main Steam Support Structure, Zone 74A and Zone 74B 100 ft through 140 ft Elevation.

T3.11 FIRE PROTECTION

T3.11.103 CO2 Systems (formerly TS 3.7.11.3)

TLCO 3.11.103 The following low pressure CO2 systems shall be OPERABLE.

a. ESF Switchgear Room; one Train A, one Train B Zone 5A and 5B Control Building 100 ft Elevation

b. Battery Rooms; one Train A (Channel C) one Train B (Channel D) Zone 8A and 8B Control Building 100 ft Elevation

c. Battery Rooms; one Train A (Channel A) one Train B (Channel B) Zone 9A and 9B Control Building 100 ft Elevation

APPLICABILITY: Whenever equipment protected by the CO2 is required to be OPERABLE.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the required CO2 systems inoperable in areas in which redundant systems or components could be damaged.	A.1 Establish a continuous fire watch with backup fire suppression equipment.	1 hour
B. One or more of the required CO2 systems inoperable in areas in which no redundant systems or components could be damaged.	B.1 Establish an hourly fire watch patrol.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.103.1	For each of the required CO2 systems, verify the CO2 storage tank weight to be greater than 10,000 lb and pressure to be greater than 275 psig.	7 days
TSR 3.11.103.2	For each of the required CO2 systems, verify that each valve (manual, power operated, or automatic) in the flow is in its correct position.	31 days
TSR 3.11.103.3	For each of the required CO2 systems, verify that the system, actuates manually and automatically, upon receipt of a simulated actuation signal.	18 months
TSR 3.11.103.4	For each of the required CO2 systems, visually inspect that there are no obstructions in the discharge path of the nozzles or during a “Puff Test.”	18 months
TSR 3.11.103.5	For each of the required CO2 systems, verify each circuit from the control panel to the fire damper actuation devices is capable of performing its intended function.	54 months
TSR 3.11.103.6	For each of the required CO2 systems, perform a functional test of associated fire dampers.	54 months

T3.11 FIRE PROTECTION

T3.11.104 Fire Hose Stations (formerly TS 3.7.11.4)

TLCO 3.11.104 The fire hose stations shown in Table 3.11.104-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE, except that fire hose stations located in containment shall have their containment isolation valves closed in MODES 1, 2, 3, 4, and 5*.

* If hot work or other work relating to the use of combustible material or flammable liquids is to be performed in containment during MODE 5, the fire hose stations located in containment shall have their containment isolation valves open and their containment flooding valve closed during the period that the work is being performed.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the fire hose stations shown in Table 3.11.104-1 inoperable where the fire hose is the primary means of fire suppression.	A.1 Provide a gated wye on the nearest OPERABLE hose station. One outlet of the wye shall be connected to the standard length of hose provided for the OPERABLE hose station. The second outlet of the wye shall be connected to a length of hose sufficient to provide coverage for the area left unprotected by the inoperable hose station.	1 hour (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	The hose for the unprotected area shall be stored at the OPERABLE hose station. Signs identifying the purpose and location of the fire hose and related valves shall be mounted above the hose and at the inoperable hose station.	
B. One or more of the fire hose stations shown in Table 3.11.104-1 inoperable where the fire hose is not the primary means of fire suppression.	B.1 Provide a gated wye on the nearest OPERABLE hose station. One outlet of the wye shall be connected to the standard length of hose provided for the OPERABLE hose station. The second outlet of the wye shall be connected to a length of hose sufficient to provide coverage for the area left unprotected by the inoperable hose station. The hose for the unprotected area shall be stored at the OPERABLE hose station. Signs identifying the purpose and location of the fire hose and related valves shall be mounted above the hose and at the inoperable hose station.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.11.104.1 Visually inspect each of the fire hose stations shown in Table 3.11.104-1 accessible during plant operation to assure all required equipment is at the station.	31 days
TSR 3.11.104.2 Visually inspect each of the fire hose stations shown in Table 3.11.104-1 not accessible during plant operation to assure all required equipment is at the station.	18 months
TSR 3.11.104.3 Remove the hose at each of the fire hose stations shown in Table 3.11.104-1 for inspection and reracking.	18 months
TSR 3.11.104.4 Inspect all gaskets and replace any degraded gaskets in the couplings at each of the fire hose stations shown in Table 3.11.104-1.	18 months
TSR 3.11.104.5 For each of the fire hose stations shown in Table 3.11.104-1, partially open each hose station valve to verify valve operability and no flow blockage.	3 years
TSR 3.11.104.6 For each of the fire hose stations shown in Table 3.11.104-1, conduct a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.	3 years

Table 3.11.104-1 (Formerly TS Table 3.7-4)

FIRE HOSE STATIONS

LOCATION	ELEVATION	HOSE RACK IDENTIFICATION
Containment NE	80’	HS # 01
Containment SE	80’	HS # 02
Containment SW	80’	HS # 03
Containment NW	80’	HS # 04
Containment NE	100’	HS # 05
Containment SE	100’	HS # 06
Containment SW	100’	HS # 07
Containment NW	100’	HS # 08
Containment NE	120’	HS # 09
Containment SE	120’	HS # 10
Containment SW	120’	HS # 11
Containment NW	120’	HS # 12
Containment NE	140’	HS # 13
Containment SW	140’	HS # 14
Auxiliary Bldg. North Corridor-W	40’	HS # 17
Auxiliary Bldg. North Corridor-E	40’	HS # 18
Auxiliary Bldg. North Corridor-W	51’ 6”	HS # 21
Auxiliary Bldg. North Corridor-E	51’ 6”	HS # 22
Auxiliary Bldg SE	70’	HS # 23
Auxiliary Bldg SW	70’	HS # 24
Auxiliary Bldg NW	70’	HS # 25
Auxiliary Bldg North Center Corridor	70’	HS # 26
Auxiliary Bldg NE	70’	HS # 27
Auxiliary Bldg NW	88’	HS # 30 -Hose Removed-
Auxiliary Bldg NE	88’	HS # 31
Auxiliary Bldg SW	100’	HS # 33
Auxiliary Bldg East Corridor	120’	HS # 37
Auxiliary Bldg SW	120’	HS # 38
Control Bldg SW	74’	HS # 86
Control Bldg E	74’	HS # 87
Control Bldg SW	100’	HS # 88
Control Bldg East by Elevator	100’	HS # 89
Control Bldg SW	120’	HS # 90
Control Bldg SW	140’	HS # 92
Control Bldg SW	160’	HS # 94
Control Bldg SE	100’	HS # 108
Fuel Bldg South	100’	HS # 97

T3.11 FIRE PROTECTION

T3.11.105 Yard Fire Hydrants and associated emergency response vehicle (formerly TS 3.7.11.5)

TLCO 3.11.105 The yard fire hydrants shown in Table 3.11.105-1 and an associated equipped emergency response vehicle shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by yard fire hydrants is required to be OPERABLE.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 a are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the yard fire hydrants shown in Table 3.11.105-1 inoperable.	A.1 Have sufficient additional lengths of 2-1/2 inch diameter hose located in an OPERABLE, equipped emergency response vehicle to provide service from an OPERABLE yard fire hydrant adjacent to the unprotected area(s).	1 hour
B. Equipped emergency response vehicle inoperable.	B.1 Have another equipped emergency response vehicle OPERABLE.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.105.1	Visually inspect the emergency response vehicle to assure all required equipment is in the emergency response vehicles.	31 days
TSR 3.11.105.2	Visually inspect each of the yard fire hydrants shown in Table 3.11.105-1 for damage.	6 months
TSR 3.11.105.3	Conduct a hose hydrostatic test on each hose in the equipped emergency response vehicle at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.	12 months
TSR 3.11.105.4	Inspect all gaskets and replace any degraded gaskets in the couplings in the yard fire hydrants shown in Table 3.11.105-1.	12 months
TSR 3.11.105.5	Perform a flow check of each of the yard fire hydrants shown in Table 3.11.105-1 hydrant to verify its OPERABILITY.	12 months

TABLE 3.11.105-1

YARD FIRE HYDRANTS

LOCATION	HYDRANT NUMBER
Unit 1:	
150’ Plant North of Fuel Bldg.	F. H. #7
100’ Plant West of Rad Waste Bldg.	F. H. #9
150’ Plant Northwest of Fuel Bldg.	F. H. #8
100' South of Control Bldg.	F. H. #10
Unit 2:	
150’ Plant North of Fuel Bldg.	F. H. #15
100’ Plant West of Rad Waste Bldg.	F. H. #16
150’ Plant Northwest of Fuel Bldg.	F. H. #17
100' South of Control Bldg.	F. H. #18
Unit 3:	
150’ Plant North of Fuel Bldg.	F. H. #23
100’ Plant West of Rad Waste Bldg.	F. H. #24
150’ Plant Northwest of Fuel Bldg.	F. H. #25
100' South of Control Bldg.	F. H. #26

T3.11 FIRE PROTECTION

T3.11.106 Halon Systems (formerly TS 3.7.11.6)

TLCO 3.11.106 The following Halon systems shall be OPERABLE.

a. Train A Remote Shutdown Panel Room, Zone 10A - Control Building 100 ft Elevation.

b. Train B Remote Shutdown Panel Room, Zone 10B - Control Building 100 ft. Elevation.

APPLICABILITY: Whenever equipment protected by the Halon system is required to be OPERABLE.

ACTIONS

--------------------------NOTES--------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the required Halon systems inoperable in areas in which redundant systems or components could be damaged.	A.1 Establish a continuous fire watch with backup fire suppression equipment.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more of the required Halon systems inoperable in areas other than those in which redundant systems or components could be damaged.	B.1 Establish an hourly fire watch patrol.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.11.106.1	For each of the required Halon systems, verify that each valve (manual, power operated, or automatic) in the flow path is in its correct position.	31 days
TSR 3.11.106.2	For each of the required Halon systems, verify Halon storage tank weight or level to be at least 95% of full charge weight or level and pressure to be at least 90% of full charge pressure.	6 months
TSR 3.11.106.3	For each of the required Halon systems, verify the system actuates manually and automatically, upon receipt of a simulated test signal.	18 months
TSR 3.11.106.4	For each of the required Halon systems, perform a flow test through headers and nozzles to assure no blockage.	18 months
TSR 3.11.106.5	For each of the required Halon systems, verify each circuit from the control panel to the fire damper actuation devices is capable of performing its intended function.	54 months
TSR 3.11.106.6	For each of the required Halon systems, perform a functional test of associated fire dampers.	54 months

T3.11 FIRE PROTECTION

T3.11.107 Fire-Rated Assemblies (formerly TS 3.7.12)

TLCO 3.11.107 All fire-rated assemblies (walls, floor/ceilings, cable tray enclosures, and other fire barriers) separating safety-related fire areas or separating portions of redundant systems important to safe shutdown within a fire area and all sealing devices in fire-rated assembly penetrations (fire doors, fire dampers, cable, piping and ventilation duct penetration seals) shall be OPERABLE.

APPLICABILITY: When the equipment in an affected area is required to be OPERABLE.

ACTIONS

-------------------------NOTES-------------------------
The provisions of TLCO 3.0.100.3 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the required fire-rated assemblies (including sealing devices) inoperable.	A.1 Establish a continuous fire watch* on at least one side of the affected assembly.	1 hour
	<u>OR</u>	
	A.2.1 Verify the OPERABILITY of the fire detectors on at least one side of the inoperable assembly.	1 hour
	<u>AND</u>	(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2.2 Establish an hourly fire watch* patrol. * Closed circuit TV may be used in lieu of fire watches in radiation areas that would pose an unnecessary risk to personnel.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.11.107.1 For each of the required fire doors, verify that doors with automatic hold-open and release mechanisms are free of obstructions.	24 hours
TSR 3.11.107.2 For each of the required fire doors, verify that each unlocked fire door without electrical supervision is closed.	24 hours
TSR 3.11.107.3 For each of the required fire doors, verify that each locked-closed fire door is closed.	7 days
TSR 3.11.107.4 For each of the required fire doors, inspect the automatic hold-open, release and closing mechanism and latches.	6 months
TSR 3.11.107.5 For each of the required fire-rated assemblies and penetration devices, perform a visual inspection of the exposed surfaces of each fire rated assembly.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.11.107.6	For each of the required fire-rated assemblies and penetration devices, perform a visual inspection of at least 10% of each type of sealed penetration. If apparent changes in appearance or abnormal degradation's are found, a visual inspection of an additional 10% of each type of sealed penetration shall be made. This inspection process shall continue until a 10% sample with no apparent changes in appearance or abnormal degradation is found. Samples shall be selected such that each penetration seal will be inspected every 15 years.	18 months
TSR 3.11.107.7	For each of the required fire-rated assemblies and penetration devices, perform a visual inspection of 10% of the fire dampers and associated hardware, coincident with functional testing of the dampers.	18 months
TSR 3.11.107.8	For each of the required fire-rated assemblies and penetration devices, perform a functional test of at least 10% of the fire dampers that are installed in fire barriers separating redundant trains important to safe shutdown. If any dampers fail to operate correctly, an additional 10% of the dampers shall be sampled. This process shall continue until a 10% sample is verified OPERABLE. Samples shall be selected such that each damper will be inspected every 15 years.	18 months
TSR 3.11.107.9	For each of the required fire doors, perform a functional test.	18 months

T4.0 DESIGN FEATURES

Refer to PVNGS Improved Technical Specification 4.0.

T5.0 ADMINISTRATIVE CONTROLS

T5.0.100 Responsibility

Refer to PVNGS Improved Technical Specifications Section 5.1

(continued)

T5.0 ADMINISTRATIVE CONTROLS

T5.0.200 Organization

Refer to PVNGS Improved Technical Specifications Section 5.2

(continued)

T5.0 ADMINISTRATIVE CONTROLS

T5.0.300 Unit Staff Qualifications

Refer to PVNGS Improved Technical Specifications Section 5.3

(continued)

T5.0 ADMINISTRATIVE CONTROLS

T5.0.400 Procedures

Refer to PVNGS Improved Technical Specifications Section 5.4

(continued)

T5.0 ADMINISTRATIVE CONTROLS

T5.0.500 Programs and Manuals

The following programs shall be established, implemented and maintained.

5.0.500.1 Offsite Dose Calculation Manual (ODCM)

The purpose of the ODCM program is to contain the information, methodology and parameters used in calculating offsite dose as well as the related controls, monitoring activities and descriptions of the information to be included in the Annual Radiological Environmental Operating and Radioactive Effluent Release Reports. The Radiation Protection group is the program owner.

In addition to the program requirements specified in ITS 5.5.1, the following also applies:

a. The Radiological Environmental Monitoring Program shall be contained in the ODCM.

5.0.500.2 Primary Coolant Sources Outside Containment

The purpose of the Primary Coolant Sources Outside Containment Program is to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The PVNGS System Engineering (NSSS) group is the program owner.

In addition to the program requirements specified in ITS 5.5.2, the following also applies:

a. At least once per 18 months, during shutdown, conduct an inspection of all ECCS piping outside of containment, which is in contact with recirculation sump inventory during LOCA conditions and verify that the total measured leakage from piping and components is less than 1500 ml/hr when pressurized to at least 40 psig.
b. The provisions of TLCO 3.0.100.3 and TSR 3.0.100.3 are applicable to the inspection performed in T5.0.500.2a.

(continued)

5.0.500.3 Post Accident Sampling

Deleted

5.0.500.4 Radioactive Effluent Controls Program

The purpose of the Radioactive Effluent Controls Program is to specify the PVNGS measures used to control radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The Radiation Protection group is the program owner.

In addition to the program requirements specified in ITS 5.5.4, the following also applies:

a. Licensee-initiated major changes to the radioactive waste systems (liquid, gaseous, and solid) shall be submitted as part of the FSAR update or reported to the Commission in the Annual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by PRB. The discussion of each change shall contain:

   1. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR 50.59.

   2. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

   3. A detailed description of the equipment, components, and processes involved and the interfaces with other plant systems;

(continued)

4. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

5. An evaluation of the change, which shows the expected maximum exposures to a MEMBER OF THE PUBLIC in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license application and amendments thereto;

6. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made; and

7. An estimate of the exposure to plant operating personnel as a result of the change.

The program elements of the Radioactive Effluent Controls Program are described in the Offsite Dose Calculation Manual (ODCM).

5.0.500.5 Component Cyclic or Transient Limit

The purpose of the Component cyclic or Transient Limit Program is to track the UFSAR Section 3.9.1.1 cyclic and transient occurrences to ensure that components are maintained within the design limits. The PVNGS System Engineering (NSSS) group is the program owner.

The program requirements are specified in ITS 5.5.5.

(continued)

5.0.500.6 Pre-Stressed Concrete Containment Tendon Surveillance Program

The purpose of the Pre-Stressed Concrete Containment Tendon Surveillance Program is to ensure containment structural integrity by providing controls for monitoring any tendon degradation and the effectiveness of the corrosion protection medium. The PVNGS Program Engineering group is the program owner.

The structural integrity of the containment vessel shall be demonstrated at the end of 1, 3, and 5 years following the initial containment vessel structural integrity test and at 5-year intervals thereafter except where relief has been authorized by the NRC. All of the acceptance testing of tendon and visual examinations of end anchorages, adjacent concrete surfaces and containment vessel surfaces shall be performed sequentially and within the same time frame.

In addition to the program requirements specified in ITS 5.5.6, the following also applies:

a. The structural integrity of the containment vessel shall be maintained at a level consistent with the acceptance criteria in the Pre-Stressed Concrete Containment Tendon Surveillance Program while in MODES 1, 2, 3, and 4.

   Refer to TRM specification T3.6.200 for specification requirements. The provisions of TLCO 3.0.100.3 and TSR 3.0.100.3 are applicable to the Pre-Stressed Concrete Containment Tendon Surveillance Program.

(continued)

b. The structural integrity of the tendons shall be demonstrated by:

1. Determining from a random but representative sample of at least 10 tendons (6 hoop and 4 inverted U) that each group (hoop, and inverted U) has an observed lift-off force within the predicted limits for that group. For each subsequent inspection one tendon from each group shall be kept unchanged to develop a history and to correlate the observed data. The procedure of inspection and the tendon acceptance criteria shall be as follows:

(a) If the measured prestressing force of the selected tendon in a group lies above the prescribed lower limit, the lift-off test is considered to be a positive indication of the sample tendon's acceptability;

(b) If the measured prestressing force of the selected tendon in a group lies between the prescribed lower limit and 90% of the prescribed lower limit, two tendons, one on each side of this tendon, shall be checked for their prestressing forces. If the prestressing forces of these two tendons are above 95% of the prescribed lower limits for tendons, all three tendons shall be restored to the required level of integrity, and the tendon group shall be considered acceptable. If the measured prestressing force of any two tendons falls below 95% of the prescribed lower limits of the tendons, additional lift-off testing shall be done to detect the cause and extent of such occurrence;

(c) If the measured prestressing force of any tendon lies below 90% of the prescribed lower limit, the defective tendon shall be completely detensioned and additional lift-off testing shall be performed to determine the cause and extent of such occurrence;

(continued)

(d) If the average of all measured prestressing forces for each group (corrected for average condition) is found to be less than the minimum required prestress level at anchorage location for that group, the condition shall be considered as below the acceptance criteria for containment vessel structural integrity; and

(e) Unless there is degradation of the containment vessel below the acceptance criteria during the first three inspections, the sample population for subsequent inspections shall include at least 6 tendons (3 hoop and 3 inverted U).

2. Performing tendon detensioning, inspections, and material tests on a previously stressed tendon from each group. A randomly selected tendon from each group shall be completely detensioned in order to identify broken or damaged wires. A previously stressed tendon wire or strands from one tendon of each group shall be removed for testing and examination over the entire length to determine (which should include the broken wire if so identified) that:

   (a) The tendon wires are free of corrosion, cracks, and damage;

   (b) There are no changes in the presence or physical appearance of the sheathing filler-grease; and

   (c) A minimum tensile strength of 240,000 psi (guaranteed ultimate strength of the tendon material) exists for at least three wire samples (one from each end and one at mid-length) cut from each removed wire. Failure of any one of the wire samples to meet the minimum tensile strength test is evidenced that structural integrity is below the acceptance criteria.

3. Performing tendon retensioning of those tendons detensioned for inspection to at least force level recorded prior to detensioning or the predicted value, whichever is greater, with the tolerance within minus zero to plus 6%, except that

(continued)

the final seating force shall be such that the stress in the wire or strand shall not exceed 70% of the guaranteed ultimate tensile strength of the tendons. During retensioning of these tendons, the stress in the tendon shall not exceed 80% of its ultimate strength, and the changes in load and elongation shall be measured simultaneously at a minimum of three approximately equally spaced levels of force between zero and the seating force. If the elongation corresponding to a specific load differs by more than 10% from that recorded during installation, an investigation shall be made to ensure that the difference is not related to wire failures or slips of wires in anchorages; and

4. Verifying the OPERABILITY of the sheathing filler-grease by assuring:

   (a) No voids in excess of 5% of the net duct volume,

   (b) Minimum grease coverage exists for the different parts of the anchorage system, and

   (c) The chemical properties of the filler material are within the tolerance limits specified as follows:

Water content	0 - 5% by wt.
Chlorides	0 - 10 ppm
Nitrates	0 - 10 ppm
Sulfides	0 - 5 ppm
Reserved Alkalinity (Base Numbers)	0 - 50% of the installed value (installed value 0 - 5 for older grease)

c. As an assurance of the structural integrity of the containment vessel, tendon anchorage assembly hardware (such as bearing plates, stressing washers, wedges, and buttonheads) of all tendons selected for inspection shall be visually examined. For those containments in multiple unit plants for which only visual inspection need be performed, tendon anchorages selected for inspection shall be visually

(continued)

examined to the extent practical without dismantling the load-bearing components of the anchorages. The surrounding concrete shall also be checked visually for indication of any abnormal condition.

d. The exterior surface of the containment vessel shall be visually examined to detect areas of large spall, severe scaling, D-cracking in an area of 25 sq. ft. or more, other surface deterioration or disintegration, or grease leakage, each of which can be considered as evidence that the structural integrity is below the acceptance criteria.

(continued)

Table 5.0.500-1 (page 1 of 2)
Tendon Test Criteria

Tendon Surveillance - First Year

Tendon Number	Visual Inspection and Monitor Forces	Detension Tendon, Remove and Test Wire
V32	X	No
V43	X	No
V62	X	X
V75*	X	A
H13-007*	X	X
H13-021	X	No
H21-037	X	No
H21-044	X	No
H32-016	X	No
H32-030	X	X

-----NOTES-----

1. "X" means the tendon shown shall be inspected for the stated requirements during this surveillance.

2. "A" means the tendon shown shall be inspected for the stated requirements during the next or second surveillance.

3. "No" means that inspection is not required for that tendon.

4. "*" means control tendon.

(continued)

5.0.500 Programs and Manuals (continued)

Table 5.0.500-1 (page 2 of 2)
Tendon Test Criteria

Lift-Off Force First Year U-Tendons

TENDON NUMBER	TENDON END	MAXIMUM (kips)	MINIMUM (kips)
V32	Shop	1463	1343
	Field	1510	1386
V43	Shop	1436	1364
	Field	1486	1364
V62	Shop	1475	1354
	Field	1486	1364
V75	Shop	1527	1402
	Field	1504	1380

Hoop Tendons

TENDON NUMBER	TENDON END	MAXIMUM (kips)	MINIMUM (kips)
H13-007	Shop	1428	1300
	Field	1451	1321
H13-021	Shop	1515	1380
	Field	1491	1358
H21-037	Shop	1505	1371
	Field	1446	1317
H21-044	Shop	1484	1360
	Field	1530	1403
H32-016	Shop	1411	1282
	Field	1457	1324
H32-030	Shop	1473	1330
	Field	1473	1330

(continued)

5.0.500.7 Reactor Coolant Pump Flywheel Inspection Program

The purpose of the Reactor Coolant Pump Flywheel Inspection Program is to provide for the inspection of each reactor coolant pump flywheel. The PVNGS Program Engineering group is the program owner.

The program requirements are specified in ITS 5.5.7.

5.0.500.8 Inservice Inspection and Testing Programs

The purpose of the Inservice Inspection (ISI) and Inservice Testing (IST) Programs is to provide controls for ASME inspection and testing of ASME Code Class 1, 2 and 3 components. The PVNGS Engineering Programs group is the program owner for ISI and the PVNGS Component Programs group is the program owner for IST.

In addition to the program requirements specified in ITS 5.5.8, the following also applies:

a. Inservice inspection shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g).

b. Inservice Testing shall be performed in accordance with the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code) and applicable Addenda as required by 10 CFR 50.55a(f).

c. The testing frequency specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice inspection and testing activities required by the ASME Boiler and Pressure Vessel Code and applicable Addenda shall be applicable as specified in PVNGS ITS 5.5.8.a for ITS and TRM requirements.

d. The provisions of ITS SR 3.0.2 are applicable to ITS 5.5.8.a for performing inservice inspection and testing activities. The testing frequency specified in the ASME OM Code and applicable Addenda for the inservice testing activities required by the ASME OM Code and applicable Addenda shall be as specified in PVNGS ITS 5.5.8a for ITS and TRM requirements.

(continued)

5.0.500.9 Steam Generator (SG) Tube Surveillance Program

The purpose of the Steam Generator Tube Surveillance Program is to provide controls for the Inservice Inspection of steam generator tubes to ensure that structural integrity of this portion of the RCS is maintained. The PVNGS System Engineering Group is the program owner.

The program requirements are specified in ITS 5.5.9.

5.0.500.10 Secondary Water Chemistry Program

The purpose of the Secondary Water Chemistry Program is to provide controls for monitoring secondary water chemistry to inhibit SG tube degradation and low pressure turbine disc stress corrosion cracking. The PVNGS Chemistry group is the program owner.

Program requirements are specified in PVNGS TS 5.5.10.

5.0.500.11 Ventilation Filter Testing Program (VFTP)

The purpose of the Ventilation Filter Testing Program is to implement the required testing of the TS and TRM filter ventilation systems. The PVNGS Electrical Maintenance (HVAC) group is the program owner.

Program requirements for the Control Room Essential Filtration System (CREFS) and ESF Pump Room Exhaust Air Cleanup System (ESF PREACS) are specified in PVNGS TS 5.5.11 and as supplemented herein.

Program requirements for the Hydrogen Purge Cleanup system (HPCS) and the Fuel Building Essential Ventilation System (FBEVS) are contained herein.

The following requirements apply:

1. When testing pursuant to PVNGS TS SR 3.7.11.2, TS SR 3.7.13.2, TSR 3.6.100.2 and TSR 3.9.104.2, the CREFS, PREACS, HPCS and FBEVS shall be demonstrated OPERABLE at least once per 18 months or:

(continued)

(a) after any maintenance affecting the airflow distribution or integrity of the HEPA or charcoal adsorber filter banks, or

(b) following painting, fire, or a chemical release in any ventilation zone communicating with the system that has been evaluated to have the potential to adversely affect the integrity of the filters.

2. When testing the CREFS, PREACS, HPCS and FBEVS pursuant to PVNGS TS SR 3.7.11.2, TS SR 3.7.13.2, TSR 3.6.100.2 and TSR 3.9.104.2, perform the in-place testing activities in accordance with Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 and the PVNGS VFTP. (In response to NRC Generic Letter 83-13).

3. After every 720 hours of charcoal adsorber operation and when testing the CREFS and PREACS pursuant to PVNGS TS 5.5.11.c, the HPCS pursuant to PVNGS TRM TSR 3.6.100.2, and the FBEVS pursuant to TRM TSR 3.9.104.2, verify within 31 days after a representative charcoal sample is removed, being obtained in accordance with the application of Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, as described in Section 1.8 of the UFSAR, that the methyl iodide penetration is less than or equal to the value specified below, when tested in accordance with ASTM D3803-1989, at a temperature of 30°C and relative humidity specified as follows:

	Penetration	RH
CREFS	$\leq$2.5%	70%
ESF PREACS/FBEVS	$\leq$2.5%	70%
HPCS	$\leq$2.5%	70%

4. After each complete or partial replacement of a HEPA filter bank for the HPCS and FBEVS by verifying that the HEPA filter banks remove greater than or equal to 99.0% of the DOP when they are tested in-place in accordance with ANSI N510-1980. The system flowrates for the HPCS and FBEVS are as specified below +/- 10%:

HPCS	50 CFM
FBEVS	6000 CFM

(continued)

5. After each complete or partial replacement of a charcoal adsorber bank for the HPCS and FBEVS by verifying that the charcoal adsorbers remove greater than or equal to 99.0% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980. The system flowrates for the HPCS and FBEVS are as specified below +/- 10%:

HPCS	50 CFM
FBEVS	6000 CFM

6. For the HPCS and FBEVS, demonstrate at least once per 18 months that the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is as specified below when tested in accordance with Regulatory Guide 1.52, Revision 2 and ANSI N510-1980 at the system flowrate specified as follows +/- 10%:

Ventilation System	Delta P	Flowrate
HPCS	< 2.26 inches water gauge	50 CFM
FBEVS	≤ 5.2 inches water gauge	6000 CFM

7. For the system specified below, demonstrate at least once per 18 months that the heaters dissipate at least the following specified value when tested in accordance with ANSI N510-1980:

Ventilation System	Wattage
HPCS	0.5 kW

8. The provisions of TLCO 3.0.100.3 and TSR 3.0.100.3 are applicable to the requirements of T5.0.500.11.1 (a) and (b), T5.0.500.11.3, T5.0.500.11.4, T5.0.500.11.5, T5.0.500.11.6 and T5.0.500.11.7.

5.0.500.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

The purpose of the Explosive Gas and Storage Tank Radioactivity Monitoring Program is to provide control for potentially explosive gas mixtures contained in the Waste Gas Holdup System, and for the quantity of radioactivity contained in gas storage tanks and unprotected outdoor liquid storage tanks. The PVNGS Chemistry group is the program owner.

(continued)

The program requirements are specified in ITS 5.5.12.

Refer to TRM specifications T3.10.200, T3.10.201 and T3.10.202 for specification requirements.

5.0.500.13 Diesel Fuel Oil Testing Program

The purpose of the Diesel Fuel Oil Testing Program is to ensure the acceptability of fuel oil prior to addition to storage tanks. The PVNGS Chemistry group is the program owner.

The program requirements are specified in ITS 5.5.13.

5.0.500.14 Technical Specifications (TS) Bases Control Program

The purpose of the Technical Specifications Bases Control Program is to provide a means for processing changes to the Bases of the PVNGS ITS. Nuclear Regulatory Affairs is the program owner.

Program requirements are specified in ITS 5.5.14.

5.0.500.15 Safety Function Determination Program (SFDP)

The purpose of the Safety function Determination Program is to ensure that a loss of safety function is detected and appropriate actions taken. The PVNGS Operations group is the program owner.

Program requirements are specified in ITS 5.5.15.

5.0.500.16 Containment Leakage Rate Testing Program

The purpose of the Containment Leakage Rate Testing Program is to implement the required containment leakage rate testing. The PVNGS Program Engineering group is the program owner.

In addition to the program requirements specified in ITS 5.5.16, the following also applies:

a. Demonstrate CONTAINMENT INTEGRITY after each closing of each penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing in accordance with ITS 5.5.16.

(continued)

b. Leakage rate acceptance criteria:

1. For the required 42 inch containment purge supply and exhaust isolation valves with resilient material seals measured leakage rate is less than or equal to 0.05 L_a when pressurized to P_a.

2. For 8 inch containment purge supply and exhaust isolation valves with resilient material seals measured leakage rate is less than or equal to 0.01 L_a when pressurized to P_a.

c. The provisions of TLCO 3.0.100.3 and TSR 3.0.100.3 are applicable to the requirements of T5.0.500.16 a and b.

5.0.500.17 Process Control Program (PCP)

The purpose of the Process Control Program is to contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, State regulations, burial ground requirements, and other requirements governing the disposal of solid radioactive waste. The PVNGS Radiation Protection Group is the program owner.

Requirements for changes to the PCP are contained in the PVNGS QA Plan.

5.0.500.18 Technical Requirements Manual (TRM) Control Program

The purpose of the Technical Requirements Manual Control Program is to provide a means for establishing controls and processing changes to the TRM. Nuclear Regulatory Affairs is the program owner.

5.0.500.19 Configuration Risk Management Program (CRMP)

The Configuration Risk Management Program (CRMP) provides a proceduralized risk-informed assessment to manage the risk associated with equipment inoperability. The program applies to technical specification structures, systems, and components for

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which a risk-informed Completion Time has been granted. The program shall include the following elements:

a. Provisions for the control and implementation of a Level 1 at-power internal events PRA-informed methodology. The assessment is to be capable of evaluating the applicable plant configuration.

b. Provisions for performing an assessment prior to entering the plant configuration described by the Limiting Conditions for Operation (LCO) Action Statement for preplanned activities.

c. Provisions for performing an assessment after entering the plant configuration described by the LCO Action Statement for unplanned entry into the LCO Action Statement.

d. Provisions for assessing the need for additional actions after the discovery of additional equipment-out-of service conditions while in the plant configuration described by the LCO Action Statement.

e. Provisions for considering other applicable risk-significant contributors such as Level 2 issues and external events, qualitatively or quantitatively.

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T5.0 ADMINISTRATIVE CONTROLS

T5.0.600 Reporting Requirements

T5.0.600.1 Annual Reports

In addition to the requirements of PVNGS ITS 5.6, annual reports shall also include the results of specific activity analysis in which the primary coolant exceeded the limits of PVNGS ITS 3.4.17. The following information shall be included:

(1) Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded;

(2) Results of the last isotopic analysis for radioiodine performed prior to exceeding the limit, results of analysis while limit was exceeded and results of one analysis after the radioiodine activity was reduced to less than limit. Each result should include date and time of sampling and the radioiodine concentrations:

(3) Clean-up system flow history starting 48 hours prior to the first sample in which the limit was exceeded;

(4) Graph of the I-131 concentration and one other radioiodine isotope concentration in microcuries per gram as a function of time for the duration of the specific activity above the steady-state level; and

(5) The time duration when the specific activity of the primary coolant exceeded the radioiodine limit.

T5.0.600.2 Startup Reports

The requirement to submit startup reports to the NRC has been deleted. However, appropriate testing and retention of startup test records will continue to be performed in accordance with the requirements of 10 CFR 50, Appendix B, and the PVNGS Quality Assurance Program. Records will be maintained in accordance with the requirements of PVNGS UFSAR Section 1.8.

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T5.0.600.3 Operating Data Reporting

Provide to the NRC, using an industry database such as the Consolidated Data Entry program, the operating data (for each calendar month) that is described in Generic Letter 97-02, "Revised Contents of the Monthly Operating Report," by the last day of the month following the end of each calendar quarter.

T5.0 ADMINISTRATIVE CONTROLS

T5.0.700 High Radiation Area

Refer to PVNGS Improved Technical Specifications Section 5.7

T3.0 TLCO Applicability

TLCO 3.0.100.1

See ITS LCO 3.0.1 Specification Bases

TLCO 3.0 100.2

See ITS LCO 3.0.2 Specification Bases

TLCO 3.0 100.3

See ITS LCO 3.0.3 Specification Bases

TLCO 3.0 100.4

See ITS LCO 3.0.3 Specification Bases

TLCO 3.0 100.5

See ITS LCO 3.0.4 Specification Bases

T3.0 TRM Surveillance Requirent (TRS) Applicability

TSR 3.0.100.1

See ITS SR 3.0.1 Specification Bases

TSR 3.0.100.2

See ITS SR 3.0.2 Specification Bases

TSR 3.0.100.3

See ITS SR 3.0.3 Specification Bases

TSR 3.0.100.4

See ITS SR 3.0.3 Specification Bases

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T6.0 TRM SPECIFICATION BASES

T3.1.100 Flow Paths - Shutdown
T3.1.101 Flow Paths - Operating
T3.1.102 Charging Pumps - Shutdown
T3.1.103 Charging Pumps - Operating
T3.1.104 Borated Sources - Shutdown
T3.1.105 Borated Sources - Operating

BACKGROUND Boration equipment is needed to support reactivity control and the pressure and inventory control safety functions during normal operations and anticipated operational occurrences. A functional boration "system" consists of a borated water source, a gravity-fed suction pathway, a pump capable of being powered from an emergency power supply, and a discharge path to the RCS. Use of redundant components within the chemical and volume control, safety injection, and spent fuel pool cooling systems enhances flexibility and reliability in meeting design requirements.

Soluble boron in the reactor coolant and control rods provide two diverse methods of core reactivity control. In accordance with the provisions of GDC 26, boration systems can reliably control the rate of reactivity changes resulting from planned, normal power changes, including xenon burnout, without exceeding acceptable fuel design limits. Each boration system is capable of maintaining the temperature-dependent shutdown margin and KN-1 requirements of the Technical Specifications during a cooldown. In addition, each boration system can add the boron equivalent of 4% $\Delta k/k$, not including the effects of xenon, during a plant cooldown to mode 5 considering only the borated makeup water used to compensate for thermal contraction of the coolant. Under normal conditions with letdown in service, the boration systems are also capable of making the core subcritical from a hot operating condition and holding it subcritical in the hot standby condition. In the event that Technical Specification shutdown margin requirements are not met during normal operations, the associated action statements direct the operator to initiate boration and continue until margins are restored. One boration system can add 1% $\Delta k/k$ of

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negative reactivity in less than 4 hours assuming "typical" reactor physics parameters and nominal system performance with letdown in service.

In accordance with GDC 33, boration systems can supply reactor coolant makeup for protection against breaks in small lines connected to the reactor coolant pressure boundary. Small lines, such as those for instrument and sample connections, contain flow orifices to limit leakage rates within the capacity of available charging pumps. As part of the normal makeup, the boration systems assure that specified acceptable fuel design limits are not exceeded as a result of minor reactor coolant leakage with or without offsite electrical power.

GDC 10 and GDC 19 require in part that the reactor coolant system be designed with appropriate margin and controls to assure that specified acceptable fuel design limits are not exceeded during normal operation and anticipated operational occurrences. The operability of boration systems ensures that primary system pressure and inventory (pressurizer level) can be adequately controlled following a loss of offsite power and subsequent cooldown to cold shutdown conditions. In combination with the shutdown cooling system, boration systems are capable of supporting a natural circulation cooldown in accordance with the requirements of Branch Technical Position (BTP) RSB 5-1 as accepted for PVNGS as a Class 2 plant.

APPLICABLE SAFETY ANALYSIS

None of the accidents analyzed in chapter 15 of the safety analysis report require charging or auxiliary spray for mitigation of the event. The boration systems support general design requirements, and verification that the systems can perform their safety functions is contained in design calculations separate from the accident analyses. Although these calculations are conservative with respect to expected system capability, they are based on nominal system conditions/performance, and the effects of instrument uncertainty are not included. The results of these analyses are summarized in UFSAR 9.3.4. Additional requirements and

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commitments associated with natural circulation cooldown are presented in UFSAR Appendix 5C.

In addition to performance requirements, the general design criteria also place limits on the damage possible from malfunctions of the boration systems. GDC 28 requires that the rate of reactivity addition be limited so that postulated reactivity accidents do not result in yielding of reactor coolant pressure boundary materials or deformation of fuel and vessel internals that may impair core cooling. This is verified in part by the UFSAR 15.4.6 analysis for inadvertent deboration. Boration systems may also affect GDC 15, which requires that reactor coolant pressure boundary design limits shall not be exceeded during normal or anticipated operational occurrences. UFSAR 15.5.2 shows that charging pump flow is low enough to ensure that the bounding pressurizer level control system malfunction will not overpressurize the primary system.

LCO

The OPERABILITY of the boration systems ensures the capability to control reactivity during power changes, maintain shutdown margin requirements, makeup for reduction in reactor coolant volume due to contraction and nominal system losses, makeup for losses due to small breaks in the RCS pressure boundary, provide reactor coolant pump seal injection, and control reactor coolant pressure through the use of auxiliary spray when required.

The charging pumps have a design flow of approximately 44 gpm, but pump inefficiencies result in a nominal charging pump discharge flow of about 42 gpm. Because of the nature of positive displacement pumps, the pump discharge flow rate does not vary significantly with reactor coolant system pressure. The net charging flow is the total charging pump discharge flow minus the reactor coolant pump controlled bleed-off flow, which does not enter the reactor coolant system. With two pumps required to be OPERABLE, the minimum net charging flow of 26 gpm for a single pump ensures that the boron injection rate described in the basis of the Technical Specifications can be provided even in the event of a single failure. In addition, the nominal charging flow from a single pump provides adequate

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makeup and auxiliary pressurizer spray for a natural circulation cooldown conducted in accordance the requirements of BTP RSB 5-1, which also postulates the single active failure of the other pump. Lastly, the OPERABILITY of two charging pumps ensures that the system can mitigate the effects of a small break in the reactor coolant system. Consideration of a single failure is not required in support of GDC 33, and the nominal net charging rate of 68 gpm from two charging pumps (i.e., 26 gpm + 42 gpm) exceeds the maximum break flow and provides sufficient makeup to prevent violation of fuel design limits during the subsequent controlled cooldown.

An OPERABLE charging pump must be powered from an OPERABLE ESF bus that can be energized from either an offsite circuit or an emergency diesel generator. Use of safety grade power supplies in combination with gravity-fed flow suction pathways provides a high level of assurance of boration system function during normal operations and following a loss of offsite power.

Requiring two of three boration flowpaths to be OPERABLE provides a high probability that at least one pathway will be available to connect the borated water source to the charging pump suction. All of the specified pathways are gravity-fed and therefore do not require use of non-class pumps to provide net positive suction head for the charging pumps. Since the VCT boron concentration is normally much less than 4000 ppm and the tank may be pressurized with a noncondensible gas, the two pathways that utilize the normal charging pump suction are not OPERABLE unless VCT outlet valve CH-501 can be closed. Although not specified, the availability of an additional flow path from the charging pump discharge to the RCS is implied. Actions outside the control room have been acknowledged in aligning the flowpaths. The specified flowpaths are neither fully safety grade nor single failure proof. However, the probability of a single-point vulnerability failing when called upon is low. In addition, high-pressure safety injection in combination with the reactor coolant head vents provides a diverse method of accomplishing the boration safety functions. Overall this results in an acceptable level of functional reliability for the boration systems.

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The Refueling Water Tank (RWT) is required per Technical Specifications to be OPERABLE in MODES 1-4 in order to provide an adequate supply of borated water for emergency core cooling systems in the event of a LOCA. The minimum RWT level required in the Technical Specifications ensures that sufficient volume is available above the high suction nozzle in order to conduct a natural circulation cooldown in accordance with the provisions of BTP RSB 5-1. That minimum level also provides adequate borated make-up for a small line break and all credited reactivity control functions. The Spent Fuel Pool (SFP) is also required to be OPERABLE in MODES 1-4 as a redundant borated water source to protect against single failure for the emergency boration function. In other analyses, failure of the RWT as a passive, seismic class 1, safety grade component is not a credible malfunction.

A cold shutdown reserve volume (CSDRV) is maintained to compensate for the change in reactor coolant volume that results from thermal contraction during cooldown to cold shutdown entry conditions with RCP controlled bleed-off isolated. The CSDRV also bounds the volumes of borated water required for postulated reactivity events. The minimum volumes required for both the RWT and SFP provide a high degree of reliability with respect to the reactivity control and safe shutdown capabilities. To account for depletion of makeup inventory during cooldown, the cold shutdown reserve volume requirements vary as a function of cold leg temperature. Once the primary has been cooled to cold shutdown conditions, borated water inventory is only required to makeup for further contraction during continued cool down to refueling conditions and to refill the pressurizer.

The requirements on temperature and boron concentration of the borated water sources are consistent with the values used in safety analysis and reactivity calculations. The upper limit spent fuel pool temperature is 180°F; however, the 2% difference in density between water at 120° and 180° has negligible impact on the required volume of makeup water or its reactivity worth.

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APPLICABILITY

The normal makeup system contains three charging pumps, all of which are normally in service. With the RCS temperature above 210°F, a minimum of two charging pumps is required to mitigate the effects of a small line break over all of the expected operating pressures. A minimum of two boron injection systems is also required to ensure single functional capability in those events where an assumed failure renders one of the systems inoperable. With the RCS temperature below 210°F, one system is acceptable without single failure consideration based on the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes.

In MODES 1-4, charging pumps are required in order to accomplish boron injection over the full range of expected reactor coolant system pressure. The provision of three charging pumps when only two are required provides for maintenance and flexibility of operation. In modes 5 and 6, the safety grade high pressure and low pressure safety injection pumps are capable of delivering the required flow rates. Since they are also energized from an emergency power supply, they are acceptable alternatives if a charging pump is not OPERABLE at low system pressures.

ACTIONS

In MODES 1-4, the allowable out-of-service period of 72 hours for one required boration system inoperable is consistent with those for safety related equipment. This time allows for minor component repair or corrective action without undue risk of overall facility safety during the repair period. If restoration can not be accomplished in 72 hours, enter TLCO 3.0.100.3 and initiate corrective action in accordance with PVNGS corrective action program and initiate an operability determination, as necessary to determine the impact on equipment in the technical specifications. This should include an assessment of the plant configuration and a determination of the appropriate compensatory action and/or Mode changes to maintain safe operation and compliance with design and licensing basis.

(continued)

In MODES 5-6, the absence of an OPERABLE boration method represents a serious degradation in reactivity management controls. Suspension of core alterations and positive reactivity additions preclude the need for emergency boration until control can be re-established.

SURVEILLANCE REQUIREMENTS

Surveillance tests for the RWT in the Technical Specifications as a supply of emergency core cooling water are more restrictive than those as a borated water source. Since SFP is as stable as the RWT with respect to temperature, level (volume), and boron concentration, the prescribed testing frequency is the same as for the RWT.

Based on operational experience, monthly verification of manual valve position in the boration flowpaths provides reasonable assurance that the system will function as designed, and remedial operator actions outside the control room in addition to those needed to normally align the system are not needed to initiate flow.

The charging pumps and valves in the boration flow paths are tested in accordance with the station in-service testing program.

(continued)

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T3.1.200 Shutdown Margin - Reactor Trip Breakers Closed
(See the ITS 3.1.2 Specification Bases.)

T3.1.201 This TRM specification is not used and is intentionally left blank.

T3.1.202 Control Element Assembly - Alignment
(See the ITS 3.1.5 Specification Bases.)

T3.1.203 Control Element Assembly - Drop Time
(See the ITS 3.1.5 Specification Bases.)

T3.2.200 Azimuthal Power Tilt - T_q

The limitations on the AZIMUTHAL POWER TILT are provided to ensure that design safety margins are maintained. An AZIMUTHAL POWER TILT greater than the limit specified in the CORE OPERATING LIMITS REPORT with COLSS in service or 0.03 with COLSS out of service is not expected and if it should occur, operation is restricted to only those conditions required to identify the cause of the tilt. The tilt is normally calculated by COLSS. A minimum core power of 20% of RATED THERMAL POWER is assumed by the CPCs in its input to COLSS for calculation of AZIMUTHAL POWER TILT. The 20% RATED THERMAL POWER threshold is due to the neutron flux detector system being inaccurate below 20% core power. Core noise level at low power is too large to obtain usable detector readings. The surveillance requirements specified when COLSS is out of service provide an acceptable means of detecting the presence of a steady-state tilt. It is necessary to explicitly account for power asymmetries because the radial peaking factors used in the core power distribution calculations are based on an untilted power distribution.

The AZIMUTHAL POWER TILT is equal to $(P_{tilt}/P_{untilt})-1.0$ where:

AZIMUTHAL POWER TILT is measured by assuming that the ratio of the power at any core location in the presence of a tilt to the untilted power at the location is of the form:

$$P_{tilt}/P_{untilt} = 1 + T_q \; g \cos(\text{Theta} - \text{Theta}_o)$$

where:

T_q is the peak fractional tilt amplitude at the core periphery
g is the radial normalizing factor
Theta is the azimuthal core location

(continued)

$Theta_o$ is the azimuthal core location of maximum tilt

P_{tilt}/P_{untilt} is the ratio of the power at a core location in the presence of a tilt to the power at that location with no tilt.

The AZIMUTHAL POWER TILT allowance used in the CPCs is defined as the value of CPC addressable constant TR-1.0.

T3.3.100 Supplementary Protection System (SPS) Instrumentation

The OPERABILITY of the reactor protective and Engineered Safety Features Actuation Systems instrumentation and bypasses ensures that (1) the associated Engineered Safety Features Actuation action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and (4) sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the safety analyses.

The quarterly frequency for the channel functional tests for these systems is based on the analyses presented in the NRC approved topical report CEN-327-A, "RPS/ESFAS Extended Test Interval Evaluation," and CEN-327-A, Supplement 1, and calculation 13-JC-SB-200-Rev. 01.

The verification of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the safety analyses. The instrumentation response times are made up of the time to generate the trip signal at the detector (sensor response time) and the time for the signal to interrupt power to the CEA drive mechanism (signal or trip delay time).

Response time may be verified by any series of sequential, overlapping or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Topical Report CE NPSD-1167-A, "Elimination of

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Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the Topical Report. Response time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time.

T3.3.101 Radiation Monitoring Instrumentation

The OPERABILITY of the radiation monitoring channels ensures that: (1) the radiation levels are continually measured in the areas served by the individual channels and (2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

T3.3.102 Incore Detectors

The OPERABILITY of the incore detectors with the specified minimum complement of equipment per TLCO 3.3.102.a, b, and c ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core.

The OPERABILITY of the incore detectors with the specified minimum complement of equipment per TLCO 3.3.102.a, b, and d prior to exceeding 30% power after refueling ensures that the assumptions supporting the Inadvertent Loading of a Fuel Assembly analysis are met. The provisions of TLCO 3.0.100.3 apply given that the actual detector compliment may, with specific analysis, be shown to be able to detect a misloaded fuel assembly.

As an alternative to a specific analysis, performing CEA Symmetry checks for at least one CEA group having a CEDM above the 4x4 array of fuel assemblies for each 4x4 not in compliance with TLCO 3.3.102 Condition B is an alternative method of verifying that the assumptions supporting the Inadvertent Loading of a Fuel Assembly are met. This testing is done at Hot Zero Power, xenon free conditions.

The OPERABILITY of the incore detectors with the specified minimum complement of equipment per TLCO 3.3.102.a, b, and d after exceeding 30% power after refueling ensures that the assumptions supporting the Inadvertent Loading of a Fuel Assembly analysis are met. There are misloadings that are not detectable at beginning of cycle. These misloadings become detectable over time with a slowly changing deviation from predicted power distribution. Therefore, the

(continued)

TRM SPECIFICATION BASES

specified minimum complement of equipment per TLCO 3.3.102.a, b, and d requires monitoring during the cycle. The slow rate of change in the power distribution factors into the Completion Time and the applicability of TLCO 3.0.100.3. Specific analysis may show that a misloaded fuel assembly is detectable given the actual equipment configuration and core conditions.

T3.3.103 Seismic Monitoring

The OPERABILITY of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility to determine if plant shutdown is required pursuant to Appendix A of 10 CFR Part 100. The instrumentation is consistent with the recommendations of Regulatory Guide 1.12, "Nuclear Power Plant Instrumentation for Earthquakes," Revision 2 as identified in the PVNGS FSAR.

T3.3.104 Meteorological Instrumentation

The OPERABILITY of the meteorological instrumentation ensures that sufficient meteorological data are available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public and is consistent with the recommendations of Regulatory Guide 1.23 "Onsite Meteorological Programs," February 1972. Wind speeds less than 0.6 MPH cannot be measured by the meteorological instrumentation.

Surveillance requirement TSR 3.3.104.2 is modified by a NOTE to indicate that the windspeed sensors are excluded from the CHANNEL CALIBRATION. The device is fixed by design and no adjustments are possible.

T3.3.105 Post Accident Monitoring Instrumentation

The OPERABILITY of the post-accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG 0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."

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T3.3.106 Loose-Part Detection Instrumentation

The OPERABILITY of the loose-part detection instrumentation ensures that sufficient capability is available to detect loose metallic parts in the primary system and avoid or mitigate damage to primary system components. The allowable out-of-service times and surveillance requirements are consistent with the recommendations of Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors," May 1981.

T3.3.107 Explosive Gas Monitoring System

The explosive gas instrumentation is provided for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the GASEOUS RADWASTE SYSTEM. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

T3.3.108 Fuel Bldg Essential Ventilation Actuation Signal (FBEVAS)

The FBEVAS is an instrumentation channel that actuates the Fuel Building Essential Ventilation System (FBEVS) to minimize radioactive material released from an irradiated fuel assembly during a Fuel Handling Accident.

TLCO 3.3.108 requires one channel of FBEVAS which includes the Actuation Logic, Manual Trip, and radiation monitor to be OPERABLE. The cross-train trip function is provided as a defense-in-depth capability and is not required for FBEVAS channel operability.

During movement of irradiated fuel assemblies in the fuel building with the required FBEVAS channel inoperable, an OPERABLE FBEVS train must be immediately placed in the emergency mode of operation (i.e., fan running, valves/dampers aligned to the post-FBEVAS mode, etc.) or movement of irradiated fuel assemblies must be suspended immediately. The first action ensures that no undetected failures preventing FBEVS system operation will occur, and that any active failure will be readily detected. If an OPERABLE FBEVS train is not placed in the emergency mode of operation, this action requires suspension of the movement of irradiated fuel assemblies in order to minimize the risk of release of radioactivity that might require the actuation FBEVS. This does not preclude the movement of fuel to a safe position.

Movement of spent fuel casks containing irradiated fuel assemblies is not within the scope of the Applicability of this technical specification. The

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movement of dry casks containing irradiated fuel assemblies will be done with a single-failure-proof handling system and with transport equipment that would prevent any credible accident that could result in a release of radioactivity.

T3.3.200 RPS Instrumentation - Operating
(See the ITS 3.3.1 Specification Bases.)

If a valid CPC cabinet high temperature alarm is received, it is possible for an OPERABLE CPC and CEAC to be affected and not be completely reliable. Therefore, a CHANNEL FUNCTIONAL TEST must be performed on OPERABLE CPCs and CEACs within 12 hours. The Completion Time of 12 hours is adequate considering the low probability of undetected failure, the consequences of a single channel failure, and the time required to perform a CHANNEL FUNCTIONAL TEST.

T3.4.100 Auxiliary Spray System

The auxiliary pressurizer spray is required to depressurize the RCS by cooling the pressurizer steam space to permit the plant to enter shutdown cooling. The auxiliary pressurizer spray is required during those periods when normal pressurizer spray is not available, such as during natural circulation and during the later stages of a normal RCS cooldown. The auxiliary pressurizer spray also distributes boron to the pressurizer when normal pressurizer spray is not available.

T3.4.101 RCS Chemistry

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride, and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

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TRM SPECIFICATION BASES

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

T3.4.102 Pressurizer Heatup and Cooldown Limits

The limitations imposed on the pressurizer heatup and cooldown rates and spray water temperature differential are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code Requirements.

T3.4.103 Intentionally Blank

T3.4.104 RCS Vents (Reactor Head Vents)

Reactor Coolant System vents are provided to exhaust noncondensible gases and/or steam from the primary system that could inhibit natural circulation core cooling. The OPERABILITY of at least one Reactor Coolant System vent path from the reactor vessel head ensures the capability exists to perform this function.

A vent path is the flow capability from the reactor vessel head to the reactor drain tank (RDT) or from the reactor vessel head to containment atmosphere. The four vent paths are:

1. From the reactor vessel head through solenoid operated valve (SOV) HV-101, then through SOV HV-105 to the RDT.
2. From the reactor vessel head through SOV HV-101, then through SOV HV-106 directly to containment atmosphere.
3. From the reactor vessel head through SOV HV-102, then through SOV HV-105 to the RDT.
4. From the reactor vessel head through SOV HV-102, then through SOV HV-106 directly to containment atmosphere.

The valve redundancy of the Reactor Coolant System vent paths serves to minimize the probability of inadvertent or irreversible actuation while ensuring that a single failure of a vent valve, power supply, or control system does not prevent isolation of the vent path.

The function, capabilities, and testing requirements of the Reactor Coolant System vent systems are consistent with the requirements of Item II.B.1 of NUREG-0737.

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TRM SPECIFICATION BASES

T3.4.200 RCS Pressure and Temperature (P/T) Limits
(See the ITS 3.4.3 Specification Bases.)

T3.4.201 Pressurizer

An OPERABLE pressurizer provides pressure control for the Reactor Coolant System during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves against water relief. The requirement to verify that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power the pressurizer heaters are automatically shed from the emergency power sources is to ensure that the non-Class 1E heaters do not reduce the reliability of or overload the emergency power source. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability to control Reactor Coolant System pressure and establish and maintain natural circulation.

T3.4.202 Pressurizer Vents
(See the ITS 3.4.12 specification Bases.)

T3.4.203 RCS Operational LEAKAGE
(See the ITS 3.4.14 Specification Bases.)

T3.4.204 RCS PIV Leakage
(See the ITS 3.4.15 Specification Bases.)

T3.5.200 Safety Injection Tanks
(See the ITS 3.5.1 and 3.5.2 Specification Bases.)

T3.5.201 Shutdown Cooling System

The OPERABILITY of two separate and independent shutdown cooling subsystems ensures that the capability of initiating shutdown cooling exists when required assuming the most limiting single failure occurs. The requirement to verify the functionality of an inoperable shutdown cooling subsystem minimizes the time exposure of the plant to an event requiring shutdown concurrent with the failure of a component on the other shutdown cooling subsystem.

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TRM SPECIFICATION BASES

The shutdown cooling subsystem operation is described in UFSAR 5.4.7. Many of the components comprising the shutdown cooling system have specific requirements during Modes 1-3 in the Technical Specifications (e.g., emergency core cooling, containment spray, and containment isolation). However, several components do not have specific operability requirements in Technical Specifications, and some components function differently in their shutdown cooling role than they do when performing the other functions required by Technical Specifications. These factors must be considered when determining the OPERABILITY and/or functionality of the shutdown cooling subsystems.

The safety analysis assumes that shutdown cooling may be placed in operation once cold leg temperature is less than or equal to 350°F and pressurizer pressure is less than approximately 400 psia. Additional information regarding the shutdown cooling system is in UFSAR Section 9.3.4. Since the subsystem is manually initiated, temporary changes in the position of shutdown cooling system valves from their normal line up do not necessarily make them inoperable with respect to their shutdown cooling safety function.

The action for one shutdown cooling subsystem inoperable requires verification that the inoperable subsystem is still functional. Functionality requires the subsystem to be capable of performing its safety function given a transient (e.g. Small Break LOCA, SGTR). Functionality will be established utilizing the Operability Determination Program. The allowed outage time is consistent with the durations permitted for those major shutdown cooling components whose operability is controlled by Technical Specifications. The specified outage time allows a reasonable opportunity to effect repairs while providing acceptable limits for the duration of intervals where the system may not be OPERABLE. In combination with the maintenance rule requirements in 10 CFR 50.65, the allowed outage times help ensure that the shutdown cooling subsystems will be functional when required.

If the subsystem cannot be restored or functionality verified within the stated time frame, the associated ACTION places the unit in Mode 4 where the steam generators are still available for heat removal and the stored energy of the NSSS is much less than it is during power operation. While in Modes 3 and 4 continued actions to restore the subsystem to OPERABLE are required.

The action for both shutdown cooling subsystems inoperable require verification of functionality of at least one subsystem within 7 hours. The shorter duration is consistent with the increased safety consequences that exist when the equipment required to establish cold shutdown conditions is

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inoperable. If at least one subsystem cannot be restored or verified functional within 7 hours, the associated ACTION again places the unit in Mode 4 where the steam generators are available for heat removal and the stored energy in the NSSS is minimized. While in Mode 3 and 4 continued actions to restore the required subsystems to OPERABLE are required.

The surveillance requirement to place each train of shutdown cooling in service every refueling interval demonstrates that the subsystems are functional. In combination with other testing performed to support Technical Specifications, including that conducted as part of the in-service testing and inspection programs, the specified surveillances provide reasonable assurance that the system will be able to perform its intended safety functions.

The SDC systems are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. The method of ensuring that any voids or pockets of gases are removed from the shutdown cooling suction piping is to vent the accessible suction piping high points, which is controlled by PVNGS procedures. Maintaining the shutdown cooling system suction piping full of water ensures the system will perform properly by minimizing the potential for degraded pump performance, preventing pump cavitation, and preventing pumping of noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel during SDC. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the SDC piping and the adequacy of the procedural controls governing system operation.

References:

1. UFSAR Sections 5.4.7 and 9.3.4

2. Combustion Engineering Owners Group Joint Applications Report for Low Pressure Safety Injection System AOT Extension, CE NPSD-995, dated May 1995, as submitted to NRC in APS letter no. 102-03392, dated June 13, 1995, with updates described in letter no. 102-04250 dated February 26, 1999. Also see TS amendment no. 124 dated February 1, 2000.

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TRM SPECIFICATION BASES

T3.5.202 ECCS - Operating
(See the ITS 3.5.3 Specification Bases.)

SURVEILLANCE REQUIREMENT

TSR 3.5.202.4

Maintaining the ECCS suction piping full of water from the Refueling Water Tank and the containment sump to the ECCS pumps ensures that the system will perform properly by minimizing the potential for degraded pump performance. The 31 day frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the adequacy of procedural controls governing system operation.

T3.5.203 ECCS - Shutdown
(See the ITS 3.5.4 Specification Bases.)

T3.6.100 Hydrogen Purge Cleanup System

The OPERABILITY of the equipment and systems required for the control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. The purge system is capable of controlling the expected hydrogen generation associated with (1) zirconium-water reactions, (2) radiolytic decomposition of water and (3) corrosion of metals within containment. The hydrogen control system is consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The use of ANSI Standard N509 (1980) in lieu of ANSI Standard N509 (1976) to meet the guidance of Regulatory Guide 1.52, Revision 2, Positions C.6.a and C.6.b, has been found acceptable as documented in Revision 2 to Section 6.5.1 of the Standard Review Plan (NUREG-0800).

T3.6.200 Prestressed Concrete Containment Tendon Surveillance

The prestressed concrete containment tendon surveillance program ensures the structural integrity of containment is maintained in accordance with ASME Code Section XI, Subsection IWL of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a, except where an exemption or relief has been authorized by the NRC.

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TRM SPECIFICATION BASES

T3.6.201 Containment Spray System

The containment system is normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. The method of ensuring that any voids or pockets of gases are removed from the containment spray suction piping is to vent the accessible suction piping high points, which is controlled by PVNGS procedures. Maintaining the containment spray system suction piping full of water ensures the system will perform properly by minimizing the potential for degraded pump performance, preventing pump cavitation, and preventing delay of spray delivery to the containment atmosphere. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the containment spray piping and the adequacy of the procedural controls governing system operation.

T3.6.300 Hydrogen Recombiners

BACKGROUND

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a hydrogen oxygen reaction. Per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and 10 CFR 50, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2), hydrogen recombiners are required to reduce the hydrogen concentration in the containment following a Loss Of Coolant Accident (LOCA) or Main Steam Line Break (MSLB). The recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor remains in containment, thus eliminating any discharge to the environment. The hydrogen recombiners are manually initiated since flammability limits would not be reached until several days after a Design Basis Accident (DBA).

Two 100% capacity independent hydrogen recombiners are shared among the three units. Each consists of controls, a power supply, and a recombiner located in the Auxiliary Building. Recombination is accomplished by heating a hydrogen air mixture above 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the recombiner. Air flows through the unit at 50 cfm with a 5 hp centrifugal blower in the unit providing the motive force. A single recombiner is capable of maintaining the hydrogen concentration in containment below the 4.0 volume percent (v/o) flammability limit. Two recombiners are provided to meet the requirement for redundancy and independence. Each recombiner is powered from a separate Engineered Safety Features bus.

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TRM SPECIFICATION BASES

APPLICABLE SAFETY ANALYSES (continued)

The hydrogen recombiners provide for controlling the bulk hydrogen concentration in containment to less than the lower flammable concentration of 4.0 v/o following a DBA. This control would prevent a containment wide hydrogen burn, thus ensuring the pressure and temperature assumed in the analysis are not exceeded and minimizing damage to safety related equipment located in containment. The limiting DBA relative to hydrogen generation is a LOCA.

Hydrogen may accumulate within containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant;

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump;

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space); or

d. Corrosion of metals exposed to Containment Spray System and Emergency Core Cooling Systems solutions.

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended in Reference 3 are used to maximize the amount of hydrogen calculated.

TLCO

Two hydrogen recombiners shared among the three units must be OPERABLE. This ensures operation of at least one hydrogen recombiner in the event of a worst case single active failure.

Operation with at least one hydrogen recombiner ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.

(continued)

TRM SPECIFICATION BASES

APPLICABILITY

In MODES 1 and 2, two hydrogen recombiners are required to control the post LOCA hydrogen concentration within containment below its flammability limit of 4.0 v/o, assuming a worst case single failure.

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the hydrogen recombiners is low. Therefore, the hydrogen recombiners are not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA are low, due to the pressure and temperature limitations. Therefore, hydrogen recombiners are not required in these MODES.

ACTIONS

The required ACTIONS have been modified by a Note stating that all three PVNGS Units (Units 1, 2, and 3) shall simultaneously comply with the REQUIRED ACTION(s) when the shared portion of the hydrogen recombiner(s) is the cause of a CONDITION. This is necessary since the three PVNGS Units share the two hydrogen recombiners that are required by this LCO. It will be necessary for the Control Room of the Palo Verde Unit that discovers an inoperable shared portion of the hydrogen recombiner(s) to notify the other two Palo Verde Unit's Control Rooms of the inoperability.

<u>A.1</u>

With one containment hydrogen recombiner inoperable, the inoperable recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE hydrogen recombiner is adequate to perform the hydrogen control function. The 30 day Completion Time is based on the availability of the other hydrogen recombiner, the small probability of a LOCA or MSLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or MSLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

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TRM SPECIFICATION BASES

ACTIONS (continued)

B.1 and B.2

With two hydrogen recombiners inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by the Hydrogen Purge Cleanup System. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist. In addition, the alternate hydrogen control system capability must be verified every 12 hours thereafter to ensure its continued availability. Both the initial verification and all subsequent verifications may be performed as an administrative check, by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two hydrogen recombiners inoperable for up to 7 days.

Seven days is a reasonable time to allow two hydrogen recombiners to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit.

C.1

If the inoperable hydrogen recombiner(s) cannot be restored to OPERABLE status within the required Completion Time. TLCO 3.0.100.3 must be entered immediately

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

This SR ensures that there are no physical problems that could affect recombiner operation. A visual inspection is sufficient to determine abnormal conditions that could cause failures. The 6 month Frequency for this SR was developed considering that the incidence of hydrogen recombiners failing the SR in the past is low.

SR 3.6.7.2

A functional test of each Hydrogen Recombiner System assures that the recombiners remain operational. The functional test shall include operating the recombiner including the air blast heat exchanger fan motor and enclosed blower motor

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continuously for at least 30 minutes at a temperature of approximately 800°F reaction chamber temperature. The frequency recommended for this surveillance in the Improved Standard Technical Specifications (NUREG-1432, Rev. 1) is 18 months. The bases for NUREG 1432 was developed for permanently installed hydrogen recombiners. The two portable hydrogen recombiners at PVNGS are shared among the three units; therefore, the 6 month frequency from the initial licensing basis is retained for reliability considerations.

SR 3.6.7.3

Performance of a CHANNEL CALIBRATION to include a system functional test for each hydrogen recombiner ensures that the recombiners are operational and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR requires 1) resistance checks of motors, thermocouples, and heater systems, 2) testing/calibration of all flow elements, switches, and temperature elements, and 3) operation of the recombiner to include a functional test at 1200°F (±50°F) for at least 4 hours. Operating experience has shown that these components usually pass the Surveillance when performed at the 12 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. Regulatory Guide 1.7, Revision 0.
4. UFSAR, Section 6.2.5

T3.7.100 Steam Generator Pressure and Temperature Limitations

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations to 120°F and 230 psig for Units 1 and 3 are based on a steam generator RTNDT of 40°F and are sufficient to prevent brittle fracture. The limitations to 70°F and 650 psig for Unit 2 are based on a steam generator RTNDT of -20°F and are sufficient to prevent brittle fracture.

(continued)

TRM SPECIFICATION BASES

T3.7.101 Snubbers

All snubbers are required to be able to perform their associated safety function(s) to ensure that the structural integrity of the reactor coolant system and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

When one or more snubbers are unable to perform their associated safety function(s), either the supported system must be declared inoperable immediately or TS LCO 3.0.8 must be entered. TS LCO 3.0.8 may only be entered if the restrictions described in the LCO 3.0.8 TS Bases are met. TS LCO 3.0.8 is an allowance, not a requirement. When any snubber is unable to perform its associated safety function, the supported system may be declared inoperable instead of utilizing LCO 3.0.8.

Required Action A.2 must be completed whenever Condition A is entered. This Required Action emphasizes the need to perform the evaluation to determine if the components to which the nonfunctional snubbers are attached were adversely affected by the non-functionality of the snubbers in order to ensure that the component remains capable of meeting the designed service. Restoration alone per Required Action A.1.1 or A.1.2 is insufficient because higher than analyzed stresses may have occurred and may have affected the supported system.

A list of individual snubbers with detailed information of snubber location and size and of system affected shall be available at the plant in accordance with Section 50.71(c) of 10 CFR Part 50. The accessibility of each snubber shall be determined and approved by the Plant Review Board. The determination shall be based upon the existing radiation levels and the expected time to perform a visual inspection in each snubber location as well as other factors associated with accessibility during plant operations (e.g., temperature, atmosphere, location, etc.), and the recommendations of Regulatory Guides 8.8 and 8.10. The addition or deletion of any hydraulic or mechanical snubber shall be made in accordance with Section 50.59 of 10 CFR Part 50.

The acceptance criteria specified in the 2001 Edition, 2003 Addenda, of the ASME OM Code, Subsection ISTD are to be used in the visual inspection to determine the functionality of the snubbers.

(continued)

TRM SPECIFICATION BASES

To provide assurance of snubber functional reliability one of the two functional testing methods specified in the 2001 Edition, 2003 Addenda, of the AMSE OM Code, Subsection ISTD, shall be utilized.

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included in the 2001 Edition, 2003 Addenda, of the ASME OM Code, Subsection ISTD to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

T3.7.102 Sealed Source Contamination

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. This limitation will ensure that leakage from byproduct, source, and special nuclear material sources will not exceed allowable intake values.

Sealed sources are classified into three groups according to their use, with surveillance requirements commensurate with the probability of damage to a source in that group. Those sources which are frequently handled are required to be tested more often than those which are not. Sealed sources which are continuously enclosed within a shielded mechanism (i.e. sealed sources within radiation monitoring or boron measuring devices) are considered to be stored and need not be tested unless they are removed from the shield mechanism.

T3.7.200 Atmospheric Dump Valves (ADVs)

Background — See TS Bases B 3.7.4

Applicable Safety Analyses — TS Bases B 3.7.4.

Actions — A.1

If the requirements of TSR 3.7.200 are not met, the condition must be documented in the corrective action program and an operability determination must be initiated as necessary to determine the impact on equipment in the

(continued)

TRM SPECIFICATION BASES

TSs. This action is required to assure compliance with the TSs.

Surveillance Requirements

TSR 3.7.200.1

The nitrogen accumulator tank pressure must be verified to have a pressure of at least 615 psig indicated to ensure that it has sufficient pressurized gas to operate the ADVs for 4 hours at hot standby plus 9.3 hours of operation to reach cold shutdown under natural circulation conditions in the event of failure of the normal control air system, as described in UFSAR 10.3.2.2.4 and based on the RSB 5-1 cooldown evaluation in UFSAR Appendix 5C.

(continued)

TRM SPECIFICATION BASES

T3.7.201 AFW System
(See the ITS 3.7.5 Specification Bases.)

T3.7.202 Essential Cooling Water (EW) System
(See the ITS 3.7.7 Specification Bases.)

T3.7.203 Essential Spray Pond System (ESPS)
(See the ITS 3.7.8 Specification Bases.)

T3.7.204 Essential Chilled Water (EC) System
(See the ITS 3.7.10 Specification Bases.)

T3.7.205 Control Room Emergency Air Temperature Control System (CREATCS)
(See the ITS 3.7.12 Specification Bases.)

T3.7.206 Fuel Storage Pool Water Level
(See the ITS 3.7.14 Specification Bases.)

T3.7.207 Secondary Specific Activity
(See the ITS 3.7.16 Specification Bases.)

T3.8.100 Cathodic Protection

If any other metallic structures (e.g., buildings, new or modified piping systems, conduit) are placed in the ground in the vicinity of the fuel oil storage system or if the original system is modified, the adequacy and frequency of inspections of the cathodic protection system shall be re-evaluated and adjusted in accordance with Regulatory Guide 1.137.

T3.8.101 Containment Penetration Conductor Overcurrent Protective Devices

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The circuit breakers will be tested in accordance with NEMA Standard Publication No. AB-2-1980. For a frame size of 250 amperes or less, the field tolerances of the high and low setting of the injected current will be within +40%/-25% of the setpoint (pickup) value. For a frame size of 400 amperes or greater, the field tolerances will be ±25% of the setpoint (pickup) value. The circuit breakers should not be affected when tested within these tolerances.

The surveillance requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one

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representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes. There are no surveillance requirements on fuses. For in-line fuses, the applicable surveillance would require removing the fuses from the circuit which would destroy the fuse. The test data for surveillance on the other fuses would not indicate whether the fuse was degrading which has been stated by the fuse manufacturer and Idaho National Engineering Laboratory.

T3.8.102 MOV Thermal Overload Protection and Bypass Devices

The OPERABILITY of the motor-operated valves thermal overload protection and/or bypass devices ensures that these devices will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the OPERABILITY of these devices are in accordance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.

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TRM SPECIFICATION BASES

T3.8.200 AC Sources - Shutdown

(See the ITS 3.8.2 Specification Bases.)

T3.9.100 Decay Time

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor pressure vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

T3.9.101 Communications

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during CORE ALTERATIONS.

T3.9.102 Refueling Machine

The OPERABILITY requirements for the refueling machine ensure that: (1) the machine will be used for movement of fuel assemblies, (2) the machine has sufficient load capacity to lift a fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

T3.9.103 Crane Travel

The restriction on movement of loads in excess of the nominal weight of a fuel assembly, CEA and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses. However, the use of a single failure-proof crane to move spent fuel cask components over irradiated fuel stored in an approved cask is allowed by this LCO.

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TRM SPECIFICATION BASES

T3.9.104 Fuel Building Essential Ventilation System (FBEVS)

The limitations on the fuel building essential ventilation system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses.

If one FBEVS train is inoperable, action must be taken to immediately verify that the OPERABLE FBEVS is capable of being powered from an emergency power source and to restore the inoperable train to OPERABLE status within 7 days. During this time period, the remaining OPERABLE train is adequate to perform the FBEVS function. The 7 day Completion Time is reasonable, based on the risk from an event occurring requiring the inoperable FBEVS train, and ability of the remaining FBEVS train to provide the required protection.

During movement of irradiated fuel assemblies in the fuel building, if the Required Actions of Condition A cannot be completed within the required Completion Time, the operation (i.e., fan running, valves/dampers aligned to the post-FBEVAS mode, etc.) or movement of irradiated fuel assemblies must be suspended immediately. The first action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected. If the system is not placed in the emergency mode of operation, this action requires suspension of the movement of irradiated fuel assemblies in order to minimize the risk of release of radioactivity that might require the actuation of FBEVS. This does not preclude the movement of fuel to a safe position.

Movement of spent fuel casks containing irradiated fuel assemblies is not within the scope of the Applicability of this technical specification. The movement of dry casks containing irradiated fuel assemblies will be done with a single-failure-proof handling system and with transport equipment that would prevent any credible accident that could result in a release of radioactivity.

(continued)

TRM SPECIFICATION BASES

When two trains of the FBEVS are inoperable during movement of irradiated fuel assemblies in the fuel building, action must be taken to place the unit in a condition in which the LCO does not apply. This LCO involves immediately suspending movement of irradiated fuel assemblies in the fuel building. This does not preclude the movement of fuel to a safe position.

The use of ANSI Standard N509 (1980) in lieu of ANSI Standard N509 (1976) to meet the guidance of Regulatory Guide 1.52, Revision 2, Positions C.6.a and C.6.b, has been found acceptable as documented in Revision 2 to Section 6.5.1 of the Standard Review Plan (NUREG-0800).

T3.9.200 Boron Concentration
(See the ITS 3.9.1 Specification Bases.)

T3.9.201 Containment Penetrations
(See the ITS 3.9.3 Specification Bases.)

T3.10.200 Liquid Holdup Tanks

The tanks referred to in this specification include all those outdoor radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system.

Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than 10 times the limits of 10 CFR Part 20.1001-20.2402, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an UNRESTRICTED AREA.

The limit of 60 curies is based on the analyses given in Section 2.4 of the PVNGS FSAR and on the amount of soluble (not gaseous) radioactivity in the Refueling Water Tank in Table 2.4-26.

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TRM SPECIFICATION BASES

T3.10.201 Explosive Gas Mixture

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen. (Automatic control features are included in the system to prevent the hydrogen and oxygen concentrations from reaching these flammability limits. These automatic control features include isolation of the source of hydrogen and/or oxygen, or injection of dilutants to reduce the concentration below the flammability limits.) Maintaining the concentration of hydrogen and oxygen below their flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

T3.10.202 Gas Storage Tanks

This specification considers postulated radioactive releases due to a waste gas system leak or failure, and limits the quantity of radioactivity contained in each pressurized gas storage tank in the GASEOUS RADWASTE SYSTEM to assure that a release would be substantially below the guidelines of 10 CFR Part 100 for a postulated event.

Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tank's contents, the resulting total body exposure to a MEMBER OF THE PUBLIC at the nearest exclusion area boundary will not exceed 0.5 rem. This is consistent with Standard Review Plan 11.3, Branch Technical Position ETSB 11-5, "Postulated Radioactive Releases Due to a Waste Gas System Leak or Failure," in NUREG-0800, July 1981.

T3.11.100 FIRE DETECTION INSTRUMENTATION

OPERABILITY of the fire detection instrumentation ensures that adequate warning capability is available for the prompt detection of fires and that fire suppression systems, that are actuated by fire detectors, will discharge extinguishing agent in a timely manner. Prompt detection and suppression of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility fire protection program.

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TRM SPECIFICATION BASES

Fire detectors that are used to actuate fire suppression systems represent a more critically important component of a plant's fire protection program than detectors that are installed solely for early fire warning and notification. Consequently, the minimum number of OPERABLE fire detectors must be greater.

The loss of detection capability for fire suppression systems, actuated by fire detectors, represents a significant degradation of fire protection for any area. As a result, the establishment of a fire watch patrol must be initiated at an earlier stage than would be warranted for the loss of detectors that provide only early fire warning. The establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to OPERABILITY.

When inoperable fire detection instrument(s) are inside containment, REQUIRED ACTIONs B.2 and C.2 require either (1) a fire watch patrol inspect the containment zone(s) with the inoperable instrument(s) at least once per 8 hours, or (2) monitor the containment air temperature at least once per hour at each of the 7 locations listed in the Bases for Technical Specification SR 3.6.5.1. The plant computer with the control room installed multi-point recorder and annunciator is an acceptable means of monitoring temperatures inside containment when required. The continuous monitoring of containment air temperature by the plant computer and multi-point recorder exceeds the requirement of hourly monitoring. The plant computer and multi-point recorder utilizes pre-set alarm points for each monitored location. If setpoints are exceeded, an audio annunciation is received that alerts the operator of an abnormal condition.

The fire zones listed in Table 3.3.11.100-1, Fire Detection Instruments, are discussed in Section 9B of the PVNGS UFSAR.

T3.11.101, 102, 103, 104, 105, and 106 FIRE SUPPRESSION SYSTEMS

The OPERABILITY of the fire suppression systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The fire suppression system consists of the water system, spray and/or sprinklers, CO2, Halon, fire hose stations, and yard fire hydrants and associated emergency response vehicles. The collective capability of the fire suppression systems is adequate to minimize potential damage to safety related equipment and is a major element in the facility fire protection program.

(continued)

TRM SPECIFICATION BASES

In the event that portions of the fire suppression systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected area(s) until the inoperable equipment is restored to service. When the inoperable fire fighting equipment is intended for use as a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the inoperable equipment is the primary means of fire suppression.

The surveillance requirements provide assurance that the minimum OPERABILITY requirements of the suppression systems are met. An allowance is made for ensuring a sufficient volume of CO2/Halon in the CO2/Halon storage tank by verifying either the weight or the level of the tank. The interval for some required surveillances for CO2 and Halon systems is based on the statistical reliability methodology provided in Electric Power Research Institute (EPRI) Technical Report 1006756, Fire Protection Equipment Surveillance Optimization and Maintenance Guide. Component failure will be entered into the corrective action program for analysis and trending.

In the event the fire suppression water system becomes inoperable, immediate corrective measures must be taken since this system provides the major fire suppression capability of the plant.

3.11.107 FIRE-RATED ASSEMBLIES

The OPERABILITY of the fire barriers and barrier penetrations ensure that fire damage will be limited. These design features minimize the possibility of a single fire involving more than one fire area prior to detection and extinguishment. The fire barriers, fire barrier penetrations for conduits, cable trays and piping, fire dampers, and fire doors are periodically inspected and functionally tested to verify their OPERABILITY.

T7.0 COMPONENT LISTS

T7.0.100 REMOTE SHUTDOWN DISCONNECT SWITCHES

This list identifies the remote shutdown disconnect switches that are subject to the testing requirements of TS 3.3.11, “Remote Shutdown System.”

	DISCONNECT SWITCH	SWITCH LOCATION
1.	SG 1 line 2 Atmospheric Dump Valve Solenoid Air Isolation Valves SGB-HY-178A and SGB-HY-178R	RSP
2.	SG 2 line 1 Atmospheric Dump Valve Solenoid Air Isolation Valves SGB-HY-185A and SGB-HY-185R	RSP
3.	Auxiliary Spray Valve CHB-HV-203	RSP
4.	Letdown to Regenerative Heat Exchanger Isolation, CHB-UV-515	RSP
5.	Reactor Coolant Pump Controlled Bleedoff, CHB-UV-505	RSP
6.	Auxiliary Feedwater Pump B to SG 1 Control Valve, AFB-HV-30	RSP
7.	Auxiliary Feedwater Pump B to SG 2 Control Valve, AFB-HV-31	RSP
8.	Auxiliary Feedwater Pump B to SG 1 Block Valve, AFB-UV-34	RSP
9.	Auxiliary Feedwater Pump B to SG 2 Block Valve, AFB-UV-35	RSP
10.	Pressurizer Backup Heaters Control	
	Bank MRCE B10, B18, A05 (Unit 1)	RSP
	Bank MRCE B10, B17, A05 (Unit 2)	RSP
	Bank MRCE B11, B17, B05 (Unit 3)	RSP
11.	Safety Injection Tank 2A Vent Control SIB-HV-613	RSP
12.	Safety Injection Tank 2B Vent Control SIB-HV-623	RSP
13.	Safety Injection Tank 1A Vent Control SIB-HV-633	RSP
14.	Safety Injection Tank 1B Vent Control SIB-HV-643	RSP
15.	Safety Injection Tank Vent Valves Power Supply SIB-HS-18C	RSP
16.	SG 1 line 2 Atmospheric Dump Valve Solenoid Air Isolation Valves SGD-HY-178B and SGD-HY-178S	RSP
17.	SG 2 line 1 Atmospheric Dump Valve Solenoid Air Isolation Valves SGD-HY-185B and SGD-HY-185S	RSP
18.	Control BLDG Battery Room D Essential Exhaust Fan 'HJB-J01A'	PHB-M3205
19.	Control BLDG Battery Room B Essential Exhaust Fan 'HJB-J01B'	PHB-M3205
20.	Battery Charger D Control Room Circuits PKD-H14	PHB-M3209 & PKD-H14
21.	ESF Switchgear Room Essential AHU HJB-Z03	PHB-M3205
22.	LPSI Pump SIB-P01 Breaker Control	PBB-S04F

(continued)

T7.0 COMPONENT LISTS

	DISCONNECT SWITCH	SWITCH LOCATION
23.	Diesel Generator B Breaker Control	PBB-S04B
24.	Essential Spray Pond Pump SPB-P01 Breaker Control	PBB-S04C
25.	Essential Chiller ECB-E01 Breaker Control	PBB-S04G
26.	E-PBB-S04J 4.16KV Feeder Breaker to 480V Load Center PGB-L32	PBB-S04J
27.	E-PBB-S04H 4.16KV Feeder Breaker to 480V Load Center PGB-L34	PBB-S04H
28.	E-PBB-S04N 4.16KV Feeder Breaker to 480V Load Center PGB-L36	PBB-S04N
29.	Auxiliary Feedwater Pump AFB-P01 Breaker Control	PBB-S04S
30.	Essential Cooling Water Pump EWB-P01 Breaker Control	PBB-S04M
31.	E-PGB-L32B2 480V Main Supply Breaker to Load Center PGB-L32	PGB-L32B2
32.	E-PGB-L34B2 480V Main Supply Breaker to Load Center PGB-L34	PGB-L34B2
33.	E-PGB-L36B2 480V Main Supply Breaker to Load Center PGB-L36	PGB-L36B2
34.	Charging Pump No. 2 CHB-P01 Supply Breaker CHB-P01	PGB-L32C1
35.	Diesel Engine Control Switch HS-2A	DGB-C01
36.	Diesel Engine Control Switch HS-2B	DGB-C01
37.	Diesel Generator Control Switch HS-2	DGB-C01
38.	Diesel Generator Essential Exhaust Fan HDB-J01	DGB-C01
39.	Diesel Generator Fuel Oil Transfer Pump DFB-P01	DGB-C01
40.	Battery Charger BD Control Room Circuits PKB-H16	PHB-M3425
41.	Battery Charger B Control Room Circuits PKB-H12	PHB-M3627
42.	125 VDC Battery B Breaker Control Room Circuits	PKB-M4201
43.	125 VDC Battery D Breaker Control Room Circuits	PKD-M4401
44.	CS Pump B Discharge to SD HX B SIB-HV-689	PHB-M3804
45.	Shutdown Cooling LPSI Suction SIB-UV-656	PHB-M3611
46.	LPSI-CS from SD HX B X-Tie SIB-HV-695	PHB-M3810
47.	Shutdown Cooling Warmup Bypass SIB-HV-690	PHB-M3806
48.	LPSI-CS to SD HX B Crosstie SIB-HV-694	PHB-M3416
49.	SD HX "B" to RC Loops 2A/2B SIB-HV-696	PHB-M3416
50.	LPSI-SD HX "B" Bypass SIB-HV-307	PHB-M3803
51.	LPSI Pump "B" Recirc SIB-UV-668	PHB-M3611
52.	LPSI Pump "B" Suction from RWT SIB-HV-692	PHB-M3805
53.	SD Cooling LPSI Pump "B" Suction SIB-UV-652	PHB-M3611

(continued)

T7.0 COMPONENT LISTS

	DISCONNECT SWITCH	SWITCH LOCATION
54.	SD Cooling LPSI Pump "B" Suction SID-UV-654	PKD-B44
55.	LPSI Header "B" to RC Loop 2A SIB-UV-615	PHB-M3611
56.	LPSI Header "B" to RC Loop 2B SIB-UV-625	PHB-M3640
57.	VCT Outlet Isolation CHN-UV-501	NHN-M7208
58.	RWT Gravity Feed CHE-HV-536	NHN-M7209
59.	Shutdown Cooling Temperature Control SIB-HV-658	PHB-M3416
60.	Shutdown Cooling Heat Exchanger Bypass Valve SIB-HV-693	PHB-M3416
61.	4.16 KV Bus PBB-SO4 Feeder from XFMR NBN-XO4	PBB-SO4K
62.	4.16 KV Bus PBB-SO4 Feeder from XFMR NBN-XO3	PBB-SO4L
63.	Electrical Penetration Room B ACU HAB-Z06	PHB-M3640
64.	Control Room HVAC Isolation Dampers HJB-M01/HJB-M55	RSP
65.	O.S.A. Supply Damper HJB-M02	RSP
66.	O.S.A. Supply Damper HJB-M03	RSP
67.	R.C.S. Sample Isolation Valve SSA-UV-203	SSA-J04
68.	R.C.S. Sample Isolation Valve SSB-UV-200	RSP
69.	125 VDC Battery A Breaker Control Room Circuits	PKA-M4101
70.	ESF Equipment Room ESS AHU Fan HJB-Z04	PHB-M3205

T7.0 COMPONENT LISTS

T7.0.200 REMOTE SHUTDOWN CONTROL CIRCUITS

This list identifies the remote shutdown control circuits that are subject to the testing requirements of TS 3.3.11, "Remote Shutdown System."

	CONTROL CIRCUITS	SWITCH LOCATION
1.	Auxiliary Feedwater Pump B to S/G 1 Isolation Valve AFB-UV-34	RSP
2.	Auxiliary Feedwater Pump B to S/G 1 Control Valve AFB-HV-30	RSP
3.	Auxiliary Feedwater Pump B to S/G 2 Isolation Valve AFB-UV-35	RSP
4.	Auxiliary Feedwater Pump B to S/G 2 Control Valve AFB-HV-31	RSP
5.	Auxiliary Feedwater Pump AFB-P01	PBB-S04S
6.	Charging Pump No. 2 CHB-P01	PGB-L32C4
7.	Pressurizer Auxiliary Spray Valve CHB-HV-203	RSP
8.	Pressurizer Backup Heater Bank	RSP
9.	Letdown to Regen HX Isolation Valve CHB-UV-515	RSP
10.	RCP Cont Bleedoff Valve CHB-UV-505	RSP
11.	Volume Control Tank Outlet Isolation Valve CHN-UV-501	NHN-M7208
12.	RWT Gravity Feed Isolation Valve CHE-HV-536	NHN-M7209
13.	S/G 1 line 2 Atmospheric Dump Valve Controller SGB-HIC-178B	RSP
14.	S/G 1 line 2 Atmospheric Dump Valve Solenoid Air Isolation Valves SGB-HY-178A and SGB-HY-178R	RSP
15.	S/G 1 line 2 Atmospheric Dump Valve Solenoid Air Isolation Valves SGD-HY-178B and SGD-HY-178S	RSP
16.	S/G 2 line 2 Atmospheric Dump Valve Controller SGB-HIC-185B	RSP
17.	S/G 2 line 1 Atmospheric Dump Valve Solenoid Air Isolation Valves SGB-HY-185A and SGB-HY-185R	RSP
18.	S/G 2 line 1 Atmospheric Dump Valve Solenoid Air Isolation Valves SGD-HY-185B and SGD-HY-185S	RSP
19.	Diesel Generator B Output Breaker	PBB-S04B
20.	Diesel Generator Building Essential Exhaust Fan HDB-J01	DGB-B01
21.	Diesel Generator B Fuel Oil Transfer Pump DFB-P01	DGB-B01
22.	E-PBB-S04H 4.16 KV Feeder Breaker to 480V Load Center PGB-L34	PBB-S04H
23.	E-PBB-S04J 4.16KV Feeder Breaker to 480V Load Center PGB-L32	PBB-S04J
24.	E-PBB-S04N 4.16KV Feeder Breaker to 480V Load Center PGB-L36	PBB-S04N

(continued)

T7.0 COMPONENT LISTS

CONTROL CIRCUITS	SWITCH LOCATION
25. E-PGB-L32B2 480V Main Supply Breaker To Load Center PGB-L32	PGB-L32B1
26. E-PGB-L34B2 480V Main Supply Breaker To Load Center PGB-L34	PGB-L34B1
27. E-PGB-L36 480V Supply Breaker To Load Center PGB-L36	PGB-L36B1
28. Battery Charger PKB-H12 Supply Breaker	PHB-M3627
29. Battery Charger PKD-H14 Supply Breaker	PHB-M3209
30. Backup Battery Charger PKB-H16 Supply Breaker	PHB-M3425
31. Essential Spray Pond Pump SPB-P01	PBB-S04C
32. Essential Cooling Water Pump EWB-P01	PBB-S04M
33. Essential Chilled Water Chiller ECB-E01	PBB-S04G
34. Battery Room D Essential Exhaust Fan HJB-J01A	PHB-M3206
35. Battery Room B Essential Exhaust Fan HJB-J01B	PHB-M3207
36. ESF Switchgear Room B Essential AHU HJB-Z03	PHB-M3203
37. Electrical Penetration Room B ACU Fan HAB-Z06	PHB-M3631
38. SIT Vent Valves Power Supply SIB-HS-18B	RSP
39. SIT 2A Vent Valve SIB-HV-613	RSP
40. SIT 2B Vent Valve SIB-HV-623	RSP
41. SIT 1A Vent Valve SIB-HV-633	RSP
42. SIT 1B Vent Valve SIB-HV-643	RSP
43. LPSI Pump B SIB-P01	PBB-S04F
44. Containment Spray Pump B Discharge to SD HX "B" Valve SIB-HV-689	PHB-M3804
45. LPSI Containment Spray from SD HX "B" X-tie Valve SIB-HV-695	PHB-M3810
46. Shutdown Cooling LPSI Suction Valve SIB-UV-656	PHB-M3605
47. Shutdown Cooling Warmup Bypass Valve SIB-HV-690	PHB-M3806
48. LPSI Containment Spray to SD HX "B" X-tie Valve SIB-HV-694	PHB-M3414
49. SD HX "B" to RC Loops 2A/2B Valve SIB-HV-696	PHB-M3415
50. LPSI SD HX "B" Bypass Valve SIB-HV-307	PHB-M3803
51. LPSI Pump B Recirc. Valve SIB-UV-668	PHB-M3609
52. LPSI Pump B Suction From RWT SIB-HV-692	PHB-M3805
53. RC Loop to Shutdown Cooling Valve SIB-UV-652	PHB-M3604
54. RC Loop to Shutdown Cooling Valve SID-UV-654	PKD-B44
55. LPSI Header B to RC Loop 2A Valve SIB-UV-615	PHB-M3606

(continued)

T7.0 COMPONENT LISTS

CONTROL CIRCUITS	SWITCH LOCATION
56. LPSI Header B to RC Loop 2B Valve SIB-UV-625	PHB-M3621
57. SDC "B" Temperature Control Valve SIB-HV-658	PHB-M3412
58. Control Room Ventilation Isolation Dampers HJB-M01/HJB-M55	RSP
59. O.S.A. Supply Damper HJB-M02	RSP
60 O.S.A. Supply Damper HJB-M03	RSP
61. Diesel Generator "B" Emergency Start	DGB-B01
62. Normal Offsite Power Supply Breaker	PBB-S04K
63. Alternate Offsite Power Supply Breaker	PBB-S04L
64. Battery "B" Breaker	PKB-M4201
65. Battery "D" Breaker	PKD-M4401
66. RCS Sample Isolation Valve SSA-UV-203	SSA-J04
67. RCS Sample Isolation Valve SSB-UV-200	SSB-J04
68. Train "B" Pumps Combined Recirc to RWT Valve SIB-UV-659	RSP
69. Shutdown Cooling Heat Exchanger Bypass Valve SIB-HV-693	PHB-M3413
70. Battery "A" Breaker	PKA-M4101
71. ESF Equipment Room B Essential AHU HJB-Z04	PHB-M3222

T7.0 COMPONENT LISTS

T7.0.300 CONTAINMENT ISOLATION VALVES

This list identifies the containment isolation valves that are subject to the testing requirements of TS 3.6.3, "Containment Isolation Valves." All manual vent, drain, and test valves within a Containment Penetration (i.e., between the Containment Isolation Valves) will be maintained locked and closed per the locked valve administrative program or surveilled closed per Technical Specification SR 3.6.3.3 or SR 3.6.3.4.

VALVE NO	ITS 3.6.3 Condition	PENETRATION	VALVES RECEIVING CONTAINMENT ISOLATION (CIAS)
RDA-UV 023	A	9	Containment radwaste sump pump to LRS holdup tank
RDB-UV 024	A	9	Containment radwaste sump pump to LRS holdup tank
RDB-UV 407 (Unit 1 only)	A	9	Containment radwaste sump post-accident sampling system
SGB-HV 200[a]	A	11	Downcomer feedwater chemical injection
SGB-HV 201[a]	A	12	Downcomer feedwater chemical injection
SIA-UV 708[a]	A	23	Containment recirc sump to post-accident sampling system
HCB-UV 044	A	25A	Containment air radioactivity monitor (inlet)
HCA-UV 045	A	25A	Containment air radioactivity monitor (inlet)
HCA-UV 046	A	25B	Containment air radioactivity monitor (outlet)
HCB-UV 047	A	25B	Containment air radioactivity monitor (outlet)
GAA-UV 002	A	29	Nitrogen to steam generator and reactor drain tank
GAA-UV 001	A	30	Nitrogen to SI tanks
HPA-UV 001	A	35	Containment to hydrogen recombiner
HPA-UV 003	A	35	Containment to hydrogen recombiner
HPA-UV 024	A	35	Hydrogen control system
HPB-UV 002	A	36	Containment to hydrogen recombiner
HPA-UV 005	A	38	Containment to hydrogen recombiner
HPB-UV 004	A	36	Hydrogen recombiner return to containment (inlet)
HPA-UV 023	A	38	Hydrogen control system
HPB-UV 006	A	39	Hydrogen recombiner return to containment (inlet)
CHA-UV 516	A	40	Letdown line from RC loop 2B to regenerative heat exchanger and letdown heat exchanger
CHB-UV 523	A	40	Letdown line from RC loop 2B to regenerative heat exchanger and letdown heat exchanger
CHB-UV 924	A	40	Letdown line to post-accident sampling system
SSB-UV 201	A	42A	Pressurizer liquid sample line

(continued)

a. Not Type C Tested

T7.0 COMPONENT LISTS

(continued)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	VALVES RECEIVING CONTAINMENT ISOLATION (CIAS)
SSA-UV 204	A	42A	Pressurizer liquid sample line
SSB-UV 202	A	42B	Pressurizer steam space sample line
SSA-UV 205	A	42B	Pressurizer steam space sample line
SSB-UV 200	A	42C	Hot leg sample line
SSA-UV 203	A	42C	Hot leg sample line
CHA-UV 560	A	44	Reactor Drain tank to pre-holdup ion exchanger
CHB-UV 561	A	44	Reactor Drain tank to pre-holdup ion exchanger
CHA-UV 580	A	45	Makeup to reactor drain tank
CHA-UV 715	A	45	Makeup to reactor drain tank post accident sampling sys
GRA-UV 001	A	52	RDT vent to WG surge tank
GRB-UV 002	A	52	RDT vent to WG surge tank
WCB-UV 63	A	60	Normal chilled water to containment ACU (inlet)
WCB-UV 61	A	61	Normal chilled water to containment ACU (outlet)
WCA-UV 62	A	61	Normal chilled water to containment ACU (outlet)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	VALVES RECEIVING CONTAINMENT PURGE (CPIAS) [Also isolated on CIAS]
CPA-UV 002A	A[(a)]	56	Containment purge (inlet)
CPB-UV 003A	A[(a)]	56	Containment purge (inlet)
CPA-UV 002B	A[(a)]	57	Containment purge (outlet)
CPB-UV 003B	A[(a)]	57	Containment purge (outlet)
CPA-UV 004A	A	78	Containment purge (inlet)
CPB-UV 005A	A	78	Containment purge (inlet)
CPA-UV 004B	A	79	Containment purge (outlet)
CPB-UV 005B	A	79	Containment purge (outlet)

a. Type C testing is not required when the valve is not a required containment isolation valve per Note 5 of LCO 3.6.3.

T7.0 COMPONENT LISTS

VALVE NO	ITS 3.6.3 Condition	PENETRATION	VALVES RECEIVING CONTAINMENT SPRAY (CSAS)
IAA-UV-002	A	31	Service air to reactor containment inst. air
NCB-UV-401	A	33	NC water to RCP motor bearing lube oil and air coolers
NCB-UV-403	A	34	NC water to RCP motor bearing lube oil and air coolers
NCA-UV-402	A	34	NC water to RCP motor bearing lube oil and air coolers
CHB-UV-505	A	43	RC pump seal bleedoff
CHA-UV-506	A	43	RC pump seal bleedoff

VALVE NO	ITS 3.6.3 Condition	PENETRATION	CONTAINMENT ISOLATION SAFETY/RELIEF VALVES
AFA-PSV-0108[a][b]	A	75	Overpressure protection for CIV AFC-UV-036
AFA-PSV-0109[a][b]	A	76	Overpressure protection for CIV AFA-UV-037
NCE-PSV-0617[c]	A	34	Overpressure protection for penetration 34
SIA-PSV 151[a]	A	23	Containment recirculation sump to containment spray, LPSI and HPSI headers 1A & 1B
SIB-PSV 140[a]	A	24	Containment recirculation sump to containment spray, LPSI and HPSI headers 2A & 2B
SIB-PSV 189[a] (Also covered by ITS 3.4.13)	A	26	From shutdown cooling RC Loop 2
SIA-PSV 179[a] (Also covered by ITS 3.4.13)	A	27	From shutdown cooling RC Loop 1
SIE-PSV 474	A	28	Safety injection drain relief

a. Not Type C Tested
b. Valve installation per DMWO 00741855
c. Valve installation per DMWO 00830780

T7.0 COMPONENT LISTS

VALVE NO	ITS 3.6.3 Condition	PENETRATION	CONTAINMENT ISOLATION CHECK VALVES
SGE-V 642[a]	A	11	Feedwater downcomer
SGE-V 652[a]	A	11	Feedwater downcomer
SGE-V 653[a]	A	12	Feedwater downcomer
SGE-V 693[a]	A	12	Feedwater downcomer
GAE-V 015	A	29	Nitrogen to steam generator and reactor drain tank
GAE-V 011	A	30	Nitrogen to SI tanks
IAE-V 021	A	31	Service air to reactor containment instrument air header
NCE-V 118	A	33	NC water to RCP motor bearing lube oil and air coolers
HPA-V 002	A	38	Hydrogen recombiner return to containment
HPB-V 004	A	39	Hydrogen recombiner return to containment
CHE-V 494	A	45	Makeup to reactor drain tank
WCE-V 039	A	60	Normal chilled water to containment ACU
FPE-V 090	A	7	Containment fire protection
SGE-V 003[a]	A	8	Steam generator feedwater
SGE-V 007[a]	A	8	Steam generator feedwater
SGE-V 005[a]	A	10	Steam generator feedwater
SGE-V 006[a]	A	10	Steam generator feedwater
SIE-V 113[a]	A	13	HPSI to RC loop 2A
SIE-V 123[a]	A	14	HPSI to RC loop 2B
SIE-V 133[a]	A	15	HPSI to RC loop 1A
SIE-V 143[a]	A	16	HPSI to RC loop 1B
SIE-V 114[a]	A	17	LPSI to RC loop 2A
SIE-V 124[a]	A	18	LPSI to RC loop 2B
SIE-V 134[a]	A	19	LPSI to RC loop 1A
SIE-V 144[a]	A	20	LPSI to RC loop 1B

(continued)

a. Not Type C Tested

T7.0 COMPONENT LISTS

(continued)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	CONTAINMENT ISOLATION CHECK VALVES
SIA-V 164	A	21	Shutdown cooling heat exchanger 1 to CS header 1
SIB-V 165	A	22	Shutdown cooling heat exchanger 2 to CS header 2
CHE-V M70	A	41	Regenerative heat exchanger to RC loop 2A
IAE-V 073	A	59	Containment service air utility station
SIB-V 533[a]	A	67	Long term recirculation loop 2
CHN-V 835	A	72	RC pump seal injection water to RCP 1A, 1B, 2A, 2B
AFA-V 079[a]	A	75	Steam generator 1 auxiliary feedwater
AFB-V 080[a]	A	76	Steam generator 2 auxiliary feedwater
SIA-V 523[a]	A	77	Long term recirculation loop 1

VALVE NO	ITS 3.6.3 Condition	PENETRATION	NORMALLY OPEN ESF ACTUATED CLOSED[d]
SGE-UV 169[a]	C	2	Main steam isolation bypass
SGE-UV 183[a]	C	3	Main steam isolation bypass
SGA-UV 1133[a]	C	2	Steam trap/bypass
SGA-UV 1134[a]	C	3	Steam trap/bypass
SGB-UV 1135A[a]	C	1	Steam trap/bypass
SGB-UV 1135B[a]	C	2	Steam trap/bypass
SGB-UV 1136A[a]	C	3	Steam trap/bypass
SGB-UV 1136B[a]	C	4	Steam trap/bypass
SIA-UV 682	A	28	SI drain from drain tank

(continued)

a. Not Type C Tested

d. The economizer and downcomer main feedwater isolation valves (MFIV's) are covered by specification 3.7.3, "MFIVs."

T7.0 COMPONENT LISTS

(continued)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	NORMALLY OPEN ESF ACTUATED CLOSED
SGA-UV 211[a]	A	37A	Steam generator blowdown sample
SGB-UV 228[a]	A	37A	Steam generator blowdown sample
SGA-UV 204[a]	A	37B	Steam generator blowdown sample
SGB-UV 219[a]	A	37B	Steam generator blowdown sample
SGA-UV 500P[a]	A	46	Steam generator blowdown to SCCS
SGB-UV 500Q[a]	A	46	Steam generator blowdown to SCCS
SGB-UV 500R[a]	A	47	Steam generator blowdown to SCCS
SGA-UV 500S[a]	A	47	Steam generator blowdown to SCCS
SGB-UV 226[a]	A	48	SG blowdown to downcomer blowdown sample
SGA-UV 227[a]	A	48	SG blowdown to downcomer blowdown sample
SGA-UV 220[a]	A	49	SG blowdown to downcomer blowdown sample
SGB-UV 221[a]	A	49	SG blowdown to downcomer blowdown sample
SGB-UV 224[a]	A	63A	SG2 blowdown sample
SGA-UV 225[a]	A	63A	SG2 blowdown sample
SGB-UV 222[a]	A	63B	SG2 blowdown sample
SGA-UV 223[a]	A	63B	SG2 blowdown sample

VALVE NO	ITS 3.6.3 Condition	PENETRATION	REQUIRED OPEN DURING ACCIDENT
SID-UV 654[a]	A	26	From shutdown cooling RC loop 2
SIB-UV 656[a]	A	26	From shutdown cooling RC loop 2
SIB-HV 690[a]	A	26	From shutdown cooling RC loop 2
SIC-UV 653[a]	A	27	From shutdown cooling RC loop 1
SIA-UV 655[a]	A	27	From shutdown cooling RC loop 1
SIA-HV 691[a]	A	27	From shutdown cooling RC loop 1
HCC-HV 076[a][f]	C	32A	Containment pressure monitor
HPA-HV 007A	A	35	Containment to hydrogen monitor
HPB-HV 008A	A	36	Containment to hydrogen monitor

(continued)

a. Not Type C Tested

f. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when leakage results in exceeding the overall containment leakage rate acceptance criteria.

T7.0 COMPONENT LISTS

(continued)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	REQUIRED OPEN DURING ACCIDENT
HPA-HV 007B	A	38	Hydrogen monitor to containment
HPB-HV 008B	A	39	Hydrogen monitor to containment
CHA-HV 524	A	41	Regenerative heat exchanger to RC Loop 2A
HCA-HV 074[a][f]	C	54A	Containment pressure monitor
HCB-HV 075[a][f]	C	55A	Containment pressure monitor
HCD-HV 077[a][f]	C	62A	CB pressure monitor
SID-HV 331	A	67	Long-term recirculation loop 2
CHB-HV 255	A	72	RCP seal injection water to RCP 1A, 1B, 2A, 2B
SIC-HV 321	A	77	Long-term recirculation loop 1
SGA-UV 134[a]	C	2	Main steam to auxiliary feedwater turbine
SGA-UV 134A[a]	C	2	Main steam to auxiliary feedwater turbine bypass
SGA-UV 138[a]	C	3	Main steam to auxiliary feedwater turbine
SGA-UV 138A[a]	C	3	Main steam to auxiliary feedwater turbine bypass
SIB-UV 616[a]	A	13	HPSI to RC loop 2A
SIA-UV 617[a]	A	13	HPSI to RC loop 2A
SIB-UV 626[a]	A	14	HPSI to RC loop 2B
SIA-UV 627[a]	A	14	HPSI to RC loop 2B
SIB-UV 636[a]	A	15	HPSI to RC loop 1A
SIA-UV 637[a]	A	15	HPSI to RC loop 1A
SIB-UV 646[a]	A	16	HPSI to RC loop 1B
SIA-UV 647[a]	A	16	HPSI to RC loop 1B
SIB-UV 615[a]	A	17	LPSI to RC loop 2A
SIB-UV 625[a]	A	18	LPSI to RC loop 2B
SIA-UV 635[a]	A	19	LPSI to RC loop 1A
SIA-UV 645[a]	A	20	LPSI to RC loop 1B
SIA-UV 672[a]	A	21	Shutdown cooling heat exchanger 1 to CS header 1
SIB-UV 671[a]	A	22	Shutdown cooling heat exchanger 2 to CS header 2
SIA-UV 673[a]	A	23	Containment recirculation sump to CS, LPSI and HPSI headers 1A & 1B

(continued)

a. Not Type C Tested

f. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when leakage results in exceeding the overall containment leakage rate acceptance criteria.

T7.0 COMPONENT LISTS

(continued)

VALVE NO	ITS 3.6.3 Condition	PENETRATION	REQUIRED OPEN DURING ACCIDENT
SIA-UV 674[a]	A	23	Containment recirculation sump to CS, LPSI and HPSI headers 1A & 1B
SIB-UV 675[a]	A	24	Containment recirculation sump to CS, LPSI and HPSI headers 2A & 2B
SIB-UV 676[a]	A	24	Containment recirculation sump to CS, LPSI and HPSI headers 2A & 2B
AFB-UV 034[a]	A	75	Steam generator 1 auxiliary feedwater
AFC-UV 036[a]	A	75	Steam generator 1 auxiliary feedwater
AFB-UV 035[a]	A	76	Steam generator 2 auxiliary feedwater
AFA-UV 037[a]	A	76	Steam generator 2 auxiliary feedwater

VALVE NO	ITS 3.6.3 Condition	PENETRATION	MANUAL CONTAINMENT ISOLATION VALVES[e] NORMALLY CLOSED/POST-ACCIDENT CLOSED
SGE-V-603[a]	C	1	Nitrogen blanket supply/Nitrogen vent
SGE-V-611[a]	C	4	Nitrogen blanket supply/Nitrogen vent
DWE-V 061	A	6	Containment demineralized water stations
DWE-V 062	A	6	Containment demineralized water stations
FPE-V 089	A	7	Fire protection containment
SIE-V 463	A	28	Safety injection tank drain
CHE-V 854	A	41	Chemical addition unit to regenerative hx
SGE-V-293[a]	A	46	SGB-UV-500Q Bypass line inlet
SGE-V-294[a]	A	47	SGA-UV-500S Bypass line inlet
PCE-V 070	A	50	Fuel pool cooling
PCE-V 071	A	50	Fuel pool cooling
PCE-V 075	A	51	Refueling pool cleanup
PCE-V 076	A	51	Refueling pool cleanup
IAE-V 072	A	59	Containment service air utility station

a. Not Type C Tested

e. May be opened on an intermittent basis under administrative controls defined in the bases of TS 3.6.3, "Containment Isolation Valves."

T7.0 COMPONENT LISTS

T7.0.400 MOV THERMAL OVERLOAD PROTECTION AND BYPASS DEVICES

This list identifies the components subject to the testing requirements of TRM T3.8.102, “MOV Thermal Overload Protection and Bypass Devices.”

VALVE NUMBER	BYPASS DEVICE (Accident Conditions)	SYSTEM(S) AFFECTED
J-SIA-UV-647	HPSI A Flow Control to Reactor Coolant Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-637	HPSI A Flow Control to Reactor Coolant Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-604	HPSI Pump A Long Term Cooling Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-609	HPSI Pump B Long Term Cooling Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-657	Shutdown Clg. Temp. Control Train A Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-658	Shutdown Clg. Temp. Control Train B Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-685	LPSI - Ctmt Spray Pump Cross Connect A Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-694	LPSI- Ctmt Spray Pump Cross Connect B Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-686	Ctmt Spray A Cross Connect Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-696	Ctmt Spray B Cross Connect Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-688	Shutdown Clg. Heat Exchange\x11A Bypass Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-693	Shutdown Clg. Heat Exchange\x11B Bypass Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-617	HPSI A Flow Control To React Coolant 2A Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-627	HPSI A Flow Control To React Coolant 2B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-645	LPSI Flow Control To React Coolant 1B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-635	LPSI Flow Control To React Coolant 1A Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-644	Safety Injection Tank 1B Isolation Valve	Safety Injection Shutdown Cooling System

(continued)

T7.0 COMPONENT LISTS

(continued)

VALVE NUMBER	BYPASS DEVICE (Accident Conditions)	SYSTEM(S) AFFECTED
J-SIA-UV-634	Safety Injection Tank 1A Isolation Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-616	HPSI B Flow Control To React Coolant 2A Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-626	HPSI B Flow Control To React Coolant 2B Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-636	HPSI B Flow Control To React Coolant 1A Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-646	HPSI B Flow Control To React Coolant 1B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-664	Ctmt Spray Pump A To Refueling Water Tank Isolation Vlv.	Safety Injection Shutdown Cooling System
J-SIB-UV-665	Ctmt Spray Pump B To Refueling Water Tank Isolation Vlv.	Safety Injection Shutdown Cooling System
J-SIB-UV-615	LPSI Flow Control To React Coolant 2A Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-625	LPSI B Flow Control To React Coolant 2B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-666	HPSI Pump A to Refueling Water Tank Isolation	Safety Injection Shutdown Cooling System
J-SIB-UV-667	HPSI Pump B to Refueling Water Tank Isolation	Safety Injection Shutdown Cooling System
J-SIA-UV-669	LPSI Pump A To Refueling Water Tank Isolation	Safety Injection Shutdown Cooling System
J-SIB-UV-668	LPSI Pump B to Refueling Water Tank Isolation	Safety Injection Shutdown Cooling System
J-SIA-UV-672	Ctmt Spray Control Train A Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-671	Ctmt Spray Control Train B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-674	Ctmt Sump Isolation Train A Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-676	Ctmt Sump Isolation Train B Valve	Safety Injection Shutdown Cooling System
J-SIA-UV-673	Ctmt Sump Isolation Train A Valve	Safety Injection Shutdown Cooling System

(continued)

T7.0 COMPONENT LISTS

(continued)

VALVE NUMBER	BYPASS DEVICE (Accident Conditions)	SYSTEM(S) AFFECTED
J-SIB-UV-675	Ctmt Sump Isolation Train B Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-614	Safety Injection Tank 2A Isolation Valve	Safety Injection Shutdown Cooling System
J-SIB-UV-624	Safety Injection Tank 2B Isolation Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-684	Shutdown Clg. Heat Exchange Isolation Train A	Safety Injection Shutdown Cooling System
J-SIB-HV-689	Shutdown Clg. Heat Exchange Isolation Train B	Safety Injection Shutdown Cooling System
J-SIA-HV-683	LPSI Pump A Isolation Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-692	LPSI Pump B Isolation Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-691	Shutdown Clg. Loop 2 Warm-Up Bypass Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-690	Shutdown Clg. Loop 1 Warm-Up Bypass Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-698	HPSI Pump A Discharge Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-699	HPSI Pump B Discharge Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-306	LPSI Pump A Header Discharge Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-307	LPSI Pump B Header Discharge Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-687	Ctmt Spray Isolation Train A Valve	Safety Injection Shutdown Cooling System
J-SIB-HV-695	Ctmt Spray Isolation Train B Valve	Safety Injection Shutdown Cooling System
J-SIA-HV-678	Shutdown Clg. Heat Exchange Isolation Train A	Safety Injection Shutdown Cooling System
J-SIB-HV-679	Shutdown Clg. Heat Exchange Isolation Train B	Safety Injection Shutdown Cooling System
J-EWA-UV-65	ECW Loop A To/From NCW Cross Tie Valve	Essential Cooling Water System

(continued)

T7.0 COMPONENT LISTS

(continued)

VALVE NUMBER	BYPASS DEVICE (Accident Conditions)	SYSTEM(S) AFFECTED
J-EWA-UV-145	ECW Loop A To/From NCW Cross Tie Valve	Essential Cooling Water System
J-CTA-HV-1	Condensate Tank to Aux. Feedwater Pump Valve	Condensate Transfer and Storage System
J-CTA-HV-4	Condensate Tank to Aux. Feedwater Pump Valve	Condensate Transfer and Storage System
J-SGA-UV-134	SG-1 Aux. Feedwater Pump A Steam Supply	Main Steam System
J-SGA-UV-138	SG-2 Aux. Feedwater Pump A Steam Supply	Main Steam System
J-SGA-UV-134A	SG-1 Aux. Feedwater Pump A Steam Supply Bypass	Main Steam System
J-SGA-UV-138A	SG-2 Aux. Feedwater Pump A Steam Supply Bypass	Main Steam System
J-NCB-UV-401	NCWS Ctmt Isolation Valve	Nuclear Cooling Water System
J-NCA-UV-402	NCWS Ctmt Isolation Valve	Nuclear Cooling Water System
J-NCB-UV-403	NCWS Ctmt Isolation Valve	Nuclear Cooling Water System
J-AFB-HV-30	Aux. Feedwater Regulating Valve	Auxiliary Feedwater System
J-AFB-HV-31	Aux. Feedwater Regulating Valve	Auxiliary Feedwater System
J-AFB-UV-34	Aux. Feedwater Regulating Valve	Auxiliary Feedwater System
J-AFB-UV-35	Aux. Feedwater Isolation Valve	Auxiliary Feedwater System
J-AFA-HV-32	Aux. Feedwater Regulating Valve	Auxiliary Feedwater System
J-AFA-UV-37	Aux. Feedwater Isolation Valve	Auxiliary Feedwater System
J-AFC-UV-36	Aux. Feedwater Isolation Valve	Auxiliary Feedwater System
J-AFC-HV-33	Aux. Feedwater Regulating Valve	Auxiliary Feedwater System
J-CPA-UV-2A	Ctmt Purge Refueling Mode Isolation Valve	Containment Purge System
J-CPB-UV-3B	Ctmt Purge Refueling Mode Isolation Valve	Containment Purge System
J-CPA-UV-2B	Ctmt Purge Refueling Mode Isolation Valve	Containment Purge System
J-CPB-UV-3A	Ctmt Purge Refueling Mode Isolation Valve	Containment Purge System
J-WCA-UV-62	Normal Chill Water Return Ctmt Isolation	Chilled Water System
J-WCB-UV-63	Normal Chill Water Supply Ctmt Isolation	Chilled Water System
J-WCB-UV-61	Normal Chill Water Return Ctmt Isolation	Chilled Water System
J-RDA-UV-23	Ctmt Radwaste Sumps Internal Isolation	Radioactive Waste Drain System
J-HPA-UV-3	H2 Ctmt Train A Downstream Supply Isolation	Containment Hydrogen Control Sys.
J-HPA-UV-5	H2 Ctmt Train A Return Isolation Valve	Containment Hydrogen Control Sys.

(continued)

T7.0 COMPONENT LISTS

VALVE NUMBER	BYPASS DEVICE (Accident Conditions)	SYSTEM(S) AFFECTED
J-HPB-UV-4	H2 Ctmt Train B Downstream Supply Isolation	Containment Hydrogen Control Sys.
J-HPB-UV-6	H2 Ctmt Train B Return Isolation Valve	Containment Hydrogen Control Sys.
J-HPB-UV-2	H2 Ctmt Train B Upstream Supply Isolation	Containment Hydrogen Control Sys.
J-HPA-UV-1	H2 Ctmt Train A Upstream Supply Isolation	Containment Hydrogen Control Sys.
J-GRA-UV-1	Radioactive Drain Tk Gas Surge Hdr Internal Containment Isolation	Gaseous Radwaste System

T7.0 COMPONENT LISTS

T7.0.500 Containment Penetration Conductor Overcurrent Protective Devices

The below referenced procedure identifies the components subject to the requirements of TRM T3.8.101.

Refer to 32DP-9ZZ12

Technical Requirements Manual

APPENDIX TA

REACTOR COOLANT SYSTEM
PRESSURE AND TEMPERATURE LIMITS REPORT
(PTLR)

Palo Verde Nuclear Generating Station
Units 1, 2, and 3

Summary of PTLR:
This reactor coolant system pressure and temperature limits report (PTLR) has been prepared in accordance with the reporting requirements of Technical Specification 5.6.9. NRC letter dated March 16, 2001, accepted report CE NPSD-683-A, Rev. 6, which provides the methodology for developing this PTLR. Application of CE NPSD-683 to PVNGS is documented in report WCAP-16835, Rev. 0.

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TA1.0 Reactor Coolant System Pressure and Temperature Limits Report (PTLR)

This Pressure and Temperature Limits Report (PTLR) has been prepared in accordance with the requirements of Technical Specification (TS) 5.6.9. The following TSs are addressed in this report:

- TS 3.4.3, RCS Pressure and Temperature Limits;
- TS 3.4.6, RCS Loops - Mode 4;
- TS 3.4.7, RCS Loops - Mode 5, Loops Filled;
- TS 3.4.11, Pressurizer Safety Valves - Mode 4; and
- TS 3.4.13, Low Temperature Overpressure Protection System.

TA2.0 Operating Limits

Parametric limits for the above LCOs were developed using NRC-approved methods specified in Technical Specification 5.6.9 (Ref. 1). Application of the methodology approved for developing P/T limits, i.e., report CE NPSD-683-A (Ref. 2), to the Palo Verde Nuclear Generating Station is detailed in WCAP-16835 (Ref. 3).

The initial PTLR was submitted to the NRC along with the Technical Specification (TS) amendment request to relocate P/T limits to the PTLR (Ref. 4). The NRC approved the relocation of the P/T limits from TS to the PTLR in amendment no. 178 (Ref. 5). Subsequent changes to the PTLR are controlled in accordance with TS 5.6.9b and 10 CFR 50.59, and the PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto as required by TS 5.6.9c.

The pressure-temperature limit curves comply with Appendix G to 10 CFR Part 50 requirements that the temperature of the closure head flange and vessel flange regions must be at least 120°F higher than the limiting RTNDT for these regions. This RTNDT limit applies during normal operation, including heatup and cooldown, when the core is not critical and the vessel pressure exceeds 625 psia, (20% of the pre-service hydrostatic test pressure of 3125 psia).

Refer to the Technical Specifications for LCOs and surveillance requirements applicable to RCS pressure and temperature limits. Specific TS LCO limits relocated from the Technical Specifications into this PTLR are given below.

(continued)

TA2.1 RCS Pressure and Temperature Limits (LCO 3.4.3)

RCS heatup and cooldown rates for Units 1, 2 and 3 through 32 EFPY shall be equal to or less than the values shown in Table TA2-1. Limiting RCS temperature requirements through 32 EFPY are specified in Table TA2-2. The RCS pressure and temperature for vessel head boltup, inservice hydrostatic and leak testing through 32 EFPY shall be limited as specified on Figure TA2-1 (or Table TA2-3) for RCS heatup, and Figure TA2-2 (or Table TA2-4) for RCS cooldown. A gradual change in reactor coolant system temperature of ±10°F in any 1-hour period is the maximum permitted during inservice hydrostatic and leak testing.

TA2.2 RCS Loops - Mode 4 (LCO 3.4.6)

The LTOP enable temperature for RCS heatup and cooldown through 32 EFPY is 221°F as specified in Table TA2-2.

TA2.3 RCS Loops - Mode 5, Loops Filled (LCO 3.4.7)

The LTOP enable temperature for RCS heatup and cooldown through 32 EFPY is 221°F as specified in Table TA2-2.

TA2.4 Pressurizer Safety Valves - Mode 4 (LCO 3.4.11)

The LTOP enable temperature for RCS heatup and cooldown through 32 EFPY is 221°F as specified in Table TA2-2.

TA2.5 Low Temperature Overpressure Protection System (LCO 3.4.13)

The LTOP enable temperature for RCS heatup and cooldown through 32 EFPY is 221°F as specified in Table TA2-2.

(continued)

Table TA2-1
PVNGS Units 1, 2 and 3
RCS Heatup and Cooldown Rate Limits through 32 EFPY
(Formerly TS Table 3.4.3-1)

Indicated RCS Cold Leg Temperature (°F)[1]	Heatup Rate (°F/hr)	Cooldown Rate (°F/hr)
80° to ≤ 92°	≤ 75	≤ 30
> 92° to ≤ 100°	≤ 75	≤ 50
> 100° to ≤221°	≤ 75	≤ 100
> 221°	≤ 75	≤ 100
(1) Corrected for instrument uncertainty.		

Table TA2-2
PVNGS Units 1, 2 and 3
Limiting RCS Temperatures through 32 EFPY

Requirement	RCS Temperature[1]
Minimum Boltup Temperature	80°F
Minimum Hydrostatic Test Temperature	181.4°F
Lowest Service Temperature	153.2°F
Minimum Flange Limit (Hydrostatic Test)	163.2°F
Minimum Flange Limit (Normal Operation)	193.2°F
LTOP Heatup and Cooldown Enable Temperature	221°F
(1) Corrected for instrument uncertainty.	

(continued)

Table TA2-3
PVNGS Unit 1, 2 and 3
RCS Heatup P/T Limits through 32 EFPY

Indicated Temperature (°F)[1]	Pressure Isothermal (psia)	Indicated RCS Pressure (psia)[1] @ Heatup Rate						Hydrostatic Test[2] (psia)
		@10°F/hr	@20°F/hr	@30°F/hr	@40°F/hr	@50°F/hr	@75°F/hr	
80	680.6	680.6	680.6	671.1	650.2	622.2	602.2	954.4
83.2	690.2	690.2	690.2	676.2	650.2	622.2	602.2	967.2
93.2	727.2	727.2	705.2	676.2	650.2	622.2	602.2	1016.2
103.2	772.2	772.2	710.2	676.2	650.2	622.2	602.2	1075.2
113.2	826.2	826.2	735.2	681.2	650.2	622.2	602.2	1148.2
123.2	893.2	893.2	778.2	700.2	653.2	622.2	602.2	1237.2
133.2	974.2	974.2	839.2	738.2	672.2	627.2	602.2	1346.2
143.2	1074.2	1074.2	918.2	790.2	705.2	645.2	602.2	1478.2
153.2	1195.2	1195.2	1018.2	862.2	754.2	676.2	604.2	1640.2
163.2	1344.2	1335.2	1142.2	954.2	819.2	721.2	617.2	1838.2
171.5	1494.8	1467.5	1269.5	1049.0	889.9	772.8	638.0	2039.1
172.1	1507.0	1478.3	1279.9	1057.0	896.0	777.3	598.0	2053.6
173.2	1525.2	1494.2	1295.2	1068.2	904.2	783.2	600.2	2080.2
183.2	1747.2	1689.2	1484.2	1213.2	1014.2	865.2	637.2	2375.2
186.7	1841.7	1772.5	1565.4	1275.5	1062.2	902.0	655.4	2500.0
193.2	2017.2	1927.2	1716.2	1391.2	1151.2	970.2	689.2	
203.2	2347.2	2217.2	1998.2	1610.2	1320.2	1101.2	757.2	
207.0	2500.0	2351.5	2129.3	1713.2	1399.2	1162.4	790.6	
211.2		2500.0	2274.2	1827.0	1486.6	1230.0	827.6	
213.2			2343.2	1881.2	1528.2	1262.2	845.2	
213.2			2327.2	1865.2	1512.2	1246.2	829.2	
217.3			2500.0	1998.9	1616.3	1327.8	874.7	
223.2				2191.2	1766.2	1445.2	940.2	
230.8				2500.0	2008.6	1634.4	1045.8	
233.2					2085.2	1694.2	1079.2	
243.2					2474.2	2000.2	1250.2	
243.7					2500.0	2018.8	1260.8	
253.2						2372.2	1461.2	
256.0						2500.0	1533.4	
263.2							1719.2	
273.2							2034.2	
283.2							2418.2	
284.9							2500.0	

(1) Corrected for instrument uncertainty and for RCS pressure and elevation effects.

(2) A gradual change in reactor coolant system temperature of ±10°F in any 1-hour period is the maximum permitted during inservice hydrostatic and leak testing.

(continued)

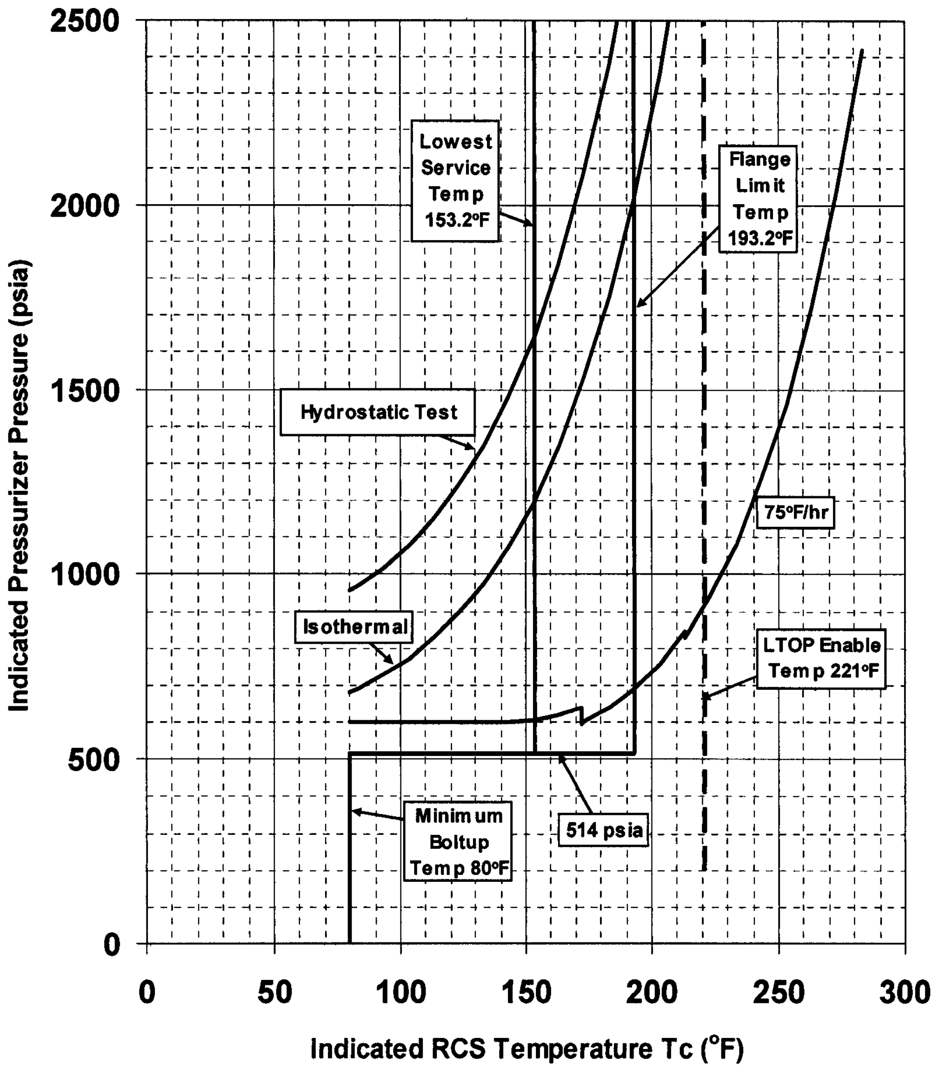
Table TA2-4
PVNGS Unit 1, 2 and 3
RCS Cooldown P/T Limits through 32 EFPY

Indicated Temperature (°F)(1)	Indicated RCS Pressure (psia)(1) @ Cooldown Rate							
	Isothermal	@10°F/hr	@20°F/hr	@30°F/hr	@40°F/hr	@50°F/hr	@75°F/hr	@100°F/hr
80	680.6	612.3	589.0	527.1	469.5	416.6	329.2	237.6
83.2	690.2	623.2	601.2	541.2	485.2	433.2	329.2	272.2
90.9	718.6	655.4	638.0	583.4	533.5	492.2	402.8	372.6
91.3	720.1	657.2	598.0	585.7	536.1	495.4	406.8	378.1
93.2	727.2	665.2	607.2	596.2	548.2	510.2	425.2	403.2
99.6	756.1	698.0	644.5	638.0	597.1	559.7	501.1	493.2
99.9	757.5	699.6	646.3	598.0	599.4	562.1	504.7	497.5
103.2	772.2	716.2	665.2	619.2	624.2	587.2	543.2	543.2
104.7	780.4	725.6	676.1	631.3	638.0	604.8	565.0	565.0
104.9	781.6	727.0	677.7	633.1	598.0	607.3	568.2	568.2
107.6	795.8	743.4	696.7	654.2	622.1	638.0	606.3	606.3
107.8	796.8	744.4	698.0	655.6	623.6	598.0	608.7	608.7
109.8	807.8	757.0	712.6	671.9	642.1	621.6	638.0	638.0
109.9	808.5	757.9	713.6	673.0	643.4	623.2	598.0	598.0
113.2	826.2	778.2	737.2	699.2	673.2	661.2	645.2	645.2
123.2	893.2	854.2	823.2	798.2	781.2	776.2	776.2	776.2
133.2	974.2	947.2	929.2	918.2	918.2	918.2	918.2	918.2
143.2	1074.2	1060.2	1057.2	1057.2	1057.2	1057.2	1057.2	1057.2
153.2	1195.2	1195.2	1195.2	1195.2	1195.2	1195.2	1195.2	1195.2
163.2	1344.2	1344.2	1344.2	1344.2	1344.2	1344.2	1344.2	1344.2
173.2	1525.2	1525.2	1525.2	1525.2	1525.2	1525.2	1525.2	1525.2
183.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2
193.2	2017.2	2017.2	2017.2	2017.2	2017.2	2017.2	2017.2	2017.2
203.2	2347.2	2347.2	2347.2	2347.2	2347.2	2347.2	2347.2	2347.2
207.1	2500.0	2500.0	2500.0	2500.0	2500.0	2500.0	2500.0	2500.0

(1) Corrected for instrument uncertainty and for RCS pressure and elevation effects.

(continued)

Figure TA2-1
PVNGS Units 1, 2 and 3
RCS Heatup Limits(1)(2) through 32 EFPY
(Formerly TS Figure TS 3.4.3-2)

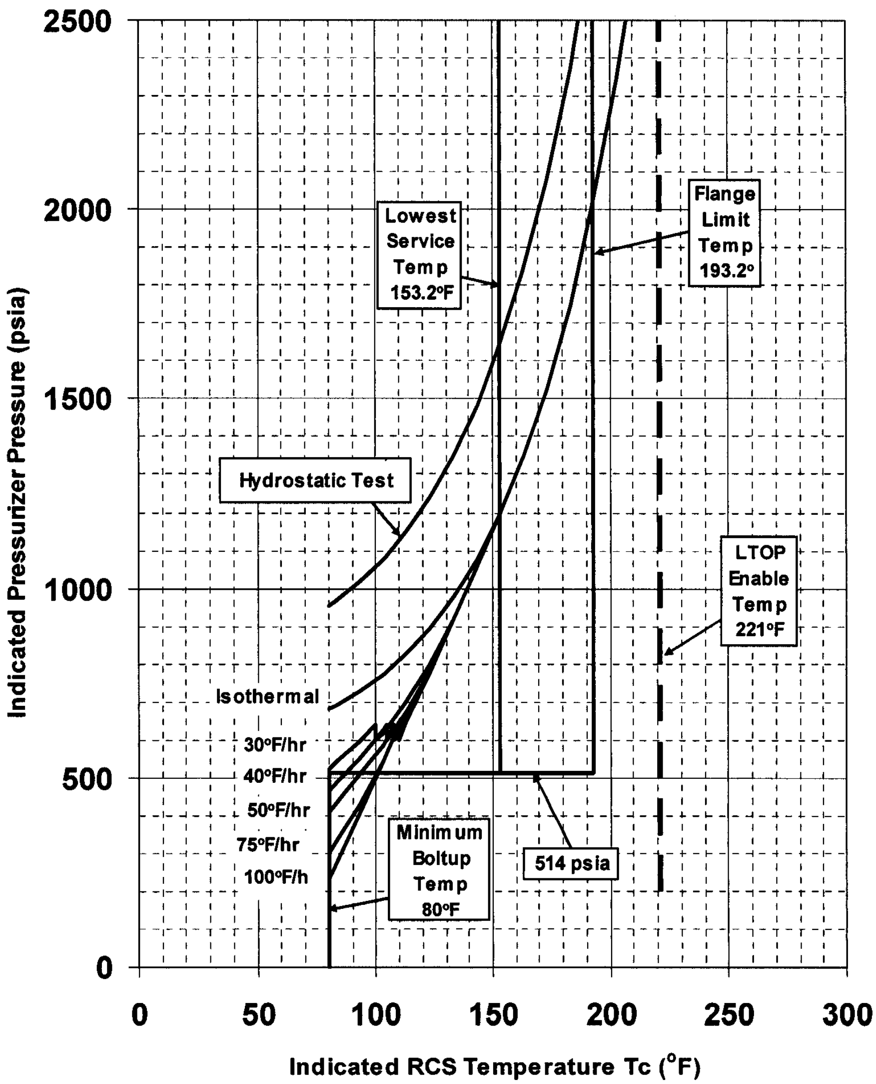


(1) Corrected for instrument uncertainty and for RCS pressure and elevation effects.

(2) A gradual change in reactor coolant system temperature of ±10°F in any 1-hour period is the maximum permitted during inservice hydrostatic and leak testing.

(continued)

Figure TA2-2
PVNGS Units 1, 2 and 3
RCS Cooldown Limits(1)(2) through 32 EFPY
(Formerly TS Figure TS 3.4.3-2)



(1) Corrected for instrument uncertainty and for RCS pressure and elevation effects.

(2) A gradual change in reactor coolant system temperature of ±10°F in any 1-hour period is the maximum permitted during inservice hydrostatic and leak testing.

(continued)

TA3.0 Neutron Fluence

The design value of peak fast neutron fluence through 32 EFPY for determining the limiting reactor vessel beltline material adjusted reference temperature is 3.29E+19 n/cm^2 (E > 1.0 MeV) and corresponds to the fluence at the vessel clad-to-base metal interface. For conservatism, this peak fluence is assumed to apply to each of the PVNGS reactor vessel beltline plates and welds; i.e., no reduction factor is applied to account for axial or azimuthal variations from the peak value.

A summary of fast neutron fluence and fluence factors through 32 EFPY determined at the 1/4T and 3/4T locations in the vessel wall is given in Table TA3-1. These fluence values are used to calculate the adjusted reference temperature at PVNGS Units 1, 2 and 3.

Table TA3-1
Summary of Fluence and Fluence Factors

Location	1/4T f (n/cm^2)$^{(1)}$	1/4T ff$^{(2)}$	3/4T f (n/cm^2)$^{(1)}$	3/4T ff$^{(2)}$
Intermediate Shell	1.681E+19	1.1431	4.390E+18	0.7711
Lower Shell	1.910E+19	1.1770	6.438E+18	0.8766

(1) f = fast neutron fluence
(2) ff = fluence factor

TA4.0 Reactor Vessel Material Surveillance Program

The PVNGS reactor vessel material surveillance program, as described in Section 5.3 of the PVNGS Updated Final Safety Analysis Report (UFSAR), is in compliance with 10 CFR Part 50, Appendix H "Reactor Vessel Material Surveillance Program Requirements." The surveillance capsule withdrawal schedules are presented in UFSAR Tables 5.3-13 through 5.3-19A and summarized in WCAP-16835 (Ref. 3). Test results and analyses of withdrawn surveillance specimens were reported in References 6, 7, and 8.

TA5.0 Adjusted Reference Temperature

A summary of limiting adjusted reference temperatures associated with PVNGS beltline materials at the 1/4T and 3/4T locations along with RT_{PTS} values through 32 EFPY is given in Table TA5-1. Conservatively, the most limiting (highest) adjusted reference temperature value from the three PVNGS units is

(continued)

applied to all three units. Chemistry factors and adjusted reference temperatures for PVNGS are determined in accordance with Regulatory Guide 1.99 (Ref. 9).

Table TA5-1
Summary of Limiting ART and RT_{PTS} Values

PVNGS	Location	Material	1/4T ART (°F)	3/4T ART (°F)	RT_{PTS} (°F)
Unit 1	Inter. Shell	Plate M-6701-2	116	103	123
Unit 2	Inter. Shell	Plate F-765-6	74	64	78
Unit 3	Lower Shell	Plate F-6411-2	65	57	68

Limiting adjusted reference temperatures are incorporated into the calculation of pressure-temperature curves and limits for heatup, cooldown, LTOP, and hydrostatic and leak tests.

Seven reactor vessel surveillance capsules have been removed from PVNGS Units 1, 2 and 3 through December 2007, with a minimum of two credible data sets available for each PVNGS unit. Even though WCAP-16835 shows that the post-irradiation surveillance capsule test results for PVNGS units are credible, the calculation of ART takes no credit for those credible results.

TA6.0 Application of Reactor Vessel Surveillance Data

TA6.1 Applicability to Adjusted Reference Temperature

Data from the reactor vessel surveillance program or from other supplemental sources were not used to determine the adjusted reference temperature (ART) values for the PVNGS beltline materials described in Section 5. The surveillance program data from each of the three Palo Verde units were evaluated for credibility; chemistry factors were also derived for those surveillance materials. (This assessment is further detailed in Report WCAP-16835 [Ref. 3].)

Chemistry factors determined following Position 1.1 of Regulatory Guide 1.99 are shown to be conservative relative to those derived from surveillance plate and weld measurements for each of the PVNGS units. Therefore, no credit is taken for those credible results in the calculation of ART.

(continued)

Each new set of surveillance results, as new data becomes available, will be evaluated to ascertain that the Position 1.1 chemistry factors remain conservative relative to the surveillance results. This will ensure that the existing RCS P/T limits remain conservative for continued plant operation or will be revised as needed to provide conservative RCS pressure-temperature limits.

TA6.2 Evaluation of Surveillance Data Credibility

Regulatory Guide 1.99 describes general procedures acceptable to the NRC staff for calculating the effects of neutron radiation embrittlement of low-alloy steels used in the PVNGS reactor vessels when credible surveillance capsule data is available. Position C.2 of Regulatory Guide 1.99 describes the method for calculating the adjusted reference temperature and Charpy upper-shelf energy of reactor vessel beltline materials using surveillance capsule data. The methods of Position C.2 apply when two or more credible surveillance data sets become available from each unit.

Post-irradiation surveillance capsule test results for PVNGS were evaluated with respect to the credibility criteria of Regulatory Guide 1.99 Revision 2. Results of the credibility assessment found that:

- The surveillance program plates and welds are those judged to be most likely controlling with regard to radiation-induced embrittlement,
- Charpy data scatter does not cause ambiguity in the determination of the 30 ft-lb shift,
- Measured RT_{NDT} shifts are consistent with the predicted shifts,
- Capsule irradiation temperature matches that of the vessel wall, and
- Correlation monitor data falls within the scatter band for that material and therefore meets the credibility test.

Revision 2 of Regulatory Guide 1.99 defines five requirements that must be met for surveillance data to be judged credible. The purpose of the following discussion is to apply these credibility requirements to PVNGS to show that the reactor vessel surveillance data are credible.

Criterion 1: Materials in the capsules should be those judged most likely to be controlling with regard to radiation embrittlement.

(continued)

The beltline region of the reactor vessel is defined in Appendix G(II)(F) to 10 CFR Part 50, "Fracture Toughness Requirements," as:

> "Beltline or beltline region of the reactor vessel means the region of the reactor vessel (shell material including welds, heat affected zones, and plates or forgings) that directly surrounds the effective height of the active core and adjacent regions of the reactor vessel that are predicted to experience sufficient neutron radiation damage to be considered in the selection of the most limiting material with regard to radiation damage."

Table TA6-1 identifies the Units 1, 2, and 3 reactor vessel base metal beltline plate materials selected for the PVNGS surveillance program.

Table TA6-1
Base Metal Materials Selected for Surveillance Program

PVNGS	Plate ID Number	Plate Location
Unit 1(1)	M-4311-1	Lower Shell
Unit 1(1)	M-6701-2	Intermediate Shell
Unit 2	F-773-1	Lower Shell
Unit 3	F-6411-2	Lower Shell

(1) Unit 1 has two different base metal surveillance materials.

The weld materials for the PVNGS Units 1, 2, and 3 surveillance programs are selected to duplicate the materials in the lower shell axial weld seams. Test specimens from these materials are heat-treated to a condition representative of the final metallurgical condition of the weld metal in the completed reactor vessel. These surveillance weld metals were made with the same weld wire heat as that of the vessel beltline weld seams and are, therefore, representative of all beltline weld seams.

Intermediate shell plate M-6701-2 in Unit 1 has the highest initial RT_{NDT} and the highest ART of all PVNGS plate materials in the beltline region. Therefore, the PVNGS Units 1, 2, and 3 surveillance material meets the intent of this criterion.

Criterion 2: Scatter in the plots of Charpy energy versus temperature for the irradiated and unirradiated conditions should be small enough to permit the determination of the 30 ft-lb temperature and upper shelf energy unambiguously.

(continued)

Evaluation of Charpy energy versus temperature for the unirradiated and irradiated condition is presented in References 6, 7, and 8. Based on engineering judgment, the scatter in the data presented is small enough to permit the unambiguous determination of the 30 ft-lb temperature and the upper shelf energy of the PVNGS Units 1, 2, and 3 surveillance materials. Thus, the PVNGS surveillance program meets this criterion.

Criterion 3: When there are two or more sets of surveillance data from one reactor, the scatter of ΔRT_{NDT} *values about a best-fit line drawn as described in Regulatory Position 2.1 normally should be less than 28°F for welds and 17°F for base metal. Even if the fluence range is large (two or more orders of magnitude), the scatter should not exceed twice those values. Even if the data fail this criterion for use in shift calculations, they may be credible for determining decrease in upper shelf energy if the upper shelf can be clearly determined, following the definition given in ASTM E 185-82.*

The surveillance program for PVNGS is based on ASTM E185-79 for Unit 1 and ASTM E185-82 for Unit 2 & 3 which presents criteria for monitoring changes in the fracture toughness properties of reactor vessel beltline materials. References 6, 7, and 8 describe the post-irradiation evaluations of PVNGS surveillance materials.

The credibility results shown in Tables TA6-2, TA6-3 and TA6-4 for Units 1, 2, and 3, respectively, present the shift measurements available to date. Those values are compared to predictions based on a chemistry factor determined following Position 1.1 of Regulatory Guide 1.99. In all cases, the difference between the measured and predicted shift is less than 17°F for the surveillance plates and less than 28°F for the surveillance welds. Therefore, this criterion is met for the PVNGS Units 1, 2, and 3 surveillance program plate and weld materials.

(continued)

Table TA6-2
PVNGS Unit 1
Credibility of Surveillance Measurements
Plate, Weld and Correlation Monitor Materials

Material	Capsule	CF	ff[2]	Measured Shift (°F)	Predicted Shift (CF*ff) (°F)	Difference (°F)
Plate M-6701-2 Longitudinal	137	27.5	0.7216	34.2	19.8	+ 14.4
	230	27.5	0.9629	15.3	26.5	- 11.2
Plate M-6701-2 Transverse	137	27.5	0.7216	13.0	19.8	- 6.8
	230	27.5	0.9629	31.9	26.5	+ 5.4
Weld (Heat 90071)	137	4.9	0.7216	- 2.8	3.5	- 6.3
	38	4.9	0.8697	6.7	4.3	+ 2.4
	230	4.9	0.9629	5.1	4.7	+ 0.4
Correlation Monitor Material	137	131.7[1]	0.7216	101.3	95.0	+ 6.3
	38	131.7[1]	0.8697	114.1	114.5	- 0.4
	230	131.7[1]	0.9629	129.2	126.8	+ 2.4

(1) Chemistry factor based on 0.174 Cu and 0.665 Ni using Table 2 of Regulatory Guide 1.99, Rev. 2.

(2) ff = fluence factor = $f^{(0.28 - 0.1*\log f)}$

(continued)

Table TA6-3
PVNGS Unit 2
Credibility of Surveillance Measurements
Plate, Weld and Correlation Monitor Materials

Material	Capsule	CF	ff(2)	Measured Shift (°F)	Predicted Shift (CF*ff) (°F)	Difference (°F)
Plate F-773-1 Longitudinal	137	17.5	0.7372	13.3	12.9	+ 0.4
	230	17.5	0.9978	17.7	17.5	+ 0.2
Plate F-773-1 Transverse	137	17.5	0.7372	9.5	12.9	- 3.4
	230	17.5	0.9978	19.3	17.5	+ 1.8
Weld (Heat 3P7317)	137	1.6	0.7372	0	1.2	- 1.2
	230	1.6	0.9978	2.5	1.6	+ 0.9
Correlation Monitor Material	137	131.7(1)	0.7372	116.0	97.1	+ 18.9
	230	131.7 (1)	0.9978	132.4	131.4	+ 1.0

(1) Chemistry Factor based on 0.174 Cu and 0.665 Ni using Table 2 of Regulatory Guide 1.99, R02.

(2) ff = fluence factor = $f^{(0.28 - 0.1*\log f)}$

Table TA6-4
PVNGS Unit 3
Credibility of Surveillance Measurements
Plate, Weld and Correlation Monitor Materials

Material	Capsule	CF	ff(2)	Measured Shift (°F)	Predicted Shift (CF*ff) (°F)	Difference (°F)
Plate F-6411-2 Longitudinal	230	10.2	0.9726	6.3	9.9	- 3.6
Plate F-6411-2 Transverse	142	10.2	0.7090	13.1	7.2	+ 5.9
	230	10.2	0.9726	9.2	9.9	- 0.7
Weld (Heat 4P7869)	142	29.6	0.7090	27.5	21.0	+ 6.5
	230	29.6	0.9726	24.1	28.8	- 4.7
Correlation Monitor Material	142	131.7(1)	0.7090	82.5	93.4	- 10.9
	230	131.7(1)	0.9726	141.8	128.1	+ 13.7

(1) Chemistry Factor based on 0.174 Cu and 0.665 Ni using Table 2 of Regulatory Guide 1.99, R02.

(2) ff = fluence factor = $f^{(0.28 - 0.1*\log f)}$

(continued)

Criterion 4: The irradiation temperature of the Charpy specimens in the capsule should match the vessel wall temperature at the cladding/base metal interface within ± 25°F.

All reactor vessel surveillance specimen capsule holders are attached to the inside vessel wall cladding in the beltline region at PVNGS. This capsule holder attachment method meets the design and inspection requirements of the ASME Code, Sections III and XI. The location of the specimens relative to the reactor vessel beltline provides assurance that the reactor vessel wall and the specimens experience equivalent operating conditions such that the *temperatures will not differ by more than 25°F. Hence this criterion is met*.

Criterion 5: The surveillance data for the correlation monitor material in the capsule should fall within the scatter band of the data base for that material.

As shown in Tables TA6-2, TA6-3, and TA6-4, the correlation monitor materials from PVNGS Units 1, 2, and 3 meet the credibility test to be within the scatter band of the database for that material.

TA6.3 Derivation of Chemistry Factors from Surveillance Data

The derived chemistry factor (CF) values for each of the Palo Verde Units 1, 2, and 3 surveillance materials is provided in Tables TA6-2, TA6-3, and TA6-4. The derived chemistry factor for the Unit 1 surveillance plate (M-6701-2) and surveillance weld (Heat 90071) are 27.5°F and 4.9°F, respectively. These chemistry factor values compare favorably with their respective values of 37°F and 27.8°F determined following Position 1.1 of Regulatory Guide 1.99. Similar conservative results are found for Unit 2 plate (F-773-1) and surveillance weld (Heat 3P7317), and for Unit 3 plate (F-6411-2) and surveillance weld (Heat 4P7869). Therefore, chemistry factors determined following Position 1.1 of Regulatory Guide 1.99 are shown to be conservative relative to those derived from surveillance plate and weld measurements for each of the PVNGS units.

TA7.0 References

1. PVNGS Units 1, 2, and 3 Technical Specification 5.6.9, “Reactor Coolant System Pressure and Temperature Limits Report.”

2. CE Owners Group Topical Report CE NPSD-683-A, Revision 6, “Development of a RCS Pressure and Temperature Limits Report for the Removal of P/T

(continued)

Limits and LTOP Requirements from the Technical Specifications," April 2001.

3. Westinghouse Report WCAP-16835, Revision 0, "Palo Verde Nuclear Generating Station Units 1, 2 and 3, Basis for RCS Pressure-Temperature Limits Report," June 2008.

4. APS letter No. 102-05960 to NRC, "Request for Technical Specification Amendment to Relocate the Reactor Coolant System Pressure and Temperature Limits and the Low Temperature Overpressure Protection Enable Temperatures," dated February 19, 2009. Supplemented by APS Letter No. 102-06112, "Response to Request for Additional Information for Technical Specification Amendment and Exemption from 10 CFR 50, Appendix G, to Relocate the Reactor Coolant System Pressure and Temperature Limits and the Low Temperature Overpressure Protection Enable Temperatures," dated December 22, 2009.

5. Letter, NRC to APS, "Palo Verde Nuclear Generating Station, Units 1, 2, and 3 - Issuance of Amendments Re: [Relocation of RCS Pressure and Temperature Limits] (TAC NOS. ME0698, ME0699, AND ME0700)," dated February 25, 2010 (Amendment No. 178).

6. APS letter no. 102-05242 to NRC, Palo Verde Nuclear Generating Station Unit 1 Reactor Vessel Material Surveillance Capsule at 230°," April 5, 2005 (transmittal of WCAP-16374-NP, "Analysis of Capsule 230° from Arizona Public Service Company Palo Verde Unit 1 Reactor Vessel Radiation Surveillance Program," February 2005).

7. APS letter no. 102-05457 to NRC, Palo Verde Nuclear Generating Station Unit 2 Reactor Vessel Material Surveillance Capsule at 230°," April 4, 2006 (transmittal of WCAP-16524-NP, "Analysis of Capsule 230° from Arizona Public Service Company Palo Verde Unit 2 Reactor Vessel Radiation Surveillance Program," February 2006).

8. APS letter no. 102-05348 to NRC, Palo Verde Nuclear Generating Station Unit 3 Analysis of Reactor Vessel Material Surveillance Capsule at 230°," September 26, 2005 (transmittal of WCAP-16449-NP, "Analysis of Capsule 230° from Arizona Public Service Company Palo Verde Unit 3 Reactor Vessel Radiation Surveillance Program," August 2005).

9. Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," U.S. Nuclear Regulatory Commission, May 1998.