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TECHNICAL REQUIREMENTS

(continued)

ENCLOSURE

TECHNICAL REQUIREMENTS MANUAL (TRM)
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LIST OF ACRONYMS

Acronym	Title
ABGTS	Auxiliary Building Gas Treatment System
ACRP	Auxiliary Control Room Panel
ASME	American Society of Mechanical Engineers
AFD	Axial Flux Difference
AFW	Auxiliary Feedwater System
ARO	All Rods Out
ARFS	Air Return Fan System
ARV	Atmospheric Relief Valve
BOC	Beginning of Cycle
CAOC	Constant Axial Offset Control
CCS	Component Cooling System
CFR	Code of Federal Regulations
COLR	Core Operating Limits Report
CREVS	Control Room Emergency Ventilation System
CSS	Containment Spray System
CST	Condensate Storage Tank
DNB	Departure from Nucleate Boiling
ECCS	Emergency Core Cooling System
EFPD	Effective Full-Power Days
EGTS	Emergency Gas Treatment System
EOC	End of Cycle
ERCW	Essential Raw Cooling Water
ESF	Engineered Safety Feature
ESFAS	Engineered Safety Features Actuation System
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilating, and Air-Conditioning
LCO	Limiting Condition For Operation
MFIV	Main Feedwater Isolation Valve
MFRV	Main Feedwater Regulation Valve
MSIV	Main Steam Isolation Valve
MSSV	Main Steam Safety Valve
MTC	Moderator Temperature Coefficient
NMS	Neutron Monitoring System
ODCM	Offsite Dose Calculation Manual
PCP	Process Control Program
PIV	Pressure Isolation Valve
PORV	Power-Operated Relief Valve
PTLR	Pressure and Temperature Limits Report
QPTR	Quadrant Power Tilt Ratio
RAOC	Relaxed Axial Offset Control
RCCA	Rod Cluster Control Assembly
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RTP	Rated Thermal Power
RTS	Reactor Trip System
RWST	Refueling Water Storage Tank
SG	Steam Generator
SI	Safety Injection
SL	Safety Limit
SR	Surveillance Requirement
UHS	Ultimate Heat Sink

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PROPOSED REVISION
Definitions will be revised consistent with Tech Specs and generic NUREG changes.

1.0 USE AND APPLICATION

1.1 Definitions

---NOTE---
The defined terms of this section appear in capitalized type and are applicable throughout these Technical Requirements and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Requirement that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CHANNEL OPERATIONAL TEST (COT)	A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of required alarm, interlock, display, and trip functions. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints so that the setpoints are within the required range and accuracy.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known input. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, interlock, and trip functions. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping calibrations or total channel steps so that the entire channel is calibrated.
CONTINUOUS FIRE WATCH	A continuous Fire Watch shall be a trained individual in a specified area such that each fire zone within the specified area is patrolled once every 15 minutes with a margin of 5 minutes.

(continued)

CHANNEL CHECK

A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

CORE ALTERATION

CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

LEAKAGE

LEAKAGE shall be:

a. <u>Identified LEAKAGE</u>

   1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;

   2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or

(continued)

LEAKAGE (continued)	3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) tube to the Secondary System;
	b. <u>Unidentified LEAKAGE</u> All LEAKAGE (except reactor coolant pump seal water injection or leakoff) that is not identified LEAKAGE;
	c. <u>Pressure Boundary LEAKAGE</u> LEAKAGE (except SG tube LEAKAGE) through a non-isolable fault in a RCS component body, pipe wall, or vessel wall.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE - OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE when it is capable of performing its specified function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper quadrant power to the average upper power or the ratio of the maximum lower quadrant power to the average lower power, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3411 MWt.

(continued)

REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All Rod Cluster Control Assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn; and b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM.
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	TADOT shall consist of operating the trip actuating device and verifying OPERABILITY of required alarm, interlock, display, and trip functions. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy.

Table 1.1-1
MODES

MODE	TITLE	REACTIVITY CONDITION (K_{eff})	% RATED THERMAL POWER[a]	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	$\geq$ 0.99	> 5	NA
2	Startup	$\geq$ 0.99	$\leq$ 5	NA
3	Hot Standby	< 0.99	NA	$\geq$ 350
4	Hot Shutdown[b]	< 0.99	NA	350 > T_{avg} > 200
5	Cold Shutdown[b]	< 0.99	NA	$\leq$ 200
6	Refueling[c]	NA	NA	NA

[a] Excluding decay heat.

[b] All reactor vessel head closure bolts fully tensioned.

[c] One or more reactor vessel head closure bolts less than fully tensioned.

PROPOSED REVISION

Sections 1.2, 1.3, and 1.4 of Tech Specs will be added to TRM.

PROPOSED REVISION
Section 3.0 will be revised consistent with Tech Specs and generic NUREG changes.

3.0 TECHNICAL REQUIREMENT (TR) APPLICABILITY

TR 3.0.1 — TRs shall be met during the MODES or other specified conditions in the Applicability, except as provided in TR 3.0.2.

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

If the TR 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.

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

a. MODE 3 within 7 hours;
b. MODE 4 within 13 hours; and
c. MODE 5 within 37 hours.

Exceptions to this Requirement are stated in the individual Requirements.

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

TR 3.0.3 is applicable in MODES 1, 2, 3, and 4.

TR 3.0.4 — When an TR is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Requirement shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

(continued)

3.0 TECHNICAL REQUIREMENT (TR) APPLICABILITY

TR 3.0.4 (continued)	Exceptions to this Requirement are stated in the individual Technical Requirements. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.
TR 3.0.5	Equipment removed from service, or declared inoperable, to comply with ACTIONS, may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to TR 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
TR 3.0.6	When a supported system TR or LCO is not met solely due to support system TR or LCO not being met, Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system ACTIONS are required to be entered. This is an exception to TR 3.0.2 and LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Technical Specification 5.8, "Safety Function Determination Program." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the TR or LCO in which the loss of safety function exists are required to be entered. When a support system's Required Action directs a supported system be declared inoperable, or directs entry into Conditions and Required Actions for a supported system, the Applicable Conditions and Required Actions shall be entered in accordance with TR 3.0.2 and LCO 3.0.2.

3.0 TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR 3.0.1

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

TSR 3.0.2

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

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

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

Exceptions to this Requirement are stated in the individual Requirements.

TSR 3.0.3

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

If the Surveillance is not performed within the delay period, the TR must immediately be declared not met, and the applicable Conditions must be entered. The Completion Times of the Required Actions begin immediately upon expiration of the delay period.

(continued)

3.0 TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR (continued)	When the Surveillance is performed within the delay period and the Technical Surveillance is not met, the TR must immediately be declared not met and the applicable Condition(s) must be entered. The Completion Times of the Required Actions begin immediately upon failure to meet the Surveillance.
TSR 3.0.4	Entry into a MODE or other specified condition in the Applicability of an TR shall not be made unless the TR's Surveillances have been met within their specified Frequency. This provision shall not prevent passage through or to MODES or other specified conditions in compliance with Required Actions.

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.1 Boration Systems Flow Paths, Shutdown

TR 3.1.1 One of the following boron injection flow paths shall be OPERABLE and capable of being powered from an OPERABLE emergency power source:

a. A flow path from an OPERABLE boric acid storage system, through the boric acid transfer pump, through a charging pump to the Reactor Coolant System (RCS), or

b. A flow path from an OPERABLE RWST through a charging pump to the RCS.

APPLICABILITY: MODE 4 with any RCS cold leg temperature ≤ 310 °F, MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boration Systems flow path OPERABILITY requirements not met. OR Boration Systems flow path not capable of being powered by an OPERABLE emergency power source.	A.1 Suspend CORE ALTERATIONS. AND A.2 Suspend positive reactivity additions.	Immediately Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.1.1	-----NOTE----- Only required if the flow path from the boric acid storage tanks is required OPERABLE. ----- Verify temperature of the heat traced portion of the flow path $\geq$ 145°F.	7 days
TSR 3.1.1.2	Verify, for the required OPERABLE flow path, that each manual, power operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.2 Boration Systems Flow Paths, Operating

TR 3.1.2 Two of the following three boron injection flow paths shall be OPERABLE:

a. One flow path from the boric acid tanks, through a boric acid transfer pump, through a charging pump to the Reactor Coolant System (RCS).

b. Two flow paths from the Refueling Water Storage Tank (RWST), through charging pumps to the RCS.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when all RCS cold leg temperatures are > 310 °F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required flow path inoperable.	A.1 Restore required flow path to OPERABLE status.	72 hours
	OR	
	A.2.1 Be in MODE 3.	78 hours
	AND	
	A.2.2 Borate to a SDM equivalent to ≥ 1% Δk/k at 200°F.	78 hours
	AND	
	A.2.3 Restore required path to OPERABLE status.	246 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4 with one or more RCS cold leg temperatures ≤ 310 °F.	~~30~~ 6 hours

PROPOSED REVISION

SURVEILLANCE		FREQUENCY
TSR 3.1.2.1	----------------NOTE---------------- Only required if the flow path from the boric acid tanks is required OPERABLE. ------------------------------------ Verify temperature of the heat traced portion of the required flow path from the boric acid tanks is ≥ 145°F.	7 days
TSR 3.1.2.2	Verify, for the required OPERABLE flow paths, each manual, power operated or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
TSR 3.1.2.3	Demonstrate that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal.	18 months
TSR 3.1.2.4	~~----------------NOTE----------------~~ ~~Only required if the flow path from the boric acid tanks is required OPERABLE.~~ ~~------------------------------------~~ Verify that the flow path from the boric acid tanks delivers ≥ 10 gpm to the RCS.	PROPOSED REVISION 18 months

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.3 Charging Pump, Shutdown

TR 3.1.3 One charging pump in the boron injection flow path required by TR 3.1.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODE 4 with any RCS cold leg temperature ≤ 310 °F, MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required charging pump inoperable. OR Required charging pump not capable of being powered by an OPERABLE emergency power source.	A.1 Suspend CORE ALTERATIONS. AND A.2 Suspend positive reactivity additions.	Immediately Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.3.1	Verify required charging pump's developed head at the test flow point is ≥ the required developed head.	In accordance with Inservice Testing Program

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.4 Charging Pumps, Operating

TR 3.1.4 Two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when all RCS cold leg temperatures are > 310 °F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required charging pump inoperable.	A.1 Restore required charging pump to OPERABLE status.	72 hours
	OR	
	A.2.1 Be in MODE 3.	78 hours
	AND	
	A.2.2 Borate to a SDM equivalent to ≥ 1% Δk/k at 200°F.	78 hours
	AND	
	A.2.3 Restore required charging pump to OPERABLE status.	246 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4 with one or more RCS cold leg temperatures ≤ 310 °F.	~~30~~ 6 hours

PROPOSED REVISION

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.4.1	Verify required charging pump's developed head at the test flow point is ≥ the required developed head.	In accordance with Inservice Testing Program

TR 3.1 REACTIVITY CONTROL SYSTEM

TR 3.1.5 Borated Water Sources, Shutdown

TR 3.1.5 One of the following borated water sources shall be OPERABLE as required by TR 3.1.1:

a. A Boric Acid Storage System and one associated Heat Tracing System, or

b. The Refueling Water Storage Tank (RWST).

APPLICABILITY: MODE 4 with any RCS cold leg temperature ≤ 310 °F, MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required borated water source inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2 Suspend positive reactivity additions.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

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

1. TSR 3.1.5.1, TSR 3.1.5.2 and TSR 3.1.5.3 are only required to be performed if the RWST is the required borated water source.

2. TSR 3.1.5.4, TSR 3.1.5.5 and TSR 3.1.5.6 are only required to be performed if the Boric Acid Storage System is the required borated water source.

SURVEILLANCE		FREQUENCY
TSR 3.1.5.1	-----------------NOTE----------------- Only required when ambient air temperature is < 60 °F. --------------------------------------- Verify RWST solution temperature is ≥ 60 °F.	24 hours
TSR 3.1.5.2	Verify RWST boron concentration is ≥ 2,000 ppm.	7 days
TSR 3.1.5.3	Verify RWST borated water volume is ≥ 36,619 gallons.	7 days
TSR 3.1.5.4	Verify Boric Acid Tank (BAT) solution temperature is ≥ 145°F.	7 days
TSR 3.1.5.5	Verify BAT boron concentration is ≥ 20,500 and ≤ 22,500 ppm.	7 days
TSR 3.1.5.6	Verify BAT borated water volume is ≥ 2,492 gallons.	7 days

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.6 Borated Water Sources, Operating

TR 3.1.6 The following borated water sources shall be OPERABLE as required by TR 3.1.2:

a. A Boric Acid Storage System and associated Heat Tracing System, and

b. The Refueling Water Storage Tank (RWST).

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when all RCS cold leg temperatures are > 310 °F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required Boric Acid Storage System inoperable.	A.1 Restore Boric Acid Storage System to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	A.2.2 Borate to a SDM equivalent to $\geq$ 1% $\Delta k/k$ at 200°F.	78 hours
	<u>AND</u>	
	A.2.3 Restore Boric Acid Storage System to OPERABLE status.	246 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4 with one or more RCS cold leg temperatures $\leq$ 310 °F.	~~30~~ 6 hours

PROPOSED REVISION

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RWST boron concentration not within limits. OR RWST borated water temperature not within limits.	C.1 Restore RWST to OPERABLE status.	8 hours
D. RWST inoperable for reasons other than Condition C.	D.1 Restore RWST to OPERABLE status.	1 hour
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3 AND E.2 Be in MODE 4 with one or more RCS cold leg temperatures ≤ 310 °F.	6 hours ~~36~~ 12 hours

PROPOSED REVISION

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.6.1	-----NOTE----- Only required when outside air temperature is < 60 °F or >105 °F. ---------- Verify RWST solution temperature is ≥ 60 °F and ≤ 105 °F.	24 hours
TSR 3.1.6.2	Verify RWST boron concentration is ≥ 2,000 ppm and ≤ 2,100 ppm.	7 days

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.1.6.3	Verify RWST borated water volume is ≥ 370,000 gallons.	7 days
TSR 3.1.6.4	-----------------NOTE------------------ Only required if the BAT is required OPERABLE. --------------------------------------- Verify Boric Acid Tank (BAT) solution temperature is ≥ 145°F.	7 days
TSR 3.1.6.5	-----------------NOTE------------------ Only required if the BAT is required OPERABLE. --------------------------------------- Verify BAT boron concentration is ≥ 20,500 and ≤ 22,500 ppm.	7 days
TSR 3.1.6.6	-----------------NOTE------------------ Only required if the BAT is required OPERABLE. --------------------------------------- Verify BAT borated water volume is ≥ 8,199 gallons.	7 days

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.7 Position Indication System, Shutdown

TR 3.1.7 The group demand position indicators shall be OPERABLE and capable of determining within ± 2 steps the demand position for each shutdown or control rod that is not fully inserted.

APPLICABILITY: MODES 3, 4, and 5, when the reactor trip breakers are closed.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more group demand position indicators inoperable.	A.1 Open reactor trip breakers.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.7.1	Determine that each group demand position indicator is OPERABLE by movement of the associated shutdown or control rod 10 steps in any one direction.	31 days

TR 3.3 INSTRUMENTATION

TR 3.3.1 Reactor Trip Instrumentation

TR 3.3.1 The Reactor Trip System instrumentation channels of Technical Specification 3.3.1 Table 3.3.1-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3.1-1 of this document.

APPLICABILITY: As shown in Technical Specification 3.3.1, Table 3.3.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refer to Technical Specification 3.3.1, Table 3.3.1-1.	A.1 Refer to Technical Specification 3.3.1, Table 3.3.1-1.	Refer to Technical Specification 3.3.1, Table 3.3.1-1.

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.1.1	Verify RTS RESPONSE TIME of each reactor trip function is within the limits of Table 3.3.1-1.	18 months on a STAGGERED TEST BASIS

Table 3.3.1-1 (Page 1 of 2)

Reactor Trip System Instrumentation Response Times

FUNCTIONAL UNIT	RESPONSE TIME
1. Manual Reactor Trip	N.A.
2. Power Range, Neutron Flux	
a. High	≤ 0.5 second[1]
b. Low	≤ 0.5 second[1]
3. Power Range, Neutron Flux	
a. High Positive Rate	N.A.
b. High Negative Rate	≤ 0.5 second[1]
4. Intermediate Range, Neutron Flux	N.A.
5. Source Range, Neutron Flux	≤ 1 second[1]
6. Overtemperature ΔT	≤ 7 seconds[1]
7. Overpower ΔT	≤ 7 seconds[1]
8. Pressurizer Pressure	
a. Low	≤ 2 seconds
b. High	≤ 2 seconds
9. Pressurizer Water Level--High	N.A.

(continued)

(1) Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from the detector output or input of first electronic component in channel.

Table 3.3.1-1 (Page 2 of 2)

Reactor Trip System Instrumentation Response Times

(continued)

FUNCTIONAL UNIT	RESPONSE TIME
10. Reactor Coolant Flow - Low	
a. Single Loop (Above P-8)	≤ 1.2 seconds
b. Two Loops (Above P-7 and Below P-8)	≤ 1.2 seconds
11. Undervoltage-Reactor Coolant Pumps	≤ 1.5 seconds(2)
12. Underfrequency-Reactor Coolant Pumps	≤ 0.6 second(3)
13. Steam Generator Water Level-Low-Low Coincident with	
a. Vessel $\Delta T \leq$ 50% RTP	≤ 2 seconds(4)
b. Vessel $\Delta T >$ 50% RTP	≤ 2 seconds
14. Turbine Trip	
a. Low Fluid Oil Pressure	N.A.
b. Turbine Stop Valve Closure	N.A.
15. Safety Injection Input from ESF	N.A.
16. Reactor Trip System Interlocks	N.A.
17. Reactor Trip Breakers	N.A.
18. Reactor Trip Breaker UV and ST	N.A.
19. Automatic Trip and Interlock Logic	N.A.

(2) Includes sensor delay time, adjustable time delay, logic and breaker trip times, gripper release (150 msec.) and EMF decay time (250 msec.).

(3) Includes sensor delay time, adjustable time delay, logic and breaker trip times and gripper release time (150 msec.).

(4) With Trip Time Delay (TTD) = 0 seconds.

TR 3.3 INSTRUMENTATION

TR 3.3.2 Engineered Safety Features Actuation System Instrumentation

TR 3.3.2 The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and interlocks as shown in Technical Specification 3.3.2, Table 3.3.2-1; Technical Specification 3.3.5, LCO 3.3.5; and Technical Specification 3.3.6, Table 3.3.6-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3.2-1 of this document.

APPLICABILITY: As shown in Technical Specification 3.3.2, Table 3.3.2-1; Technical Specification 3.3.5 Applicability; and Technical Specification 3.3.6, Table 3.3.6-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refer to Technical Specification 3.3.2, Table 3.3.2-1; Technical Specification 3.3.5 Actions; and Technical Specification 3.3.6, Table 3.3.6-1.	A.1 Refer to Technical Specification 3.3.2, Table 3.3.2-1; Technical Specification 3.3.5 Actions; and Technical Specification 3.3.6, Table 3.3.6-1.	Refer to Technical Specification 3.3.2, Table 3.3.2-1; Technical Specification 3.3.5 Actions; and Technical Specification 3.3.6, Table 3.3.6-1.

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.2.1	Verify ESF RESPONSE TIME of each ESFAS function is within the limits of Table 3.3.2-1.	18 months on a STAGGERED TEST BASIS

Table 3.3.2-1 (Page 1 of 5)

Engineered Safety Features Response Times

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual Initiation	
a. Safety Injection (ECCS)	N.A.
b. Containment Spray	N.A.
c. Phase "A" Isolation	N.A.
d. Phase "B" Isolation	N.A.
e. Containment Ventilation Isolation	N.A.
f. Steam Line Isolation	N.A.
g. Feedwater Isolation	N.A.
h. Auxiliary Feedwater	N.A.
i. Essential Raw Cooling Water	N.A.
j. CREVS Actuation	N.A.
k. Containment Air Return Fan	N.A.
l. Component Cooling System	N.A.
m. Start Diesel Generators	N.A.
n. Reactor Trip	N.A.
2. Containment Pressure-High	
a. Safety Injection (ECCS)	≤ 32(1)/17(5)
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 8(3)
3) Containment Isolation-Phase "A"(6)	≤ 18(2)/28(1)
4) Containment Ventilation Isolation	≤ 5.5(2)(11)
5) Auxiliary Feedwater Pumps	≤ 60(10)
6) Essential Raw Cooling Water	≤ 65(2)/75(1)
7) CREVS Actuation	N.A.
8) Component Cooling System	≤ 35(2)/45(1)
9) Start Diesel Generators	≤ 12(12)
3. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	≤ 32(1)/17(5)
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 8(3)
3) Containment Isolation-Phase "A"(6)	≤ 18(2)/28(1)
4) Containment Ventilation Isolation	≤ 5.5(2)(11)
5) Auxiliary Feedwater Pumps	≤ 60(10)

(continued)

Table 3.3.2-1 (Page 2 of 5)

Engineered Safety Features Response Times

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
3. Pressurizer Pressure-Low (continued)	
6) Essential Raw Cooling Water	≤ 65[(2)]/75[(1)]
7) CREVS Actuation	N.A.
8) Component Cooling System	≤ 35[(2)]/45[(1)]
9) Start Diesel Generators	≤ 12[(12)]
4. Steam Line Pressure Negative Rate-High	
a. Steam Line Isolation	≤ 8
5. Steam Line Pressure - Low	
a. Safety Injection (ECCS)	≤ 12[(5)]/22[(4)]
1) Reactor Trip (from SI)	≤ 2
2) Feedwater Isolation	≤ 8[(3)]
3) Containment Isolation-Phase "A"[(6)]	≤ 18[(2)]/28[(1)]
4) Containment Ventilation Isolation	N.A.
5) Auxiliary Feedwater Pumps	≤ 60[(10)]
6) Essential Raw Cooling Water	≤ 65[(2)]/75[(1)]
7) CREVS Actuation	N.A.
8) Component Cooling System	≤ 35[(2)]/45[(1)]
9) Start Diesel Generators	≤ 12[(12)]
b. Steam Line Isolation	≤ 7
6. Containment Pressure - High - High	
a. Containment Spray	≤ 147[(1)]
b. Containment Isolation-Phase "B"	≤ 71[(2)]/81[(1)]
c. Steam Line Isolation	≤ 7
d. Containment Air Return Fans	≤ 660
7. Steam Generator Water Level - High - High	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 11[(3)]

(continued)

Table 3.3.2-1 (Page 3 of 5)

Engineered Safety Features Response Times

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
8. Steam Generator Water Level - Low - Low Coincident with Vessel Δ% ≤ 50% RTP	
a. Motor-driven Auxiliary Feedwater Pumps	≤ 60[7]
b. Turbine-driven Auxiliary Feedwater Pumps	≤ 60[8]
9. Steam Generator Water Level-Low-Low Coincident with Vessel ΔT > 50% RTP	
a. Motor-driven Auxiliary Feedwater Pumps	≤ 60[7]
b. Turbine-driven Auxiliary Feedwater Pumps	≤ 60[8]
10. RWST Level-Low Coincident with Containment Sump Level-High and Safety Injection	
Automatic Switchover to Containment Sump	≤ 250
11. Loss-of-Offsite Power	
Auxiliary Feedwater Pumps	≤ 60
12. Trip of All Main Feedwater Pumps	
Auxiliary Feedwater Pumps	≤ 60
13. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low	
a. Motor-driven Auxiliary Feedwater Pumps	≤ [TBD]
b. Turbine-driven Auxiliary Feedwater Pumps	≤ [TBD]
14. Loss of Voltage/Degraded Voltage	
6.9 kV Shutdown Board	≤ 11[9]

Table 3.3.2-1 (Page 4 of 5)

Engineered Safety Features Response Times

TABLE NOTATIONS

(1) Diesel generator starting and sequence loading delays included.

(2) Diesel generator starting and sequence loading delay not included. Offsite power available.

(3) Air operated valves.

(4) Diesel generator starting and sequence loading delay included. RHR and SI pumps not included.

(5) Diesel generator starting and sequence loading delays not included. RHR and SI pumps not included. Time is based on signal generation plus stroke times of FCV-62-135/136.

(6) The following valves are exceptions to the response time shown in the table and will have the following response times for the initiating signals and functions:

FCV-70-143		FCV-62-77 and FCV-26-240, -243		FCV-61-96, -97, -110, -122 -191, -192, -193, -194	
2.a.3	68(2)/78(1)	2.a.3	22(2)/32(1)	2.a.3	32
3.a.3	68(2)/78(1)	3.a.3	22(2)/32(1)	3.a.3	32
4.a.3	68(2)/78(1)	4.a.3	22(2)/32(1)	4.a.3	32
5.a.3	70(2)/80(1)	5.a.3	24(2)/34(1)	5.a.3	34
6.a.3	68(2)/78(1)	6.a.3	22(2)/32(1)	6.a.3	32

(7) On 2/3 any steam generator and Trip Time Delay = 0 seconds.

(8) On 2/3 in 2/4 steam generators and Trip Time Delay = 0 seconds.

(9) The response time is measured from the time the 6.9 kV shutdown boards voltage exceeds the Setpoint until the time full voltage is returned for the loss of voltage sensors; or from the time the degraded voltage timers generate a signal to start the diesels or shed loads until the time full voltage is returned for the degraded voltage sensors.

(10) The Response Time for motor-driven AFW pumps includes the diesel generator starting and sequence loading delays. The Response Time for (steam) turbine driven AFW pumps does not include diesel generator starting and sequence loading delays.

(continued)

Table 3.3.2-1 (Page 5 of 5)

Engineered Safety Features Response Times

TABLE NOTATIONS

(11) Containment purge valves only. Containment radiation monitor valves have a response time of 6.5 seconds.

(12) Diesel generator start time includes a reactor trip response time of 2 seconds.

TR 3.3 INSTRUMENTATION

TR 3.3.3 Movable Incore Detectors

TR 3.3.3 The Movable Incore Detection System shall be OPERABLE with $\geq$ 75% of the detector thimbles, $\geq$ 2 detector thimbles per core quadrant, and sufficient movable detectors, drive, and readout equipment to map these thimbles.

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

a. Recalibration of the Excore Neutron Flux Detection System, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{XY}.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Movable Incore Detection System inoperable.	--------------NOTE----------- TR 3.0.3 is not applicable. ----------------------------- A.1 Restore the inoperable system to OPERABLE status.	Prior to using the system for monitoring or calibration functions.

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.3.1	Verify the Movable Incore Detection System is OPERABLE by: a) Determining each detector's operating voltage; and b) Performing a drift check on each detector.	24 hours

TR 3.3 INSTRUMENTATION

TR 3.3.4 Seismic Instrumentation

TR 3.3.4 The seismic monitoring instrumentation shown in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: At all times.

---------------------NOTE---------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more seismic monitoring instruments inoperable for > 30 days.	A.1 Prepare and submit a Special Report to the Commission in accordance with Technical Specification 5.9.2 outlining the cause of the malfunction and the plans for restoring the instrument(s) to OPERABLE status.	10 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. -------NOTE---------- All Required Actions must be completed whenever this Condition is entered. ---------------------			
One or more seismic monitoring instruments actuated during a seismic event.	B.1	Restore each actuated monitoring instrument to OPERABLE status.	24 hours
	<u>AND</u>		
	B.2	Perform a CHANNEL CALIBRATION on each actuated monitoring instrument.	10 days
	<u>AND</u>		
	B.3	Analyze data retrieved from actuated instruments to determine the magnitude of the vibratory ground motion.	14 days
	<u>AND</u>		
	B.4	Prepare a Special Report to the NRC in accordance with Technical Specification 5.9.2. describing the magnitude, frequency spectrum and resultant effect upon facility features important to safety.	14 days

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
	----------------NOTE------------------- Refer to Table 3.3.4-1 to determine which Technical Surveillance Requirements must be performed for each seismic monitoring instrument. ---------------------------------------	
TSR 3.3.4.1	Perform CHANNEL CHECK.	31 days
TSR 3.3.4.2	Perform CHANNEL OPERATIONAL TEST.	184 days
TSR 3.3.4.3	Perform CHANNEL CALIBRATION.	18 months

Table 3.3.4-1 (Page 1 of 1)

Seismic Monitoring Instrumentation

INSTRUMENTS AND SENSOR LOCATIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	MEASUREMENT RANGE
1. Strong Motion Triaxial Accelerometers[1]			
a. 0-XT-52-75A Annulus El. 703	1	TSR 3.3.4.1[2] TSR 3.3.4.2 TSR 3.3.4.3[3]	0 - 1.0 g
b. 0-XT-52-75B Reactor Bldg. El. 757	1	TSR 3.3.4.1[2] TSR 3.3.4.2 TSR 3.3.4.3[3]	0 - 1.0 g
c. 0-XT-52-75D D/G Bldg. El. 742	1	TSR 3.3.4.1[2] TSR 3.3.4.2 TSR 3.3.4.3[3]	0 - 1.0 g
2. Triaxial Peak Accelerographs			
a. 0-XR-52-76A Reactor Bldg. El. 725	1	TSR 3.3.4.3	0 - 5.0 g
b. 0-XR-52-76B Reactor Bldg. El. 730	1	TSR 3.3.4.3	0 - 5.0 g
c. 0-XR-52-76D Control Bldg. El. 755	1	TSR 3.3.4.3	0 - 5.0 g
3. Triaxial Seismic Switches			
a. 0-XS-52-80 Annulus El. 703[1]	1	TSR 3.3.4.1 TSR 3.3.4.2 TSR 3.3.4.3	0.025 - 0.25 g
4. Triaxial Response-Spectrum Recorders			
a. 0-XR-52-77A Annulus El. 703[1]	1	TSR 3.3.4.1 TSR 3.3.4.2 TSR 3.3.4.3	2 - 25.4 Hz
b. 0-XR-52-77B Reactor Bldg. El. 757	1	TSR 3.3.4.3	2 - 25.4 Hz
c. 0-XR-52-77D Aux. Cont. Rm. El. 757	1	TSR 3.3.4.3	2 - 25.4 Hz
d. 0-XR-52-77E D/G Bldg. El. 742	1	TSR 3.3.4.3	2 - 25.4 Hz

[1] With associated acceleration triggers, and control room indication on 0-XR-52-75.
[2] Except acceleration trigger.
[3] Includes acceleration trigger.

TR 3.3 INSTRUMENTATION

TR 3.3.5 Turbine Overspeed Protection

TR 3.3.5 At least one Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

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

1. Not applicable to MODES 2 and 3 when all main steam isolation valves are closed and all other steam flow paths to the turbine are isolated.
2. TR 3.0.4 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One stop valve or one control valve per high pressure turbine steam line inoperable.	A.1 Restore inoperable valve(s) to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2 Close at least one valve in the affected steam line (if the other three steam lines have flow).	78 hours
	<u>OR</u>	
	A.3 Isolate the turbine from the steam supply.	78 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One reheat stop valve or one reheat intercept valve per low pressure turbine steam line inoperable.	B.1 Restore inoperable valve(s) to OPERABLE status.	72 hours
	OR	
	B.2 Close at least one valve in the affected steam line(s).	78 hours
	OR	
	B.3 Isolate the turbine from the steam supply.	78 hours
C. Turbine Overspeed Protection System inoperable for causes other than Condition A or Condition B.	C.1 Isolate the turbine from the steam supply system.	6 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
------------------NOTE------------------ 1. TSR 3.0.4 is not applicable. --	

PROPOSED REVISION

Testing requirements described in FSAR to be identified as TSRs.

TR 3.3 INSTRUMENTATION

TR 3.3.6 Fire Detection Instrumentation

TR 3.3.6 As a minimum, the Fire Detection Instrumentation for each Fire Detection Zone shown in Table 3.3.6-1 shall be OPERABLE.

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

----------------------------NOTE----------------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With any fire detection instrument in any fire zone shown in Table 3.3.6-1 inoperable <u>outside</u> the reactor building.	A.1 Restore inoperable instrument(s) to OPERABLE status.	1 hour
	<u>OR</u>	
	A.2 Establish a fire watch patrol.	Once per hour
B. With any Fire Detection Instrument in any fire zone shown in Table 3.3.6-1 inoperable <u>inside</u> the reactor building.	B.1 Restore inoperable instrument(s) to OPERABLE status.	8 hours
	<u>OR</u>	
	B.2 Establish a fire watch patrol.	Once per 8 hours
	<u>OR</u>	
	B.3 Monitor the air temperature in the zone.	Once per hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. With an automatic suppression system inoperable due to the inoperability of Function B detectors within a given zone <u>outside</u> the reactor building.	C.1 For the affected zone(s) only, comply with ACTIONS stated for TR 3.7.6 or TR 3.7.7 as applicable.	In accordance with TR 3.7.6 or TR 3.7.7
D. With an automatic suppression system inoperable due to the inoperability of Function B detectors in a given zone <u>inside</u> the reactor building.	D.1 Establish a fire watch patrol.	Once per 8 hours
	<u>OR</u>	
	D.2 Monitor air temperature in the zone.	Once per hour

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.6.1	Perform TADOT (excluding confirmation of setpoint accuracy) on each of the required smoke detection instruments which are accessible during plant operation and are located outside the reactor building.	6 months
TSR 3.3.6.2	Perform TADOT (excluding confirmation of setpoint accuracy) on each of the required smoke detection instruments which are <u>not</u> accessible during plant operation or are located inside the reactor building.	During each COLD SHUTDOWN exceeding 24 hours unless the TSR was performed in the previous 6 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.3.6.3	Verify each of the required Fire Detection Instruments OPERABLE based on the NFPA Standard 72D supervised circuits associated with the detector alarm to a constantly attended central location.	6 months
TSR 3.3.6.4	-----------------NOTE---------------- Detectors shall be selected from the previously untested instruments until all thermal detectors have been tested. -------------------------------------- Perform TADOT (excluding confirmation of setpoint accuracy) on one of the required thermal detection instruments in each zone which are accessible during plant operation and are located outside the reactor building.	6 months
TSR 3.3.6.5	-----------------NOTE---------------- Detectors shall be selected from the previously untested instruments until all thermal detectors have been tested. -------------------------------------- Perform TADOT (excluding confirmation of setpoint accuracy) on one of the required thermal detection instruments in each zone which are <u>not</u> accessible during plant operation or are located inside the reactor building.	During each COLD SHUTDOWN exceeding 24 hours unless the TSR was performed in the previous 6 months

TABLE 3.3.6-1 (page 1 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
A. Diesel Generator Building		
1 Diesel Gen. Rm. 2B-B, El. 742	0/5	
2 Diesel Gen. Rm. 2B-B, El. 742	0/5	
3 Diesel Gen. Rm. 1B-B, El. 742	0/5	
4 Diesel Gen. Rm. 1B-B, El. 742	0/5	
5 Diesel Gen. Rm. 2A-A, El. 742	0/5	
6 Diesel Gen. Rm. 2A-A, El. 742	0/5	
7 Diesel Gen. Rm. 1A-A, El. 742	0/5	
8 Diesel Gen. Rm. 1A-A, El. 742	0/5	
9 Lube Oil Storage Rm., El. 742	0/1	
10 Lube Oil Storage Rm., El. 742	0/1	
11 Fuel Oil Transfer Rm., El. 742	0/1	
12 Fuel Oil Transfer Rm., El. 742	0/1	
13 Diesel Gen. Corridor, El. 742		0/6
14 Air Intake & Exhaust Rm. 2B, El. 760	10/0	
15 Air Intake & Exhaust Rm. 1B, El. 760	10/0	
16 Air Intake & Exhaust Rm. 2A, El. 760	10/0	
17 Air Intake & Exhaust Rm. 1A, El. 760	10/0	
18 Diesel Gen. 2B-B Relay Bd. El. 742		3/0

(continued)

TABLE 3.3.6-1 (page 2 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
A.	Diesel Generator Building (continued)		
19	Diesel Gen. 1B-B Relay Bd. El. 742		3/0
20	Diesel Gen. 2A-A Relay Bd. El. 742		3/0
21	Diesel Gen. 1A-A Relay Bd. El. 742		3/0
22	Diesel Gen. Board Rm. 2B-B, El. 760	0/2	
23	Diesel Gen. Board Rm. 2B-B, El. 760		0/2
24	Diesel Gen. Board Rm. 1B-B, El. 760	0/2	
25	Diesel Gen. Board Rm. 1B-B, El. 760		0/2
26	Diesel Gen. Board Rm. 2A-A, El. 760	0/2	
27	Diesel Gen. Board Rm. 2A-A, El. 760		0/2
28	Diesel Gen. Board Rm. 1A-A, El. 760	0/2	
29	Diesel Gen. Board Rm. 1A-A, El. 760		0/2
36	DGB Tr B Conduit Entry, El. 742		0/1
37	DGB Tr A Conduit Entry, El. 742		0/1
B.	Control Building		
30	Cable Spreading Rm. C7-C11, El. 729		0/15
31	Cable Spreading Rm. C7-C11, El. 729		0/15
32	Cable Spreading Rm. C7-C11, El. 729		0/15

(continued)

TABLE 3.3.6-1 (page 3 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
B.	Control Building (continued)		
33	Cable Spreading Rm. C7-C11, El. 729		0/15
34	Cable Spreading Rm. C3-C7, El. 729		0/15
35	Cable Spreading Rm. C3-C7, El. 729		0/15
149	Cable Spreading Rm. C3-C7, El. 729		0/15
150	Cable Spreading Rm. C3-C7, El. 729		0/15
48	Control Bldg. Corridor, El. 692		0/4
49	Control Bldg. Corridor, El. 692		0/4
68	Mech. Equip. Rm., Col. C11, El. 692		0/2
69	Mech. Equip. Rm., Col. C11, El. 692		0/2
66	Communications Rm., El. 692		0/4
67	Communications Rm., El. 692		0/4
214	Mech. Equip. Rm., Col. C1-C2, El. 755		0/5
215	Mech. Equip. Rm., Col. C1-C2, El. 755		0/5
216	CR Fltr. B, Duct Det., El. 755		0/1
217	CR Fltr. B, Duct Det., El. 755		0/1
218	CR Fltr. A, Duct Det., El. 755		0/1
219	CR Fltr. A, Duct Det., El. 755		0/1
220	Main CR, El. 755		27/0

(continued)

TABLE 3.3.6-1 (page 4 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
B.	Control Building (continued)		
226	Electric Cont. Bds., El. 755		12/0
229	Main Cont. Bds., El. 755		8/0
221	Tech Support Center, El. 755		0/6
222	Tech Support Center, El. 755		0/6
223	PSO Eng. Shop, El. 755		0/1
224	PSO Eng. Shop, El. 755		0/1
225	Relay Bd. Rm., El. 755		11/0
227	Operation Living Area, El. 755		0/8
228	Operation Living Area, El. 755		0/8
267	Aux. Instr. Rm., Unit 1, El. 708		0/8
268	Aux. Instr. Rm., Unit 1, El. 708	0/10	
269	Computer Rm., El. 708		0/4
270	Computer Rm., El. 708	0/4	
271	Aux. Instr. Rm., Unit 2, El. 708		0/8
272	Aux. Instr. Rm., Unit 2, El. 708	0/10	
273	Computer Rm. Corridor, El. 708		3/0
298	Common Main Cont. Boards & M15, El.755		12/0
412	Duplex Relay Bds., El. 755		4/0

(continued)

TABLE 3.3.6-1 (page 5 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
B. Control Building (continued)		
50 Mech. Equip. Rm. Col. C1, El. 692		0/2
51 Mech. Equip. Rm. Col. C1, El. 692		0/2
52 Mech. Equip. Rm. Col. C3, El. 692		0/2
53 Mech. Equip. Rm. Col. C3, El. 692		0/2
54 Battery Rm., El. 692		0/3
55 Battery Rm., El. 692		0/3
56 Battery Bd. Rm., El. 692		2/0
57 Battery Bd. Rm., El. 692		2/0
58 Battery Bd. Rm., El. 692		2/0
59 Battery Bd. Rm., El. 692		2/0
60 Battery Rm., El. 692		0/3
61 Battery Rm., El. 692		0/3
62 Battery Rm., El. 692		0/3
63 Battery Rm., El. 692		0/3
64 Battery Bd. Rm., El. 692		2/0
65 Battery Bd. Rm., El. 692		2/0
387 Control/Turbine Bldg. Wall	0/26	

(continued)

TABLE 3.3.6-1 (page 6 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
C. Auxiliary Building		
39 Cont. Spray Pump 1A-A, El. 676		2/0
40 Cont. Spray Pump 1B-B, El. 676		2/0
43 RHR Pump 1A-A, El. 676		2/0
44 RHR Pump 1B-B, El. 676		2/0
47 Corridor of Aux. Bldg., El. 676		11/0
70 A5-A11, Col. W-X, El. 692		0/5
71 A5-A11, Col. W-X, El. 692		0/5
72 Aux. FW Pump Turbine 1A-S, El. 692		0/1
73 Aux. FW Pump Turbine 1A-S, El. 692		0/1
76 S.I. & Charging Pump Rms., El. 692		0/5
77 S.I. Pump Rm. 1A, El. 692		0/1
78 S.I. Pump Rm. 1B, El. 692		0/1
79 Charging Pump Rm. 1C, El. 692		0/1
80 Charging Pump Rm. 1B, El. 692		0/1
81 Charging Pump Rm. 1A, El. 692		0/1
88 Aux. Bldg. Corridor A1-A8, El. 692		0/8

(continued)

TABLE 3.3.6-1 (page 7 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
C.	Auxiliary Building (continued)		
89	Aux. Bldg. Corridor A1-A8, El. 692		0/8
90	Aux. Bldg. Corridor A8-A15, El. 692		0/12
91	Aux. Bldg. Corridor A8-A15, El. 692		0/12
92	Aux. Bldg. Corridor Col. U-W, El. 692		0/4
93	Aux. Bldg. Corridor Col. U-W, El. 692		0/4
94	Pipe Gallery, El. 692		0/2
95	Pipe Gallery, El. 692		0/2
98	Cntmt. Purge Air Fltr., A & B, Duct. Det., El. 713		0/2
99	Cntmt. Purge Air Fltr., A & B, Duct. Det., El. 713		0/2
102	Pipe Gallery, El. 713		0/4
103	Pipe Gallery, El. 713		0/4
106	Aux. Bldg. A5-A11, Col. T-W, El. 713		0/8
107	Aux. Bldg. A5-A11, Col. T-W, El. 713		0/8
108	Radio Chemical Lab. Area, El. 713		0/3
109	Radio Chemical Lab. Area, El. 713		0/3
110	Aux. Bldg. A1-A8, Col. Q-U, El. 713		0/18
111	Aux. Bldg. A1-A8, Col. Q-U, El. 713		0/19

(continued)

TABLE 3.3.6-1 (page 8 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
C.	Auxiliary Building (continued)		
112	Aux. Bldg. A8-A15, Col. Q-U, El. 713		0/9
113	Aux. Bldg. A8-A15, Col. Q-U, El. 713		0/9
114	Waste Packaging Area, El. 729		0/3
115	Waste Packaging Area, El. 729		0/3
116	Cask Loading Area, El. 729		0/2
117	Cask Loading Area, El. 729		0/2
118	New Fuel Storage Area		4/0
120	Aux. Bldg. Gas Trtmt. Fltr., El. 737		0/1
121	Aux. Bldg. Gas Trtmt. Fltr., El. 737		0/1
123	Vol. Control Tank Rm. 1A, El. 713		0/3
125	Vol. Control Tank Rm. 1A, El. 713		0/3
128	Post Accident Samp. Fac. U-1, El. 729		0/3
129	Post Accident Samp. Fac. U-1, El. 729		0/3
132	Ventilation & Purge Air Rm., El. 737		0/5
133	Ventilation & Purge Air Rm., El. 737		0/5
134	Aux. Bldg. A5-A11, Col. U-W, El. 737		0/7
135	Aux. Bldg. A5-A11, Col. U-W, El. 737		0/7
136	Heating & Vent Rm., El. 737		0/4

(continued)

TABLE 3.3.6-1 (page 9 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
		HEAT (A/B)	SMOKE (A/B)
C.	Auxiliary Building (continued)		
137	Heating & Vent Rm., El. 737		0/4
140	Hot Instrument Shop, El. 737		0/1
141	Hot Instrument Shop, El. 737		0/1
142	Aux. Bldg. A1-A8, Col. Q-U, El. 737		0/13
143	Aux. Bldg. A1-A8, Col. Q-U, El. 737		0/13
144	Aux. Bldg. A8-A15, Col. Q-U, El. 737		0/10
145	Aux. Bldg. A8-A15, Col. Q-U, El. 737		0/10
146	N_2 Storage, El. 729		4/0
155	Refueling Rm., El. 757		21/0
156	Reactor Bldg. Access Rm., El. 757		0/2
157	Reactor Bldg. Access Rm., El. 757		0/2
160	SG Blwdn. Rm. (Reverse Osmosis), El. 757		0/4
161	SG Blwdn. Rm. (Reverse Osmosis), El. 757		0/4
162	EGTS Rm., El. 757		0/3
163	EGTS Rm., El. 757		0/3
164	EGTS Fltr. A, El. 757		0/1
165	EGTS Fltr. A, El. 757		0/1

(continued)

TABLE 3.3.6-1 (page 10 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
C. Auxiliary Building (continued)		
166 EGTS Fltr. B, El. 757		0/1
167 EGTS Fltr. B, El. 757		0/1
168 Reactor Bldg. Equip. Hatch, El. 757		0/1
169 Reactor Bldg. Equip. Hatch, El. 757		0/1
172 Unit 1 Mech. Eqpt. Rm., El. 757		0/1
173 Unit 1 Mech. Eqpt. Rm., El. 757		0/1
174 Unit 2 Mech. Eqpt. Rm., El. 757		0/1
175 Unit 2 Mech. Eqpt. Rm., El. 757		0/1
176 480V Shtdn. Bd. Rm. 1A1, El. 757		0/2
177 480V Shtdn. Bd. Rm. 1A1, El. 757		0/2
178 480V Shtdn. Bd. Rm. 1A2, El. 757		0/2
179 480V Shtdn. Bd. Rm. 1A2, El. 757		0/2
180 480V Shtdn. Bd. Rm. 1B1, El. 757		0/2
181 480V Shtdn. Bd. Rm. 1B1, El. 757		0/2
182 480V Shtdn. Bd. Rm. 1B2, El. 757		0/3
183 480V Shtdn. Bd. Rm. 1B2, El. 757		0/3
184 6.9kV Shtdn. Bd. Rm. A, El. 757		0/6
185 6.9kV Shtdn. Bd. Rm. A, El. 757		0/6

(continued)

TABLE 3.3.6-1 (page 11 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
C. Auxiliary Building (continued)		
186 6.9kV Shtdn. Bd. Rm. B, El. 757		0/6
187 6.9kV Shtdn. Bd. Rm. B, El. 757		0/6
188 480V Shtdn. Bd. Rm. 2A1, El. 757		0/2
189 480V Shtdn. Bd. Rm. 2A1, El. 757		0/2
190 480V Shtdn. Bd. Rm. 2A2, El. 757		0/3
191 480V Shtdn. Bd. Rm. 2A2, El. 757		0/3
192 480V Shtdn. Bd. Rm. 2B1, El. 757		0/2
193 480V Shtdn. Bd. Rm. 2B1, El. 757		0/2
194 480V Shtdn. Bd. Rm. 2B2, El. 757		0/2
195 480V Shtdn. Bd. Rm. 2B2, El. 757		0/2
196 125V Batt. Bd. Rm. I, El. 757		2/0
198 125V Batt. Bd. Rm. II, El. 757		2/0
200 125V Batt. Bd. Rm. III, El. 757		2/0
202 125V Batt. Bd. Rm. IV, El. 757		2/0
204 Aux. CR, El. 757		0/2
205 Aux. CR, El. 757		0/2
206 Aux. Cr Inst. Rm. 1A, El. 757		0/1
207 Aux. Cr Inst. Rm. 1A, El. 757		0/1

(continued)

TABLE 3.3.6-1 (page 12 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
C. Auxiliary Building (continued)		
208 Aux. Cr Inst. Rm. 1B, El. 757		0/1
209 Aux. Cr Inst. Rm. 1B, El. 757		0/1
210 Aux. Cr Inst. Rm. 2A, El. 757		0/1
211 Aux. Cr Inst. Rm. 2A, El. 757		0/1
212 Aux. Cr Inst. Rm. 2B, El. 757		0/1
213 Aux. Cr Inst. Rm. 2B, El. 757		0/1
230 Aux. CR Bds. L-4A, 4C, 11A & 10, El. 757		12/0
296 Aux. CR Bds. L-4B, 4D & 11B, El. 757		8/0
235 Ctrl. Rod Dr. Eqpt. Rm., El. 782		0/4
236 Ctrl. Rod Dr. Eqpt. Rm., El. 782		0/4
237 Unit 1 Mech. Eqpt. Rm., El. 772		0/2
238 Unit 1 Mech. Eqpt. Rm., El. 772		0/2
239 Unit 2 Mech. Eqpt. Rm., El. 772		0/2
240 Unit 2 Mech. Eqpt. Rm., El. 772		0/2
241 480V XFMR Rm. 1A, El. 772		0/3
242 480V XFMR Rm. 1A, El. 772		0/3
243 480V XFMR Rm. 1B, El. 772		0/3
244 480V XFMR Rm. 1B, El. 772		0/3
245 480V XFMR Rm. 2A, El. 772		0/3

(continued)

TABLE 3.3.6-1 (page 13 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
C. Auxiliary Building (continued)		
246 480V XFMR Rm. 2A, El. 772		0/3
247 480V XFMR Rm. 2B, El. 772		0/3
248 480V XFMR Rm. 2B, El. 772		0/3
249 125V Batt. Rm. I, El. 772		2/0
251 125V Batt. Rm. II, El. 772		2/0
253 125V Batt. Rm. III, El. 772		2/0
255 125V Batt. Rm. IV, El. 772		2/0
441 125V Batt. Rm. V, El. 772		0/2
442 125V Batt. Rm. V, El. 772		0/2
257 480V Bd. Rm. 1B, El. 772		0/4
258 480V Bd. Rm. 1B, El. 772		0/4
259 480V Bd. Rm. 1A, El. 772		0/4
260 480V Bd. Rm. 1A, El. 772		0/4
261 480V Bd. Rm. 2A, El. 772		0/4
262 480V Bd. Rm. 2A, El. 772		0/4
263 480V Bd. Rm. 2B, El. 772		0/4
264 480V Bd. Rm. 2B, El. 772		0/4
330 Pipe Chase, U-1, El. 737, 713, 692		20/0
332 North Main Stm. Vlv. Rm., El. 737	9/0	

(continued)

TABLE 3.3.6-1 (page 14 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE	INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS** HEAT (A/B)	SMOKE (A/B)
C.	Auxiliary Building (continued)		
333	South Main Stm. Vlv. Rm., El. 737	10/0	
455	Post Accident Samp. Fac., U-1, El. 737		0/2
456	Post Accident Samp. Fac., U-1, El. 737		0/2
D.	Additional Equipment Building		
122	Add. Eqpt. Bldg., Unit 1, El. 729		6/0
154	Add. Eqpt. Bldg., Unit 1, El. 763.5		6/0
231	Add. Eqpt. Bldg. , El. 786.5		4/0
232	Add. Eqpt. Bldg., El. 775.25		4/0
E.	Intake Pumping Station		
250	ERCW Pmp. Rm., El. 741	4/0	
277	Strainer Rm., El. 722		18/0
278	ERCW Pmp. Rm., El. 741	4/0	
405	Elect. Bd. Rm., El. 711		0/5
406	Elect. Bd. Rm., El. 711		0/5
F.	Containment#		
352	Lwr. Compt. Coolers, El. 716		4/0
354	Upr. Compt. Coolers, El. 801		4/0
356	RCP 2, El. 716	0/2	
357	RCP 2, El. 716	0/2	

(continued)

TABLE 3.3.6-1 (page 15 of 16)
FIRE DETECTION INSTRUMENTATION

ZONE INSTRUMENT LOCATION	TOTAL NUMBER OF INSTRUMENTS**	
	HEAT (A/B)	SMOKE (A/B)
F. Containment# (continued)		
360 RCP 1, El. 716	0/2	
361 RCP 1, El. 716	0/2	
364 RCP 3, El. 716	0/2	
365 RCP 3, El. 716	0/2	
368 RCP 4, El. 716	0/2	
369 RCP 4, El. 716	0/2	
372 Reactor Bldg. Annulus		0/20
373 Reactor Bldg. Annulus		0/19
457 Reactor Bldg. Annulus		0/9
458 Reactor Bldg. Annulus		0/8
G. Additional Diesel Generator Building		
425 Add. D/G Rm., Fuel Trf. Rm. & Pipe Gallery	0/8	
426 Add. D/G Rm., Fuel Trf. Rm. & Pipe Gallery	0/8	
427 Add. D/G Rm., Bd. Rm.		0/4
428 Add. D/G Rm., Bd. Rm.		0/4
429 Add. D/G Rm., C-S Relay Bd.		3/0
430 Add. D/G Rm., Corridor Fire Prot. Rm., Closet, Intake & Exhaust Rm.	11/0	4/0
432 Add. D/G B Conduit Interface Rm.		9/0

TABLE 3.3.6-1 (page 16 of 16)
FIRE DETECTION INSTRUMENTATION

Table Notation

** (A/B): A is a number of Function A (early warning fire detection and notification only) instruments.
B is a number of Function B (actuation of fire suppression systems and early warning and notification) instruments.

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

TR 3.3 INSTRUMENTATION

TR 3.3.7 Loose-Part Detection System

TR 3.3.7 The Loose-Part Detection System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

--------------------------NOTE--------------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels of Loose-Part Detection System inoperable > 30 days.	A.1 Prepare and submit a Special Report to the NRC in accordance with Technical Specification 5.9.2. outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.	10 days

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.7.1	Perform CHANNEL CHECK.	24 hours
TSR 3.3.7.2	Perform CHANNEL OPERATIONAL TEST.	31 days
TSR 3.3.7.3	Perform CHANNEL CALIBRATION.	18 months

PROPOSED REVISION

Change applicability to be Consistent with Tech Spec Safety valve LCO.

TR 3.4 REACTOR COOLANT SYSTEM

TR 3.4.1 Safety Valves, Shutdown

TR 3.4.1 One pressurizer Code safety valve shall be OPERABLE with a lift setting of ≥ 2460 psig and ≤ 2510 psig.

---NOTE---

The lift setting is not required to be within the TR limit ~~while~~ [during MODE 4 for the purpose of] setting the pressurizer safety valve under ambient (hot) conditions. [This exception is allowed for entry and operation into MODE 4 provided a preliminary cold setting was made prior to heatup.]

APPLICABILITY: MODE 4 with any RCS cold leg temperature ≤ 310 °F and MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. No pressurizer Code safety valve OPERABLE.	A.1 Suspend all operations involving positive reactivity changes.	Immediately
	AND	
	A.2 Place an OPERABLE Residual Heat Removal (RHR) loop into operation in the shutdown cooling mode.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.1.1	Verify the required pressurizer safety valve OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program.

TR 3.4 REACTOR COOLANT SYSTEM

TR 3.4.2 Pressurizer Temperature Limits

TR 3.4.2 The pressurizer temperature shall be limited to:

a. Heatup of ≤ 100°F in any 1-hour period, and

b. Cooldown of ≤ 200°F in any 1-hour period.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. --------NOTE--------- All Required Actions must be completed whenever this Condition is entered. --------------------		
Pressurizer temperature not within limits.	A.1 Restore pressurizer temperature to within limits.	30 minutes
	AND	
	A.2 Perform engineering evaluation to determine effects of the out-of-limit condition on the structural integrity of the pressurizer.	72 hours
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Determine that the pressurizer remains acceptable for continued operation.	72 hours
B. Required Action and associated Completion Time not met.	B.1. Be in MODE 3.	6 hours
	<u>AND</u>	
	B.2 Reduce pressurizer pressure to < 500 psig.	36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.2.1	-------------------NOTE------------------ Only required during system heatup or cooldown operations. --------------------------------------- Determine that pressurizer temperatures are within limits.	30 minutes.

TR 3.4 REACTOR COOLANT SYSTEM (RCS)

TR 3.4.3 Reactor Coolant System Vents

TR 3.4.3 Two Reactor Coolant System Vent (RCSV) paths shall be CPERABLE.

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

PROPOSED REVISION TO BE CONSISTENT WITH NUREG 0452

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RCSV path inoperable.	A.1	Initiate action to maintain the affected RCSV path closed with power removed from the valve actuators.	Immediately
	<u>AND</u>		
	A.2	Restore the inoperable path to OPERABLE status.	30 days
B. Two RCSV paths inoperable.	B.1	Restore one RCSV path to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Be in MODE 4.	12 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.3.~~1~~2	Verify that the upstream manual RCSV isolation valve is locked in the opened position.	18 months
TSR 3.4.3.~~2~~3	Operate each remotely controlled valve through at least one complete cycle of full travel from the control room.	18 months
TSR 3.4.3.~~3~~4	Verify flow through the RCSV paths during venting.	18 months
TSR 3.4.3.1	----- NOTE ----- ~~This~~ NOT REQUIRED To be performed for valves closed in accordance with Required Actions. ----- Operate each remotely controlled isolation valve through at least one complete cycle of full travel from the control room.	92 days

PROPOSED REVISION
TO be Consistent with
NUREG 0452

TR 3.4 REACTOR COOLANT SYSTEM (RCS)

TR 3.4.4 Chemistry

TR 3.4.4 The RCS Chemistry shall be maintained within the limits specified below:

PARAMETER	STEADY STATE LIMIT	TRANSIENT LIMIT
DISSOLVED OXYGEN	$\leq$ 0.10 ppm	$\leq$ 1.00 ppm
CHLORIDE	$\leq$ 0.15 ppm	$\leq$ 1.50 ppm
FLUORIDE	$\leq$ 0.15 ppm	$\leq$ 1.50 ppm

APPLICABILITY: At all times.

-------------------------NOTE-------------------------
With $T_{avg} \leq 250°F$, the dissolved oxygen limit is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more chemistry parameters not within Steady State Limits, in MODE 1, 2, 3, or 4.	A.1 Restore the parameter to within its Steady State Limit.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more chemistry parameters not within the Transient Limits in MODES 1, 2, 3 and 4. OR Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours
C. --------NOTE--------- All Required Actions must be completed whenever this Condition is entered. --------------------- RCS chloride or fluoride concentration not within the Steady State Limits for more than 24 hours in any condition other than MODES 1, 2, 3 and 4. OR RCS chloride or fluoride concentration not within Transient Limits in any condition other than MODES 1, 2, 3 and 4.	C.1 Initiate action to reduce the pressurizer pressure to ≤ 500 psig. AND C.2 Perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the RCS. AND	Immediately Prior to increasing the pressurizer pressure > 500 psig OR Prior to entry to MODE 4. (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.3 Determine that the RCS remains acceptable for continued operation.	Prior to increasing the pressurizer pressure > 500 psig OR Prior to entry to MODE 4.

TECHNICAL SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
TSR 3.4.4.1	Demonstrate by analysis that RCS dissolved oxygen concentration is ≤ 0.10 ppm.	----NOTE----- Not required with T_{avg} ≤ 250°F. ------------- 72 hours
TSR 3.4.4.2	Demonstrate by analysis that RCS chloride concentration is ≤ 0.15 ppm.	72 hours
TSR 3.4.4.3	Demonstrate by analysis that RCS fluoride concentration is ≤ 0.15 ppm.	72 hours

PROPOSED REVISION

TR 3.4 REACTOR COOLANT SYSTEM

TR 3.4.5 Reactor Coolant System Structural Integrity

TR 3.4.5 The structural integrity of ASME Code Class 1, 2, and 3 components shall be maintained in accordance with TSR 3.4.5.1 and TSR 3.4.5.2.

APPLICABILITY: All MODES.

---NOTE---
TR 3.0.4 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Structural integrity of any ASME Code Class 1 component(s) not within limits.	A.1 Restore structural integrity of affected component(s) to within limit. OR	Prior to increasing Reactor Coolant System temperature > 50°F above the minimum temperature required by NDT consider-actions. (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Isolate affected component(s).	Prior to increasing Reactor Coolant System temperature > 50°F above the minimum temperature required by NDT consider-actions.
B. Structural integrity of any ASME Code Class 2 component(s) not within limits.	B.1 Restore structural integrity of affected component(s) to within limit.	Prior to increasing Reactor Coolant System temperature to > 200°F.
	<u>OR</u>	
	B.2 Isolate affected component(s).	Prior to increasing Reactor Coolant System temperature to > 200°F.

(continued)

PROPOSED REVISIONS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.1 Enter applicable Conditions and Required Actions for the affected component AND	Immediately
C. Structural integrity of any ASME Code Class 3 component(s) not within limits.	C.~~1~~2.1 Restore structural integrity of affected component(s) to within limit. OR C.2.2 ~~C.2~~ Isolate affected component(s) from remaining system.	~~Prior to usage of affected component(s).~~ Within the Completion Time Specified in the affected Component's LCO or TR ~~Prior to placing affected system in service.~~

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.5.1	Inspect each reactor coolant pump flywheel according to the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.	According to the recommend-actions of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1.
TSR 3.4.5.2	Verify the Reactor Coolant System structural integrity in accordance with the Inservice Inspection Program.	In accordance with the Inservice Inspection Program.

TR 3.6 CONTAINMENT SYSTEMS

TR 3.6.1 Ice Bed Temperature Monitoring System

TR 3.6.1 The Ice Bed Temperature Monitoring System shall be OPERABLE with at least two OPERABLE RTD channels in the ice bed at each of three basic elevations: 10′6", 30′9" and 55′ above the floor of the ice condenser, for each one-third of the ice condenser.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Ice Bed temperature not available in the main control room.	A.1 Monitor ice bed temperature at the local ice condenser temperature monitoring panel (local panel).	Once per 12 hours
B. Ice Bed Temperature Monitoring System inoperable. AND Local ice condenser temperature monitoring panel inoperable.	B.1.1 Verify ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed. AND	1 hour AND 12 hours thereafter
	B.1.2 Verify last recorded mean ice bed temperature was ≤ 20°F and steady. AND	1 hour

PROPOSED REVISION

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.1.3 Verify Ice Condenser Cooling System is OPERABLE with at least 21 air handling units, two glycol circulating pumps and three refrigerant units OPERABLE.	1 hour AND 12 hours thereafter PROPOSED REVISION
	AND	
	B.2.1 Restore Ice Bed Temperature Monitoring System to OPERABLE status.	30 days
	OR	
	B.2.2 Restore local temperature monitoring panel to OPERABLE status.	30 days
C. Ice Bed Temperature Monitoring System inoperable. AND Local ice condenser temperature monitoring panel inoperable. AND Ice Condenser Cooling System inoperable.	C.1.1 Verify ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed.	1 hour AND 12 hours thereafter PROPOSED REVISION
	AND	
	C.1.2 Verify last recorded mean ice bed temperature was ≤ 15°F and steady.	1 hour
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Restore the Ice Condenser Cooling System to OPERABLE status. OR C.2.2 Restore local temperature monitoring panel to OPERABLE.	6 days 6 days
D. Required Action and associated Completion Time of Condition A, B or C not met	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.1.1	Perform CHANNEL CHECK on the Ice Bed Temperature Monitoring System.	12 hours

TR 3.6 CONTAINMENT SYSTEMS

TR 3.6.2 Inlet Door Position Monitoring System

TR 3.6.2 The Inlet Door Position Monitoring System shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Inlet Door Position Monitoring System inoperable ~~.~~ in MODE 1	A.1 Confirm the Ice Bed Temperature Monitoring System is OPERABLE with the ice bed temperature ≤ 27°F.	~~----NOTE----- MODE 1 may continue ≤ 14 days in this condition.~~ 4 hours **AND** Each 4 hours thereafter.
	AND A.2 Restore the Inlet Door Position Monitoring System to OPERABLE status.	14 days
B. Required Action and associated Completion Time of Condition A not met. **OR** Inlet Door Position Monitoring System inoperable in MODES 2, 3, or 4.	B.1 Restore the Inlet Door Monitoring System to OPERABLE. ~~OR~~	48 hours
C. Required Action and associated Completion Time of Condition B not met.	~~B.2~~ C.1 Be in MODE 4.	~~54~~ 12 hours
	AND ~~B.2~~ C.2 Be in MODE 5.	~~84~~ 36 hours

PROPOSED REVISION TO BE CONSISTENT WITH NUREG-0452

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.2.1	Perform CHANNEL CHECK.	12 hours
TSR 3.6.2.2	Perform TADOT.	18 months
TSR 3.6.2.3	Verify that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Surveillance Requirements 3.6.12.1, Surveillance Requirements 3.6.12.3, Surveillance Requirements 3.6.12.4, and Surveillance Requirements 3.6.12.5.	In accordance with Technical Specification Surveillance Requirements.

TR 3.6 CONTAINMENT SYSTEMS

TR 3.6.3 Lower Compartment Cooling (LCC) System

TR 3.6.3 Two LCC trains with two fans in each train shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One LCC fan inoperable.	A.1 Restore LCC fan to OPERABLE status.	7 days
B. Two LCC fans inoperable.	B.1 Restore at least one LCC fan to OPERABLE status.	72 hours
C. Required action and associated Completion Time of conditions A or B not met. OR More than two LCC fans inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.3.1	Verify that each fan can be started from the control room and operates for $\geq$ 15 minutes.	31 days

TR 3.7 PLANT SYSTEMS

TR 3.7.1 Steam Generator Pressure/Temperature Limitations

TR 3.7.1 The pressure of the reactor and secondary coolants in the Steam Generators shall be ≤ 200 psig.

APPLICABILITY: Whenever the temperature of the reactor or secondary coolant in any Steam Generator ≤ 70°F.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. --------NOTE--------- All Required Actions must be completed whenever this Condition is entered. --------------------			
Steam Generator pressure not within limits.	A.1	Reduce pressure to ≤ 200 psig.	30 minutes
	AND		
	A.2	Perform an engineering evaluation to determine the effect of the over-pressurization on the structural integrity of the Steam Generator.	Prior to increasing Steam Generator coolant temperatures to > 200°F.
	AND		
			(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Determine that the Steam Generator remains acceptable for continued operation.	Prior to increasing Steam Generator coolant temperatures to > 200°F.

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.1.1	Determine that the pressure of the reactor and the secondary coolants in the Steam Generators is < 200 psig.	1 hour

TR 3.7 PLANT SYSTEMS

TR 3.7.2 Flood Protection Plan

TR 3.7.2 The flood protection plan shall be ready for implementation to maintain the plant in a safe condition.

APPLICABILITY: When one or more of the following conditions exist:

a. Flood-producing rainfall conditions in the east Tennessee watershed, or

b. An early warning or alert that a critical combination of flood and/or high headwater levels may or have developed, or

c. An early warning or alert involving Fontana Dam, or

d. Recognizable seismic activity in the east Tennessee region.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Stage I flood warning issued.	A.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	A.2	Initiate and complete the Stage I flood protection plan.	10 hours
	<u>AND</u>		
	A.3	Establish a SDM $\geq$ 5% $\Delta k/k$ and $T_{avg} \leq$ 350°F.	10 hours
	<u>AND</u>		
			(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4.1 Verify that communications between the TVA Division of Water Resources and the Watts Bar Nuclear Plant have been established. OR A.4.2 Initiate and complete the Stage II flood protection procedure.	10 hours 27 hours
B. Stage II flood warning issued.	B.1 Initiate and complete the Stage II flood protection plan.	17 hours prior to predicted flooding of the site.
C. Seismic event occurs after a critical combination of flood and/or headwater alerts are issued.	C.1 Verify and maintain communications between TVA Power Control Center and the Watts Bar Nuclear Plant. OR	6 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Initiate and complete the Stage I flood protection plan.	16 hours
	<u>AND</u>	
	C.2.2.1 Establish communications between TVA Power Control Center and the Watts Bar Nuclear Plant.	Prior to completion of the Stage I flood protection plan.
	<u>OR</u>	
	C.2.2.2 Initiate and complete the Stage II flood protection plan.	33 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Fontana Dam Alert issued.	D.1 Verify and maintain communications between the Fontana Dam and the Watts Bar Nuclear Plant.	1 hour AND Once per hour thereafter
	OR	
	D.2.1 Initiate and complete the Stage I flood protection plan.	10 hours
	AND	
	D.2.2.1 Establish communications between Fontana Dam and the Watts Bar Nuclear Power Plant.	Prior to completion of the Stage I flood protection plan.
	OR	
	D.2.2.2 Initiate and complete the Stage II flood protection plan.	27 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Either the Norris, Cherokee, Douglas, Fort Loudon, Fontana, or Tellico dam failed seismically after a critical combination of flood and/or headwater alerts is issued.	E.1.1 Initiate and complete the Stage I flood protection plan.	10 hours
	AND	
	E.1.2 Initiate and complete the Stage II flood protection plan.	27 hours
	OR	
	E.2 Terminate Stage I and Stage II flood protection plans once it is determined that the potential for flooding the site does not exist.	Immediately

PROPOSED REVISION

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.2.1	Determine water level at the intake pumping station when water level ≤ 714.5 feet Mean Sea Level USGS datum during ~~November~~ October 1 through April 15.	8 hours
TSR 3.7.2.2	Determine water level at the intake pumping station when water level ≤ 726.5 feet Mean Sea Level USGS datum during April 16 through ~~October 31~~ September 30.	8 hours
TSR 3.7.2.3	Determine water level at the intake pumping station when water level > 714.5 feet Mean Sea Level USGS datum during ~~November~~ October 1 though April 15.	2 hours
TSR 3.7.2.4	Determine water level at the intake pumping station when water level > 726.5 feet Mean Sea Level USGS datum during April 16 through ~~October 31~~ September 30.	2 hours
TSR 3.7.2.5	----------------NOTE------------------- Only required during flood-producing rainfall conditions in the east Tennessee watershed. -------------------------------------- Establish and maintain communications between Watts Bar Nuclear Plant and TVA Division of Water Resources.	3 hours

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.2.6	----------------NOTE------------------ Only required following a recognizable seismic event that has occurred when a critical combination of flood and/or headwater alert is issued. -------------------------------------- Establish and maintain communications between the Watts Bar Nuclear Plant and TVA Power Control Center until such time that is has been determined that the potential for flooding the site does not exist.	3 hours
TSR 3.7.2.7	----------------NOTE------------------ Only required when an alert involving Fontana Dam has been issued by TVA Division of Water Resources. -------------------------------------- Establish and maintain communications between the Watts Bar Nuclear Plant and Fontana Dam.	1 hour

TR 3.7 PLANT SYSTEMS

TR 3.7.3 Snubbers

TR 3.7.3 All snubbers utilized on safety related systems shall be OPERABLE. For those snubbers utilized on non-safety related systems, each snubber shall be OPERABLE if a failure of that snubber or the failure of the non-safety related system would have an 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 snubber(s) inoperable.	A.1.1 Restore snubber(s) to OPERABLE status.	72 hours
	<u>OR</u>	
	A.1.2 Replace snubber(s).	72 hours
	<u>AND</u>	
	A.2 Perform an engineering evaluation per Table 3.7.3-5 on the attached component.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Declare supported component or supported system inoperable.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

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

1. Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program.

2. Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test results shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom-of-motion test must have been performed within 12 months before being installed in the unit.

3. As used herein, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

SURVEILLANCE		FREQUENCY
TSR 3.7.3.1	Visually inspect each snubber in accordance with the acceptance criteria in Table 3.7.3-1.	Between 4 and 10 months after initial operation. AND In accordance with Table 3.7.3-2 and the Inservice Inspection Program.
TSR 3.7.3.2	Perform a transient event inspection of all hydraulic and mechanical snubbers in accordance with Table 3.7.3-3.	6 months following transient event.

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.3.3	Perform a functional test on a representative sample of snubbers in accordance with Table 3.7.3-4 to determine acceptance with criteria in Table 3.7.3-5.	During first refueling shutdown. AND 18 months thereafter during shutdown.
TSR 3.7.3.4	------------------NOTES------------------ 1. The maximum expected service life for various seals, springs, and other critical parts shall be determined and established based on engineering information and shall be extended or shortened based on monitored test results and failure history. 2. Critical parts shall be replaced so that the maximum service life will not be exceeded during a period when the snubber is required to be OPERABLE. 3. The parts replacement shall be documented and the documentation shall be retained in accordance with Technical Specification 5.10.3. --- Verify that the service life of hydraulic and mechanical snubbers has not been exceeded or will not be exceeded prior to the next scheduled surveillance inspection.	18 months

Table 3.7.3-1 (Page 1 of 1)

Visual Inspection Acceptance Criteria

1. Visual inspection shall verify that:

   a. There are no visible indications of damage or impaired OPERABILITY.

   b. Attachments to the foundation or supporting structure are functional; and

   c. Fasteners for attachment of the snubber to the component and to the snubber anchorage are functional.

2. Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that:

   a. The cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and

   b. The affected snubber is functionally tested in the as-found condition and determined OPERABLE per Table 3.7.3-5, Snubber Functional Test Acceptance Criteria.

3. All snubbers connected to an inoperable common hydraulic fluid reservoir shall be counted as unacceptable for determining the next inspection interval.

4. Snubbers which have been made inoperable as the result of unexpected transients, isolated damage or other such random events, when the provisions of Table 3.7.3-3 have been met and any other appropriate corrective action implemented, shall not be counted in determining the next visual inspection interval.

5. A review and evaluation shall be performed and documented to justify continued operation with an unacceptable snubber. If continued operation cannot be justified, the snubber shall be declared inoperable and the ACTION requirements shall be met.

Table 3.7.3-2 (Page 1 of 2)

Visual Inspection Surveillance Frequency

Population or Category (Notes 1 and 2)	NUMBER OF UNACCEPTABLE SNUBBERS		
	Column A Extended Interval (Notes 3 and 6)	Column B Repeat Interval (Notes 4 and 6)	Column C Reduce Interval (Notes 5 and 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1000 or greater	29	56	109

Note 1: The next visual inspection interval for a snubber population or category size shall be determined based upon the previous inspection interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. However, the licensee must make and document that decision before any inspection and shall use that decision as the basis upon which to determine the next inspection interval for that category.

and the number of unacceptable snubbers found during that interval.

Note 2: Interpolation between population or category size and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B, or C if that integer includes a fractional value of unacceptable snubbers as described by interpolation.

PROPOSED REVISION

(continued)

Table 3.7.3-2 (Page 2 of 2)

Note 3: If the number of unacceptable snubbers is equal to or less than the number in Column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

Note 4: If the number unacceptable snubbers is equal to or less than the number in Column B but greater than the number in Column A, the next inspection interval shall be the same as the previous interval.

Note 5: If the number of unacceptable snubbers is equal to or greater than the number in Column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in Column C but greater than the number in Column B, the next interval shall be reduced proportionally by interpolation, that is, the previous interval shall be reduced by a factor that is one third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in Column B to the difference in the numbers in Column B and C.

Note 6: The provisions of TSR 3.0.2 are applicable for all inspection intervals up to and including 48 months.

Table 3.7.3-3 (Page 1 of 1)

Transient Event Inspection

1. An inspection shall be performed of all hydraulic and mechanical snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems within six months following such an event.

2. In addition to satisfying the visual inspection acceptance criteria, freedom-of-motion of mechanical snubbers shall be verified using one of the following:

   a. Manually induced snubber movement.

   b. Evaluation of in-place snubber piston setting.

   c. Stroking the mechanical snubber through its full range of travel.

Table 3.7.3-4 (Page 1 of 2)

Functional Testing General Notes

1. The representative sample of snubbers shall include each type and shall be tested using either sample plan A, B, or C as follows. The sample plan shall be selected prior to the test period and cannot be changed during the test period.

2. The NRC Regional Administrator shall be notified in writing of the sample plan selected for each snubber type prior to the test period or the sample plan used in the prior test period shall be implemented.

SAMPLE PLAN A

1. At least 10% of the total of each type of snubber shall be functionally tested either in-place or in a bench test.

2. For each snubber of a type that does not meet the functional test acceptance criteria of Table 3.7.3-5, an additional 10% of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested.

SAMPLE PLAN B

1. A representative sample of each type of snubber shall be functionally tested in accordance with Figure 3.7.3-1. "C" is the total number of snubbers of a type found not meeting the acceptance requirements of Table 3.7.9-5. The cumulative number of snubbers of a type tested is denoted by "N". At the end of each day's testing, the new values of "N" and "C" (previous day's total plus current day's increments) shall be plotted on Figure 3.7-1. If at any time the point plotted falls in the "Reject" region, all snubbers of that type shall be functionally tested. If at any time the point plotted falls in the "Accept" region, testing of snubbers of that type may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers of that type shall be tested until the point falls in the "Accept" region or the "Reject" region, or all the snubbers of that type have been tested.

(continued)

Table 3.7.3-4 (Page 2 of 2)

Functional Testing General Notes

(continued)

SAMPLE PLAN C

1. An initial representative sample of 55 snubbers shall be functionally tested. For each snubber type which does not meet the functional test acceptance criteria, another sample of at least one-half the size of the initial sample shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, 1 + C/2, where "C" is the number of snubbers found which do not meet the functional test acceptance criteria. The results from this sample plan shall be plotted using an "Accept" line which follows the equation N = 55 (1 + C/2). Each snubber point should be plotted as soon as the snubber is tested. If the point plotted falls on or below the "Accept" line, testing of that type of snubber may be terminated. If the point plotted falls above the "Accept" line, testing must continue until the point falls in the "Accept" region or all the snubbers of that type have been tested.

TABLE NOTES

1. Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time provided all snubbers tested with the failed equipment during the day of equipment failure are retested.

2. The representative sample selected for the functional test sample plans shall be randomly selected from the snubbers of each type and reviewed before beginning the testing. The review shall ensure, as far as practicable, that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers of each type.

3. Snubbers placed in the same location as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the sample plan.

4. If during the functional testing, additional sampling is required due to failure of only one type of snubber, the functional test results shall be reviewed at that time to determine if additional samples should be limited to the type of snubber which has failed the functional testing.

Table 3.7.3-5 (Page 1 of 1)

Snubber Functional Test Acceptance Criteria

The snubber functional test shall verify that:

a. Activation (restraining action) is achieved within the specified range in both tension and compression.

b. Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range (Hydraulic Snubbers).

c. The force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel (Mechanical Snubbers).

TABLE NOTES

1. Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

2. An engineering evaluation shall be made of each failure to meet the functional test criteria to determine the cause of the failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of the type which may be subject to the same failure mode.

3. For snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

4. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen-in-place, the cause will be evaluated and, if caused by manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the functional test acceptance criteria.

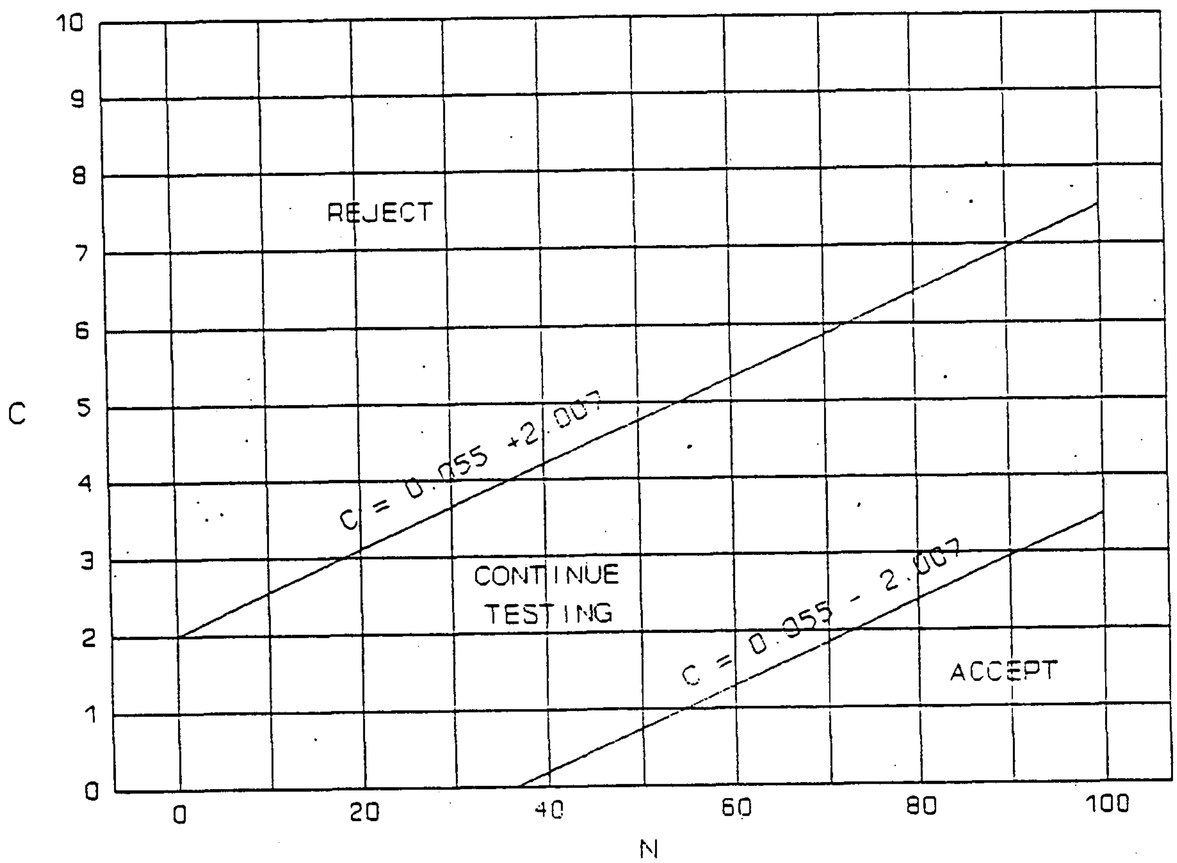

FIGURE 3.7.3-1

Sample Plan B for Snubber Functional Test

TR 3.7 PLANT SYSTEMS

TR 3.7.4 Sealed Source Contamination

TR 3.7.4 The removable contamination shall be < 0.005 microcuries for each sealed source containing radioactive material > 100 microcuries of beta and/or gamma emitting material or > 5 microcuries of alpha emitting material.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Sealed source contamination not within limit.	---------------NOTE----------- TR 3.0.3 is not applicable. ------------------------------	PROPOSED REVISION
	A.1 Remove sealed source from use.	Immediately~~, as ALARA or Safety considerations permit~~
	AND	
	A.2 Prepare and submit a Special Report to the NRC in accordance with Technical Specification 5.9.2.	12 months
	AND	
	A.3.1 Decontaminate and repair sealed source.	Prior to returning the sealed source to use.
	OR	
	A.3.2 Dispose of sealed source in accordance with NRC regulations.	In accordance with NRC regulations.

TECHNICAL SURVEILLANCE REQUIREMENTS

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

1. The licensee, other persons specifically authorized by the NRC, or an Agreement State shall perform the Technical Surveillance Requirements.

2. The test methods shall have a detection sensitivity of ≤ 0.005 microcuries per test sample.

SURVEILLANCE		FREQUENCY
TSR 3.7.4.1	-----------------NOTES----------------- 1. Only applicable to sources in use. 2. Only applicable to sources with half-lives > 30 days, excluding Hydrogen 3. 3. Not applicable to startup sources and fission detectors previously subjected to core flux. 4. Only applicable to sources in any form other than gas. -- Determine that the removable contamination is < 0.005 microcuries for each sealed source.	6 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
TSR 3.7.4.2	-----------------NOTES----------------- 1. Only applicable to sources not in use. 2. Sealed sources and fission detector transferred without a certificate indicating the last test date shall be tested prior to being placed in use. --------------------------------------- Determine that the removable contamination is < 0.005 microcuries for each sealed source and fission detector.	Within 6 months prior to use or transfer to another licensee.
TSR 3.7.4.3	-----------------NOTE----------------- Only applicable to startup sources and fission detectors not in use. --------------------------------------- Determine that the removable contamination is < 0.005 microcuries for each startup source and fission detector.	Within 31 days prior to being installed in the core or being subjected to core flux. <u>AND</u> Following repair or maintenance to the source.

TR 3.7 PLANT SYSTEMS

TR 3.7.5 Fire Suppression Water System

TR 3.7.5 The Fire Suppression Water System shall be OPERABLE as follows:

a. Three fire suppression pumps, each with a capacity of at least 1590 gpm at [300] feet of head, with the discharge aligned to the fire suppression header, and

b. An OPERABLE flow path with suction from the forebay, through distribution piping, sectionalizing control or isolation valves to the standpipe hose valves required OPERABLE by TR 3.7.8, and the first valve upstream of the water flow device on each spray and/or sprinkler system required to be OPERABLE per TR 3.7.6.

APPLICABILITY: Whenever equipment protected by the Spray and/or Sprinkler Systems of TR 3.7.6 or the Fire Hose Stations of TR 3.7.8 is required to be OPERABLE.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required pump inoperable.	-----------NOTE---------- TR 3.0.3 and TR 3.0.4 are not applicable. -------------------------	
	A.1 Restore required pump to OPERABLE status.	7 days
	OR	
	A.2 Provide an alternate backup pump or supply.	7 days
B. System inoperable for reasons other than Condition A.	B.1 Establish a backup Fire Suppression Water System.	24 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.5.1	Operate each pump for 15 minutes on recirculation flow.	31 days
TSR 3.7.5.2	Verify each testable manual, power-operated or automatic valve (located outside of the Reactor Building), in the flow path, is in the correct position.	31 days
TSR 3.7.5.3	Perform system flush.	6 months
TSR 3.7.5.4	Cycle each non-self indicating, testable valve (located outside of the Reactor Building) in the flow path through one cycle.	12 months
TSR 3.7.5.5	Perform a system functional test with simulated automatic actuation, and: a. Verify automatic valves in the flow path actuate to the correct position, b. Verify pumps develop flow $\geq$ 1590 gpm at a head of [300] feet, c. Cycle non-self indicating, not testable valves, and those located in the Reactor Building, through one cycle, and d. Verify pumps start and maintain a discharge pressure $\geq$ 105 psig.	18 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.5.6	Perform a flow test of the system in accordance with Chapter 5, Section 11, of the Fire Protection Handbook, 14th Edition (NFPA).	3 years

TR 3.7 PLANT SYSTEMS

TR 3.7.6 Spray and/or Sprinkler Systems

TR 3.7.6 Spray and/or Sprinkler Systems in the following areas shall be OPERABLE:

a. Reactor building - RC pump areas, and Annulus;

b. Auxiliary building - Elev. 692, 713, 729, 737, 757, 772, 782, ABGTS Filters, EGTS Filters, Containment Purge Air Exhaust Filters, 125 V Battery and Battery Board Rooms;

c. Control building - Elev. 692, Cable spreading room, MCR air filters and Operator living area;

d. Diesel building - Corridor area;

e. Turbine building - Control building wall;

f. ERCW pumping station (Intake); and

g. Additional Diesel Building - Pipe gallery, diesel generator, fuel oil pump, transformer, switchgear, and electrical board rooms.

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

-------------------------NOTE-------------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Spray and/or Sprinkler System(s) inoperable in areas where 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 required Spray and/or Sprinkler System(s) inoperable in areas other than Condition A.	B.1 Establish a fire watch patrol.	1 hour <u>AND</u> Once per hour thereafter

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.6.1	Verify each testable manual, power-operated, or automatic valve (located outside of the Reactor Building), in the flow path, is in the correct position.	31 days
TSR 3.7.6.2	Cycle non-self indicating testable valves (accessible during plant operations and located outside of the Reactor Building), in the flow path, through one cycle.	12 months
TSR 3.7.6.3	Perform a system functional test including a simulated automatic actuation of the system, and: a. Verify automatic valves, in the flow path, actuate to the correct positions on a single or cross zoned test signal and b. Cycle non-self indicating valves, not testable during plant operation and those located in the Reactor Building that are in the flow path, through one cycle.	18 months
TSR 3.7.6.4	Verify, by visual inspection, integrity of the normally dry pipe spray and sprinkler headers.	18 months
TSR 3.7.6.5	Verify, by visual inspection, sprinkler head/spray nozzle areas are not obstructed.	18 months

TR 3.7 PLANT SYSTEMS

TR 3.7.7 CO_2 Systems

TR 3.7.7 The following Low Pressure CO_2 Systems shall be OPERABLE:

a. Auxiliary instrument room (Units 1 and 2);

b. Diesel generator rooms;

c. Computer room;

d. Diesel generator fuel oil pump rooms;

e. Diesel generator electrical board rooms; and

f. Diesel generator lube oil storage rooms.

APPLICABILITY: Whenever equipment protected by the Low Pressure CO_2 Systems is required to be OPERABLE.

-----NOTE-----
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Low Pressure CO_2 Systems inoperable in an area where 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 required Low Pressure CO_2 Systems inoperable in an area other than Condition A.	B.1 Establish a fire watch patrol.	1 hour <u>AND</u> Once per hour thereafter

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.7.1	Verify each CO_2 storage tank level > 50% and pressure > 270 psig.	7 days
TSR 3.7.7.2	Verify each manual, power-operated, or automatic valve with position indication, in the flow path, is in the correct position.	31 days
TSR 3.7.7.3	Verify each system's valves, associated ventilation system fire dampers, and fire door release mechanisms actuate manually and automatically (except if CO_2 discharge would occur) upon receipt of a simulated actuation signal.	18 months
TSR 3.7.7.4	Verify flow from each nozzle during a "Puff Test."	18 months

TR 3.7 PLANT SYSTEMS

TR 3.7.8 Fire Hose Stations

TR 3.7.8 The fire hose stations given in Table 3.7.8-1 shall be OPERABLE.

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

---------------------------NOTE---------------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the fire hose stations given in Table 3.7.8-1 inoperable.	----------NOTE--------- Where it can be determined that the physical routing of the backup fire hose would result in a recognizable hazard to operating technicians, plant equipment, or the hose itself; the fire hose shall be stored on a roll at the outlet of the OPERABLE hose station. -----------------------	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.1 Provide gated wye(s) on the nearest OPERABLE hose station(s). One outlet of the wye shall be connected to the standard length of hose provided for the hose station. The second outlet shall be connected to a length of hose capable of supplying water to the area left unprotected by the inoperable hose station.	1 hour if the inoperable fire hose is the primary means of fire suppression OR 24 hours otherwise

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.8.1	Perform visual inspection of the fire hose stations accessible during plant operations and located outside the Reactor Building to assure all required equipment is at the station and all required stations are not obstructed.	31 days
TSR 3.7.8.2	Perform a visual inspection of the fire hose stations not accessible during plant operation or located in the Reactor Building to assure all required equipment is at the station and all required stations are not obstructed.	18 months
TSR 3.7.8.3	Remove each hose for inspection and reracking. Inspect all gaskets and replace any degraded gaskets in couplings.	18 months
TSR 3.7.8.4	Partially open each hose station valve to verify valve OPERABILITY and no flow blockage. <u>AND</u> 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 3.7.8-1 (1 of 3)

FIRE HOSE STATIONS

LOCATION	ELEVATION	HOSE RACK #
Diesel Generator Building		
Corridor	742	0-26-1077
Air Exhaust 2B Room	760	0-26-1082
Entrance to 1A Elec. Bd. Rm.	760	0-26-1080
Reactor Building		
Reactor Coolant Pumps	702	1-26-1220
Reactor Coolant Pumps	702	1-26-1221
Reactor Coolant Pumps	702	1-26-1222
Reactor Coolant Pumps	702	1-26-1223
Reactor Coolant Pumps	702	1-26-1224
Reactor Coolant Pumps	702	1-26-1225
Standpipe R. Bldg. Annulus	Platform 702	1-26-1216
Standpipe R. Bldg. Annulus	Platform 702	1-26-1217
Standpipe R. Bldg. Annulus	Platform 702	1-26-1218
Standpipe R. Bldg. Annulus	Platform 702	1-26-1219
Standpipe R. Bldg. Annulus	Platform 724	1-26-1212
Standpipe R. Bldg. Annulus	Platform 724	1-26-1213
Standpipe R. Bldg. Annulus	Platform 724	1-26-1214
Standpipe R. Bldg. Annulus	Platform 724	1-26-1215
Standpipe R. Bldg. Annulus	Platform 744	1-26-1208
Standpipe R. Bldg. Annulus	Platform 744	1-26-1209
Standpipe R. Bldg. Annulus	Platform 744	1-26-1210
Standpipe R. Bldg. Annulus	Platform 744	1-26-1211
Standpipe R. Bldg. Annulus	Platform 763	1-26-1204
Standpipe R. Bldg. Annulus	Platform 763	1-26-1205
Standpipe R. Bldg. Annulus	Platform 763	1-26-1206
Standpipe R. Bldg. Annulus	Platform 763	1-26-1207
Standpipe R. Bldg. Annulus	Platform 782	1-26-1200
Standpipe R. Bldg. Annulus	Platform 782	1-26-1201
Standpipe R. Bldg. Annulus	Platform 782	1-26-1202
Standpipe R. Bldg. Annulus	Platform 782	1-26-1203
Standpipe R. Bldg. Annulus	Platform 801	1-26-1196
Standpipe R. Bldg. Annulus	Platform 801	1-26-1197
Standpipe R. Bldg. Annulus	Platform 801	1-26-1198
Standpipe R. Bldg. Annulus	Platform 801	1-26-1199

(continued)

TABLE 3.7.8-1 (2 of 3)

FIRE HOSE STATIONS

LOCATION	ELEVATION	HOSE RACK #
Auxiliary Building		
A9V	676	0-26-691
A8T	676	0-26-663
A3T	692	1-26-668
A13S	692	2-26-668
A7W	692	0-26-680
A8X	692	0-26-681
A8T	692	0-26-662
A3T	713	1-26-667
A13T	713	2-26-667
A8W	713	0-26-690
A8T	713	0-26-661
A1V	716	ABH-5, valves 1-26-674 and 1-26-675
A8X	729	0-26-658
A8X	729	0-26-659
A5X	729	1-26-686
A11X	729	2-26-686
A11Y	730	0-26-854
A3T	737	1-26-666
A8W	737	0-26-677
A8T	737	0-26-660
A13T	737	2-26-666
A11Y	750	0-26-855
A3T	757	1-26-665
A13T	757	2-26-665
A4U	757	1-26-670
A12V	757	2-26-670
A5X	757	0-26-682
A10T	757	0-26-684
A5U	757	ABH-3, valves 1-26-671 and 1-26-672
A5X	763	1-26-693
A11X	763.5	2-26-696
A3T	772	1-26-664
A13T	772	2-26-664
A5X	775	1-26-694
A4U	782	1-26-669
A5X	786.5	1-26-695

(continued)

TABLE 3.7.8-1 (3 of 3)

FIRE HOSE STATIONS

LOCATION	ELEVATION	HOSE RACK #
Control Building		
Stairwell C-1	692	0-26-1194
Stairwell C-1	708	0-26-1193
Stairwell C-1	729	0-26-1192
Stairwell C-1	755	0-26-1191
Stairwell C-2	692	0-26-1189
Stairwell C-2	708	0-26-1188
Stairwell C-2	729	0-26-1187
Stairwell C-2	755	0-26-1186
Intake Pumping Station		
Electrical Board Rm.	716	0-26-595
Electrical Board Rm.	716	0-26-596
B Strainer Room	727	0-26-594
A Strainer Room	727	0-26-597
A Fire Pump Room	747	0-26-1710
B Fire Pump Room	747	0-26-1711
Additional Diesel Generator Building		
Top of Stairway	765	0-26-1646
Air Intake Room	765	0-26-1647
Air Intake Room	765	0-26-1648
Bottom of Stairway	742	0-26-1649
Diesel Generator Room	742	0-26-1650

TR 3.7 PLANT SYSTEMS

TR 3.7.9 Fire Rated Assemblies

TR 3.7.9 All Fire Rated Assemblies 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 shall be OPERABLE.

APPLICABILITY: Whenever safety-related equipment or portions of redundant systems important to safe shutdown separated by these Fire Rated Assemblies are required to be OPERABLE.

----------------------NOTE----------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Fire Rated Assemblies or sealing devices inoperable.	A.1 Establish a CONTINUOUS FIRE WATCH on one side of the affected assembly.	1 hour
	<u>OR</u>	
	A.2.1 Verify the OPERABILITY of fire detectors on one side of the inoperable assembly.	1 hour
	<u>AND</u>	
	A.2.2 Establish a fire watch patrol.	1 hour

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.9.1	Verify all fire doors with automatic hold-open and release mechanisms are free of obstructions.	24 hours
TSR 3.7.9.2	Verify each unlocked fire door without electrical supervision is closed.	24 hours
TSR 3.7.9.3	Verify each locked closed fire door is closed.	7 days
TSR 3.7.9.4	For each fire door, verify OPERABILITY by inspecting the automatic hold-open, release, and closing mechanism and latches.	6 months
TSR 3.7.9.5	Perform a functional test on all fire doors with automatic hold-open and release mechanisms.	18 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
TSR 3.7.9.1	Verify all fire doors with automatic hold-open and release mechanisms are free of obstructions.	24 hours
TSR 3.7.9.2	Verify each unlocked fire door without electrical supervision is closed.	24 hours
TSR 3.7.9.3	Verify each locked closed fire door is closed.	7 days
TSR 3.7.9.4	For each fire door, verify OPERABILITY by inspecting the automatic hold-open, release, and closing mechanism and latches.	6 months
TSR 3.7.9.5	Perform a functional test on all fire doors with automatic hold-open and release mechanisms.	18 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.9.1	Verify all fire doors with automatic hold-open and release mechanisms are free of obstructions.	24 hours
TSR 3.7.9.2	Verify each unlocked fire door without electrical supervision is closed.	24 hours
TSR 3.7.9.3	Verify each locked closed fire door is closed.	7 days
TSR 3.7.9.4	For each fire door, verify OPERABILITY by inspecting the automatic hold-open, release, and closing mechanism and latches.	6 months
TSR 3.7.9.5	Perform a functional test on all fire doors with automatic hold-open and release mechanisms.	18 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.9.6	Verify OPERABILITIY of the required Fire Rated Assemblies and penetration sealing devices by performing a visual inspection of the following: a. The exposed surfaces of each fire rated assembly, b. Each fire window/fire damper and associated hardware, and c. At least 10% of each type of sealed penetration. If apparent changes in appearance or abnormal degradations 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

TR 3.7 PLANT SYSTEMS

TR 3.7.10 Area Temperature Monitoring

TR 3.7.10 The temperature limit of each area shown in Table 3.7.10-1 shall not be exceeded for > 8 hours or by more than 30°F.

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

PROPOSED REVISION

-----NOTE-----
TR 3.0.3 and TR 3.0.4 are not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more areas not within temperature limits for > 8 hours.	A.1 Prepare and submit to the NRC a Special Report in accordance with Technical Specification 5.9.2. that provides a record of the cumulative time and the amount by which the temperature in the affected area(s) exceeded the limit(s) and an analysis to demonstrate OPERABILITY of the affected equipment.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more areas exceeding temperature limits by more than 30°F.	B.1.1	Restore the area(s) to within temperature limits.	4 hours
		<u>OR</u>	
	B.1.2	Declare the affected equipment in the affected area(s) inoperable.	4 hours
	<u>AND</u>		
	B.2	Prepare and submit to the NRC a Special Report in accordance with Technical Specification 5.9.2 that provides a record of the cumulative time and the amount by which the temperature in the affected area(s) exceeded the limit(s) and an analysis to demonstrate OPERABILITY of the affected equipment.	30 days

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.10.1	Verify each area temperature is within limits.	12 hours

Table 3.7.10-1

Area Temperature Monitoring

AREA	TEMPERATURE LIMIT (°F)
1. Aux Bldg el 772 next to 480V Sd Bd transformer 1A2-A.	≤ 104
2. Aux Bldg el 772 next to 480V Sd Bd transformer 1B1-B.	≤ 104
3. Aux Bldg el 772 next to 480V Rx MOV Bd 1A2-A.	≤ 80
4. Aux Bldg el 772 across from spare 125V vital battery charger 1-S.	≤ 80
5. Aux Bldg el 772 next to 480V Rx MOV Bd 2A2-A.	≤ 80
6. Aux Bldg el 772 next to 480V Sd Bd transformer 2A2-A.	≤ 104
7. Aux Bldg el 772 next to 480V Sd Bd transformer 2B2-B.	≤ 104
8. Aux Bldg el 772 next to 480V Rx MOV Bd 2B2-B.	≤ 80
9. Aux Bldg el 772 U1 Mech Equip Room.	≤ 80
10. Sd Bd room el 757 U1 behind stairs S-A3.	≤ 80
11. Sd Bd room el 757 U2 behind stairs S-A13.	≤ 80
12. Refueling floor el 757 U1 beside Aux boration makeup tk.	≤ 104
13. Aux Bldg el 737 U1 outside supply fan room.	≤ 104
14. Aux Bldg el 713 U1 across from AFW pumps.	≤ 104
15. Aux Bldg el 692 U1 outside AFW pump room door.	≤ 104
16. Aux Bldg el 692 U2 near boric acid concentrate filter vault.	≤ 104
17. Aux Bldg el 676 next to 0-L-629.	≤ 104
18. Add Equip Bldg U1 el 729 between UHI accumulators.	≥ 70 ≤ 92
19. Main Control Room south wall.	≤ 80
20. Main Control Room across from 1-M-9.	≤ 80
21. D/G Bldg el 742 2B-B D/G room on wall by battery charger.	≤ 120
22. D/G Bldg el 760.5 next to 480V diesel Aux Bd 2B1-B.	≤ 120
23. IPS el 711 next to 480V IPS board and transformer (A bus).	≤ 120
24. IPS el 741 in B train ERCW pump room.	≤ 120
25. IPS el 711 next to 480V IPS board and transformer (B bus).	≤ 120
26. Computer room el 708 center of room.	≤ 68
27. North steam valve vault room U1.	≥ 80
28. South steam valve vault room U1.	≥ 80
29. D/G Bldg el 742 1A-A D/G Room near D/G set.	≥ 50
30. D/G Bldg el 742 1B-B D/G Room near D/G set.	≥ 50
31. D/G Bldg el 742 2A-A D/G Room near D/G set.	≥ 50
32. D/G Bldg el 742 2B-B D/G Room near D/G set.	≥ 50
33. Aux. Instrument Room el 708.	≤ 85
34. Add D/G Bldg el 742 C-S D/G Room near D/G set.	≥ 50

TR 3.8 ELECTRICAL POWER SYSTEMS

TR 3.8.1 Isolation Devices

TR 3.8.1 All circuit breakers actuated by fault currents that are used as isolation devices protecting 1E busses from non-qualified loads shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required circuit breakers inoperable.	A.1 Restore the inoperable circuit breaker(s) to OPERABLE status.	8 hours
	<u>OR</u>	
	A.2.1 Trip or remove the inoperable circuit breaker(s).	8 hours
	<u>AND</u>	
	A.2.2 Verify that inoperable circuit breaker(s) are tripped or removed.	Once per 7 days thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
TSR 3.8.1.1	-----NOTES----- 1. Molded case circuit breakers selected for functional testing shall be selected on a rotating basis. 2. The functional test shall be conducted by simulating a fault current with an approved test set and verifying that the molded case circuit breaker functions as designed. 3. For each device found inoperable during functional tests of the selected molded-case circuit breakers, an additional representative sample of 10% of the defective type molded-case circuit breakers shall be functionally tested until no more defective molded-case circuit breakers are found or all the devices of that type have been functionally tested. ---------- Perform functional test on representative sample of ≥ 10% of each type of molded-case circuit breaker.	 18 months

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
TSR 3.8.1.2	-----NOTES----- 1. Electrically-operated circuit breakers selected for functional testing shall be selected on a rotating basis. 2. The functional test shall consist of injecting a current input at the specified Setpoint to each selected electrically-operated circuit breaker or trip device and verifying that each electrically-operated circuit breaker functions as designed. 3. For each device found inoperable during functional tests, an additional representative sample of 10% of the defective type electrically-operated circuit breakers shall be functionally tested until no more failures are found or all the devices of that type have been functionally tested. ---------- Perform functional test on representative sample of ≥ 10% of each type of electrically-operated circuit breaker.	18 months
TSR 3.8.1.3	Inspect each circuit breaker and perform preventive maintenance in accordance with procedures prepared in conjunction with the manufacturer's recommendations.	60 months

TR 3.8 ELECTRICAL POWER SYSTEMS

TR 3.8.2 Containment Penetration Conductor Overcurrent Protection Devices

TR 3.8.2 All containment penetration conductor overcurrent protection devices shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetration conductor overcurrent protection devices inoperable.	A.1 Restore the protective device(s) to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Deenergize the circuit(s) by tripping the associated backup circuit breaker or removing the inoperable circuit breaker.	72 hours
	<u>AND</u>	
	(continued)	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Declare the affected system or component inoperable. AND A.2.3 Verify the backup circuit breaker to be tripped or the inoperable circuit breaker removed.	72 hours Once per 7 days thereafter.
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
	------------------NOTES---------------- 1. All containment penetration conductor overcurrent protection devices listed in Drawing Series 45B710-3 shall be demonstrated OPERABLE by performance of the following Technical Surveillance Requirements 2. The Technical Surveillance Requirements 3.8.2.1, 3.8.2.2, and 3.8.2.3 apply to at least one 6900-volt reactor coolant pump circuit such that all reactor coolant pump circuits are demonstrated OPERABLE at least once per 72 months. ---------------------------------------	
TSR 3.8.2.1	Perform a CHANNEL CALIBRATION of associated protective relays.	18 months
TSR 3.8.2.2	------------------NOTE---------------- 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. --------------------------------------- Perform an [medium voltage [TBD]] integrated system functional test on each ~~unique type of~~ breaker which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed.	18 months PROPOSED REVISION

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
TSR 3.8.2.3	-----NOTES----- 1. Circuit breakers selected for functional testing shall be selected on a rotating basis. 2. Testing of these circuit breakers shall consist of injecting a current with a value equal to 300% of the pickup of the long-time delay trip element and 150% of the pickup of the short-time delay trip element, and verifying the circuit breaker operates within the time delay band width for that current specified by the manufacturer. The instantaneous element shall be tested by injecting a current equal to ±20% of the pickup value of the element and verifying the circuit breaker trips instantaneously with no intentional time delay. Molded case circuit breaker testing shall also follow this procedure except generally no more than two trip elements, time delay and instantaneous, will be involved. 3. Circuit breakers found inoperable during functional testing shall be restored to OPERABLE status prior to resuming operation. 4. For each circuit breaker found inoperable during functional testing, an additional representative sample of ≥ 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. -----	

(continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.8.2.3 (continued)	Select and functionally test a representative sample of ≥ 10% of each type of lower voltage circuit breaker.	18 months
TSR 3.8.2.4	Inspect each circuit breaker and perform preventive maintenance in accordance with procedures prepared in conjunction with the manufacturer's recommendations.	60 months

TR 3.8 ELECTRICAL POWER SYSTEMS

TR 3.8.3 Motor-Operated Valves Thermal Overload Bypass Devices

TR 3.8.3 The thermal overload bypass devices integral with the motor starter of each valve listed in Table 3.8.3-1 shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Thermal overload protection not bypassed when required for one or more of the valves listed in Table 3.8.3-1.	A.1 Restore inoperable device to OPERABLE status. OR A.2 Provide a means to bypass the thermal overload.	8 hours 8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Declare the affected valve(s) inoperable. AND B.2 Apply the appropriate ACTION statement(s) of the affected system(s).	Immediately Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.3.1	Perform TADOT of the bypass circuitry.	~~92 days~~ ~~AND~~ ~~Following maintenance on motor starter(s)~~ 18 months

PROPOSED REVISION
TO BE CONSISTENT
WITH NUREG-0452

Table 3.8.3-1 (Page 1 of 5)

Motor-Operated Valves Thermal Overload Devices Which Are Bypassed Under Accident Conditions

VALVE NO.	FUNCTION	BYPASS DEVICE
1-FCV-62-63	Isolation for Seal Water Filter	Yes
1-FCV-62-90	ECCS Operation	Yes
1-FCV-62-91	ECCS Operation	Yes
1-FCV-62-61	Cont. Isolation	Yes
1-LCV-62-132	ECCS Operation	Yes
1-LCV-62-133	ECCS Operation	Yes
1-LCV-62-135	ECCS Operation	Yes
1-LCV-62-136	ECCS Operation	Yes
1-FCV-74-1	Open for Normal Plant Cooldown	Yes
1-FCV-74-2	Open for Normal Plant Cooldown	Yes
1-FCV-74-3	ECCS Operation	Yes
1-FCV-74-21	ECCS Operation	Yes
1-FCV-74-12	RHR Pump, Mini-flow Protects Pump	Yes
1-FCV-74-24	RHR Pump, Mini-flow Protects Pump	Yes
1-FCV-74-33	ECCS Operation	Yes
1-FCV-74-35	ECCS Operation	Yes
1-FCV-63-7	ECCS Operation	Yes
1-FCV-63-6	ECCS Operation	Yes
1-FCV-63-156	ECCS Flow Path	Yes
1-FCV-63-157	ECCS Flow Path	Yes
1-FCV-63-25	BIT Injection	Yes
1-FCV-63-26	BIT Injection	Yes
1-FCV-63-118	RCS Pressure Boundary	Yes
1-FCV-63-98	RCS Pressure Boundary	Yes
1-FCV-63-80	RCS Pressure Boundary	Yes
1-FCV-63-67	RCS Pressure Boundary	Yes
1-FCV-63-1	ECCS Operation	Yes
1-FCV-63-72	ECCS Flow Path from Cont. Sump	Yes
1-FCV-63-73	ECCS Flow Path from Cont. Sump	Yes
1-FCV-63-8	ECCS Flow Path	Yes
1-FCV-63-11	ECCS Flow Path	Yes
1-FCV-63-93	ECCS Cooldown Flow Path	Yes
1-FCV-63-94	ECCS Cooldown Flow Path	Yes

(continued)

Table 3.8.3-1 (Page 2 of 5)

Motor-Operated Valves Thermal Overload Devices Which Are Bypassed Under Accident Conditions

(continued)

VALVE NO.	FUNCTION	BYPASS DEVICE
1-FCV-63-172	ECCS Flow Path	Yes
1-FCV-63-5	ECCS Flow Path	Yes
1-FCV-63-47	Train Isolation	Yes
1-FCV-63-48	Train Isolation	Yes
1-FCV-63-4	SI Pump Mini-flow	Yes
1-FCV-63-175	SI Pump Mini-flow	Yes
1-FCV-63-3	SI Pump Mini-flow	Yes
1-FCV-63-152	ECCS Recirc	Yes
1-FCV-63-153	ECCS Recirc	Yes
1-FCV-63-22	ECCS Recirc	Yes
1-FCV-3-33	Quick Closing Isolation	Yes
1-FCV-3-47	Quick Closing Isolation	Yes
1-FCV-3-87	Quick Closing Isolation	Yes
1-FCV-3-100	Quick Closing Isolation	Yes
1-FCV-1-15	Steam Supply to Aux FWP Turbine	Yes
1-FCV-1-16	Steam Supply to Aux FWP Turbine	Yes
1-FCV-3-179A	ERCW System Supply to Pump	Yes
1-FCV-3-179B	ERCW System Supply to Pump	Yes
1-FCV-3-136A	ERCW System Supply to Pump	Yes
1-FCV-3-136B	ERCW System Supply to Pump	Yes
1-FCV-3-116A	ERCW System Supply to Pump	Yes
1-FCV-3-116B	ERCW System Supply to Pump	Yes
1-FCV-3-126A	ERCW System Supply to Pump	Yes
1-FCV-3-126B	ERCW System Supply to Pump	Yes
1-FCV-70-133	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-143	Isolation for Excess Letdown Ht Xchngr	Yes
1-FCV-70-92	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-90	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-87	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-89	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-140	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-70-134	Isolation for RCP Oil Coolers & Therm B	Yes
1-FCV-67-67	DG Heat Exchanger	Yes
1-FCV-67-66	DG Heat Exchanger	Yes

(continued)

Table 3.8.3-1 (Page 3 of 5)

Motor-Operated Valves Thermal Overload
Devices Which Are Bypassed Under
Accident Conditions

(continued)

VALVE NO.	FUNCTION	BYPASS DEVICE
1-FCV-67-123	CS Heat Exchanger Supply	Yes
1-FCV-67-125	CS Heat Exchanger Supply	Yes
1-FCV-67-124	CS Heat Exchanger Discharge	Yes
1-FCV-67-126	CS Heat Exchanger Discharge	Yes
1-FCV-67-146	CCWS Heat Exchanger Throttling	Yes
1-FCV-67-223	Isolation of 1B/2A Headers	Yes
1-FCV-67-83	Containment Isolation Lower	Yes
1-FCV-67-88	Containment Isolation Lower	Yes
1-FCV-67-87	Containment Isolation Lower	Yes
1-FCV-1-51	AFPT Trip and Throttle Valve	Yes
1-FCV-67-68	DG Heat Exchanger	Yes
1-FCV-67-65	DG Heat Exchanger	Yes
1-FCV-67-95	Containment Isolation Lower	Yes
1-FCV-67-96	Containment Isolation Lower	Yes
1-FCV-67-91	Containment Isolation Lower	Yes
1-FCV-67-103	Containment Isolation Lower	Yes
1-FCV-67-104	Containment Isolation Lower	Yes
1-FCV-67-99	Containment Isolation Lower	Yes
1-FCV-67-111	Containment Isolation Lower	Yes
1-FCV-67-112	Containment Isolation Lower	Yes
1-FCV-67-107	Containment Isolation Lower	Yes
1-FCV-67-130	Containment Isolation Upper	Yes
1-FCV-67-131	Containment Isolation Upper	Yes
1-FCV-67-295	Containment Isolation Upper	Yes
1-FCV-67-134	Containment Isolation Upper	Yes
1-FCV-67-296	Containment Isolation Upper	Yes
1-FCV-67-133	Containment Isolation Upper	Yes
1-FCV-67-139	Containment Isolation Upper	Yes
1-FCV-67-297	Containment Isolation Upper	Yes
1-FCV-67-138	Containment Isolation Upper	Yes
1-FCV-67-142	Containment Isolation Upper	Yes
1-FCV-67-298	Containment Isolation Upper	Yes

(continued)

Table 3.8.3-1 (Page 4 of 5)

Motor-Operated Valves Thermal Overload Devices Which Are Bypassed Under Accident Conditions

(continued)

VALVE NO.	FUNCTION	BYPASS DEVICE
1-FCV-67-141	Containment Isolation Upper	Yes
1-FCV-72-21	Cont. Spray Pump Suction	Yes
1-FCV-72-22	Cont. Spray Pump Suction	Yes
1-FCV-72-2	Cont. Spray Isolation	Yes
1-FCV-72-39	Cont. Spray Isolation	Yes
1-FCV-72-40	RHR Cont. Spray Isolation	Yes
1-FCV-72-41	RHR Cont. Spray Isolation	Yes
1-FCV-72-44	Cont. Sump to Hdr A - Cont. Spray	Yes
1-FCV-72-45	Cont. Sump to Hdr B - Cont. Spray	Yes
1-FCV-26-240	Containment Isolation	Yes
1-FCV-26-241	Annulus Isolation	Yes
1-FCV-26-242	Annulus Isolation	Yes
1-FCV-26-243	RCP Cont. Spray Isolation	Yes
1-FCV-26-244	Annulus Isolation	Yes
1-FCV-26-245	Annulus Isolation	Yes
1-FCV-68-332	RCS PRZR Rel.	Yes
1-FCV-68-333	RCS PRZR Rel.	Yes
1-FCV-70-153	RHR Ht Ex B-B Outlet	Yes
1-FCV-70-156	RHR Ht Ex A-A Outlet	Yes
1-FCV-70-207	Cont. Demin. Waste Evap. Bldg Supply	Yes
1-FCV-67-9A	ERCW Strainer Backwash	Yes
2-FCV-67-9A	ERCW Strainer Backwash	Yes
1-FCV-67-9B	ERCW Strainer Flush	Yes
2-FCV-67-9B	ERCW Strainer Flush	Yes
1-FCV-67-10A	ERCW Strainer Backwash	Yes
2-FCV-67-10A	ERCW Strainer Backwash	Yes
1-FCV-67-10B	ERCW Strainer Flush	Yes
2-FCV-67-10B	ERCW Strainer Flush	Yes
2-FCV-67-65	Emerg DSL HTXS Supply	Yes
2-FCV-67-66	Emerg DSL HTXS Supply	Yes
2-FCV-67-67	Emerg DSL HTXS Supply	Yes
2-FCV-67-68	Emerg DSL HTXS Supply	Yes
1-FCV-67-72	ERCW to DG Heat Exchanger	Yes
2-FCV-67-73	ERCW to DG Heat Exchanger	Yes

(continued)

Table 3.8.3-1 (Page 5 of 5)

Motor-Operated Valves Thermal Overload Devices Which Are Bypassed Under Accident Conditions

(continued)

VALVE NO.	FUNCTION	BYPASS DEVICE
1-FCV-67-89	Containment Isolation	Yes
1-FCV-67-97	Containment Isolation	Yes
1-FCV-67-105	Lower Containment Isolation	Yes
1-FCV-67-113	Lower Containment Isolation	Yes
1-FCV-67-143	CCS Heat Exchanger Discharge	Yes
2-FCV-67-143	CCS Heat Exchanger Discharge	Yes
0-FCV-67-144	CCS Heat Exchanger Bypass	Yes
2-FCV-67-146	CCS Heat Exchanger Throttling	Yes
0-FCV-67-152	CCS Heat Exchanger Discharge	Yes
0-FCV-67-205	Nonessential Equipment Isolation	Yes
0-FCV-67-208	Station Service/Contr. Air Supply	Yes
2-FCV-67-223	Supply Header Isolation	Yes
1-FCV-67-458	ERCW To CCS Heat Exchanger	Yes
1-FCV-67-478	ERCW To CCS Heat Exchanger	Yes
2-FCV-70-153	RHR Heat Exchanger Outlet	Yes
2-FCV-70-156	RHR Heat Exchanger Outlet	Yes
1-FCV-70-183	Sample Ht Ex Header Outlet	Yes
0-FCV-70-194	SFPCS Ht Ex Supply Header	Yes
1-FCV-70-100	RGP Oil Cooler Supply Cont. Isolation	Yes
0-FCV-70-197	SFPCS Ht Ex Supply Header	Yes
2-FCV-70-207	Cond Denim Waste Evap Bldg Supply	Yes
1-FCV-70-215	Sample Ht Ex Header Inlet	Yes
1-FCV-74-8	RHR Isolation Bypass	Yes
1-FCV-74-9	RHR Isolation Bypass	Yes

TR 3.8 ELECTRICAL POWER SYSTEMS

TR 3.8.4 Submerged Component Circuit Protection

TR 3.8.4 The submerged component circuits associated with valves 1-FCV-74-1 and 1-FCV-74-9, and with each component as shown in Table 3.8.4-1 shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more submerged components circuits inoperable.	A.1 Restore the inoperable circuit to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.4.1	Verify that valves 1-FCV-74-1 and 1-FCV-74-9 are de-energized.	31 days
TSR 3.8.4.2	Verify that the components as shown in Table 3.8.4-1 are automatically de-energized on a simulated accident signal.	18 months

Table 3.8.4-1

Submerged Components With Automatic De-energization
Under Accident Conditions

COMPONENT
1-FCV-62-72
1-FCV-62-73
1-FCV-62-74
1-FCV-62-76
1-FCV-87-7
1-FCV-87-8
1-MTR-77-125
1-MTR-77-126
1-MTR-77-4
1-MTR-77-6
1-MTR-30-83/1-A
1-MTR-30-83/2-A
1-MTR-30-88/1-A
1-MTR-30-88/2-A
1-MTR-30-92/1-B
1-MTR-30-92/2-B
1-MTR-30-80/1-B
1-MTR-30-80/2-B
1-MTR-30-74-A
1-MTR-30-77-A
1-MTR-30-75-B
1-MTR-30-78-B

TR 3.9 REFUELING OPERATIONS

TR 3.9.1 Decay Time

TR 3.9.1 The reactor shall be subcritical for ≥ 100 hours.

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

ACTIONS

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

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.1.1	Verify the reactor has been subcritical for ≥ 100 hours by confirming the date and time of subcriticality.	Prior to movement of irradiated fuel in the reactor vessel

TR 3.9 REFUELING OPERATIONS

TR 3.9.2 Communications

TR 3.9.2 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

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.2.1	Demonstrate that direct communications between the control room and personnel at the refueling station are established.	1 hour prior to the start of CORE ALTERATIONS. <u>AND</u> Each 12 hours during CORE ALTERATIONS.

TR 3.9 REFUELING OPERATIONS

TR 3.9.3 Refueling Machine

TR 3.9.3 The Refueling Machine and Auxiliary Hoist shall be used for movement of fuel assemblies or drive shafts and shall be OPERABLE as follows:

a. The Refueling Machine shall have a capacity of ≥ 3150 pounds, an electrical overload cutoff limit of ≤ 2850 pounds, and a mechanical overload cutoff limit of ≤ 3400 pounds.

b. The Auxiliary Hoist shall have a capacity of ≥ 1200 pounds and a load indicator shall be used to indicate the lifting of loads > 1190 pounds.

APPLICABILITY: During movement of fuel assemblies or drive shafts within the reactor pressure vessel.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling Machine inoperable.	A.1 Suspend use of Refueling Machine from operations involving the movement of fuel assemblies within the reactor pressure vessel.	Immediately
B. Auxiliary Hoist inoperable.	B.1 Suspend use of Auxiliary Hoist from operations involving the movement of drive shafts within the reactor pressure vessel.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.3.1	For each required Refueling Machine, perform a load test of ≥ 3150 pounds, demonstrate an automatic electrical load cutoff when the crane load is > 2850 pounds, and an automatic mechanical load cutoff before the crane load is > 3400 pounds.	Within 100 hours prior to start of fuel assemblies movement within the reactor pressure vessel.
TSR 3.9.3.2	For each required Auxiliary Hoist and associated load indicator, perform a load test of ≥ 1200 pounds.	Within 100 hours prior to start of drive shafts movement within the reactor pressure vessel.

TR 3.9 REFUELING OPERATIONS

TR 3.9.4 Crane Travel - Spent Fuel Storage Pool Building

TR 3.9.4 Loads > 2100 pounds shall be prohibited from travel over fuel assemblies in the spent fuel pool.

APPLICABILITY: With fuel assemblies in the spent fuel pool.

-------------------------NOTE-------------------------
TR 3.0.3 is not applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Technical Requirement not met.	A.1 Place the crane load in a safe condition.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.4.1	Demonstrate crane interlocks and physical stops which prevent crane travel over fuel assemblies to be OPERABLE.	Within 7 days prior to crane use. <u>AND</u> At least once per 7 days thereafter during crane operation.

5.0 ADMINISTRATIVE CONTROLS

5.1 Description of the Technical Requirements Manual (TRM)

As part of the implementation of the Restructured Standard Technical Specifications (RSTS), Watts Bar has relocated certain information from the 1985 Draft Technical Specifications to separate controlled documents based on the Westinghouse Owners Group MERITS Program, and the Commission's Interim Policy Statement for improvement of Technical Specifications for nuclear power plants (52 FR 3788 of February 6, 1987). The majority of relocated information is now contained in the Technical Requirements Manual (TRM). Other information has been relocated into Site Procedures or other programs such as the Offsite Dose Calculation Manual and the Process Control Program as permitted by generic guidance.

5.2 Use and Application

The rules for the use and applications of Logical Connectors, Completion Times, and Frequency are contained in the Technical Specifications, Section 1.0. These rules shall be followed in the TRM just as they are applied in the Technical Specifications.

5.3 2 Document Control

The TRM is considered a licensing basis document and as such, overall control of the document shall be in accordance with site procedures for document control. Distribution of the TRM is controlled by the Watts Bar Site Licensing Department. Licensing specifies the proper distribution for the TRM which includes those personnel/locations which receive the Technical Specifications as well as any other groups which need access to the information contained in the TRM. Changes to the TRM will be issued on a replacement page basis to controlled document holders following approval of the change in accordance with Site Procedures on Document Control.

5.4 3 Changes/Deletions to the TRM

Changes made at Watts Bar have the potential to affect (or be affected by) the TRM. These include items such as design modifications, procedure changes, other licensing document changes, etc. Changes to the TRM shall be controlled by procedure. Changes to the TRM shall be evaluated per the 10CFR50.59 program. This program requires that the TRM be considered in a manner similar to the FSAR when screening changes to determine if an unreviewed safety question might be involved.

Changes to the TRM will be reported to the NRC annually as part of the FSAR update. Related safety evaluations will be reported as part of the 10CFR50.59 annual report. Proposed TRM changes that are determined to constitute an unreviewed safety question (as defined by 10CFR50.59(a)(2)) will either not be made or will be submitted to the NRC for prior review and approval.

PROPOSED REVISION

B 3.0 will be revised consistent with Tech Specs and generic NUREG changes.

B 3.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES

TRs

TR 3.0.1 through TR 3.0.6 establish the general requirements applicable to all Technical Requirements in Chapter 3.0 and apply at all times, unless otherwise stated.

TR 3.0.1

TR 3.0.1 establishes the Applicability statement within each individual Requirement as the requirements for when the TR is required to be met (i.e., when the unit is in the MODES or other specified Conditions of the Applicability statement of each Requirement).

TR 3.0.2

TR 3.0.2 establishes that upon discovery of a failure to meet a TR, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of a TR are not met. This Requirement establishes that:

a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Technical Requirement; and

b. Completion of the Required Actions is not required when an TR is met within the specified Completion Time, unless otherwise specified.

There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the TR must be met. This time limit is the Completion Time to

(continued)

BASES

TRs

TR 3.0.2 (continued)

restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Requirement is not applicable. (Whether stated as a Required Action or not, correction of the entered condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, conformance to the Required Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when an TR is met or is no longer applicable, unless otherwise stated in the individual Technical Requirements.

The nature of some Required Actions of some conditions necessitates that, once the condition is entered, the Required Actions must be completed even though the Required Actions no longer exist. The individual TR's associated Conditions no longer exist. The individual TR's ACTIONS specify the Required Actions where this is the case. An example of this is in TR 3.4.2, "Pressurizer Temperature Limits."

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead. Doing so limits the time both subsystems/trains of a safety function are inoperable and limits the time other conditions exist which result in TR 3.0.3 being entered. Individual

(continued)

TRs

TR 3.0.2 (continued)

Requirements may specify a time limit for performing an TSR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are applicable when this time limit expires, if the equipment remains removed from service or bypassed.

When a change in MODE or other specified condition is required to comply with Required Actions, the unit may enter a MODE or other specified condition in which another Technical Requirement becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new Technical Requirement becomes applicable and the ACTIONS' Condition(s) are entered.

TR 3.0.3

TR 3.0.3 establishes the actions that must be implemented when an TR is not met; and

a. An associated Required Action and Completion Time is not met and no other Condition applies; or

b. The Condition of the unit is not specifically addressed by the associated ACTIONS. This means that no combination of Conditions stated in the ACTIONS can be made that exactly corresponds to the actual condition of the unit. Sometimes, possible combinations of Conditions are such that going to TR 3.0.3 is warranted; in such cases, the ACTIONS specifically state a Condition corresponding to such combinations and also that TR 3.0.3 be entered immediately.

This Requirement delineates the time limits for placing the unit in a safe MODE or other specified Condition when operation cannot be maintained within the limits for safe operation as defined by the TR and its ACTIONS. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or

(continued)

TRs

TR 3.0.3 (continued)

components from service in lieu of other alternatives that would not result in redundant systems or components being inoperable.

Upon entry into TR 3.0.3, 1 hour is allowed to prepare for an orderly shutdown before initiating a change in unit operation. This includes time to permit the operator to coordinate the reduction in electrical generation with the load dispatcher to ensure the stability and availability of the electrical grid. The time limits specified to reach lower MODES of operation permit the shutdown to proceed in a controlled and orderly manner that is well within the specified maximum cool-down rate and within the capabilities of the unit, assuming that only the minimum required equipment is OPERABLE. This reduces thermal stresses on components of the Reactor Coolant System (RCS) and the potential for a plant upset that could challenge safety systems under conditions to which this Requirement applies. The use and interpretation of specified times to complete the actions of TR 3.0.3 is consistent with the discussion of Technical Specification 1.3, "Completion Times."

A unit shutdown required in accordance with TR 3.0.3 may be terminated and TR 3.0.3 exited if any of the following occurs:

a. The TR is now met;

b. A Condition exists for which the Required Actions have now been performed.

c. ACTIONS exist which do not have expired Completion Times. These Completion Times are applicable from the point in time that the Condition was initially entered and not from the time TR 3.0.3 is exited.

The time limits of Technical Requirement 3.0.3 allow 37 hours for the unit to be in MODE 5 when a shutdown is required during MODE 1 operation. If the unit is in a lower MODE of operation when a shutdown is required, the time

(continued)

TRs

TR 3.0.3 (continued)

limit for reaching the next lower MODE applies. If a lower MODE is reached in less time than allowed, however, the total allowable time to reach MODE 5, or other applicable MODE, is not reduced. For example, if MODE 3 is reached in 2 hours, then the time allowed for reaching MODE 4 is the next 11 hours, because the total time for reaching MODE 4 is not reduced from the allowable limit of 13 hours. Therefore, if remedial measures are completed that would permit a return to MODE 1, a penalty is not incurred by having to reach a lower MODE of operation in less than the total time allowed.

In MODES 1, 2, 3, and 4, TR 3.0.3 provides actions for Conditions not covered in other Requirements. The requirements of TR 3.0.3 do not apply in MODES 5 and 6 because the unit is already in the most restrictive Condition required by TR 3.0.3. The requirements of TR 3.0.3 do not apply in other specified Conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Requirements sufficiently define the remedial measures to be taken.

The exceptions to TR 3.0.3 are provided in instances where requiring a unit shutdown in accordance with TR 3.0.3, would not provide appropriate remedial measures for the associated condition of the unit. An example of this is in TR 3.3.4, "Seismic Instrumentation". TR 3.3.4 has an Applicability of "At all times". Therefore, this TR can be applicable in any or all MODES. If the TR and the Required Actions of TR 3.3.4 are not met while in MODES 1, 2, or 3, there is no safety benefit to be gained by placing the unit in a shutdown condition. The Required Actions are the appropriate Required Actions to complete in lieu of the ACTIONS of TR 3.0.3. These exceptions are addressed in the individual Requirements.

TR 3.0.4

TR 3.0.4 establishes limitations on changes in MODES or other specified Conditions in the Applicability when a TR is

(continued)

BASES

TRs

TR 3.0.4 (continued)

not met. It precludes placing the unit in a different MODE or other specified condition when the following exist:

a. The requirements of a TR, in the MODE or other specified condition to be entered, are not met; or

b. Continued noncompliance with these TR requirements would result in the unit being required to be placed in a MODE or other specified condition in which the TR does not apply to comply with the Required Actions.

Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in an applicable MODE or other specified condition provides level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Technical Requirement should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before unit startup.

The provisions of TR 3.0.4 shall not prevent changes in MODES or other specified Conditions in the Applicability which are required to comply with ACTIONS. In addition, the provision of TR 3.0.4 shall not prevent changes in MODES or other specified Conditions in the Applicability that result from a normal shutdown.

Exceptions to TR 3.0.4 are stated in the individual Technical Requirements. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Requirement.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by TSR 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, either in compliance with TR 3.0.4, or

(continued)

BASES

TRs

TR 3.0.4 (continued)

where an exception to TR 3.0.4 is stated, is not a violation of TSR 3.0.1 or TSR 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, TSRs must be met to assure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected TR.

TR 3.0.5

TR 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The purpose of this Requirement is to provide an exception to TR 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of TSRs to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed TSRs. This requirement does not provide time to perform any other preventative or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is the reopening of a containment isolation valve that has been closed to comply with Required Actions, and must be reopened to perform the TSRs.

An example of demonstrating the OPERABILITY of other equipment is the taking of an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of a TSR on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is the taking of an inoperable channel or trip system out of the

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BASES

TRs

TR 3.0.5 (continued)

tripped condition to permit the logic to function and indicate the appropriate response during the performance of a TSR on another channel in the same trip system.

TR 3.0.6

TR 3.0.6 establishes an exception to TR 3.0.2 for support systems that have an TR specified in the Technical Requirements. This exception is provided because TR 3.0.2 would require that the Conditions and Required Actions of the associated inoperable supported system TR be entered solely due to the inoperability of the support system. This exception is justified because the actions that are required to ensure the unit is maintained in a safe condition are specified in the support system TRs Required Actions. These Required Actions may include entering the supported systems Conditions and Required Actions or may specify other Required Actions.

When a support system is inoperable and there is an TR specified for it in the Technical Requirements, the supported system is not required to be declared inoperable solely as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do so by the support systems Required Actions. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported system's TR Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the unit is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some

(continued)

BASES

TRs

TR 3.0.6 (continued)

other required action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with TR 3.0.2.

Technical Specification 5.8, "Safety Function Determination Program" (SFDP), ensures loss of safety function is detected and appropriate actions are taken. Upon failure to meet two or more TRs concurrently, an evaluation shall be made to determine if loss of safety function exists. Additionally, other limitations, remedial actions, or compensatory actions may be identified as a result of the support system inoperability and corresponding exception to entering supported system Conditions and Required Actions. The SFDP implements the requirements of TR 3.0.6.

Cross-train checks to identify a loss of safety function for those support systems that support safety systems are required. The cross-train check verifies that the supported systems of the redundant OPERABLE support system are OPERABLE, thereby ensuring safety function is retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of the TR in which the loss of safety function exists are required to be entered.

TSRs

TSR 3.0.1 through TSR 3.0.4 establish the general requirements applicable to all Technical Surveillance Requirements in Chapter 3.0 and apply at all times unless otherwise stated.

TSR 3.0.1

TSR 3.0.1 establishes the requirement that TSRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the TR apply,

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BASES

TSRs

TSR 3.0.1 (continued)

unless otherwise specified in the individual TSRs. This Requirement is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Technical Surveillance Requirement within the specified Frequency, in accordance with TSR 3.0.2, constitutes a failure to meet a TR.

Systems and components are assumed to be OPERABLE when the associated TSRs have been met. Nothing in this Requirement, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the TSRs; or

b. The requirements of the Surveillance(s) are known to be not met between required Surveillance performances.

Technical Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated TR are not applicable, unless otherwise specified.

Surveillances, including Surveillances invoked by Required Actions, do not have to be performed on inoperable equipment because the ACTIONS define the remedial measures that apply. TSRs have to be performed and met in accordance with TSR 3.0.2, prior to returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes assuring applicable TSRs are not failed and their most recent performance is in accordance with TSR 3.0.2. Post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not

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BASES

TSRs

TSR 3.0.1 (continued)

otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed.

TSR 3.0.2

TSR 3.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per . . ." interval.

TSR 3.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the TSRs. The exceptions to TSR 3.0.2 are those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual Requirements. An example of where TSR 3.0.2 does not apply is a Surveillance with a Frequency of "in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions." The requirements of regulations take precedence over the TRs. The TRs cannot in and of themselves extend a test interval specified in the regulations. Therefore, there is a Note in the Frequency stating, "TSR 3.0.2 is not applicable."

As stated in TSR 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per . . ." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some

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BASES (continued)

TSRs

TSR 3.0.2 (continued)

other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of TSR 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals or periodic Completion Time intervals beyond those specified.

TSR 3.0.3

TSR 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours, or up to the limit of the specified Frequency, whichever is less, applies from the point in time that it is discovered that the Surveillance has not been performed, in accordance with TSR 3.0.2, and not at the time that the specified Frequency was not met.

This delay period provides an adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that may preclude completion of the Surveillance.

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, and the safety significance of the delay in completing the required Surveillance and the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the TSRs.

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions or operational situations, is discovered not to have been performed when specified, TSR 3.0.3 allows the full 24-hour delay period in which to perform the Surveillance.

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BASES

TSRs

TSR 3.0.3 (continued)

TSR 3.0.3 also provides a time limit for completion of Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for TSRs is expected to be an infrequent occurrence. Use of the delay period established by TSR 3.0.3 is a flexibility which is not intended to be used as an operational convenience to extend Surveillance intervals.

If a Surveillance is not completed within the allowed delay period, the equipment is considered inoperable or the variable is considered outside the specified limits and the

Completion Times of the Required Actions for the applicable TR Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable TR Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Requirement, or within the Completion Time of the ACTIONS, restores compliance with TSR 3.0.1.

TSR 3.0.4

TSR 3.0.4 establishes the requirement that all applicable TSRs must be met before entry into a MODE or other specified condition in the Applicability.

This Requirement ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit. This Requirement applies to changes in MODES or other specified conditions in the Applicability associated with unit shutdown as well as startup.

The provisions of TSR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

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BASES

TSRs

TSR 3.0.4 (continued)

The precise requirements for performance of TSRs are specified such that exceptions to TSR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the TSRs are specified in the Frequency, in the Surveillance or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated TR prior to the performance or completion of a Surveillance. A Surveillance, which could not be performed until after entering the TR Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of TSR annotation are found in Technical Specification 1.4, Frequency.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.1 Boration Systems Flow Paths, Shutdown

BASES

BACKGROUND

The boration injection system is a subsystem of the Chemical and Volume Control System (CVCS). The CVCS regulates the concentration of chemical neutron absorber (boron) in the reactor coolant to control reactivity changes. The boration system ensures that negative reactivity control is available during each mode of facility operation. The amount of boric acid stored in the borated water sources always exceeds the amount required to borate the Reactor Coolant System (RCS) to cold shutdown concentration assuming that the control assembly with the highest reactivity worth is stuck in its fully withdrawn position. This amount of boric acid also exceeds the amount required to bring the reactor to hot shutdown and to compensate for subsequent xenon decay.

The components required to perform this function include: (1) borated water sources, (2) charging pumps, (3) separate flow paths, (4) boric acid transfer pumps, (5) associated heat tracing systems, and (6) an emergency power supply from OPERABLE diesel generators. The boration system technical requirements place limitations on the contained water volume, boron concentration, and temperature of both the Refueling Water Storage Tank (RWST) and Boric Acid Storage System. For MODES 5 and 6, the boron capability is necessary to provide a sufficient SDM to compensate for xenon decay and cooldown from 200°F to 140°F. For MODES 1, 2, 3, and 4, the boron capability is necessary to provide a sufficient SDM to compensate for xenon decay and cooldown to 200°F.

During reactor operation, changes are made in the reactor coolant boron concentration for the following conditions:

1. Reactor Startup - boron concentration must be decreased from shutdown concentration to achieve criticality.

2. Load Follow - boron concentration must be either increased or decreased to compensate for the xenon transient following a change in load.

(continued)

BASES

BACKGROUND (continued)

3. Fuel Burnup - boron concentration must be decreased to compensate for fuel burnup and the buildup of fission products in the fuel.

4. Cold Shutdown - boron concentration must be increased to the cold shutdown concentration.

Boric acid is stored in three boric acid tanks. Two boric acid transfer pumps are provided for each unit with one pump normally aligned with one boric acid tank and continuously running at low speed to provide recirculation for the boric acid system and the boric acid tank. On a demand signal by the reactor makeup control system, the boric acid transfer pump is shifted to high speed and delivers boric acid to the suction header of the charging pumps (Ref. 1).

APPLICABLE SAFETY ANALYSES

The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the CVCS, which causes a boron dilution event, the response required by the operator is to close the appropriate valves in the reactor makeup system and/or stop the primary water pumps. This action is required before the shutdown margin is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 2). OPERABILITY of the charging pumps, the RWST, and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components.

TR

TR 3.1.1 requires at least one boron injection flow path to be OPERABLE and capable of being powered from an OPERABLE emergency power source during MODES 4 (at or below 310 °F), 5, and 6 in order to provide a path to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations. This requirement may be achieved by meeting one of the following two conditions:

a. A flow path from an OPERABLE boric acid storage tank, through the boric acid transfer pump, through a charging pump to the RCS, or

(continued)

BASES

TR (continued)

b. A flow path from an OPERABLE RWST through a charging pump to the RCS.

APPLICABILITY

The OPERABILITY of one boron injection flow path ensures that this system is available for reactivity control while in MODES 4 (at or below 310 °F in any RCS cold leg), 5, and 6.

Boron injection flow paths for MODES 1, 2, 3, and 4 (above 310 °F in all RCS cold legs) are covered in Technical Requirement 3.1.2, "Boration Systems Flow Paths, Operating".

ACTIONS

A.1 and A.2

With the Boration Systems flow path OPERABILITY requirements not met, or the Boration Systems flow path not capable of being powered by an OPERABLE emergency power source, the plant must be placed in a condition where negative reactivity addition is not required. This is accomplished by suspending all CORE ALTERATIONS and positive reactivity additions immediately. One boron injection flow path is required to meet the TR and to ensure that negative reactivity control is available during MODES 4 (at or below 310 °F), 5, and 6. Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition.

The immediate Completion Time is consistent with the required times for actions to be performed without delay and in a controlled manner.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.1.1

This surveillance verifies the temperature of the heat traced portion of the flow path to be ≥ 145°F. This ensures that the high concentration of boric acid in the storage tanks is not allowed to precipitate due to cooling.

The Surveillance is modified by a note stating that the surveillance is required only if a flow path from the boric

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

acid storage tanks is required OPERABLE. The frequency of 7 days is considered reasonable in view of the redundant heat tracing systems and has been shown to be acceptable by operating experience.

TSR 3.1.1.2

This surveillance verifies that each manual, power operated, or automatic valve in the required OPERABLE flow path that is not locked, sealed, or otherwise secured in position is in its correct position. The Frequency of 31 days is based on engineering judgement. This Frequency has been shown to be acceptable through operating experience.

REFERENCES

1. Watts Bar FSAR, Section 9.3.4, "Chemical and Volume Control System."
2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.2 Boration Systems Flow Paths, Operating

BASES

BACKGROUND	A description of the Boration Systems Flow Paths is provided in the Bases for Technical Requirement 3.1.1, "Boration Systems Flow Paths, Shutdown."
APPLICABLE SAFETY ANALYSES	The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the Chemical and Volume Control System, which causes a boron dilution event, the response required by the operator is to close the appropriate valves in the reactor makeup system and/or stop the primary water pumps. This action is required before the shutdown margin is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 1). OPERABILITY of the charging pumps, the Refueling Water Storage Tank (RWST), and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components.
TR	TR 3.1.2 requires at least two boron injection flow paths to be OPERABLE during MODES 1, 2, 3, and 4 (above 310 °F) in order to provide two redundant paths to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations. This requirement may be achieved by having two of the following three flow paths OPERABLE: a. One flow path from the boric acid storage tanks, through a boric acid transfer pump, through a charging pump to the Reactor Coolant System (RCS). b. Two flow paths from the RWST, through a charging pump to the RCS.

(continued)

BASES (continued)

APPLICABILITY

The OPERABILITY of two boron injection flow paths ensures that this system is available for reactivity control while in MODES 1, 2, 3, and 4 (when all RCS cold leg temperatures are > 310 °F). Two flow paths are required to ensure single functional capability in the event an assumed failure renders one of the flow paths inoperable.

Boron injection flow paths for MODES 4 (with any RCS cold leg temperatures ≤ 310 °F), 5, and 6 are covered in Technical Requirement 3.1.1, "Boration Systems Flow Paths, Shutdown".

ACTIONS

A.1

If one of the required boron injection flow paths is inoperable, action must be taken to restore the required flow path to OPERABLE status. The 72-hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE flow path and reasonable time for repairs. The Completion Time is consistent with the time allowed to restore an ECCS train to OPERABLE status (see Technical Specification 3.5.2, "ECCS-Operating").

A.2.1, A.2.2, and A.2.3

An alternative to Required Action A.1 is to place the plant in MODE 3 and borate to a SDM equivalent to ≥ 1% $\Delta k/k$ at 200°F within 78 hours, and restore the required flow path to OPERABLE status within 246 hours. This precludes the need for a flow path for load follow and fuel burnup compensation, allowing the additional 7 days to restore two flow paths to OPERABLE status. An additional 6 hours (78 hours total) are allowed to reach MODE 3 from full power in an orderly manner and without challenging plant systems. The allowed Completion Time to reach MODE 3 is reasonable, based on operating experience.

B.1

If the required flow path cannot be restored to OPERABLE status or the Required Action of Condition A are not met within the associated Completion Times, the unit must be placed in a MODE in which the TR does not apply. This is done by placing the unit in at least MODE 4 below 310 °F within ~~30~~ 6 hours. The allowed Completion Time is reasonable, based on operating experience, to reach required plant conditions in an orderly manner and without challenging plant systems.

PROPOSED REVISION

(continued)

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.2.1

This surveillance verifies the temperature of the heat traced portion of the required flow path from the boric acid tanks to be at least 145°F. This ensures that the high concentration of boric acid in the storage tanks is not allowed to precipitate due to cooling.

The surveillance is modified by a note stating that the surveillance is required only if the flow path from the boric acid storage tanks is used as one of the two required flow paths. The Frequency of 7 days is considered reasonable in view of the redundant Heat Tracing Systems and has been shown to be acceptable by operating experience.

TSR 3.1.2.2

This surveillance verifies, for the required OPERABLE flow paths, that each manual, power operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position. The Frequency of 31 days is based on engineering judgement. This frequency has been shown to be acceptable through operating experience.

TSR 3.1.2.3

This surveillance demonstrates that each automatic valve in the flow path actuates to its required position on an actual or simulated actuation signal. The 18-month Frequency was developed considering it is prudent that this surveillance only be performed during a plant outage. This is due to the plant conditions needed to perform the TSR and the potential for unplanned plant transients if the TSR is performed with the reactor at power.

TSR 3.1.2.4

Verification that the flow path from the boric acid tanks delivers at least 10 gpm to the RCS demonstrates that gross degradation of the boric acid transfer pumps, crystallization of boric acid in the system, and other hydraulic component problems have not occurred.

(continued)

PROPOSED REVISION

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

The surveillance is modified by a Note stating that the surveillance is required only if the flow path from the boric acid storage tanks is used as one of the two required flow paths. The 18-month Frequency was developed considering it is prudent that this surveillance only be performed during a plant outage. This is due to the plant conditions needed to perform the TSR and the potential for unplanned plant transients if the TSR is performed with the reactor at power.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.3 Charging Pump, Shutdown

BASES

BACKGROUND	A description of the Boration Systems Flow Paths, which include charging pumps, is provided in the Bases for Technical Requirement 3.1.1, "Boration Systems Flow Paths, Shutdown."
APPLICABLE SAFETY ANALYSES	The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the Chemical and Volume Control System, which causes a boron dilution event, the response required by the operator is to close the appropriate valves in the reactor makeup system and/or stop the primary water pumps. This action is required before the SDM is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 1). OPERABILITY of the charging pumps, the refueling water storage tank, and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components. Technical Specification 3.4.12, "Cold Overpressure Mitigation System", places restrictions on maximum number of charging pumps allowed OPERABLE for overpressure concerns.
TR	TR 3.1.3 requires one charging pump in the required boron injection flow path to be OPERABLE and capable of being powered from an OPERABLE emergency power source during MODES 4 (at or below 310 °F), 5, and 6 in order to provide the driving force to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations.
APPLICABILITY	The OPERABILITY of one charging pump in the required boron injection flow path ensures that this system is available for reactivity control while in MODES 4 (with any RCS cold leg temperature ≤ 310 °F), 5, and 6. Charging pump OPERABILITY requirements for MODES 1, 2, 3, and 4 (when all RCS cold leg temperatures are > 310 °F) are covered in Technical Requirement 3.1.4, "Charging Pumps - Operating."

(continued)

BASES (continued)

ACTIONS

A.1 and A.2

With the required charging pump inoperable or not capable of being powered by an OPERABLE emergency power source, the plant must be placed in a condition where negative reactivity addition is not required. This is accomplished by suspending all CORE ALTERATIONS and positive reactivity additions immediately. One OPERABLE charging pump in the required boron injection flow path is required to meet the TR and to ensure that negative reactivity control is available during Modes 4 (at or below 310 °F), 5, and 6. Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.3.1

Periodic surveillance testing of charging pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is performed in accordance with Section XI of the American Society of Mechanical Engineers (ASME) Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. SRs are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and Frequencies necessary to satisfy the requirements.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.4 Charging Pumps, Operating

BASES

BACKGROUND

A description of the Boration Systems Flow Paths is provided in the Bases for Technical Requirement 3.1.1, "Boration Systems Flow Paths, Shutdown."

APPLICABLE SAFETY ANALYSES

The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the Chemical and Volume Control System (CVCS), which causes a boron dilution event, the response required by the operator is to close the appropriate valves in the reactor makeup system and/or stop the primary water pumps. This action is required before the shutdown margin is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 1). OPERABILITY of the charging pumps, the refueling water storage tank, and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components.

TR

TR 3.1.4 requires at least two charging pumps to be OPERABLE during MODES 1, 2, 3, and 4 (above 310 °F) in order to assure redundant pumps to the two redundant flow paths to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations.

APPLICABILITY

The OPERABILITY of two charging pumps ensures that the CVCS system is available for reactivity control while in MODES 1, 2, 3, and 4 when all RCS cold leg temperatures are > 310 °F. Two charging pumps are required to ensure single functional capability in the event an assumed failure renders one of the pumps inoperable.

Charging pump OPERABILITY requirements for MODES 4 (with any RCS cold leg temperature ≤ 310 °F), 5, and 6 are covered in Technical Requirement 3.1.3, "Charging Pumps - Shutdown".

(continued)

BASES (continued)

ACTIONS

A.1

If one of the required charging pumps is inoperable, action must be taken to restore a required charging pump to OPERABLE status. The 72-hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE charging pump and reasonable time for repairs. The Completion Time is consistent with the time allowed to restore an ECCS train or to restore a boron injection flow path to OPERABLE status (see Technical Specification 3.5.2, "ECCS-Operating" and Technical Requirement 3.1.2, "Boration Systems Flow Paths, Operating").

A.2.1, A.2.2, and A.2.3

An alternative to Required Action A.1 is to place the plant in MODE 3 and borate to a SDM equivalent to $\geq 1\% \Delta k/k$ at 200°F within 78 hours, and restore the required charging pump to OPERABLE status within 246 hours. This precludes the need for a flow path/charging pump for load follow and fuel burnup compensation, allowing the additional 7 days to restore two charging pumps to OPERABLE status. An additional 6 hours (78 hours total) are allowed to reach MODE 3 from full power in an orderly manner and without challenging plant systems. The allowed Completion Time to reach MODE 3 is reasonable, based on operating experience.

B.1

PROPOSED REVISION

If two charging pumps cannot be restored to OPERABLE status or the Required Actions of Condition A are not met within the associated Completion Times, the plant must be placed in a MODE in which the TR does not apply. This is done by placing the plant in at least MODE 4 (at or below 310 °F) within ~~30~~ 6 hours. The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions in an orderly manner and without challenging plant systems.

(continued)

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.4.1

Periodic surveillance testing of charging pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is performed in accordance with Section XI of the American Society of Mechanical Engineers (ASME) Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. SRs are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and Frequencies necessary to satisfy the requirements.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEM

B 3.1.5 Borated Water Sources, Shutdown

BASES

BACKGROUND

A description of the Boration System Flow Paths, which include borated water sources is provided in the Bases for Technical Requirement 3.1.1, "Boration System Flow Paths, Shutdown."

APPLICABLE SAFETY ANALYSES

The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the Chemical and Volume Control System which causes a boron dilution event, the response required by the operator is to close the appropriate valves in the reactor makeup system and/or stop the primary water pumps. This action is required before the SDM is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 1). OPERABILITY of the charging pumps, the Refueling Water Storage Tank (RWST), and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components.

TR

TR 3.1.5 requires at least one borated water source to be OPERABLE during MODES 4 (at or below 310 °F) 5 and 6 to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations. This requirement may be achieved by one of the following being OPERABLE as required by TR 3.1.1:

a. A Boric Acid Storage System (BASS) and one associated heat tracing system; or

b. The RWST.

(continued)

BASES (continued)

APPLICABILITY

The OPERABILITY of one borated water source in the required boron injection flow path ensures that this system is available for reactivity control while in MODE 4 with any RCS cold leg temperature ≤ 310 °F, and MODES 5 and 6.

Borated water source OPERABILITY requirements for MODES 1, 2, 3, and 4 (when all RCS cold leg temperatures exceed 310 °F) are covered in Technical Requirement 3.1.6, "Borated Water Sources, Operating."

ACTIONS

A.1 and A.2

If the required borated water source is inoperable, the plant must be placed in a condition where negative reactivity addition is not required. This is accomplished by suspending all CORE ALTERATIONS and positive reactivity additions immediately. One borated water source is required to meet the TR and to ensure that negative reactivity control is available during MODES 4 (at or below 310 °F), 5, and 6. Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition.

The immediate Completion Time is consistent with the required times for actions requiring prompt attention.

TECHNICAL SURVEILLANCE REQUIREMENTS

The Notes in the Technical Surveillance Requirements state that TSR 3.1.5.1, TSR 3.1.5.2, and TSR 3.1.5.3 are only required to be performed if the RWST is the required borated water source, and TSR 3.1.5.4, TSR 3.1.5.5, and TSR 3.1.5.6 are only required to be performed if the BASS is the required borated water source.

TSR 3.1.5.1

This surveillance requires verification every 24 hours that the RWST temperature is greater than or equal to 60°F. The Frequency of 24 hours for performance of the surveillance is frequent enough to identify a temperature change that would approach the 60°F temperature limit and has been shown to be acceptable through operating experience.

(continued)

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

The TSR is modified by a Note which eliminates the requirement to perform this surveillance when ambient air temperature is greater than or equal to 60°F. With ambient air temperature greater than 60°F, the RWST solution temperature should not exceed this limit, therefore, monitoring is not required.

TSR 3.1.5.2

This surveillance requires verification every 7 days that the boron concentration of the RWST is at least 2,000 ppm. This boron concentration is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the RWST volume is normally stable, a 7-day Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

TSR 3.1.5.3

This surveillance requires verification every 7 days that the RWST borated water volume is at least 36,619 gallons. This borated water volume is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the RWST volume is normally stable, a 7-day Frequency to verify borated water volume is appropriate and has been shown to be acceptable through operating experience.

TSR 3.1.5.4

This surveillance requires verification every 7 days that the Boric Acid Tank (BAT) solution temperature is at least 145°F. This ensures that the high concentration of boric acid in the BAT is not allowed to precipitate due to cooling. The Frequency of 7 days for performance of the surveillance is frequent enough to identify a temperature change that would approach the 145°F temperature limit, considering the availability of redundant heat trace circuits, and has been shown to be acceptable through operating experience.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.1.5.5

This surveillance requires verification every 7 days that the boron concentration of the BAT is between 20,500 ppm and 22,500 ppm. This boron concentration is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the BAT volume is normally stable, a 7-day Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

TSR 3.1.5.6

This surveillance requires verification every 7 days that the BAT borated water volume is at least 2,492 gallons. This borated water volume is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the BAT volume is normally stable, a 7-day Frequency to verify borated water volume is appropriate and has been shown to be acceptable through operating experience.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEM

B 3.1.6 Borated Water Sources, Operating

BASES

BACKGROUND

A description of the Boration System Flow Paths, which include borated water sources is provided in the Bases for Technical Requirement 3.1.1, "Boration System Flow Paths, Shutdown."

APPLICABLE SAFETY ANALYSES

The boration subsystem is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. In the case of a malfunction of the Chemical and Volume Control System, which causes a boron dilution event, the automatic response, or that required by the operator, is to close the appropriate valves in the reactor makeup system. This action is required before the SDM is lost. Operation of the boration subsystem is not assumed to mitigate this event (Ref. 1). OPERABILITY of the charging pumps, the RWST, and the appropriate flow paths is required as part of the Emergency Core Cooling System (ECCS). The Technical Specifications for the ECCS address the requirements of these components.

TR

TR 3.1.6 requires a Boric Acid Storage System (BASS) and associated Heat Tracing System to be OPERABLE, and the Refueling Water Storage Tank (RWST) to be OPERABLE as required by TR 3.1.2. This is a requirement during MODES 1, 2, 3, and 4 (above 310 °F) to accomplish (1) normal makeup, (2) chemical shim reactivity control, and (3) miscellaneous fill and transfer operations.

APPLICABILITY

The OPERABILITY of borated water sources (as required by TR 3.1.2) in the required boron injection flow path ensures that this system is available for reactivity control while in MODES 1, 2, 3, and 4 when all RCS cold leg temperatures are > 310 °F.

Borated water source OPERABILITY requirements for MODES 4 (with any RCS cold leg temperature ≤ 310 °F), 5 and 6 are covered in Technical Requirement 3.1.5, "Borated Water Sources, Shutdown."

(continued)

BASES (continued)

ACTIONS

A.1, A.2.1, A.2.2, and A.2.3

With the BASS inoperable, action must be taken to restore the BASS to OPERABLE status within 72 hours. The Completion Time of 72 hours to perform Required Action A.1 is reasonable based upon the typical time necessary to effect repairs and the redundant capabilities afforded by the OPERABLE borated water source.

If the BASS cannot be restored to OPERABLE status the plant must be placed in a MODE in which the requirement does not apply. This is done by placing the plant in at least MODE 3 and by borating to a SDM equivalent to at least 1% Δk/k at 200°F in 6 additional hours (78 hours total time). It is also required that the BASS be restored to OPERABLE status in an additional 7 days (246 hours total time).

The 6 additional hours to perform Required Actions A.2.1 and A.2.2 are reasonable and based on operating experience to reach MODE 3 and the required SDM from full power operation in an orderly manner and without challenging plant systems. The 7 day Completion Time per Required Action A.2.3 is based on the low probability of an event occurring during this time period, and the consideration that the remaining borated water sources can provide the required capability.

B.1

If the Required Actions and associated Completion Times of Condition A are not met, the plant must be placed in a MODE in which the TR does not apply. This is done by placing the plant in MODE 4 (at or below 310 °F) within ~~30~~ 6 hours. The allowed Completion Time is reasonable and based on operating experience to reach required plant conditions in an orderly manner and without challenging plant systems.

PROPOSED REVISION

C.1

With the RWST boron concentration or borated water temperature not within limits, action must be taken within 8 hours to restore the RWST to OPERABLE status. This 8-hour limit was developed considering the time required to change either the boron concentration or water temperature. The Completion Time is consistent with Technical Specification 3.5.4, "Refueling Water Storage Tank".

(continued)

BASES

ACTIONS (continued)

D.1

With the RWST inoperable for reasons other than Condition B (e.g. water volume), it must be restored to OPERABLE status within 1 hour. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting two of the boration system flow paths. The Completion Time is consistent with Technical Specification 3.5.4, "Refueling Water Storage Tank."

PROPOSED REVISION

E.1 and E.2

If the Required Actions and associated Completion Times of Condition C or D are not met, the plant must be placed in a MODE in which the TR does not apply. This is done by placing the plant in MODE 3 within 6 hours and in MODE 4 (at or below 310 °F) within the next ~~30~~ 12 hours. The allowed Completion Time is reasonable and based on operating experience to reach required plant conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.6.1

This surveillance requires verification every 24 hours that the RWST borated water temperature is within the limits assumed in the accident analysis band. This is frequent enough to identify a temperature change that would approach either temperature limit and has been shown to be acceptable through operating experience.

The TSR is modified by a Note which eliminates the requirement to perform this surveillance when ambient air temperatures are within the operating limits of the RWST. With ambient air temperatures within the band, the RWST solution temperature should not exceed the limits.

TSR 3.1.6.2

This surveillance requires verification every 7 days that the boron concentration of the RWST is within the required band. This ensures the reactor will remain subcritical following a LOCA. Further, it assures that the resulting sump pH will be maintained in an acceptable range so that boron precipitation in the core will not occur and the effect of chloride and caustic stress corrosion on

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.6.2 (continued)

mechanical systems and components will be minimized. Since the RWST volume is normally stable, a 7-day Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

TSR 3.1.6.3

This surveillance requires verification every 7 days that the RWST borated water volume is within the required limit. This will ensure that a sufficient initial supply is available for injection and to support continued ECCS and Containment Spray System pump operation on recirculation. Since the RWST volume is normally stable, a 7-day Frequency to verify borated water volume is appropriate and has been shown to be acceptable through operating experience.

TSR 3.1.6.4

This surveillance requires verification every 7 days that the Boric Acid Tank (BAT) solution temperature is at least 145°F. This ensures that the high concentration of on boric acid in the BAT is not allowed to precipitate due to cooling. The Frequency of 7 days for performance of the surveillance is frequent enough to identify a temperature change that would approach the 145°F temperature limit (considering the availability of redundant heat trace circuits) and has been shown to be acceptable through operating experience.

TSR 3.1.6.5

This surveillance requires verification every 7 days that the boron concentration of the BAT is between 20,500 ppm and 22,500 ppm. This boron concentration is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the BAT volume is normally stable, a 7-day sampling Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

This surveillance has been modified by a NOTE stating that the surveillance is only required if the BAT is used as one of the required borated water sources for TR 3.1.2.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.1.6.6

This surveillance requires verification every 7 days that the BAT borated water volume is at least 8,199 gallons. This borated water volume is sufficient to provide an adequate SDM and also ensure a pH value between 8.0 and 10.5. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. Since the BAT volume is normally stable, a 7-day Frequency to verify borated water volume is appropriate and has been shown to be acceptable through operating experience.

This surveillance has been modified by a NOTE stating that the surveillance is only required if the BAT is used as one of the required borated water sources for TR 3.1.2.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.7 Position Indication System, Shutdown

BASES

BACKGROUND

Instrumentation to monitor variables and systems over their operating ranges during normal operation, anticipated operational occurrences, and accident conditions must be OPERABLE. TR 3.1.7 is required to ensure OPERABILITY of the control rod group demand position indicators to determine control rod positions of rod groups not fully inserted with the Reactor Trip System breakers in the closed position.

The OPERABILITY, including group demand position indication, of the shutdown and control rods are initial assumptions in all safety analyses that assume rod insertion upon reactor trip. Rod position indication is required to assess OPERABILITY and misalignment. These safety analyses are not applicable to shutdown conditions. Rod Drop Times and other tests requiring control rod operability, however, are performed at shutdown. Additionally, positive reactivity addition due to rod withdrawal must be compensated for by boron addition. Rod positions are monitored and controlled when withdrawn during shutdown conditions to ensure shutdown margin is maintained. The axial position of shutdown rods and control rods is determined by the group demand position indicators.

The group demand position indicators count the pulses generated in the Rod Control System to provide a readout of the demand bank position (Ref. 1). There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move and should, therefore, all be at the same position indicated by the group step counter for that group. The group demand position indicators are considered highly precise ($\pm$ 1 step or $\pm \frac{5}{8}$ inch). If a rod does not move 1 step for each demand pulse, the step counter will still count the pulse and incorrectly reflect the position of the rod.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The rod Position Indication System is a system which provides information to the operator which could be used to initiate operator action. However, no DBA or Transient assumes operator action to manually trip the reactor, or to take some alternative action if an automatic reactor trip does not occur (Ref. 2). Hence, the shutdown and control rods, including position indication, are not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient during shutdown conditions. Positive reactivity addition due to withdrawal of control rods is compensated for by boron concentration.

TR

TR 3.1.7 specifies that the group demand position indicators be OPERABLE and capable of determining within ± 2 steps the demand position for each shutdown or control rod not fully inserted. For the control rod position indicators to be OPERABLE requires meeting the surveillance requirement of the TR. This requirement provides adequate assurance that control rod position indication during shutdown conditions and rod testing is accurate, and that design assumptions are not challenged. OPERABILITY of the required position indicators ensures that inoperable, misaligned, or mispositioned control rods can be detected.

APPLICABILITY

This TR covers only the requirements on Rod Position Indication during MODES 3, 4, and 5 with the reactor trip breakers closed. Rod Position Indication during MODES 1 and 2 are covered by Technical Specification 3.1.8. In MODE 6 and in MODES 3, 4, and 5 with trip breakers open or all rods on the bottom, Rod Position Indication is not required to be OPERABLE. Rod Position Indication OPERABILITY is required only when rods are withdrawn from fully inserted.

(continued)

BASES (continued)

ACTIONS

A.1

With one or more group demand position indicators inoperable, the plant must be placed in a condition where the demand position indicators are not required. This is accomplished by opening the reactor trip breakers immediately.

The immediate Completion Time is consistent with the required time for actions to be pursued without delay and in a controlled manner.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.1.7.1

Exercising rods at a Frequency of 31 days allows the operator to determine that all withdrawn rods, including the group step counter demand position indicator, continue to be OPERABLE. A movement of 10 steps is adequate to demonstrate motion and verify a corresponding step change in the group step counter demand position indicator. The 31-day Frequency takes into consideration other information available to the operator in the control room and the remote likelihood that rods would be withdrawn from fully inserted for extended periods of time during shutdown conditions.

REFERENCES

1. Watts Bar FSAR, Section 4.2.3 "Reactivity Control System."

2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Trip Instrumentation

BASES

BACKGROUND

A reactor trip signal acts to open two trip breakers connected in series, feeding power to the control rod drive mechanisms. The loss of power to the mechanism coils causes the mechanisms to release the rod cluster control assemblies which then fall by gravity into the core. There are various instrumentation delays associated with each trip function, including delays in signal actuation, in opening the trip breakers, and in the release of the rods by the mechanisms. The total delay to trip is defined as the time delay from the time that trip conditions are reached to the time the rods are free and begin to fall (Ref. 1). Furthermore, RTS RESPONSE TIME is defined as the time required for the reactor trip (i.e., the time the rods are free and begin to fall) to be initiated following a step change in the variable being monitored from at least five percent below (or above) to at least five percent above (or below) the trip setpoint (Ref. 2). This definition has been clarified in the Technical Specifications. Limiting trip setpoints assumed for each trip function are given in Reference 1.

The difference between the limiting trip setpoint assumed for the analysis and the nominal trip point represents an allowance for instrumentation channel error and setpoint error. During plant startup tests it is demonstrated that actual instrument time delays are equal to or less than the assumed values. Additionally, protection system channels are calibrated and instrument response times determined periodically in accordance with the plant Technical Specifications and this Technical Requirement.

APPLICABLE SAFETY ANALYSES

The RTS functions to maintain the SLs during all Anticipated Operational Occurrences (AOO)s and mitigates the consequences of DBAs in all MODES in which the Reactor Trip Breakers are closed.

Each of the analyzed accidents and transients can be detected by one or more RTS functions. The accident analyses described in Reference 3 take credit for most RTS

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

trip functions. RTS trip functions not specifically credited in the accident analyses were qualitatively credited in the safety analyses and the NRC staff-approved licensing basis for the plant. These RTS trip functions may provide protection for conditions which do not require dynamic transient analysis to demonstrate function performance. These RTS trip functions may also serve as backups to RTS trip functions that were credited in the accident analysis.

The safety analyses applicable to each RTS function are discussed in the bases for the Technical Specifications, B.3.3.1 (Ref. 4).

PROPOSED REVISION

Although the RTS RESPONSE TIMES must meet this TR to be considered OPERABLE, response times for the RTS Instrumentation have not been identified as significant risk contributors (Ref. 5).

TR

OPERABILITY requirements for the RTS Instrumentation and interlocks are specified in Technical Specifications, section 3.3.1. TR 3.3.1 requires the RTS Instrumentation and interlocks of Table 3.3.1-1 of the TR to be OPERABLE with RESPONSE TIMES as shown in the table. RESPONSE TIMES must be within the specified limits for the affected instruments to be considered OPERABLE.

APPLICABILITY

Applicable MODES for the specific RTS Instrumentation and interlocks are delineated in Table 3.3.1-1 of Reference 4. The bases for Applicability of each function is included in Reference 4.

ACTIONS

A.1

The Required Actions for inoperable instruments are found in Reference 4. With one or more RESPONSE TIMES outside the specified limits, the affected instrument(s) must be considered inoperable and the appropriate Action referenced in Table 3.3.1-1 of Reference 4 must be taken. The bases for these actions is found in Reference 4.

(continued)

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.1.1

TSR 3.3.1.1 demonstrates that the RTS RESPONSE TIME of each reactor trip function is within the limits listed in table 3.3.1-1 of the TR. This ensures that the time delays assumed in the safety analyses are not exceeded. Each train's response must be verified every 18 months on a STAGGERED TEST BASIS (i.e., Train A at 18 months after initial startup, Train B at 36 months, and then Train A again). Response times cannot be determined during plant operation because equipment operation is required to measure response times. Experience has shown that these components usually pass this surveillance when performed on the 18-month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

Table 3.3.1-1 of this TR specifies the RESPONSE TIMES for the RTS.

REFERENCES

1. Watts Bar FSAR, Section 15.1.3. "Trip Points and Time Delays To Trip Assumed in Accident Analyses."

2. Watts Bar FSAR, Section 7.0 "Instrumentation and Controls."

3. Watts Bar FSAR, Section 15.0 "Accident Analyses."

4. Watts Bar Technical Specifications (Unit 1), Section 3.3.1, "Reactor Trip Instrumentation" and Bases for 3.3.1.

PROPOSED REVISION

5. ~~WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.~~

B 3.3 INSTRUMENTATION

B 3.3.2 Engineered Safety Features Actuation System (ESFAS) Instrumentation

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based upon the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents. A detailed Background for ESFAS is given in Reference 1. This TR covers only RESPONSE TIME testing.

The ESFAS RESPONSE TIME is defined as the interval required for the ESF sequence to be initiated subsequent to the time that the appropriate variables exceed the setpoints. This definition is augmented in the Standard Technical Specifications to include automatic system lineups and diesel generator starting and sequence loading delays. The ESF sequence is initiated by the output of the ESFAS, which is by the operation of the dry contacts of the slave relays (600 series relays) in the output cabinets of the Solid State Protection System (SSPS). The RESPONSE TIMES listed in Reference 2 include the interval of time which will elapse between the time the parameter as sensed by the sensor exceeds the safety setpoint and the time the SSPS slave relay dry contacts are operated. The values listed are maximum allowable values consistent with the safety analyses and this Technical Requirement and are systematically verified during plant preoperational startup tests. These maximum delay times thus include all compensation and therefore require that any such network be aligned and operating during verification testing. The overall ESFAS RESPONSE TIMES are listed in this TR.

The ESFAS is always capable of having response time tests performed using the same methods as those tests performed during the preoperational test program or following significant component changes (Ref. 2).

APPLICABLE SAFETY ANALYSES

The required channels of ESFAS Instrumentation provide plant protection in the event of any of the analyzed accidents. The accident analyses described in Reference 3 take credit for operation of ESF systems during DBAs. The safety

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

PROPOSED REVISION

analyses applicable to each ESFAS function are discussed in the bases for the Technical Specifications, B 3.3.2 (Ref. 1), B 3.3.5 (Ref. 4~~5~~) and B 3.3.6 (Ref. 5~~6~~). Although the ESFAS RESPONSE TIMES must meet this TR to be considered OPERABLE, response times for ESFAS have not been identified as significant risk contributors (Ref. 4).

TR

OPERABILITY requirements for ESFAS Instrumentation are specified in Technical Specifications, LCO 3.3.2, 3.3.5 and 3.3.6. TR 3.3.2 requires the ESFAS Instrumentation of Table 3.3.2-1 of the TR to be OPERABLE with RESPONSE TIMES as shown in the table. RESPONSE TIMES must be within the specified limits for the affected instruments to be considered OPERABLE.

APPLICABILITY

Applicable MODES for the specific ESFAS Instrumentation are delineated in Table 3.3.2-1 of Reference 1; in the Applicability of Reference 5; and in Table 3.3.6-1 of Reference 6. The bases for Applicability of each function is included in Reference 1, 5 and 6.

ACTIONS

A.1

The required Actions for inoperable instruments is found in Reference 1. With one or more RESPONSE TIMES outside the specified limits, the affected instrument(s) must be considered inoperable and the appropriate Action referenced in Table 3.3.2-1 of Reference 1; the Actions of Reference 2; or the appropriate Action of Table 3.3.6-1, must be taken. The bases for these actions is found in References 1, 5 and 6.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.2.1

TSR 3.3.2.1 demonstrates that the ESFAS RESPONSE TIME of each ESFAS function is within the limits listed in Table 3.3.2-1 of the TR. This ensures that the time delays assumed in the safety analyses are not exceeded. Response

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.2.1 (continued)

time tests are conducted on an 18-month STAGGERED TEST BASIS. The 18-month Frequency was developed considering it was prudent that these Surveillances only be performed during a plant outage. This was due to the plant conditions needed to perform the Surveillance and the potential for unplanned plant transients if the Surveillance is performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the 18-month Frequency.

Table 3.3.2-1 of this TR specifies the RESPONSE TIMES for the ESFAS Instrumentation.

REFERENCES

1. Watts Bar Technical Specifications (Unit 1), Section 3.3.2, "Engineered Safety Features Actuation System Instrumentation" and Bases for 3.3.2.

2. Watts Bar FSAR, Section 7.3.1.2.6, "Minimum Performance Requirements."

3. Watts Bar FSAR, Section 15.0 "Accident Analyses."

PROPOSED REVISION

4. ~~WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.~~

4 ~~5~~. Watts Bar Technical Specifications (Unit 1), Section 3.3.5, "LOP Diesel Generator Start Instrumentation" and Bases for 3.3.5.

5 ~~6~~. Watts Bar Technical Specifications (Unit 1), Section 3.3.6, "Containment Vent Isolation Instrumentation" and Bases for 3.3.6.

B 3.3 INSTRUMENTATION

B 3.3.3 Movable Incore Detectors

BASES

BACKGROUND

The Movable Incore Detection System uses six miniature fission chamber neutron detectors to measure fuel assembly power level. The miniature fission chambers are positioned by a Detector Drive System which pushes and pulls the detectors in and out of the reactor core through one of 58 thimbles, which are open at one end. The thimbles have Reactor Coolant System (RCS) pressure on the outside and atmospheric pressure inside. Each thimble is inserted into the center position of the fuel assembly, all the way to the top of the fuel assembly. The drive system slowly pushes the detector up through the fuel assembly, inside the thimble, to the top of the core. An x-y plot (position verses flux level) is initiated with the slow withdrawal of the detectors through the core from top to a point below the bottom. As the detector traverses the thimble tube it obtains the raw currents for 61 axial levels. At each level, the computer takes three rapid looks, averages the readings and uses this as the base reading for that axial point. In a similar manner, other core locations are selected and plotted. Each detector provides axial flux distribution data along the center of a fuel assembly.

Each of the six miniature neutron detectors has its own drive unit. A series of five- and ten-path transfer devices are then used to direct a detector into one of several possible fuel assemblies. In this manner, the six detectors and drive units are used to monitor 58 fuel assemblies in the core.

The OPERABILITY of the Movable Incore Detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the core. The OPERABILITY of this system is demonstrated by irradiating each detector used and determining the acceptability of the data obtained. For the purpose of measuring $F_Q(Z)$, the Heat Flux Hot Channel Factor (Technical Specification 3.2.1), or $F^N_{\Delta H}$, the Nuclear Enthalpy Rise Hot Channel Factor (Technical Specification 3.2.2), a full incore flux map is used. Quarter-core flux maps, as defined in Reference 1, may be used in

(continued)

BASES

Background (continued)

recalibration of the Excore Neutron Flux Detection System, and full incore flux maps or symmetric incore thimbles may be used for monitoring the QPTR.

The detectors are normalized to one another through cross-calibration comparison (looking for relative readings) of each detector's output. This effectively makes the data from all the detectors approximately the same as the reference detector.

APPLICABLE SAFETY ANALYSES

The Movable Incore Detector System is used for periodic surveillance of the power distribution and calibration of the excore detectors. Surveillance of the power distribution verifies that the peaking factors are within the design envelope. The system is not used continuously and does not initiate any automatic protection action. The Movable Incore Detector System is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 2).

TR

TR 3.3.3 specifies that the Movable Incore Detection System shall be OPERABLE with at least 75% of the detector thimbles, and a minimum of two detector thimbles per core quadrant. Also, sufficient movable detectors, drive, and readout equipment to map these thimbles.

This TR ensures the OPERABILITY of the Movable Incore Detector Instrumentation when required to monitor the flux distribution within the core. The Movable Incore Detector System is used for periodic surveillance of the power distribution, and calibration of the excore detectors. The surveillance of power distribution verifies that the peaking factors are within their design envelope (Ref. 2).

APPLICABILITY

The Movable Incore Detection System must be OPERABLE when it is used for recalibration of the Excore Neutron Flux Detection System, or monitoring the QPTR or measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{XY}.

(continued)

BASES (continued)

ACTIONS

A.1

The Required Action A.1 has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

Inoperable Movable Incore Detection Systems cannot be used for recalibration of the Excore Neutron Flux Detection System, or monitoring the QPTR or measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{XY}. Therefore, the Required action A.1 prohibits the use of the inoperable system for the above applicable monitoring or calibration functions.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.3.1

The Movable Incore Detector System must be demonstrated OPERABLE at least once per 24 hours by the setting of each detector's operating voltage. The operating voltage is set by determining the operating region for each detector after inserting it into a high flux region of the core. The acceptability of each detector is verified by the performance of a detector drift check. The operating voltage must be determined prior to using the Movable Incore Detector System for recalibration of the Excore Neutron Flux Detection System, or monitoring the QPTR, or measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{XY}. This surveillance ensures that the measurements obtained from use of this system accurately represents the spatial neutron flux distribution of the core. The Frequency of 24 hours has been established, based on engineering judgment, and has been shown to be acceptable through operating experience.

REFERENCES

1. WCAP-8648, "Excore Detector Recalibration Using Quarter-core Flux Maps", June 1976.

2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.3 INSTRUMENTATION

B 3.3.4 Seismic Instrumentation

BASES

BACKGROUND

The seismic instrumentation is made up of several instruments such as accelerometers, acceleration triggers, magnetic tape recorders, etc. These instruments are placed in several appropriate locations throughout the plant in order to provide data on the seismic input to containment, data on the frequency, amplitude and phase relationship of the seismic response of the containment structure, and data on the seismic input to other Seismic Category I structures, systems and components (Ref. 1).

The seismic instrumentation is used to promptly determine the seismic response of nuclear power plant features which are important to safety. This is required to permit comparison of the measured response to that used in the design basis for the unit to determine if plant shutdown is required pursuant to Appendix A of 10 CFR Part 100. The instrumentation is consistent with the recommendations of Reference 1.

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and to determine the impact on 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 unit to determine if plant equipment inspection is required pursuant to Appendix A of 10 CFR part 100 prior to restart. Seismic risks which appear as dominant sequences in PRAs occur for very severe earthquakes with magnitudes which are a factor of two or three above the Safe Shutdown Earthquake and Design Basis Earthquake. The Seismic Instrumentation System was not designed to function or to provide comparative information for such severe earthquakes. This instrumentation is more pertinent to determining the ability to restart the plant after seismic events which are not risk contributors, and is therefore not of prime importance in risk dominant sequences (Ref. 2).

(continued)

BASES (continued)

TR

TR 3.3.4 requires that the seismic monitoring instrumentation which is shown in Table 3.3.4-1 shall be OPERABLE. This requirement ensures that an assessment can be made of the effects on the plant of earthquakes which may occur that exceed the ground acceleration for the Operating Basis Earthquake (OBE - 0.09g ground acceleration) (Ref. 3).

APPLICABILITY

Since the possibility of earthquakes is not MODE dependent, OPERABILITY of the seismic instrumentation is required at all times. The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1

With one or more of the required seismic monitoring instruments listed in Table 3.3.4-1 inoperable for more than 30 days, a Special Report must be submitted to the Commission in accordance with Technical Specification 5.9.2. This report is to outline the cause of the malfunction and the plans for restoring the inoperable instruments to OPERABLE status. The Completion Time of 10 days to perform Required Action A.1 is reasonable and based upon the typical time necessary to prepare and submit a Special Report to the NRC.

B.1 and B.2

When one or more seismic monitoring instruments actuate during a seismic event with greater than or equal to 0.01g ground acceleration, all of the Required Actions under Condition B must be completed. Each actuated monitoring instrument must be restored to OPERABLE status within 24 hours. Within 10 days of the actuation, a CHANNEL CALIBRATION must be performed on each actuated monitoring instrument. The Completion Time of 10 days to perform Required Action B.2 is reasonable and is based on engineering judgement.

(continued)

BASES

ACTIONS (continued)

B.3 and B.4

The data retrieved from the actuated instruments must be analyzed to determine the magnitude of the vibratory ground motion and a Special Report must be sent to the NRC in accordance with Technical Specification 5.9 2. This report is to describe the magnitude, frequency spectrum, and resultant effect upon unit features important to safety. The Completion Time of 14 days to perform Required Actions B.3 and B.4 is reasonable and based upon the typical time necessary to analyze data and prepare a Special Report.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.4.1

Performance of a CHANNEL CHECK on the seismic instrumentation once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or of even something more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the match criteria, it may be an indication that the sensor or the signal-processing equipment has drifted outside its limit.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency of 31 days is based on operating experience related to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given function in any 31-day interval is a rare event. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels, which occur during normal operational use of the displays associated with this TR's required channels.

TSR 3.3.4.2

A CHANNEL OPERATIONAL TEST is to be performed on each required channel to ensure the entire channel will perform the intended function. A CHANNEL OPERATIONAL TEST is the comparison of the response of the instrumentation, including all components of the instrument expect the sensor, to a known signal. The Surveillance Frequency of 184 days is based upon the known reliability of the monitoring instrumentation and has been shown to be acceptable through operating experience.

TSR 3.3.4.3

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor by comparing the response of the instrument to a known input on the sensor. This test verifies the capability of the seismic instrumentation to correctly determine the magnitude of a seismic event and evaluate the response of those features important to safety. The Surveillance Frequency of 18 months is based upon operating experience and consistency with the typical industry refueling cycle.

REFERENCES

1. Regulatory Guide 1.12, "Instrumentation for Earthquakes."

2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

3. Watts Bar FSAR, Section 3.7.4, "Seismic Instrumentation Program."

B 3.3 INSTRUMENTATION

B 3.3.5 Turbine Overspeed Protection

BASES

BACKGROUND

Three types of overspeed protection mechanisms are provided to isolate main steam to the turbo-generator when the rated operating speed of 1800 rpm is exceeded. During normal speed-load control, the Analog Electro Hydraulic (AEH) Overspeed Protection Control (OPC) which is set at 1854 rpm (103 percent of rated speed) will rapidly close the governor and interceptor valves in case of an overspeed condition. Rotational speed is then maintained below this runback setpoint by moving the interceptor valves between the closed and open position until the reheater steam (steam between the high pressure turbine exhaust and the low pressure turbines) is dissipated. If the AEH control system is in the automatic mode, the governor valves will take over speed control and will maintain reference speed. However, if the AEH control system is in the manual mode (normally only at low power levels during startup), the turbine generator will coast down to turning gear operation, if no operator action is taken.

If for some reason the AEH OPC control system does not function and the turbine speed increases to 1980 rpm (110 percent of rated speed), the mechanical overspeed mechanism will trip close all steam valves (throttle, governor, reheat, stop, and interceptor valves and prevent the turbine speed from exceeding 120 percent of rated speed. The unit will then coast down to turning gear operation.

In addition to these two control systems, an independent electrical overspeed trip is provided in the Analog Electro Hydraulic (AEH) Control System. If the turbine generator speed increases to 1998 rpm (111 percent of rated speed), all steam valves (as listed in the previous paragraph) will be tripped closed. This trip will be actuated by a contact output from the AEH controller which energizes a trip solenoid in the autostop oil fluid lines. Again, during the overspeed condition, turbine speed will remain below 120 percent of rated speed. The unit will then coast down to turning gear operation. (Ref. 1)

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The Turbine Overspeed Protection System trips the turbine to prevent the generation of potentially damaging missiles from the turbine, in the event of a loss of the Turbine Speed Control System, or a Transient. However, the turbine overspeed event is not a DBA (Ref. 2). Turbine Overspeed Protection is not assumed to function in the safety analyses.

TR

This requirement is provided to ensure that the turbine overspeed protection instrumentation and the turbine speed control valves are OPERABLE and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could present a personnel and equipment hazard.

APPLICABILITY

At least one Turbine Overspeed Protection System must be OPERABLE whenever the potential for turbine overspeed exists. Since steam may be admitted to the turbine in MODES 1, 2, or 3, the requirement is applicable in these MODES.

The Applicability has been modified by a Note stating that it is not applicable to MODES 2 and 3 when all main steam isolation valves are closed and all other steam flow paths to the turbine are isolated. Under these conditions, the potential for turbine overspeed does not exist.

Another Note has been added stating TR 3.0.4 is not applicable. Failure to meet this requirement does not prohibit MODE changes.

ACTIONS

A.1

If one stop valve or one control valve in one or more high pressure turbine steam lines is inoperable, action must be taken to restore the inoperable valve(s) to OPERABLE

(continued)

BASES

ACTIONS (continued)

status. The 72-hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE valve in the same steam line(s) and reasonable time for repairs.

A.2

A first alternative to Required Action A.1 is to close at least one valve in the affected steam line if the other three lines have flow. This places the high pressure steam line with the inoperable valve in a no flow condition but can only be performed if the other three lines have flow so as to prevent possible turbine damage. This ensures total steam isolation to the high pressure turbine in the event of an overspeed condition, even with a single failure of another stop valve or control valve. An additional 6 hours (total of 78 hours) are allowed for a power reduction, if necessary, in an orderly manner and without challenging plant systems.

A.3

A second alternative is to isolate the turbine from the steam supply. This places the turbine in a condition where overspeed protection is not required. Again, an additional 6 hours (total of 78 hours) are allowed for a power reduction, if necessary, in an orderly manner and without challenging plant systems.

B.1

If one reheat stop valve or one reheat intercept valve in one or more low pressure turbine steam lines is inoperable, action must be taken to restore the inoperable valve(s) to OPERABLE status. The 72-hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE valve in the same steam line(s) and reasonable time for repairs.

B.2

A first alternative to Required Action B.1 is to close at least one valve in the affected steam line(s). This places the low pressure steam line(s) with the inoperable valve(s) in a no flow condition. This ensures total steam isolation to the low pressure turbine(s) in the event of an overspeed condition, even with a single failure of another reheat stop

(continued)

BASES

ACTIONS (continued)

valve or reheat intercept valve. An additional 6 hours (total of 78 hours) are allowed for a power reduction, if necessary, in an orderly manner and without challenging plant systems.

B.3

A second alternative is to isolate the turbine from the steam supply. This places the turbine in a condition where overspeed protection is not required. Again, an additional 6 hours (total of 78 hours) are allowed for a power reduction, if necessary, in an orderly manner and without challenging plant systems.

C.1

If the Turbine Overspeed Protection System is inoperable for causes other than Condition A or Condition B, the turbine must be placed in a condition where overspeed protection is not required. This is accomplished by isolating the turbine from the steam supply system. A Completion Time of 6 hours is allowed to shutdown the turbine in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

No Technical Surveillance Requirements for Turbine Overspeed Protection are specified. Testing requirements for the TOPS are specified in Reference 1. This section contains only a Note stating that TSR 3.0.4 is not applicable.

REFERENCES

1. Watts Bar FSAR, Section 10.2, "Turbine Generator."
2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

PROPOSED REVISION

Add TSRs from FSAR.

B 3.3 INSTRUMENTATION

B 3.3.6 Fire Detection Instrumentation

BASES

BACKGROUND

The primary objective of the fire protection program is to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref. 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire Protection" (Ref. 2), to minimize the adverse affects of fires on structures, systems and components important to safety. The Fire Detection Instrumentation is designed to detect and indicate the presence of fires in the vicinity of safety related equipment, to initiate alarms and to actuate automatic suppression systems and closure devices (e.g. fire dampers, doors, etc.). Automatic fire detection systems employ ionization or photoelectric smoke detectors, and rate compensated thermal detectors (Ref. 3).

APPLICABLE SAFETY ANALYSES

Fire Detection Instrumentation, Fire Suppression Systems, and Fire Rated Assemblies are required by Reference 1 and are necessary to maintain the integrity of safety related equipment during a fire. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 4). In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA or transient. Because fire may affect safe shutdown systems, and because the loss of function of systems used to mitigate the consequences of DBAs under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. Fire protection must be capable of limiting the fire damage so that:

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room or auxiliary control room is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control stations can be repaired within 72 hours.

TR

This requirement is provided to ensure, as a minimum, the Fire Detection Instrumentation for each Fire Detection Zone shown in Table 3.3.6-1 is OPERABLE. The OPERABILITY of the Fire Detection Instrumentation ensures that both adequate warning capability is available for prompt detection of fires and that Fire Suppression Systems, that are actuated by fire detectors, will discharge extinguishing agents 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.

APPLICABILITY

Since the potential for fire is not MODE dependent, the Fire Detection Instrumentation is required to be OPERABLE whenever equipment protected by fire detection instruments is required to be OPERABLE.

The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1 and A.2

With any Function A or B Fire Detection Instrumentation shown in Table 3.3.6-1 inoperable outside the reactor building, the inoperable instrument must be restored within 1 hour. The Completion Time of 1 hour to perform Required Action A.1 is based on engineering judgement and is reasonable considering that the failure of a single instrument could defeat the detection capability for the entire fire zone for which the failed instrument is

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

is associated with. If the inoperable instrument(s) cannot be restored within 1 hour, a fire watch patrol must be established within the next 1 hour to inspect the zone(s) with inoperable instrument(s), and thereafter, inspect the zone(s) once per hour. The loss of detection capability for Fire Suppression Systems, actuated by fire detectors, represents a significant degradation of fire protection for an area. The establishment of frequent fire watch patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to OPERABILITY. The Completion Time of an hour to perform Required Action A.2 is reasonable and based upon the typical time necessary to establish a fire watch patrol and perform an inspection.

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

With any Function A or B Fire Detection Instrumentation shown in Table 3.3.6-1 inoperable inside the reactor building, the inoperable instrument(s) must be restored within 8 hours. The Completion Time of 8 hours to perform Required Action B.1 is based on engineering judgement and is reasonable based on containment access considerations and considering that the failure of a single instrument defeats the detection capability for the entire fire zone for which the failed instrument is associated with. If the inoperable instrument(s) cannot be restored within 8 hours, the zone(s) with inoperable instrument(s) must be inspected once per 8 hours, or the air temperature must be monitored in the affected zone once per hour. The Completion Times of once per 8 hours required per Required Action B.2, and once per hour required per Required Action B.3 are reasonable and are based on engineering judgement.

C.1

With an automatic suppression system inoperable due to the inoperability of Function B detectors within a given zone outside the reactor building, reference TR 3.7.6 or 3.7.7 as applicable for the given zone.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

With an automatic suppression system inoperable due to the inoperability of Function B detectors in a given zone inside the reactor building, establish a fire watch patrol and inspect the reactor building zone once per 8 hours, or monitor the reactor building air temperature in the affected zone once per hour. The Completion Times of once per 8 hours required per Required Action D.1, and once per hour required per Required Action D.2 are reasonable and are based on engineering judgement.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.6.1

TSR 3.3.6.1 is the performance of a TADOT (excluding confirmation of setpoint accuracy) on each of the required smoke detection instruments which are accessible during plant operation and are located outside the reactor building. This test is performed every 6 months. The Frequency of 6 months is based on engineering judgement, and has been shown to be acceptable through operating experience.

TSR 3.3.6.2

TSR 3.3.6.2 is the performance of a TADOT (excluding confirmation of setpoint accuracy) on each of the required smoke detection instruments which are not accessible during plant operation or are located inside the reactor building. This test is performed during each COLD SHUTDOWN exceeding 24 hours unless the TSR was performed in the previous 6 months. The Frequency for this TSR is based on the assumption that the required smoke detection instruments which are not accessible during plant operation, cannot be tested until the plant is in COLD SHUTDOWN for more than 24 hours. Therefore, each time the plant is in a COLD SHUTDOWN exceeding 24 hours, this test shall be performed, unless the test has been performed in the previous 6 months. The Frequency of 6 months is based on engineering judgement, and has been shown to be acceptable through operating experience.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.3.6.3

This surveillance requires verification that each of the required Fire Detection Instruments are OPERABLE based on the National Fire Protection Association (NFPA) Standard 72D supervised circuits associated with detector alarms to a constantly attended central location. The associated Frequency for this surveillance is 6 months.

TSR 3.3.6.4

TSR 3.3.6.4 is the performance of a TADOT (excluding confirmation of setpoint accuracy) on one of the required thermal detection instruments in each zone which are accessible during plant operation and are located outside the reactor building. The Frequency of 6 months is based on engineering judgement and has been shown acceptable through industry operating experience. The TSR has been modified by a Note to indicate the detectors to be tested shall be selected from the previously untested instruments until all thermal detectors have been tested.

TSR 3.3.6.5

TSR 3.3.6.5 is the performance of a TADOT (excluding confirmation of setpoint accuracy) on one of the required thermal detection instruments in each zone which are not accessible during plant operation or are outside the reactor building. This test is performed during each COLD SHUTDOWN exceeding 24 hours unless the TSR was performed in the previous 6 months. The Frequency for this TSR is based on the assumption that the required thermal detection instruments which are not accessible during plant operation, can not be tested until the plant is in COLD SHUTDOWN for more than 24 hours. Therefore, each time the plant is in a COLD SHUTDOWN exceeding 24 hours, this test shall be performed unless the test has been performed in the previous 6 months. The Frequency of 6 months is based on engineering judgement, and has been shown to be acceptable through operating experience. The TSR has been modified by a Note to indicate the detectors to be tested shall be selected from the previously untested instruments until all infrared and thermal detectors have been tested.

(continued)

BASES (continued)

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."
2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection".
3. Watts Bar FSAR, Section 9.5.1, "Fire Protection System."
4. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.3 INSTRUMENTATION

B 3.3.7 Loose-Part Detection System

BASES

BACKGROUND

The Loos^-Part Detection System consists of six sensors, a system cabinet, alarm units, a frequency-modulated tape recorder, an audio monitor, and calibration devices. The sensors are located in the six natural collection regions. These regions consist of the top and bottom plenums of the reactor vessel and the primary coolant inlet plenum to each steam generator. There are installed spares at each sensor location. The entire system is described in Reference 1.

The Loose-Part Detection System provides the capability to detect acoustic disturbances indicative of loose parts within the Reactor Coolant System (RCS) pressure boundary. This system is provided to avoid or mitigate damage to RCS components that could occur from these loose parts. The Loose-Part Detection System Technical Requirement is consistent with the recommendations of Reference 2.

APPLICABLE SAFETY ANALYSES

The presence of a loose part in the RCS can be indicative of degraded reactor safety resulting from failure or weakening of a safety-related component. A loose part, whether it be from a failed or weakened component, or from an item inadvertently left in the primary system during construction, refueling, or maintenance, can contribute to component damage and material wear by frequent impacting with other parts in the system. Also, a loose part increases the potential for control-rod jamming and for accumulation of increased levels of radioactive crud in the primary system (Ref. 2).

The Loose Part Detection System provides the capability to detect loose parts in the RCS which could cause damage to some component in the RCS. Loose parts are not assumed to initiate any DBA, and the detection of a loose part is not required for mitigation of any DBA (Ref. 3).

(continued)

BASES (continued)

TR

TR 3.3.7 requires the Loose-Part Detection System to be OPERABLE. This is necessary to ensure that sufficient capability is available to detect loose metallic parts in the RCS and avoid or mitigate damage to the RCS components. This requirement is provided in Reference 2.

APPLICABILITY

TR 3.3.7 is required to be met in MODES 1 and 2 as stated in Reference 2. These MODES of applicability are provided in Reference 2.

The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1

If one or more required channels of the Loose-Part Detection System are inoperable for more than 30 days, the reactor need not be shutdown, but a Special Report must be prepared and submitted to the NRC within the next 10 days in accordance with Technical Specification 5.9.2. This report is to outline the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status. This Condition, Required Action, and Completion Time are provided in Reference 2.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.3.7.1

Performance of a CHANNEL CHECK for the Loose-Part Detection System once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or of even something more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the match criteria, it may be an indication that the sensor or the signal-processing equipment has drifted outside its limit.

The Surveillance and the Surveillance Frequency are provided in Reference 2.

TSR 3.3.7.2

A CHANNEL OPERATIONAL TEST is to be performed every 31 days on each required channel to ensure the entire channel will perform the intended function. This test verifies the capability of the Loose-Part Detection System to detect impact signals which would indicate a loose part in the RCS. The Surveillance and the Surveillance Frequency are provided in Reference 2.

TSR 3.3.7.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The Surveillance Frequency of 18 months is based upon operating experience and is consistent with the typical industry refueling cycle. The Surveillance and the Surveillance Frequency are provided in Reference 2.

REFERENCES

1. Watts Bar FSAR, Section 7.6.7, "Loose Part Monitoring System (LPMS) System Description."

2. Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors."

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.1 Safety Valves, Shutdown

BASES

BACKGROUND

The pressurizer safety valves provide, in conjunction with the Reactor Trip System, overpressure protection for the RCS. The pressurizer safety valves are totally enclosed pop-type, spring-loaded, self-actuated valves with backpressure compensation. The safety valves are designed to prevent the system pressure from exceeding the system Safety Limit (SL), 2735 psig, which is 110% of the design pressure (Ref. 1).

Because the safety valves are totally enclosed and self-actuating, they are considered independent components. The relief capacity for each valve, 420,000 lb/hr, is based on postulated overpressure transient conditions resulting from a complete loss of steam flow to the turbine. This event results in the maximum surge rate into the pressurizer, which specifies the minimum relief capacity for the safety valves. The discharge flow from the pressurizer safety valves is directed to the pressurizer relief tank. This discharge flow is indicated by an increase in temperature downstream of the pressurizer safety valves or increase in the pressurizer relief tank temperature or level.

Overpressure protection is required in MODES 1, 2, 3, 4, 5, and 6 (with the reactor vessel head on); however, in MODE 4, with any RCS cold leg temperature ≤ 310 °F, and MODE 5 and MODE 6 with the reactor vessel head on, overpressure protection is provided by operating procedures and by meeting the requirements of Technical Specification 3.4.12, "Cold Overpressure Mitigation System (COMS)."

The upper and lower pressure limits are based on the ± 1% tolerance requirement (Ref. 2) for lifting pressures above 1000 psig. The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated

(continued)

BASES

BACKGROUND (continued)

accidents above 310 °F. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the American Society of Mechanical Engineers (ASME) pressure limit (Ref. 2) could include damage to RCS components, increased LEAKAGE, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

APPLICABLE SAFETY ANALYSES

The pressurizer safety valves protect the RCS from being pressurized above the RCS pressure Safety Limit. The pressurizer safety valves provide overpressurization protection during both power operation and hot standby. However, the pressurizer safety valves are not assumed to function to mitigate a DBA or Transient in MODES 4 and 5 (Ref. 3).

TR

This requirement is provided to ensure continuity in the restructuring of Standard Technical Specifications. Reactor Coolant System overpressure protection is provided in MODES 4 (below 310 °F) and 5 by the Cold Overpressure Mitigation System (COMS) covered by LCO 3.4.12.

PROPOSED REVISION

Reference 4 specifies requirements which, when met, may preclude the need for this TR.

A Note modifies this TR to indicate that the lift setting of the pressurizer code safety valve can be outside the required lift setting when ~~set~~ in MODE 4 for the purpose of setting at hot ambient conditions. Safety valves can lift at a slightly different pressure as the valve temperature vary. Therefore, setting the safety valve for nominal operating conditions in MODE 1 may result in a lift pressure drifting outside the required tolerance limits as the plant is shutdown to MODE 5. This exception is allowed for entry and operation into MODE 4 provided a preliminary cold setting was made prior to heatup.

APPLICABILITY

The OPERABILITY of one pressurizer Code safety valve ensures that overpressure protection is provided in MODES 4 (below 310 °F) and 5. OPERABILITY of Code safety valves is not required in MODE 6. Code safety valve OPERABILITY requirements for MODES 1, 2, 3, and 4 (above 310 °F in all RCS cold legs) are covered in Technical Specification 3.4.10, "Pressurizer Safety Valves."

(continued)

BASES (continued)

ACTIONS

A.1

With no pressurizer safety valves OPERABLE, the plant must be placed in a condition which minimizes the risk of a pressure spike large enough to actuate a safety valve. This is done by suspending all operations involving positive reactivity changes. The immediate Completion Time for performance of Required Action A.1 shall not preclude completion of actions to establish a safe condition.

A.2

In addition to Action A.1, an OPERABLE Residual Heat Removal loop shall be placed in operation in the shutdown cooling mode. This provides overpressure protection through the Residual Heat Removal suction and discharge relief valves. The immediate Completion Time requires an operator to initiate actions to place the loop in shutdown cooling. Once actions are initiated, they must be continued until the loop is in the shutdown cooling mode.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.4.1.1

TSR 3.4.1.1 requires verification that the pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program.

REFERENCES

1. Watts Bar FSAR, Section 5.5.13, "Safety and Relief Valves."

2. ASME Boiler and Pressure Vessel Code, Section III, NB 7614.3.

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

4. Generic Letter 90-06, "Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors," Pursuant to 10 CFR 50.54(f).

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.2 Pressurizer Temperature Limits

BASES

BACKGROUND

The pressurizer is an ASME Section III, vertical vessel with hemispherical top and bottom heads constructed of carbon steel. The vessel is clad with austenitic stainless steel on all surfaces exposed to the reactor coolant. A stainless steel liner or tube may be used in lieu of cladding in some nozzles. The surge line nozzle and removable electric heaters are installed in the bottom head. Spray line nozzles, relief and safety valves are located in the top head of the vessel. A small continuous spray is provided through a manual bypass valve around the power-operated spray valves. The temperature, and hence the pressure are controlled by varying the power input to selected heater elements. The pressurizer is designed to withstand the effects of cyclic loads due to pressure and temperature changes. These loads are introduced by startup and shutdown operations, power transients and reactor trips. During startup and shutdown, the rate of temperature change is controlled by the operator. Heatup rate is controlled by the input to the heater elements, and cooldown is controlled by spray. When the pressurizer is filled with water, i.e., during initial system heatup, and near the end of the second phase of plant cooldown, Reactor Coolant System (RCS) pressure is maintained by the letdown flow rate via the Residual Heat Removal System.

These Bases address the control of the rate of change of temperature and the effect of the thermal cycling on critical areas of the pressure boundary of the pressurizer. The Reactor Coolant Pressure Boundary, which includes the pressurizer, is defined in 10 CFR 50, section 50.2 (Ref.1). General rules for design and fabrication are provided in 10 CFR 50, section 50.55a (Ref. 2). These design and fabrication rules are based on the ASME Boiler and Pressure Vessel Code.

APPLICABLE SAFETY ANALYSES

The limits on the rate of change of temperature for the heatup and cooldown of the pressurizer are not derived from Design Basis Accident analyses (Ref. 3). The limits are prescribed during normal operation to limit the cyclic, thermal loading on critical areas in the pressure

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES (continued)

boundary. The limits on the rate of change of temperature have been established, using approved methodology, to preclude operation in an unanalyzed condition.

TR

TR 3.4.2 specifies the acceptable rates of heatup and cooldown of the pressurizer. These limits define allowable operating regions and permit a large number of operating cycles while providing a wide margin to cyclic induced failure in the pressure boundary of the pressurizer.

APPLICABILITY

The limits on the rate of change of temperature provide a definition of acceptable operation to limit cyclic temperature loading to analyzed conditions. Although these limits were developed to provide rules for operation during heatup and cooldown (MODES 3, 4, and 5), they are applicable at all times.

ACTIONS

A.1, A.2 and A.3.

If the rate of change of temperature is outside the limits, the rate of temperature change must be restored to within limits in 30 minutes. The 30-minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the corrective actions can be accomplished in this time in a controlled manner. In addition to restoring operation to within limits, an evaluation is required within 72 hours to determine if operation may continue. This may require event-specific stress analyses or inspections. A favorable evaluation must be completed before continuing operation. The 72-hour Completion Time is consistent with that allowed in Technical Specification 3.4.3, "RCS Pressure and Temperature Limits."

A Note is provided to clarify that all Actions must be completed whenever this Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration to within limits is insufficient without the evaluation of the structural integrity of the pressure boundary of the pressurizer.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If a Required Action and associated Completion Time of Condition A are not met, the plant must be placed in a lower MODE and the pressure reduced. This will allow a more careful examination of the event. The 6-hour Completion Time is reasonable, considering operating experience, to reach MODE 3 from full power. The additional 30 hours to reduce the pressure to 500 psig in an orderly manner also considers operating experience. This reduction in pressure is possible without challenging the plant systems or violating any operating limits.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.4.2.1

TSR 3.4.2.1 verifies that the rate of heatup and the rate of cooldown are within limits. "Step wise" cooling must be avoided as discussed in Reference 4. The 30-minute Frequency is considered reasonable in view of the instrumentation available in the control room to monitor the status of the RCS. The Surveillance has been modified by a Note which requires the Surveillance to be performed only during heatup and cooldown of the system.

REFERENCES

1. 10 CFR 50.2, "Definitions."
2. 10 CFR 50.55a, "Codes and Standards.
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.
4. Westinghouse letter WAT-D-8376, "Reactor Coolant System Accelerated Cooldown", dated November 5, 1990.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.3 Reactor Coolant System Vents

BASES

BACKGROUND

The Reactor Vessel Head Vent System (RVH''S) is installed on the reactor vessel head. The RVHVS consists of a safety-grade venting flow path with redundancy around process solenoid valves. Two one inch solenoid-operated globe valves are mounted in series in each redundant portion of the flow path. The piping between these valves is provided with a temperature monitor. Any leakage through the upstream valve will be detected as an increase in temperature. The two redundant upstream valves are open/close isolation valves and are powered by opposite vital power buses. The two redundant downstream valves are throttle valves that are used to regulate the release rate of the noncondensible gases and steam. The two throttle valves are also powered by opposite vital power buses. All four valves are remote, manual-operated from the control room. The valves are normally closed, deenergized and designed to fail closed in accordance with Regulatory Guide 1.48. The system provides venting during plant startup/shutdown or for postaccident. The system is designed to operate in the containment atmosphere during and after a design basis event. However, the system is not utilized during emergency operation until an inadequate water level in the reactor vessel has been determined. During an incident with hydrogen generation and release, a venting period of approximately ten minutes is acceptable without violating the combustible concentration of hydrogen in the containment.

The capability and the function of the system is consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements" (Ref.1). Direct operator action is required to actuate the system. System actuation is only required when the accumulation of noncondensible gases could impair forced or natural circulation and, hence, cooling of the core.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSIS

The RVHVS is designed to ensure that noncondensible gases do not accumulate under the reactor vessel head and thereby impair the cooling of the core. However, in designing the accident sequences for theoretical hazard evaluation, the RVHVS is not assumed to be a system that directly serves to prevent or mitigate a DBA or Transient (Ref. 2).

TR

TR 3.4.3 requires that the two redundant vent paths are OPERABLE. One condition for OPERABILITY is that the upstream manual isolation valve is locked open. However, in case of one inoperable path, one condition for continued operation, (while restorative actions take place), is that the inoperable path is maintained closed with power removed from both valve actuators. With two paths inoperable, no requirement exists with respect to isolation during the much shorter time of restorative actions.

APPLICABILITY

The TR is basically protecting against uncovering the core and reduces the possibility for impairment of natural or forced circulation through the core. This is mainly a concern during the production of power and early in the decay heat removal phase. Accordingly, Applicability is consistent with operation in MODES 1, 2, and 3. In higher-numbered MODES, the heat flux in the core is low and protection by this TR is not required.

, 4 PROPOSED REVISION

ACTIONS

A.1 and A.2

With one vent path inoperable, it is necessary to immediately start actions to see to that the inoperable path is closed and fully isolated from the Reactor Coolant System. The inoperable path must be restored to OPERABLE condition in 30 days. It should be noted that during this period of time one path is fully OPERABLE. If the need for venting should occur during this time period, the OPERABLE path will provide 100% of the required venting capacity. Based on this, 30 days is an acceptable time period for restoring the inoperable path.

(continued)

BASES

ACTIONS (continued)

B.1

With two paths inoperable, it is required to restore one path in 72 hours. The 72 hours is based on operating experience and is a reasonable time period for identifying and correcting problems which could be associated with an inoperable path.

C.1 AND C.2

If the Required Action and associated Completion Time of Condition A or B are not met, the plant must be placed in a condition in which the TR does not apply. This is accomplished by placing the unit in MODE 3 within 6 hours and MODE 4 in an additional 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

Proposed Revision

Add Bases for new TSR 3.4.3.1

TSR 3.4.3.~~1~~ 2, TSR 3.4.3.~~2~~ 3 and TSR 3.4.3.~~3~~ 4

Every 18 months it is necessary to verify that each of the two vent paths are OPERABLE. This verification consists of checking the upstream isolation valve and ensuring that the valve is locked in the open position. Further, the two control valves are operated from the control room, through one complete cycle of full travel. Lastly, the test includes a verification of flow through the two vent paths.

REFERENCES

1. NUREG-0737, "Clarification of TMI Action Plan Requirements".
2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.4 Chemistry

BASES

BACKGROUND

The Reactor Coolant System (RCS) water chemistry is selected to minimize corrosion. A periodic analysis of the coolant chemical composition is performed to verify that the reactor coolant quality meets the specifications (Ref. 1). This Technical Requirement places limits on the dissolved oxygen, chloride and fluoride content of the RCS to minimize corrosion.

Limiting dissolved oxygen content of the RCS limits the amount of general corrosion and reduces the possibility of stress corrosion. General corrosion is a contributing factor in Reactor Coolant Activity (Ref. 2) and must be controlled for ALARA (as low as reasonably achievable) considerations as well as structural integrity considerations.

Both chlorides and fluorides have been shown to cause stress corrosion if present in the RCS in sufficiently high concentrations at high pressure and temperature conditions. Stress corrosion can lead to either localized leakage or catastrophic failure of the RCS. The associated effects of exceeding the dissolved 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 RCS.

APPLICABLE SAFETY ANALYSES

Minimizing corrosion of the RCS reduces the potential for RCS leakage and for failure due to stress corrosion, thus ultimately ensuring the structural integrity of the RCS (Ref. 3). It is not, however, a consideration in the analyses of Design Basis Accidents.

(continued)

BASES (continued)

TR

TR 3.4.4 establishes the limits on concentration of dissolved oxygen, chloride and fluoride in the RCS. These limits ensure that dissolved oxygen, chloride and fluoride concentrations are maintained at levels low enough to prevent unacceptable degradation of the RCS pressure boundary.

APPLICABILITY

Concentrations of dissolved oxygen, chloride and fluoride in the RCS must be maintained within limits at all times. Applicability is modified by a Note stating with Tavg ≤ 250 °F, the dissolved oxygen limit is not applicable.

ACTIONS

A.1, A.2.1, and A.2.2

If one or more chemistry parameters are not within Steady State Limits in MODES 1, 2, 3, and 4, the parameter(s) must be restored to its Steady State Limit within 24 hours. This allows time to take corrective actions to restore the contaminant concentrations to within the Steady State Limits.

B.1 and B.2

With one or more chemistry parameters not within Transient Limits in MODES 1, 2, 3, and 4, or if the Required Action of Condition A is not met in the associated Completion Time, the plant must be placed in a condition where the limit is not applicable or where corrosion rates are reduced. This is accomplished by placing the plant in MODE 3 within 6 hours and MODE 5 within 36 hours. In MODE 5, the dissolved oxygen limit is not applicable and stress corrosion rates are reduced. The 6 hours allotted to reach MODE 3 is a reasonable time, based on operating experience, to shutdown the plant from full power in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 36 hours for restoration of the parameters and to reach MODE 5.

If high chloride or fluoride concentrations are the reason for entering MODE 5, and the condition is not corrected before entering MODE 5, Required Actions C.1, C.2 and C.3 must be performed.

(continued)

BASES

ACTIONS (continued)

C.1

If RCS chloride or fluoride concentration are not within Steady State Limits for more than 24 hours in any condition other than MODES 1, 2, 3 or 4, or if RCS chloride or fluoride concentration are not within Transient Limits for any amount of time in any condition other than MODES 1, 2, 3 or 4, action must be immediately initiated to reduce pressurizer pressure to ≤ 500 psig unless it is already below 500 psig. The immediate Completion Time is consistent with the required times for actions requiring prompt attention.

A Note is added to Condition C stating that all Required Actions must be completed whenever this Condition is entered.

C.2 and C.3

In addition to Required Action C.1, an engineering evaluation must be performed to determine the effects of the out-of-limit condition on the structural integrity of the RCS. It must also be determined that the RCS remains acceptable for continued operation. These actions must be taken prior to increasing pressurizer pressure above 500 psig or prior to entry to MODE 4. These evaluations are necessary because of the time/temperature/concentration dependency of the effects of exceeding the limits. Corrosion evaluations for conditions outside the limits are made on a case by case basis.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.4.4.1, 3.4.4.2 and 3.4.4.3

Demonstrating that the chemistry parameters are within their Steady State Limits at a Frequency of 72 hours provides adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action. TSR 3.4.4.1 Frequency is modified by a Note stating that it is not required with Tavg ≤ 250 °F. With Tavg ≤ 250 °F, the dissolved oxygen limit is not applicable.

(continued)

BASES (continued)

REFERENCES

1. Watts Bar FSAR, Section 5.2, "Integrity of Reactor Coolant Pressure Boundary."

2. Watts Bar FSAR, Section 11.1, "Source Terms."

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.5 Reactor Coolant System Structural Integrity

BASES

BACKGROUND

Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of ASME Code Class 1, 2, and 3 pumps and valves are performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (Ref. 1) and applicable Addenda, as required by 10 CFR 50.55a(g) (Ref.2). Exception to these requirements apply where relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i) and (a)(3). In general, the surveillance intervals specified in Section XI of the ASME Code apply. However, the Inservice Inspection Program includes a clarification of the frequencies for performing the inservice inspection and testing activities required by Section XI of the ASME Code. This clarification is provided to ensure consistency in surveillance intervals throughout the Technical Specifications. Each reactor coolant pump flywheel is, in addition, inspected as recommended in Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975 (Ref.3).

PROPOSED REVISION

Under the terms of this specification, the more restrictive requirements of the Technical Specifications take precedence over the ASME Boiler and Pressure Vessel Code and applicable Agenda. For example, the requirements of TSR 3.0.4 to perform surveillance activities prior to the change of MODE takes precedence over the ASME Boiler and Pressure Vessel Code provision which allows pumps to be tested up to one week after return to normal operation. Accordingly, in order to establish proper test conditions without MODE limitations, the Specification takes an exception to the provisions in TR 3.0.4. This provides the necessary authorization to change the operational condition, including change of MODE, in order to establish the proper test conditions as stipulated in the ASME Boiler and Pressure Vessel Code. Likewise, the ASME Boiler and Pressure Vessel Code allows a valve to be incapable of performing the specified function for up to 24 hours before being declared inoperable. However, the Technical Specification definition of OPERABLE does not permit a grace period before a component, which is not capable of performing a specific function, is declared inoperable.

(continued)

BASES

BACKGROUND (continued)	Additionally, programmatic information on Inservice Inspection is provided in Technical Specifications, Chapter 5.0, Administrative Controls, Section 5.7.2.11, Inservice Inspection Program.
APPLICABLE SAFETY ANALYSES	Certain components which are designed and manufactured to the requirements of specific sections of the ASME Boiler and Pressure Vessel Code are part of the primary success path and function to mitigate DBAs and Transients. However, the integrity/operability of these components is addressed in the relevant specifications that cover individual components. In addition, this particular Technical Requirement covers only inspection/testing requirements for these components, which is not a consideration in designing the accident sequences for theoretical hazard evaluation (Ref.4).
TR	TR 3.4.5 requires that the structural integrity of the ASME Code Class 1, 2, and 3 components be maintained in accordance with TSR 3.4.5.1 and TSR 3.4.5.2. In those areas where conflict may exist between the Technical Specifications and the ASME Boiler and Pressure Vessel Code, the Technical Specifications take precedence.
APPLICABILITY	The structural integrity of the ASME Code Class 1 components is required in all MODES, when the temperature is above the minimum temperature required by NDT considerations. For ASME Code Class 2 components, the structural integrity is required when the temperature is above 200 °F. For ASME Code Class 3 components, the structural integrity is required at all times when the particular component is in service. The Note stipulates exception to TR 3.0.4 which permits MODE changes without consideration of structural integrity. This is necessary to establish the proper conditions for the testing in accordance with the ASME Boiler and Pressure Vessel Code.

(continued)

BASES (continued)

ACTIONS

A.1 and A.2

Required Actions A.1 and A.2 apply to ASME Code Class 1 components. Required Action A.1 stipulates that structural integrity should be restored before the temperature of the component is increased more than 50°F above the minimum temperature required by NDT considerations. Alternatively, the component could be isolated before the temperature reaches 50°F above the minimum temperature required by NDT considerations.

B.1 and B.2

Required Actions B.1 and B.2 apply to ASME Code Class 2 components. Required Actions B.1 stipulates that structural integrity should be restored before the temperature of the component is increased more than 200°F. Alternatively, the component could be isolated before the temperature reaches 200°F.

PROPOSED REVISION

C.1, C.2.1, and C.2.2

Required Actions C.1, C.2.1, and C.2.2 apply to ASME Code Class 3 components. Required Action C.1 requires that the applicable Conditions and Required Actions for the affected components be entered immediately. Additionally, the structural integrity of all components must be satisfied ~~before the respective components are placed in service. Required Action C.2 requires that a~~ or the particular component, which does not satisfy the required structural integrity, must be isolated from the system ~~before the system is placed in service~~. within the Completion Time specified in the affected components LCO or TR.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.4.5.1

This surveillance stipulates inspection of the coolant pump flywheel in accordance with Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1. This inspection verifies the structural integrity of the flywheel.

TSR 3.4.5.2

TSR 3.4.5.2 requires the verification of the Reactor Coolant System structural integrity in accordance with the Inservice Inspection Program.

(continued)

BASES (continued)

REFERENCES

1. ASME Boiler and Pressure Vessel Code, Section XI.
2. 10 CFR 50.55a, "Codes and Standards."
3. Regulatory Guide 1.14, Revision 1, 1975.
4. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1 Ice Bed Temperature Monitoring System

BASES

BACKGROUND

The Ice Bed Temperature Monitoring System consists of Resistance Temperature Detectors (RTDs) which are located in various parts of the ice condenser. They serve to verify the attainment of a uniform equilibrium temperature in the ice bed and to detect general gradual temperature rise in the cooling system if breakdown occurs.

Forty-eight RTDs are mounted on ice bed probes which are located throughout the ice bed. These 48 RTDs tie into a temperature scanner unit, located in the Incore Instrument Room. The scanner multiplexes the ice condenser RTD's signals to a Westronics recorder in the Main Control Room. There are also six temperature switches located at various points in the ice bed to serve as backup indication should the scanner unit or recorder fail to operate. These inputs provide an alarm on the control room annunciator panel should the ice bed temperature exceed preset value (Ref. 1). In addition, the 48 RTDs can be read from the local ice condenser temperature monitoring panel.

APPLICABLE SAFETY ANALYSES

The ice condenser is a passive device requiring only maintenance of the ice inventory in the ice bed. As such there are no actuation circuits or equipment which are required for the ice condenser to operate in the event of a Loss of Coolant Accident (LOCA). The Ice Bed Temperature Monitoring System serves only to monitor the ice bed temperature. Since the ice bed has a very large thermal capacity, postulated off-normal conditions can be successfully tolerated for a week to two weeks. Therefore, the Ice Bed Temperature Monitoring System provides an early warning of any incipient ice condenser temperature anomalies. The Ice Bed Temperature Monitoring System is not assumed to be OPERABLE to mitigate the consequences of a DBA or Transient. Based on the PRA Summary Report (Ref. 2), the Ice Bed Temperature Monitoring System has not been identified as a significant risk contributor.

(continued)

BASES (continued)

TR

TR 3.6.1 states that the Ice Bed Temperature Monitoring System shall be OPERABLE with at least two OPERABLE RTD channels in the ice bed at each of three basic elevations: 10'6", 30'9", and 55' above the floor of the ice condenser, for each one-third of the ice condenser.

The OPERABILITY of the Ice Bed Temperature Monitoring System ensures that the capability is available for monitoring the ice bed temperature. The ice bed temperature may be determined at the local ice condenser temperature monitoring panel as well as in the Main Control Room and the Monitoring System would still be considered OPERABLE. In the event the Monitoring System is inoperable, the Required Actions provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.

APPLICABILITY

The Ice Bed Temperature Monitoring System is required to be OPERABLE in MODES 1, 2, 3, and 4. This corresponds to the Applicability requirements for the ice bed in Technical Specification LCO 3.6.11, Ice Bed.

ACTIONS

A.1

With the ice bed temperature not available in the Main Control Room, the ice bed temperature must be determined at the local ice condenser temperature monitoring panel (local panel) every 12 hours. Since the ice bed has a very large thermal capacity, postulated off-normal conditions can be successfully tolerated for one or two weeks. Therefore, a 12 hour surveillance of the ice bed temperature will give sufficient warning of any incipient ice condenser temperature anomalies.

B.1.1, B.1.2, and B.1.3

With the Ice Bed Temperature Monitoring System inoperable and being unable to determine the ice bed temperature at the local panel, B.1.1, B.1.2, and B.1.3 require verification that: the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed; the last recorded mean ice bed temperature was less than or equal to 20°F and steady; and the Ice Condenser Cooling System is OPERABLE.

(continued)

BASES

and every 12 hours thereafter

ACTIONS (continued)

and 1 hour to perform Required Action B.1.2

The Completion Time of 1 hour to perform Required Actions B.1.1 ~~B.1.2~~ and B.1.3 is reasonable and based upon the typical time necessary to perform the Required Actions. These Required Actions, along with the high thermal capacity of the ice bed, ensure that the ice bed will remain below critical temperatures while the Monitoring System is inoperable.

B.2.1 and B.2.2

With the Ice Bed Temperature Monitoring System inoperable and being unable to determine the ice bed temperature at the local panel, either the Monitoring System or the local monitoring panel must be restored to OPERABLE within 30 days. A Completion Time of 30 days is given, provided that Required Actions B.1.1, B.1.2, and B.1.3 are met. These Required Actions, along with the high thermal capacity of the ice bed, ensure that the ice bed will remain below critical temperatures during the 30 day Completion Time. Also, the six alarmed temperature switches (which provide an alarm at 25°F) will continue to monitor the ice bed temperature. If the Ice Condenser Cooling System becomes inoperable before the Ice Bed Temperature Monitoring System is OPERABLE, than Required Action C must be performed.

PROPOSED REVISIONS

C.1.1 and C.1.2

With the Ice Bed Temperature Monitoring System inoperable and being unable to determine the ice bed temperature at the local panel and with the Ice Condenser Cooling System not satisfying the minimum components OPERABILITY requirements of Required Action B.1.3, Required Actions C.1.1 and C.1.2 require verification that: the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed; and that the last recorded mean ice bed temperature was less than or equal to 15°F and steady. The Completion Time of 1 hour to perform Required Actions ~~C.1.1 and~~ C.1.2 is reasonable and based upon the typical time necessary to perform the Required Actions. These Required Actions, along with the high thermal capacity of the ice bed, ensure that the ice bed will remain below critical temperatures while the Monitoring System and Ice Condenser Cooling System are inoperable.

and every 12 hours thereafter to perform Required Action C.1.1 and 1 hour

(continued)

BASES

ACTIONS (continued)

C.2.1 and C.2.2

With the Ice Bed Temperature Monitoring System inoperable and being unable to determine the ice bed temperature at the local panel and with the Ice Condenser Cooling System not satisfying the minimum components OPERABILITY requirements of Required Action B.1.3, the Ice Condenser Cooling System or the local temperature monitoring panel must be restored to OPERABLE. A Completion Time of 6 days is given, provided that Required Actions C.1.1, and C.1.2 are met. These Required Actions, along with the high thermal capacity of the ice bed, ensure that the ice bed will remain below critical temperatures during the 6-day Completion Time. Also, the six alarmed temperature switches (which provide an alarm at 25°F) will continue to monitor the ice bed temperature.

D.1 and D.2

If the Required Action and associated Completion Time of Condition A, B or C is not met, the integrity of the ice bed may be threatened. Therefore, the plant must be placed in a MODE in which the TR does not apply. This is done by placing the plant in MODE 3 in 6 hours and MODE 5 in 36 hours. The allowed Completion Times are reasonable based on operating experience to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.6.1.1

Performance of a CHANNEL CHECK on the Ice Bed Temperature Monitoring System once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or of even something more serious. The Surveillance Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. Thus, TSR 3.6.1.1 ensures that loss of function will be identified within 12 hours.

(continued)

BASES (continued)

REFERENCES

1. Watts Bar FSAR, Section 6.7.15, "Ice Condenser Instrumentation"

2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Inlet Door Position Monitoring System

BASES

BACKGROUND

Ninety-six limit switches monitor the position of the lower inlet doors. Two switches are mounted on the door frame for each door panel. The position and movement of the switches are such that the doors must be effectively sealed before the switches are actuated. A single annunciator window in the control room gives a common alarm signal when any door is open. Open/shut indication is also provided at the lower inlet door position display panel located in the Main Control Room. For door monitoring purposes, the ice condenser is divided into six zones, each containing four inlet door assemblies, or a total of eight door panels. The limit switches on the doors in any single zone are wired to a single light on the inlet door position display panel such that a closed light indicates that all the doors in that zone are shut and an open light indicates that one or more doors in that zone are open (Ref. 1).

Monitoring of inlet door position is necessary because the inlet doors form the barrier to air flow through the inlet ports of the ice condenser for normal unit operation. Failure of the Inlet Door Position Monitoring System requires an alternate OPERABLE monitoring system to be used to ensure that the ice condenser is not degraded.

APPLICABLE SAFETY ANALYSES

Proper operation of the inlet doors is necessary to mitigate the consequences of a loss of coolant accident or a main steam line break inside containment. The Inlet Door Position Monitoring System, however, is not required for proper operation of the inlet doors, nor is it considered OPERABLE as an initial condition for a DBA. Hence, the Inlet Door Position Monitoring System is not a consideration in the analyses of DBAs. Based on the PRA Summary Report in Reference 2, the Inlet Door Position Monitoring System has not been identified as a significant risk contributor.

(continued)

BASES (continued)

TR

The Inlet Door Position Monitoring System provides the only direct means of determining that the inlet doors are shut. Since an open door would allow heat input that could cause sublimation and mass transfer of ice in the ice condenser compartment, the Inlet Door Position Monitoring System must be OPERABLE whenever the ice bed is required to be OPERABLE. This ensures early detection of an inadvertently opened or failed door, allowing prompt action before ice bed degradation can occur.

APPLICABILITY

The Inlet Door Position Monitoring System is required to be OPERABLE in MODES 1, 2, 3 and 4. This corresponds to the Applicability requirements for the ice bed.

ACTIONS

PROPOSED REVISION

A.1 and A.2

in MODE 1

If the Inlet Door Position Monitoring System is inoperable, in MODE 1, an alternate OPERABLE monitoring system must be used to ensure that the ice condenser is not degraded. This is done by confirming the Ice Bed Temperature Monitoring System is OPERABLE with the ice bed temperature ≤ 27°F. Since this is an indirect means of monitoring inlet door position, operation in MODE 1 may continue for a maximum of 14 days in this condition. ~~Completion Time is modified by a Note to this effect~~. This Action must be completed within 4 hours and each 4 hours thereafter. The Frequency of 4 hours is based on the fact that temperature changes cannot occur rapidly in the ice bed because of the large mass of ice involved. If the ice bed temperature increases to above 27°F, the ice bed must be declared inoperable in accordance with Technical Specification 3.6.11, "Ice Bed".

B.1

If the Required Action and associated Completion Time for Condition A are not met, or if the Inlet Door Position Monitoring System is inoperable in MODES 2, 3, or 4, the Inlet Door Position Monitoring System must be restored to OPERABLE within 48 hours. The 48-hour Completion Time is based on the fact that, with the very large mass of ice involved, it would not be possible for the temperature to increase to the melting point and a significant amount of ice to melt in a 48-hour period.

(continued)

BASES

ACTIONS (continued)

PROPOSED REVISION

C.1 and C.2 ~~B.2.1 and B.2.2~~

If the Required Action ~~B.1~~ and associated Completion Time of Condition B cannot be met, the plant must be placed in a condition where OPERABILITY of the Inlet Door Position Monitoring System is not required. This is accomplished by placing the plant in MODE 4 within ~~an additional 6~~ 12 hours ~~(54 hours total)~~ and MODE 5 within ~~an additional~~ 36 hours ~~(84 hours total)~~. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.6.2.1

Performance of the CHANNEL CHECK for the Inlet Door Position Monitoring System once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. Performance of the CHANNEL CHECK helps to ensure that the instrumentation continues to operate properly between each TADOT. The dual switch arrangement on each door allows comparison of open and shut indicators for each zone as well as a check with the annunciator window. The Surveillance Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. Thus, TSR 3.6.2.1 ensures that loss of function will be identified within 12 hours.

TSR 3.6.2.2

TSR 3.6.2.2 is the performance of a TADOT every 18 months. It checks trip devices (limit switches) that provide actuation signals directly. The 18-month Frequency was developed considering the plant conditions needed to perform TSR 3.6.2.2. The 18-month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)	TSR 3.6.2.3 TSR 3.6.2.3 requires verification that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its Technical Specification testing. This provides ongoing operational testing of the indicating system. The Frequency coincides with the Technical Specifications performed.
REFERENCES	1. Watts Bar FSAR, Section 6.7, "Ice Condenser System." 2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Lower Compartment Cooling (LCC) System

BASES

BACKGROUND

The Compartment Cooling fans (LCCs) provide non-safety related cooling for the lower compartment spaces after all accidents, except those that initiate a Phase B Containment Isolation Signal (Ref. 1), when the non-safety related cooling coils and cooling water supply are available. LCC fans perform a safety related air recirculation function in the lower containment pocketed (dead ended) spaces after a main steam line break (MSLB) to prevent the formation of localized hot spots which could exceed the qualification temperatures of equipment required to operate post accident. The LCC fans are not required to operate during or after a loss of coolant accident (LOCA).

After a MSLB, one LCC train will be manually started a minimum of 1-1/2 hours, but less than 4 four hours after the accident to ensure that the dead ended compartment temperatures are kept below the environmental qualification limit. Each train consists of two 50% capacity fans, backdraft damper, instrumentation and controls, and associated ductwork. Each train is powered from separate class 1E power sources.

APPLICABLE SAFETY ANALYSES

The LCC fans recirculate air in the lower compartment spaces after a MSLB. Under these circumstances, the intact Reactor Coolant System piping will serve as a long term heat source. After the ice is melted, the heat from the RCS will result in a gradual temperature increase in the sub-compartments of the lower containment. If the recirculation of air should fail during or after the accident, the Containment Spray System and Air Return Fan System can be started to provide the necessary containment cooling. The temperatures in the sub-compartments of the lower containment are not input to the safety analyses. Based on the PRA Summary Report (Ref. 2), containment area temperatures have not been identified as significant risk contributors. Also, Area Temperature Monitoring ~~has been~~ was identified as a candidate for relocation out of the Technical Specifications (Ref.3).

PROPOSED REVISION

(continued)

BASES (continued)

TR

The TR specifies the equipment which needs to be OPERABLE in order to ensure that air can be circulated in the sub-compartments if an accident should take place. At least one LCC train must be placed in operation after the accident. The LCC fans do not perform a cooling function, which means that the coils and the secondary cooling water circuits need not be OPERABLE. However, secondary side failures which could impair the operation of the fans and the circulation of the air must be prevented.

APPLICABILITY

The flow of air to the sub-compartments is necessary following a MSLB where the RCS represents a major heat source in lower containment. Based on the temperature of the RCS, this could be in MODES 1 through 4. In MODES 5 and 6 the probability for an accident is small and, in any case, the heat capacity of the RCS is limited and, therefore, not able to heat up the lower compartment spaces to such an extent that equipment could degrade. The specification is therefore only applicable in MODES 1, 2, 3 and 4.

ACTIONS

A.1

With one fan inoperable, the inoperable fan must be restored to OPERABLE status within 7 days. During this period, the remaining three fans are available to circulate the air in the lower compartments of the containment. However, only two fans are necessary to prevent the hot spots. Hence, there is one spare fan available. The 7-day Completion Time is based on the low probability of an event requiring emergency fan operation, the availability of one fan more than required, and the availability of alternate cooling means.

B.1

With two fans inoperable the plant has still adequate fan capacity to circulate air if an accident should take place. However, in this case no spare capacity is available. Hence, it is required to restore at least one fan to OPERABLE status within 72 hours. With one fan restored, three fans will be OPERABLE and Condition A must be entered. This will allow another 7 days to restore the last inoperable fan to OPERABLE. The 72-hour Completion Time in

(continued)

BASES

ACTIONS

B.1 (continued)

Condition B is based on the low probability of an event requiring fan operation simultaneous with further fan deterioration, and the availability of alternate cooling means.

C.1 and C.2

If the Required Actions of A.1 and B.1 cannot be completed within the required Completion Time or if more than two fans are inoperable, the plant must be placed in a MODE in which the TR does not apply. This is done by placing the plant in at least MODE 3 within 6 hours and in MODE 5 within an additional 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.6.3.1

During normal operation three of the four LCCs operate to remove heat from the lower compartments of the containment. This means that three of the four fans are operating at all times. Hence, this gives certainty that at least three fans are OPERABLE. The test is for the fan that has not been in operation during the preceding 31 days and to verify that all fans can be manually started from the control room. The 15 minutes running test is optional for fans that have been running the previous 31 days, or will be running after the Surveillance has been carried out.

REFERENCES

1. Watts Bar FSAR, Section 6.2.2, "Containment Heat Removal Systems".

2. WCAP-13470, "Watts Bar Unit 1 Technical Specifications Criteria Application Report," dated August, 1992.

3. Thomas E. Murley (NRC) letter to W. S. Wilgus, dated May 9, 1988, forwarding the NRC Staff review of the "Nuclear Steam Supply System Vendor Owners Groups' Application of the Commission's Interim Policy Statement Criteria to the Standard Technical Specifications."

B 3.7 PLANT SYSTEMS

B 3.7.1 Steam Generator Pressure/Temperature Limitations

BASES

BACKGROUND

In order to meet regulatory and code requirements with respect to material toughness, certain limits on steam generator pressure and temperature are established. Material toughness varies with temperature and is lower at room temperature than at operating temperature. One indicator of the temperature effect on ductility is the nil-ductility temperature (NDT). Therefore, a nil-ductility reference temperature (RT_{NDT}) has been determined by experimental means. The RT_{NDT} is that temperature below which brittle (non-ductile) fracture may occur. For the steam generator, the RT_{NDT} has been determined to be 10°F. Considering uncertainties and proper margins, the minimum operating temperature has been determined to be 70°F. The 70°F temperature must be established before the pressure is increased to 200 psig. This 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 fracture mechanic methodology, which is used to determine the stresses and material toughness, follows the guidance given by 10 CFR 50, Appendix G (Ref. 1). Reference 1 mandates the use of ASME Boiler and Pressure Vessel Code, Section III, Appendix G (Ref. 2).

APPLICABLE SAFETY ANALYSIS

The RT_{NDT} limit is not derived from the Design Basis Accident analyses. The RT_{NDT} limit is imposed during normal operation to avert encountering pressure/temperature combinations which are not analyzed as part of the steam generator design. Unanalyzed pressure/temperature combinations could cause propagation of minor, undetected flaws, which could cause brittle failure of the pressure boundary. Because the RT_{NDT} limit is related to normal operation, the RT_{NDT} limit is not a consideration in designing the accident sequences for theoretical hazard evaluations (Ref. 3).

(continued)

BASES (continued)

TR

TR 3.7.1 requires that the pressures on the primary and the secondary sides in the steam generator are kept at or below 200 psig when the temperature is less than or equal to 70°F. The pressure induced stress from the 200 psig pressure is low enough to be insignificant, even at temperatures at or below RT_{NDT}.

APPLICABILITY

The operating requirements which must be observed to avoid a condition, which could lead to brittle failure, is not strictly limited to specific MODES. Hence, in general, Applicability should be at all times. However, in practice it is unlikely that these limits will be violated in the lower numbered MODES, due to the high operating temperature on the primary as well as the secondary side in the steam generators. Accordingly, the limits are most easily violated at low temperature, during shutdown and startup of the plant. Applicability can therefore conveniently be limited to whenever the temperature on the primary or the secondary side is at or below 70°F.

ACTIONS

A.1, A.2, and A.3

With the combination of pressure and temperature not within limits, a reduction in pressure at or below 200 psig is required within 30 minutes. An engineering evaluation must be performed to determine the effect on the structural integrity of the pressure boundary. The evaluation must be finished and the conclusion made that no hazard exists, before the temperature is increased to more than 200°F. Condition A is modified by a Note which states that whenever Condition A is entered, all ACTIONS A.1 through A.3 must be completed.

(continued)

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.1.1

TSR 3.7.1.1 verifies that the pressures on the primary and the secondary sides in the steam generators are less than 200 psig. At temperatures below 70°F, the temperature margin to RT_{NDT} is diminished. Hence, the pressure must be checked every hour to ensure that the material toughness criteria are not violated. The 1-hour Frequency is based on engineering judgement and is consistent with industry practice.

REFERENCES

1. 10 CFR 50, Appendix G, "Fracture Toughness Requirements".
2. ASME Boiler and Pressure Code, Section III.
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7 PLANT SYSTEMS

B 3.7.2 Flood Protection Plan

BASES

BACKGROUND

Nuclear power plants are designed to prevent the loss of capability for cold shutdown and maintenance thereof resulting from the most severe flood conditions that can reasonably be predicted to occur at the site as a result of severe hydrometeorological conditions, seismic activity, or both (Ref. 1). Assurance that safety-related facilities are capable of surviving all possible flood conditions is provided by the flood protection plan.

The elevations of plant features which could be affected by the submergence during floods vary from 714.5 ft Mean Sea Level (MSL) (access to electrical conduits) to 740.1 ft MSL (including wave runup). Plant grade is elevation 728 ft MSL which can be exceeded by rainfall floods and by seismic-caused dam failure floods. One kind of warning plan is needed to assure plant safety from rainfall floods, and another kind of warning plan is needed for seismic-caused dam failure floods.

The warning plan is divided into two stages. This two-stage scheme is designed to prevent excessive economic loss in case a potential flood does not fully develop. Stage I, which is a minimum of 10 hours, allows preparation steps, causing some damage to be sustained, but will postpone major economic damage. Stage II, which is a minimum of 17 hours, is a warning that assumes a forthcoming flood above grade. The time limits on the stages are given so that unnecessary economic penalty can be avoided while adequate time is allowed for preparing for operation in the flood mode.

Stage I procedures consist of a controlled reactor shutdown and other easily revokable steps, such as moving flood supplies above the maximum possible flood elevation and making temporary connections and load adjustments on the onsite power supply. After unit shutdown, the Reactor Coolant System will be cooled by the Auxiliary Feedwater System and the pressure will be reduced to less than 500 psig. Stage II procedures are the least easily revokable and more damaging steps necessary to have the plant in the flood mode when the flood exceeds plant grade. Heat removal from the steam generators will be accomplished by adding river water

(continued)

BASES

BACKGROUND (continued)	from the Fire Protection System, and relieving steam to the atmosphere through the steam generator power operated relief valves. Other essential plant cooling loads will be transferred from the Component Cooling Water System to the Essential Raw Cooling Water System (ERCW); the ERCW will also replace the Raw Cooling Water System to the ice condensers. The Radioactive Waste System will be secured by filling tanks below Design Bases Flood (DBF) level with enough water to prevent floatation; one exception is the waste gas decay tanks, which are sealed and anchored against floatation. Power and communication lines running beneath the DBF that are not required for submersed operation will be disconnected, and batteries below the DBF will be disconnected (Ref. 2).
APPLICABLE SAFETY ANALYSES	The flood protection plan specifies flood control measures to protect safety related equipment in the event that the maximum elevation for the ultimate heat sink or other body of water, as applicable, is exceeded. Because external flooding conditions (e.g. upstream dam rupture or local rainfall) typically present substantial warning time to achieve plant shutdown, this requirement is not a contributor to a dominant risk sequence (Ref. 3).
TR	TR 3.7.2 requires that the flood protection plan be ready for implementation to maintain the plant in a safe condition. This requirement ensures that facility protective actions will be taken and operation will be terminated in the event of flood conditions.
APPLICABILITY	The flood protection plan TR is applicable when one or more of the following conditions exist: a. Flood producing rainfall conditions in the east Tennessee watershed, or b. An early warning or alert that a critical combination of flood and/or highhead water levels may or have developed, or c. An early warning or alert involving Fontana Dam, or

(continued)

BASES

APPLICABILITY (continued)

d. Recognizable seismic activity in the east Tennessee region.

ACTIONS

A.1, A.2, and A.3

If a Stage I flood warning is issued, several actions are required to be taken. The first requires the plant to be placed in MODE 3 in 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems.

Upon a Stage I flood warning notification, initiate and complete the Stage I flood protection plan, which involves preparatory steps to postpone major economic damage. The required Completion Time for this Required Action is 10 hours which is adequate time for preparing for operation in the flood mode. The plant is also required to be brought from full power operation to a safe shutdown. This is accomplished by Required Action A.3. This Required Action requires the establishment of a SHUTDOWN MARGIN of at least 5% $\Delta k/k$ and T_{avg} less than or equal to 350°F. The Completion Time of 10 hours is reasonable to accomplish the required SHUTDOWN MARGIN and T_{avg}.

A.4.1 and A.4.2

Once a Stage I flood warning has been issued, it is necessary to verify within 10 hours that communications between the TVA Division of Water Resources and the Watts Bar Nuclear Plant have been established. This is necessary because the TVA Division of Water Resources provides the flood forecasting for the Watts Bar Nuclear Plant. The Completion Time of 10 hours corresponds to the time specified to initiate and complete the Stage I flood protection plan.

If communications between the TVA Division of Water Resources and the Watts Bar Nuclear Plant have not been established within the required Completion Time, the Stage II flood protection procedure must be initiated and completed within 27 hours. The Completion Time of 27 hours corresponds to the TVA Division of Water Resources preflood preparation time. This is to ensure that warnings of floods

(continued)

BASES

ACTIONS (continued)

with the prospect of reaching elevation of 727 ft MSL, 1 foot below plant grade, are early enough to assure adequate warning time for safe plant shutdown.

B.1

If the Stage II flood warning has been issued, the Stage II flood protection plan must be initiated and completed within 17 hours prior to the predicted flooding of the site. The Completion Time of 17 hours corresponds to the remaining hours of the 27 hour preflood preparation time after the Stage I flood warning consisting of 10 hours has expired, and is an adequate time period to complete shutdown.

C.1, C.2.1, C.2.2.1, and C.2.2.2

If a seismic event occurs after a critical combination of flood and/or headwater alerts is issued, within 6 hours communications between TVA Power Control Center and the Watts Bar Nuclear Plant must be verified and maintained.The TVA Power Control Center is able to detect unexplained electrical interruptions at dams (not including Fontana Dam), or loss of contact with the dams involved in the issued alert. If an unexplained interruption occurs, the Watts Bar Plant Manager will be notified and efforts will be made by the TVA Power Control Center to determine whether dam failure has occurred. The 6-hour Completion Time is an adequate time period to complete the requirements of Required Action C.1.

If Required Action C.1 and the associated Completion Time is not met, the Stage I flood protection plan must be initiated and completed within the 16 hours. The Completion Time for this Required Action is 16 hours which is adequate time for preparing for operation in the flood mode.

Also, communications between the TVA Power Control Center and Watts Bar Nuclear Plant must be established prior to the completion of the Stage I flood protection plan. If communications cannot be established, the Stage II flood protection plan must be initiated and completed within 17 additional hours (33 hours total). The Completion Time of 33 hours corresponds the TVA Division of Water Resources preflood preparation time and is an adequate time period to complete shutdown.

(continued)

BASES

ACTIONS (continued)

D.1, D.2.1, D.2.2.1, and D.2.2.2

Once a Fontana Dam Alert has been issued, communications between Fontana Dam and the Watts Bar Nuclear Plant must be verified and maintained on an hourly basis. This ensures that the Watts Bar Nuclear Plant will know on a frequent basis the status of Fontana Dam, and if a dam failure has occurred.

If Required Action D.1 and the associated Completion Time is not met, the Stage I flood protection plan must be initiated and completed within 10 hours. The Completion Time for this Required Action is 10 hours which is adequate time for preparing for operation in the flood mode.

Also, communications between Fontana Dam and Watts Bar Nuclear Plant must be established prior to the completion of the Stage I flood protection plan. If communications cannot be established, the Stage II flood protection plan must be initiated and completed within 17 additional hours (27 hours total). The Completion Time of 27 hours corresponds to the TVA Division of Water Resources preflood preparation time. After the Stage I flood warning, consisting of 10 hours, has expired, 17 additional hours are allotted to the Stage II flood protection plan. This is an adequate time period to complete shutdown.

E.1.1, E.1.2, and E.2

If either Norris, Cherokee, Douglas, Fort Loudon, Fontana, or Tellico Dam has failed seismically after a combination of flood and/or headwater alerts have been issued, the Stage I flood protection plan must be initiated and completed within 10 hours. The Completion Time for this Required Action is 10 hours which is adequate time for preparing for operation in the flood mode.

Also, the Stage II flood protection plan must be initiated and completed within 17 additional hours (27 hours total). The Completion Time of 27 hours corresponds to the TVA Division of Water Resources preflood preparation time. After the Stage I flood warning, consisting of 10 hours, has expired,

(continued)

BASES

ACTIONS (continued)

17 additional hours are allotted to the Stage II flood protection plan. This is an adequate time period to complete shutdown.

At any time it is determined that the potential for flooding at the site does not exist, the Stage I and Stage II flood protection plans are to be terminated immediately.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.2.1

This surveillance involves determining, every 8 hours, the water level at the intake pumping station when the water level is less than or equal to 714.5 ft MSL during November 1 through April 15 (the winter months). The 8 hour Frequency of this surveillance for this water level is frequent enough to ensure the water level is not approaching the plant elevation of 727.0 ft MSL.

TSR 3.7.2.2

This surveillance involves determining, every 8 hours, the water level at the intake pumping station when the water level is less than or equal to 726.5 ft MSL during April 16 through October 31 (the summer months). The 8 hour Frequency of this surveillance for this water level is frequent enough to ensure the water level is not approaching the plant elevation of 727.0 ft MSL.

TSR 3.7.2.3

This surveillance involves determining, every 2 hours, the water level at the intake pumping station when the water level is greater than 714.5 ft MSL during November 1 through April 15 (the winter months). The 2 hour Frequency of this surveillance, for water levels greater than 714.5, is required because of the potential for fast rising water, which could approach the plant elevation of 727.0 ft MSL.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.2.4

This surveillance involves determining, every 2 hours, the water level at the intake pumping station when the water level is greater than 726.5 ft MSL during April 16 through October 31 (the summer months). The 2 hour Frequency of this surveillance, for water levels greater than 726.5, is required because of the potential for fast rising water, which could approach the plant elevation of 727.0 ft MSL.

TSR 3.7.2.5

This surveillance requires communications between Watts Bar Nuclear Plant and TVA Division of Water Resources be established and maintained every 3 hours. A Note for this surveillance states that this is required only when flood-producing rainfall conditions exist in the east Tennessee watershed. This communications requirement exists because the TVA Division of Water Resources provides the flood forecasting for Watts Bar Nuclear Plant. The 3 hour Frequency is adequate for early flood forecasting.

TSR 3.7.2.6

This surveillance requires communications between Watts Bar Nuclear Plant and TVA Power Control Center be established and maintained every 3 hours until such time that it has been determined the potential for flooding the site does not exist. A Note for this surveillance states that this is required only following a recognizable seismic event that has occurred when a critical combination of flood and/or headwater alerts have been issued. This communications requirement exists because the TVA Power Control Center is able to detect unexplained electrical interruptions at dams (not including Fontana Dam), or loss of contact with the dams involved in the issued alert. If an unexplained interruption occurs, the Watts Bar Plant Manager will be notified and efforts will be made by the TVA Power Control Center to determine whether dam failure has occurred. The 3 hour Frequency is adequate for dam failure notification.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENT (continued)

TSR 3.7.2.7

This surveillance requires communications between Watts Bar Nuclear Plant and Fontana Dam be established and maintained every hour. A Note for this surveillance states that this is required only when an alert has been issued by TVA Division of Water Resources. This communications requirement exists because Fontana Dam would notify Watts Bar Nuclear Plant in the event that Fontana Dam had failed. This hourly Frequency is adequate for early flood forecasting as a result of the failure of Fontana Dam.

REFERENCES

1. Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants."
2. Watts Bar FSAR, Section 2.4.14, "Flooding Protection Requirements."
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7 PLANT SYSTEMS

B 3.7.3 Snubbers

BASES

BACKGROUND

Component standard supports, are those metal supports which are designed to transmit loads from the pressure-retaining boundary of the component to the building structure. Although classified as component standard supports, snubbers require special consideration due to their unique function. Snubbers are either operated hydraulically or mechanically, depending on the nature of the support needed. They are designed to provide no transmission of force during normal plant operations, but function as a rigid support when subjected to dynamic transient loadings. Therefore, snubbers are chosen in lieu of rigid supports where restricting thermal grow during normal operation would induce excessive stresses in the piping nozzles or other equipment. The location and size of the snubbers are determined by stress analysis. Depending on the design classification of the particular piping, different combinations of load conditions are established. These conditions combine loading during normal operation, seismic loading and loading due to plant accidents/transients to four different loading sets. These loading sets are denominated: normal, upset, emergency, and faulted condition. The actual loading included in each of the four conditions, depends on the design classification of the piping. The calculated stresses in the piping and other equipment, for each of the four conditions, must be in conformance with established design limits.

Supports for pressure-retaining components are designed in accordance with the rules of the ASME Boiler and Pressure Vessel Code, Section III, Division 1 (Ref. 1). The combination of loadings for each support, including the appropriate stress levels, meet the criteria of Regulatory Guide 1.124, "Design Limits and Loading Combinations for Class 1 Linear-Type Component Supports" (Ref. 2), and Regulatory Guide 1.130, "Design Limits and Loading Combinations for Class 1 Plate-and-Shell-Type Component Supports" (Ref. 3).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSIS

Pipe and equipment supports, in general, are not directly considered in designing the accident sequences for theoretical hazard evaluations. Further, various Probabilistic Risk Assessment (PRA) studies have indicated that snubbers are not of prime importance in a risk significant sequence (Ref. 4 and 5). Therefore, the function of the snubbers is not essential in mitigating the consequences of a DBA or Transient (Ref. 6).

TR

TR 3.7.3 requires that all snubbers utilized on safety related equipment shall be OPERABLE. Those snubbers that are utilized on non-safety related systems, shall be OPERABLE if a failure could have adverse effect on a safety related system.

APPLICABILITY

The OPERABILITY of the snubbers is required in MODES 1, 2, 3, and 4. For MODES 5 and 6, the OPERABILITY is limited to the snubbers located on those systems which need to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1.1, A.1.2, and A.2

If one or more snubbers have been declared inoperable, the snubber(s) must be restored to OPERABLE status in 72 hours. Alternatively, the snubber(s) must be replaced in the 72 hours. In either case, an engineering evaluation per Table 3.7.3-5 must be performed during the 72 hours to:

a) Determine the cause of the failure

As a result of this evaluation, the need for testing other snubbers will be considered. The results from the testing will be used to consider expanded functional testing and cause examination with consideration of manufacturing and design deficiency. It should be noted that the testing must be independent and not combined with TSR 3.7.3.3.

(continued)

BASES

ACTIONS (continued)

b) Determine the impact on the supported component

This evaluation shall determine if the inoperable snubber has adversely affected the attached component.

The 72 hours is based on engineering experiences and is reasonable, considering the time it will take to identify the problem and take the proper corrective actions.

B.1

If Required Actions under Condition A are not met within the 72 hours, the supported system or component is immediately declared inoperable.

TECHNICAL SURVEILLANCE REQUIREMENTS

The TSRs are preceded by three Notes. Note 1 states that the inservice inspection program shall be carried out in in accordance with the requirements in Tables 3.7.3-1, 2 and 3. This represents an enhanced inservice inspection program compared to the Inservice Inspection Program which stipulates inservice inspection in accordance with ASME section XI. Note 2 requires repair or replacement of snubbers which fail inspection, and testing of repaired snubbers before installation. Note 3 indicates that a "snubber type," as used in this TR, is determined by the design and manufacturer, but not by size.

TSR 3.7.3.1

TSR 3.7.3.1 comprises a visual inspection of the snubbers. The initial inservice inspection must be performed on the snubbers after 4 months, but no longer than 10 months, after initial unit operation. The frequency of subsequent surveillances depends on the number of snubbers found inoperable from each previous inspection as provided in Table 3.7.3-2 and the Inservice Inspection Program. The acceptance criteria and the remedial are listed in Table 3.7.3-1.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

The visual inspections are designed to detect obvious indications of inoperability of the snubbers. Removal of insulation or direct contact with the snubbers is not required initially. However, suspected causes of inoperability are to be investigated and all snubbers of the same type and all snubbers subjected to the same failure mode are to be inspected more frequently.

The visual inspection frequency is based upon the number of unacceptable snubbers found during the previous inspection. Therefore, the required inspection intervals vary inversely with the number of inoperable snubbers found during an inspection. If a snubber fails the visual acceptance criteria, the snubber is declared unacceptable and cannot be declared OPERABLE via functional testing. However, if the cause of rejection is understood and remedied for that type of snubber and for any other type of snubbers, that may be generically susceptible, and OPERABILITY verified by testing, that snubber may be reclassified acceptable for the purpose of establishing the next surveillance interval.

Snubbers maybe categorized, according to accessibility, as noted in the Note to Table 3.7.3-2. The accessibility of each snubber is determined based on radiation level as well as other factors such as temperature, atmosphere, location, etc. The recommendations of Regulatory Guide 8.8, "Information Relevant to Maintaining Occupational Radiation Exposure as Low as Practicable" (Ref. 7) and Regulatory Guide 8.10, "Operation Philosophy for Maintaining Occupational Radiation Exposure as Low as Practicable" (Ref. 8), are considered in planning and implementing the visual inspection program.

TSR 3.7.3.2

TSR 3.7.3.2 comprises the inspection of all snubbers attached to systems that have experienced unexpected, potentially damaging transients. The potential impact of the transients is assessed by reviewing operating data and by visually inspecting the associated systems. The review and the inspection must be performed within six months of the event. In addition to the inspection, the freedom-of-motion of the mechanical snubber(s) is verified in accordance with Table 3.7.3-3.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.3.3

TSR 3.7.3.3 comprises the functional testing of a representative sample of snubbers of each type. The sample plans are described in Table 3.7.3-4 and the acceptance criteria in Table 3.7.3-5. Notes to the two Tables provide detailed test instruction.

The testing of the snubbers has to be performed during plant shutdown. The first test is therefore performed during the first refueling and every 18 months thereafter, during shutdown. This frequency is based on engineering experience and is reasonable for testing of a representative sample of snubbers.

TSR 3.7.3.4

The TSR is preceded by three Notes which underline the need for considering service life of sub-components and to replace these sub-components before the end of the respective service lives. The replacement of sub-components must be documented and the documentation retained for further reference. TSR 3.7.3.4 address the monitoring of the service life of the snubbers. The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. The expected service life is established by the manufacturer and is based on operating experience with critical snubber parts such as seals and springs in a radiation environment. The 18 months Frequency is based on engineering experience and is reasonable for the verification service life.

REFERENCES

1. ASME Boiler and Pressure Vessel Code, Section III.
2. Regulatory Guide 1.124, "Design Limits and Loading Combinations for Class 1 Linear-Type Component Supports".

(continued)

BASES

REFERENCES (continued)

3. Regulatory Guide 1.130, "Design Limits and Loading Combinations for Class 1 Plate-and-Shell-Type Component Supports".

4. "Zion Probabilistic Safety Study", Commonwealth Edison Company, September 1981.

5. "Millstone Unit 3 Probabilistic Safety Study," North-east Utilities Company, August 1983.

6. NRC Staff Review of Nuclear Steam Supply System Vendor Owners Groups' Application of The Commission's Interim Policy Statement Criteria to Standard Technical Specifications, Attachment to letter dated May, 1988 from T.E. Murley, NRC to W.S. Wilgus, Chairman The B&W Owners Group.

7. Regulatory Guide 8.8, "Information Relevant to Maintaining Occupational Radiation Exposure as Low as Practicable".

8. Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposure as Low as Practicable".

B 3.7 PLANT SYSTEMS

B 3.7.4 Sealed Source Contamination

BASES

BACKGROUND

A sealed source is any byproduct, source, or special nuclear material that is encased in a capsule designed to prevent leakage or escape of the material (Ref. 1). Sealed sources are classified into three groups according to their use (sources in use, not in use, and startup sources and fission detectors) and may contain beta, gamma, or alpha emitting material. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on Reference 2. Those sources that 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 shielded mechanism.

APPLICABLE SAFETY ANALYSES

The sealed source contamination requirement ensures that leakage from sealed sources will not exceed allowable intake values. This TR is important to the safety of plant personnel, however it is not required to mitigate the consequences of a DBA or Transient (Ref. 3).

TR

TR 3.7.4 requires that the removable contamination shall be less than 0.005 microcuries for each sealed source containing the following radioactive material:

a. Greater than 100 microcuries of beta and/or gamma emitting material; or

b. Greater than 5 microcuries of alpha emitting material.

APPLICABILITY

Since the limits on the removable contamination for each sealed source containing radioactive material are not MODE dependent, this TR is applicable at all times.

(continued)

BASES (continued)

ACTIONS

Since this TR is applicable at all times, the Required Actions have been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

A.1

PROPOSED REVISION

With a sealed source having removable contamination in excess of the limits, the sealed source should be withdrawn from use immediately, or as ALARA principles and plant safety principles dictate. The immediate Completion Time reflects the importance of preventing the contamination from spreading.

A.2

If sealed source or fission detector leakage tests reveal the presence of removable contamination is greater than the specified limits, a report is required to be prepared and submitted to the NRC. This report should be prepared in accordance with Technical Specification 5.9.2 and submitted on an annual basis.

A.3.1 and A.3.2

If the sealed source contamination is not within the specified limit and the sealed source has been removed from use, the sealed source must be decontaminated and repaired, otherwise, disposal of the sealed source is required. If the sealed source is to be decontaminated and repaired, it must be done prior to returning the sealed source to use. If disposal of the sealed source is to be done, it must be completed in accordance with NRC regulations.

TECHNICAL SURVEILLANCE REQUIREMENTS

Notes have been added to this section stating that the licensee or other persons specifically authorized by the NRC shall perform the TSRs, and that the test methods used shall have a detection sensitivity of greater than or equal to 0.005 microcurie per test sample.

TSR 3.7.4.1

This surveillance determines every 6 months that the removable contamination is less than 0.005 microcuries for

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

each sealed source. The 6-month Frequency is frequent enough to identify a leaking or contaminated sealed source without having extensive spreading of contamination.

This surveillance is modified by several Notes. The Notes state that this TSR is only applicable to sources in use, to sources with half-lives of more than 30 days, and to sources in any form other than gas. Also, this TSR is not applicable to startup sources and fission detectors previously subjected to core flux.

TSR 3.7.4.2

This surveillance determines within 6 months prior to use or transfer to another licensee that the removable contamination is less than 0.005 microcuries for each sealed source and fission detector. This Frequency is adequate to identify a leaking or contaminated sealed source or fission detector to avoid extensive contamination.

This surveillance is modified by two Notes. The first Note states that this TSR is only applicable to sealed sources not in use. The second Note states that sealed sources and fission detectors transferred without a certificate indicating the last test date shall be tested prior to being placed in use.

TSR 3.7.4.3

This surveillance determines that the removable contamination is less than 0.005 microcuries for each startup source and fission detector. This test should be performed on each startup source and fission detector within 31 days prior to being installed in the core or being subjected to core flux. It also should be performed following any repairs or maintenance to the source. This Frequency ensures that the startup source or fission detector is not leaking or contaminated over the specified limit.

This Surveillance is modified by a Note stating this TSR only applies to startup sources and fission detectors that are not in use.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 70.4 "Definitions."
2. 10 CFR 70.39 "Specific Licenses for the Manufacture or Initial Transfer of Calibration or Reference Sources."
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7 PLANT SYSTEMS

B 3.7.5 Fire Suppression Water System

BASES

BACKGROUND

The primary objective of the fire protection program is to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref. 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire protection" (Ref. 2), to minimize the effects of fire on the structures, systems, and components important to safety. An essential element of this program is the Fire Suppression Water System. The components of this system are subject to periodic inspections to ensure continued OPERABILITY.

The water for fire fighting is supplied by four vertical turbine, high pressure, motor-driven pumps. The pumps are connected with headers in two pairs on the suction and pressure sides of the pumps. Two pumps are required to provide the flow for the most hydraulicly demanding area in a safety related structure. The pumps are Seismic Category I and conform to the requirements of ASME Section III, Class 3. Each pump is rated at 1590 gpm at [300] feet delivery head. Power is supplied to the pumps from the regular power supply. In addition, each pair of pumps are supplied with emergency power from each of the two emergency power trains. The pumps are installed in the Seismic Category I pumping station, with all motors above the estimated maximum flood level. Each pair of pumps take suction from a separate sump. Water is provided to the two sumps in such a way that the four pumps are capable of operating during any lake condition from minimum to maximum water level. Minimum and maximum water levels are associated with, respectively, loss of downstream dam and maximum design basis flood level. A single automatic backwashing strainer is installed on the pressure side of each pair of pumps. The strainers conform to the requirements of ASME Section III, Class 3. The

(continued)

BASES

BACKGROUND (continued)

strainers are located in the pumping station and are, therefore, protected against seismic events and flooding. The two pressure headers feed three separate delivery headers, which supply the various plant areas. Two of the three delivery headers, which are seismic Category I, supply water directly to the auxiliary building. The third header, which is not seismically qualified, supplies water to the yard loop. All three headers are interconnected within the auxiliary building in such a way that impairment of any single feed header will not result in the loss of fire protection for any plant feature.

Spool pieces are also available for cross connection between the two seismic Category I headers and the Auxiliary Feed Water System. This cross connection allows the Fire Suppression System to supply water to the Auxiliary Feed Water System during flood mode conditions.

The Fire Suppression System is normally supplied through an interconnection with the Raw Cooling Water System and pressurized by two raw water head tanks located on the auxiliary building roof. The raw water head tanks are part of the Raw Service Water System. The raw water head tanks are automatically isolated from the Fire Suppression System upon automatic starting of the fire pumps. These Bases cover the equipment listed above, including the first isolation valve to connected systems. Hence, parts of the Auxiliary Feed Water System, Raw Service Water System, and the Raw Cooling Water System, which interact with the Fire Suppression Water System are not included in the requirements for this specification.

APPLICABLE SAFETY ANALYSES

The Fire Suppression System is designed to protect the systems required to shutdown the plant and to maintain it in a safe shutdown condition. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 3). In designing the accident sequences for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA. Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of DBAs under postfire conditions does not

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

per se impact Public Safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. Fire protection features must be capable of limiting fire damage so that:

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room or auxiliary control room is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the control room or auxiliary control room can be repaired within 72 hours.

TR

TR 3.7.5 requires three fire suppression pumps to be OPERABLE. With one of the three required pumps inoperable, 100% of the required flow can still be provided by the two remaining OPERABLE pumps, but no pump redundancy is available. The TR also requires that the flow path through the distribution piping and valves, to each supply terminal to be OPERABLE.

APPLICABILITY

The Fire Suppression Water System is required to be OPERABLE whenever equipment protected by the spray/sprinkler systems or the fire hose stations is required to be OPERABLE.

ACTIONS

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

With one required pump inoperable, compensatory measures must be taken. These measures consist of restoring the inoperable pump within 7 days so that three pumps are available. This provides 150% pump capacity to safety related areas. Alternatively, another pump or water supply may be made OPERABLE within 7 days to replace the inoperable pump. The Completion Time of 7 days for Action A.1 and A.2, respectively, is reasonable, considering time required to identify the problem and to take the corrective Actions.

(continued)

BASES

ACTIONS (continued)

Required Action A has been modified by a note stating that the provisions of TR 3.0.3 and TR 3.0.4 do not apply.

B.1

If the system is inoperable for reasons other than an inoperable pump, a backup fire suppression system must be established. A Completion Time of 24 hours is necessary since this system provides the major fire suppression capability of the plant.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.5.1

TSR 3.7.5.1 verifies that the pumps operate as designed. Every 31 days, the three required pumps are tested by starting each pump and letting it operate for 15 minutes on recirculation flow. A test Frequency of 31 days is reasonable for pumps which are not normally in operation.

TSR 3.7.5.2

TSR 3.7.5.2 verifies every 31 days that each valve that can be tested is in the correct position. This applies to manual, power-operated and automatic valves in the flow path and located outside the Reactor Building. Verification of valve position is not required for valves not part of the main flow path which feed branch headers to form a train separation boundary or which have capped or blind flanges downstream of the valves or if inadvertently opened/left open would lead to a visible, noticeable discharge which could be corrected. Valves which are not part of the main flow path which are normally closed and feed to branch headers to closed station drains are included in the verification of position, since if left mispositioned could lead to undetected leakage. The verification Frequency of 31 days is based on industry operating experience and is considered adequate.

TSR 3.7.5.3

TSR 3.7.5.3 requires that the system be flushed every six months. The Frequency of six months is based on industry operating experience and is considered acceptable.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.5.4

TSR 3.7.5.4 requires that certain valves (located outside the Reactor Building) without position indication and which can be tested are cycled every 12 months. This verifies that each valve operates properly. Verification of the position of all valves, without position indication, every 12 months is based on industry operating experience and is considered acceptable.

TSR 3.7.5.5

TSR 3.7.5.5 consists of a system functional test every 18 months, including all pumps and major valves. Pumps are verified for proper startup and for adequate flow and discharge pressure. Non-self indicating valves which could not be tested at power or are located in the Reactor Building are cycled and automatic valves are checked for correct position and operation. The functional test Frequency of 18 months is based on industry operating experience and gives acceptable assurance that the system is OPERABLE at all times.

TSR 3.7.5.6

TSR 3.7.5.6 specifies a flow test every three years of the system in accordance with Reference 4. The test Frequency of three years is based on industry experience and is considered acceptable.

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."
2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection".
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.
4. Fire Protection Handbook, 14th Edition, National Fire Protection Association (Chapter 5, Section 11).

B 3.7 PLANT SYSTEMS

B 3.7.6 Spray and/or Sprinkler Systems

BASES

BACKGROUND

The primary objective of the fire protection program is to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref. 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire protection" (Ref. 2), to minimize the effects of fire on the structures, systems, and components important to safety. An essential element of this program is the spray/sprinkler systems. These systems include valves (manual, power-operated, and automatic), normally dry spray and sprinkler headers, and sprinkler head/spray nozzles. These components are subject to periodic inspections to ensure continued OPERABILITY.

APPLICABLE SAFETY ANALYSIS

Fire suppression systems are necessary to maintain the integrity of safety related equipment during a fire. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 3). In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA or transient. Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of DBAs under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents. Fire protection features must be capable of limiting fire damage so that:

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room or auxiliary control room is free of fire damage; and
2. Systems necessary to achieve and maintain cold shutdown from either the control room or auxiliary control room can be repaired within 72 hours.

TR

This requirement is provided to ensure that spray/sprinkler systems remain OPERABLE. This is necessary to limit fire damage to structures, systems, or components important to safety so that the capability to safely shut down the plant is ensured.

APPLICABILITY

The spray/sprinkler systems are required to be OPERABLE whenever equipment protected by the spray/sprinkler systems is required to be OPERABLE. This is necessary to minimize the adverse effects of fires on structures, systems, and components important to safety.

The applicability has been modified by a note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1

With one or more required spray/sprinkler system(s) inoperable in areas where redundant systems or components could be damaged, compensatory actions must be taken. Redundant systems or components could be damaged when separation of the two paths of systems necessary to achieve and maintain hot shutdown is defeated by one of the following conditions:

1. Transient intervening combustibles have been added to an area where twenty foot spatial separation of no intervening combustibles was required; or
2. A fire barrier, rated one hour or greater that is addressed by TR 3.7.9 "Fire Rated Assemblies," is breached.

(continued)

BASES

ACTIONS

A.1 (continued)

This consists of establishing a CONTINUOUS FIRE WATCH with backup fire suppression equipment. The loss of spray/sprinkler system(s) represents a significant degradation of fire protection for an area. The establishment of a CONTINUOUS FIRE WATCH with backup fire suppression equipment provides fire suppression capabilities until the inoperable spray/sprinkler system(s) are restored to OPERABLE.

B.1

With one or more spray/sprinkler system(s) inoperable in areas where redundant systems or components are not in danger of being damaged, compensatory actions must be taken. This consists of establishing an hourly fire watch patrol to inspect the area with the inoperable equipment. The loss of spray/sprinkler system(s) represents a degradation of fire protection for an area, but the ability of the plant to function is not directly threatened since redundant components are not affected. The establishment of an hourly fire watch provides fire suppression capability until the inoperable spray/sprinkler system(s) are restored to OPERABLE.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.6.1

Verifying the correct alignment for manual, power-operated, and automatic valves (located outside the Reactor Building) in the spray/sprinkler systems flow paths provides assurance that the proper flow paths will exist for spray/sprinkler system operation. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a non-fire suppression position provided the valve will automatically reposition in the event of a fire. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. A frequency of 31 days has been established, based on engineering judgement, and has been shown to be acceptable through operating experience.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.6.2

This TSR ensures that each non-self indicating valve, (accessible during plant operations), in the flow path, will travel through one cycle and located outside the Reactor Building. A non-self indicating valve can be of manual, power-operated, or automatic operation. This TSR is necessary to ensure the non-self indicating valves are OPERABLE in the event of a fire. A frequency of 12 months has been established, based on engineering judgement, and has been shown to be acceptable through operating experience.

TSR 3.7.6.3

This TSR ensures that each automatic spray/sprinkler system valve actuates to its correct position. Also, that each non-self indicating valve, not testable during plant operation or located in the Reactor Building, will travel through one cycle. The 18 month frequency was developed considering that many surveillances can only be performed during a power outage. Operating experience has shown these components usually pass the TSR when performed on the 18 month frequency. Therefore, the frequency was concluded to be acceptable from a reliability stand point.

TSR 3.7.6.4

Verifying, by visual inspection, the integrity of the normally dry spray and sprinkler headers is necessary to insure OPERABILITY if a fire occurs. The frequency of 18 months has been established, based on engineering judgment, and has been shown to be acceptable through operating experience.

TSR 3.7.6.5

Verifying, by visual inspection, that sprinkler head/spray nozzle areas of discharge are not obstructed is necessary to ensure OPERABILITY if a fire occurs. The frequency of 18 months has been established, based on engineering judgment, and has been shown to be acceptable through operating experience.

(continued)

BASES (continued)

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Planes."

2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection".

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7 PLANT SYSTEMS

B 3.7.7 CO_2 Systems

BASES

BACKGROUND

The primary objective of the fire protection program is to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref. 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire protection" (Ref. 2), to minimize the effects of fire on the structures, systems, and components important to safety. An essential element of this program is the CO_2 Systems. The CO_2 Systems are located in the auxiliary instrument room (Units 1 and 2), the diesel generator rooms, the computer room, the diesel generator fuel oil pump rooms, the diesel generator electrical board rooms, and the diesel generator lube oil storage rooms. The components of the CO_2 Systems are subject to periodic inspections to ensure continued OPERABILITY.

APPLICABLE SAFETY ANALYSES

Fire suppression systems are necessary to maintain the integrity of safety related equipment during a fire. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 3). In designing the accident sequences for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA or transient. Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of DBAs, under postfire conditions, does not per se impact public safety; the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. Fire protection features must be capable of limiting fire damage so that:

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room or auxiliary control room is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the control room or auxiliary control room can be repaired within 72 hours.

TR

TR 3.7.7 requires the Low Pressure CO_2 Systems to be OPERABLE in the following areas: Auxiliary instrument room (Units 1 and 2), diesel generator rooms, computer room, diesel generator fuel oil pump rooms, and the diesel generator electrical board rooms, and the diesel generator lube oil storage rooms. These rooms contain safety related equipment which must be protected against fire damage in order to continue to be OPERABLE.

APPLICABILITY

Since the potential for fire is not MODE dependent, the Low Pressure CO_2 Systems are required to be OPERABLE whenever the safety related equipment that they protect is required to be OPERABLE. The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1

In the event that one or more required Low Pressure CO_2 Systems are inoperable in an area where redundant systems or components could be damaged, a CONTINUOUS FIRE WATCH with alternate backup fire suppression equipment made available must be established in the affected areas. This is to compensate for the inoperable systems and will continue until these systems are restored to service. Redundant systems or components could be damaged when separation of the two paths of systems necessary to achieve and maintain hot shutdown is defeated by one of the following conditions:

1. Transient intervening combustibles have been added to an area where twenty foot spatial separation of no intervening combustibles was required; or

(continued)

BASES

ACTIONS

A.1 (continued)

2. A fire barrier, rated one hour or greater that is addressed by TR 3.78.9, "Fire Rated Assemblies," is breached.

The Completion Time of 1 hour ensures prompt attention and is reasonable based upon the typical time necessary to establish a fire watch patrol.

B.1

In the event that one or more required Low Pressure CO_2 Systems are inoperable in an area where redundant systems or components are not in danger of being damaged, within one hour, a fire watch patrol must be established and the area where the inoperable equipment must be inspected. The inspections must then be performed every hour thereafter. Since redundant systems are not in danger, the ability of the plant to function is not directly threatened and therefore these actions are less stringent than Action A.1. The Completion Time of 1 hour to perform Required Action B.1 ensures prompt attention and is reasonable based on the typical time necessary to establish a fire watch patrol and perform an inspection of the area.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.7.1

TSR 3.7.7.1 verifies that each of the carbon dioxide storage tank levels is greater than 50% of its capacity and that each tank pressure is greater than 270 psig. This surveillance ensures that the quantity of carbon dioxide and the pressure in the tanks are adequate for fire suppression. The Frequency of 7 days has been established, based on engineering judgement, and has been shown to be acceptable through operating experience.

TSR 3.7.7.2

TSR 3.7.7.2 requires that each valve is verified to be in its correct position. This applies to manual, power-operated, and automatic valves (with position indication) in

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.7.2 (continued)

the flow path. It does not apply for automatic valves without position indication. This ensures that the system will function as planned if needed. The Frequency of 31 days is based on engineering judgement and has been shown to be acceptable through operating experience.

TSR 3.7.7.3

TSR 3.7.7.3 requires that the system be demonstrated OPERABLE by verifying that the system's valves, associated ventilation system fire dampers, and fire door release mechanisms actuate manually and automatically upon receipt of a simulated actuation signal. It does not apply for system valves that actuate automatically to discharge CO_2 because of personnel safety concerns during test performance. The Frequency of 18 months is based on engineering judgement and has been shown to be acceptable through operating experience.

TSR 3.7.7.4

TSR 3.7.7.4 requires that the flow from each nozzle be verified by performing a "Puff Test." This ensures that each nozzle is capable of injecting carbon dioxide into the room where it is located. The Frequency of 18 months is based on engineering judgement and has been shown to be acceptable through operating experience.

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."
2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection".
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7.8 PLANT SYSTEMS

B 3.7.8 Fire Hose Stations

BASES

BACKGROUND

The primary objective of the fire protection program is to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire protection" (Ref. 2), to minimize the effects of fire on the structures, systems, and components important to safety. An essential element of this program is the Fire Hose Stations. The Fire Hose Stations are part of the High Pressure Fire-Protection System (HPFPS) that furnishes a reliable source of water to various points throughout the plant to fight fires. The Fire Hose Stations are subject to periodic inspections to ensure continued OPERABILITY.

APPLICABLE SAFETY ANALYSES

The Fire Suppression System is designed to protect the systems required to shutdown the plant and to maintain it in a safe shutdown condition. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 3). In designing the accident sequences for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA. Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of DBAs, under postfire conditions, does not per se impact Public Safety; the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. Fire protection features must be capable of limiting fire damage so that:

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

or auxiliary control room is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the control room or auxiliary control room can be repaired within 72 hours.

TR

TR 3.7.8 requires all fire hose stations listed in Table 3.7.8-1 be OPERABLE. As part of the HPFPS, fire hose stations ensure 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.

APPLICABILITY

Since the potential for fire is not MODE dependent, OPERABILITY of fire hose stations is required at all times whenever equipment in the areas protected by the fire hose is required to be OPERABLE. The Applicability has been modified by a note stating that the provisions to TR 3.0.3 do not apply.

ACTIONS

A.1

With one or more of the fire hose stations inoperable, the degree of fire protection provided to safety related equipment in certain areas of the plant is degraded. Consequently, a backup source of fire hose protection must be supplied from the nearest OPERABLE fire hose station. This is done by providing gated wye(s) at the nearest OPERABLE fire hose station.

If the inoperable fire hose station is the primary means of fire suppression, it is necessary to restore fire protection as expeditiously as possible to the area. A one-hour Completion Time is adequate to provide the gated wye('s) and length of hose necessary to accomplish this. If the

(continued)

BASES

ACTIONS (continued)

inoperable fire hose station is not the primary means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting. A 24-hour Completion Time allows sufficient time to restore the degraded fire protection while not diverting the attention of operations personnel from higher priority activities.

In some instances, the physical routing of fire hoses from the OPERABLE hose station to the inoperable hose station may result in a recognizable hazard to operating technicians, plant equipment, or the hose itself. A Note has been added to Required Action A.1 to store the fire hoses on a roll at the outlet of the OPERABLE hose station when it is determined that such a hazard could occur if the hose is routed to the inoperable station.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.8.1

This surveillance requires performance of a visual inspection of the fire hose stations accessible during plant operations and located outside the Reactor Building to assure all required equipment is at the station and the station is not blocked or obstructed. The Frequency of 31 days is considered reasonable in view of the infrequent use of the hoses.

TSR 3.7.8.2

This surveillance requires performance of a visual inspection of the fire hose stations not accessible during plant operations or located in the Reactor Building to assure all required equipment is at the station and the station is not blocked or obstructed. The frequency of 18 months is consistent with the plant refueling outage Frequency and allows inspection of those stations that are unaccessible during normal plant operation.

TSR 3.7.8.3

This Surveillance requires removal of each fire hose for inspection of gaskets in the hose couplings. Degraded gaskets require replacement. Following inspection and gasket replacement, if necessary, the fire hose must be reracked. The frequency of 18 months is consistent with the plant refueling outage Frequency.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.8.4

This surveillance verifies the OPERABILITY of each fire hose station by ensuring that there is no blockage of flow and that each hose is capable of sustaining the required hydrostatic pressure. Verification of no flow blockage may utilize air flow instead of fire water flow for hose stations that would generate potentially radioactive waste water from flushing. The period of 3 years between tests is reasonable because the infrequent use of the fire hoses provides for little opportunity for physical degradation or buildup of silt or other obstructions.

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."

2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection"

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.7.9 PLANT SYSTEMS

B 3.7.9 Fire Rated Assemblies

BASES

BACKGROUND

The primary objective of the fire protection program i~ to minimize both the probability and consequences of postulated fires. In spite of steps taken to reduce the probability of fire, fires are expected to occur. Therefore, means are needed to detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown with or without offsite power (Ref. 1).

Fire detection and suppression systems are provided and designed per GDC 3, "Fire protection" (Ref. 2), to minimize the effects of fire on the structures, systems, and components important to safety. An essential element of this program is the passive protection provided by Fire Rated Assemblies (walls, floors/ceilings, cable tray enclosures and other fire barriers) and sealing devices in fire rated assembly penetrations (fire doors, fire windows, fire dampers, cable, and piping penetration seals). The fire rated assemblies and sealing devices protect important equipment within an area from a fire outside the area. These passive components are subject to periodic inspections to ensure continued OPERABILITY.

APPLICABLE SAFETY ANALYSES

Fire rated assemblies are necessary to maintain the integrity of safety related equipment during a fire. They are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or Transient (Ref. 1 and 3). In designing the accident sequences for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the analyzed DBA. Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of DBAs under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. Fire protection features must be capable of limiting fire damage so that:

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

1. One path of systems necessary to achieve and maintain hot shutdown conditions from either the control room or auxiliary control room is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the contro' room or auxiliary control room can be repaired within 72 hours.

TR

TR 3.7.9 requires all fire rated assemblies (walls, floors, 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 windows, fire dampers, cable, piping and ventilation duct penetration seals) to be OPERABLE. OPERABILITY of all fire rated assemblies and sealing devices is necessary to minimize the possibility of a single fire spreading to other areas of the facility prior to the fire being detected and extinguished. Fire Rated Assemblies are not, however, assumed to be OPERABLE to mitigate the consequences of a DBA or transient (Ref. 3).

APPLICABILITY

OPERABILITY of fire rated assemblies and sealing devices in fire rated assembly penetrations is required whenever safety-related equipment or portions of redundant systems important to safe shutdown, separated by the fire rated assemblies, are required to be OPERABLE.

The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1, A.2.1 and A.2.2

With one more required fire rated assemblies or sealing devices inoperable, compensatory measures must be taken. These measures consist of either establishing a CONTINUOUS FIRE WATCH on one side of the affected assembly or verifying OPERABILITY of fire detectors on at least one side of the inoperable assembly and establishing an hourly fire watch

(continued)

BASES

ACTIONS (continued)

patrol. Verification of fire detectors OPERABILITY is an administrative review of existing test documents, operator logs, etc., only. These measures provide early warning of a fire in the vicinity of the affected assembly, allowing early corrective measures to ensure that the fire does not spread to adjacent areas. The Completion Time of 1 hour to perform the Required Actions is reasonable and is based upon the typical time necessary to establish a fire watch.

TECHNICAL SURVEILLANCE REQUIREMENTS

<u>TSR 3.7.9.1</u>

TSR 3.7.9.1 ensures that the fire doors with automatic hold-open and release mechanisms are free to close. The Frequency of 24 hours is justified in Reference 1.

<u>TSR 3.7.9.2</u>

TSR 3.7.9.2 provides a daily verification that each unlocked fire door without electrical supervision is closed. The Frequency of 24 hours is justified in Reference 1.

<u>TSR 3.7.9.3</u>

TSR 3.7.9.3 provides a weekly verification that each locked closed fire door is closed. The Frequency of 7 days is justified in Reference 1.

<u>TSR 3.7.9.4</u>

TSR 3.7.9.4 requires an inspection of the automatic hold-open, release and closing mechanism, and latches for each fire door semi-annually. The Frequency of 6 months is justified in Reference 1.

<u>TSR 3.7.9.5</u>

TSR 3.7.9.5 requires a functional test of the fire doors with automatic hold-open and release mechanisms consistent with the requirements found in NFPA 80 (Ref. 4). The 18-month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.7.9.6

Fire Rated Assemblies and penetration sealing devices must be visually inspected to verify OPERABILITY. Inspection of bellows, metal plates, fire barrier wrap, or insulation, provides verification of the penetration integrity, provided there is no apparent change in appearance or abnormal degradation. Inspections validate their functional integrity and ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This validation includes closing mechanisms and latches for fire dampers, that are needed for the functional integrity of the device. The sampling program used for sealed penetrations provides adequate assurance that common mode failures are detected, evaluated, and corrected early enough to prevent gross degradation of these sealing devices. If additional 10% inspections are required by TSR 3.7.9.6.c, inspection of 10% of the total number of each type of sealed penetration in the plant is required. A 10% sample is sufficient to detect aging and deterioration of sealed penetrations and prevents unnecessary disassembly which would be required to inspect normally inaccessible penetrations. Operating experience has shown that fire rated assemblies and penetration sealing devices usually pass the inspection when performed on the 18-month Frequency. Since only 10% of the sealed penetrations are required to be inspected on the 18-month Frequency, inspection of all sealed penetrations could require 15 years to complete.

REFERENCES

1. Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants."

2. 10 CFR 50, Appendix A, General Design Criterion 3, "Fire Protection."

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

4. NFPA 80, "Fire Doors and Windows."

B 3.7 PLANT SYSTEMS

B 3.7.10 Area Temperature Monitoring

BASES

BACKGROUND

Thermal-life of various electrical and mechanical equipment is one of several important aging concerns in the qualification of hardware. The requirement is that the equipment remains functional during and after specified design basis events. Design basis events consist of loss of offsite power and design basis accidents (DBA). In general, the following three groups of hardware are subjected to qualification:

a. Safety related equipment
b. Non-safety related equipment (failure of which could prevent safety related equipment to operate as designed)
c. Specific post-accident monitoring equipment.

The normal service temperatures of concern are relatively low, hence, most of the equipment requiring consideration are components in the electrical power supply and the instrumentation systems. Some of these components are designed for relatively low temperature with very little margin to normal operating temperatures in cabinets and buildings. The procedure for thermal qualification is normally to subject prototypes from the production line to life tests by natural or artificial (accelerated) aging to its end-of-installed life condition. Analyses with justifications of methods and assumptions are used to qualify the prototypes to the actual service conditions, which may differ from the test conditions. Although the equipment is qualified for an environment expected after a DBA, the components are only subjected to normal operating conditions for most of the design life. Therefore, the thermal aging due to normal operating conditions is of major importance and is the parameter which is controlled by the Technical Requirements. Accordingly, this particular requirement establishes temperature limits during normal operation for specific locations in various buildings, except the containment. The temperature limits are related to the expected thermal-life for the hardware which operates in the areas where the temperatures are monitored and controlled.

(continued)

BASES

BACKGROUND (continued)	The general guidelines, which are followed for the qualification of electrical equipment, are provided in 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants" (Ref. 1). Detailed requirements for the implementation of the general guidelines are provided in various Regulatory Guides and IEEE Standards. Basic requirements for the qualification of mechanical equipment are outlined in General Design Criteria 4 (Ref. 2).
APPLICABLE SAFETY ANALYSIS	Certain components, which have the service temperatures controlled by this requirement, are part of the primary success path and function to mitigate DBAs and Transients. However, the integrity/OPERABILITY of these components is addressed in the relevant specifications that cover individual components. The service temperatures and the thermal aging, which are controlled by observing the requirements of this TR, are not inputs to the safety analysis. Further, Probabilistic Risk Assessment studies performed to date, do not explicitly model the function of area temperature monitors. In addition, this particular requirement covers only service temperatures and thermal aging of these components, which are not considerations in designing the accident sequences for theoretical hazard evaluations (Ref. 3).
TR	TR 3.7.10 provides nominal temperature limits in the vicinity of major equipment. The TR allows for each area shown in Table 3.7.10-1 to be up to 30°F higher than the limit for a maximum of eight hours.
APPLICABILITY	The limits on temperature and time apply whenever the affected equipment in an affected area is required to be OPERABLE.
PROPOSED REVISION Move to next page	Condition A ~~The Applicability~~ has been modified by a Note stating that the provisions of TR 3.0.3 and TR 3.0.4 do not apply.

(continued)

BASES (continued)

ACTIONS

A.1

Whenever the temperature in one or more areas have exceeded the allowable temperature for more than eight hours, a report must be prepared and submitted to the NRC within 30 days. The report must contain the cumulative time and the amount by which the temperature has exceeded the limits. In addition, an analysis needs to be submitted which demonstrates OPERABILITY of the affected equipment. The 30 day Completion Time is based on engineering experience and is a reasonable time to collect data, perform the evaluation, and prepare the report.

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B.1.1, B.1.2, and B.2

Whenever the temperature in one or more areas exceed the limits by more than 30°F, the temperature must be restored to within the limits in 4 hours. The Completion Time of 4 hours is based on operator experience and is a reasonable time for restoring the temperature. Alternatively, the affected equipment must be declared inoperable. Within 30 days a report must be prepared and submitted to NRC. The report must contain the cumulative time and the amount by which the temperature has exceeded the limits. In addition, an analysis needs to be submitted which demonstrates OPERABILITY of the affected equipment. The 30 day Completion Time is based on engineering experience and is a reasonable time to collect data, perform the evaluation and prepare the report.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.10.1

The temperature in each area must be determined every 12 hours to ensure compliance with the limits. The 12 hour Frequency is based on engineering experience and is reasonable considering the time required for performing the surveillance and the probability for changes in the area temperatures.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 50.49 "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants".
2. 10 CFR 50 Appendix A, General Design Criteria 4, "Environmental and Dynamic Effects Design Bases".
3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 Isolation Devices

BASES

BACKGROUND

The onsite Class 1E AC and DC electrical power distribution system is divided by trains into two redundant and independent AC and DC electrical power distribution subsystems. Each AC and DC electrical power distribution subsystem is comprised of 6.9kV ac shutdown boards, 480V ac shutdown boards, associated motor control centers, and 120V ac power distribution panels, 120V ac vital buses, and 125V dc vital buses. Two trains (or subsystems) are required for safety function redundancy; any one train provides safety function, but without worst-case single-failure protection.

Because of the safety significance of the Class 1E AC and DC electrical power distribution subsystems and the equipment that they supply, unique requirements for OPERABILITY are imposed on these subsystems beyond those requirements applicable to non-qualified AC and DC distribution subsystems. As such, 1E busses must be protected from faults that could occur on loads not included as part of the Class 1E system, associated nonqualified cables routed in Class 1E cable trays or nonqualified cables insufficiently separated from Class 1E cables. Circuit breakers actuated by fault currents are used as isolation devices in this plant to detect and isolate faults. The OPERABILITY of these circuit breakers ensures that the 1E busses will be protected in the event of faults in nonqualified loads powered by the busses, located in associated nonqualified cables routed in Class 1E cable trays or in nonqualified cables insufficiently separated from Class 1E cables.

APPLICABLE SAFETY ANALYSES

The initial conditions of design basis transient and accident analyses in FSAR Chapter 6, "Engineered Safety Feature," and Chapter 15, "Accident Analyses"(Ref. 1) assume ESF Systems are OPERABLE. The class 1E AC and DC electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF Systems so that the fuel, Reactor Coolant System (RCS) and containment design limits are not exceeded. These limits

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

are discussed in more detail in the Bases for Technical Specifications 3.2 (Power Distribution Limits), 3.4 (Reactor Coolant System), and 3.6 (Containment Systems).

The OPERABILITY of the AC and DC electrical power distribution system is consistent with the initial assumptions of the accident analyses (Reference 1) and is based upon meeting the design basis of the plant. This includes maintaining at least one train of the onsite or offsite AC electrical power sources, DC electrical power sources, and associated distribution systems OPERABLE during accident conditions in the event of:

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

b. A worst-case single failure.

Isolation devices help ensure the OPERABILITY of Class 1E AC and DC electrical power distribution systems by protecting them from faults on the non-Class 1E portion of the distribution system, on associated nonqualified cables routed in Class 1E cable trays, or on nonqualified cables insufficiently separated from Class 1E cables. However, these devices are not a structure, system, or component that is part of the primary success path and which actuates to mitigate a DBA or Transient that either assumes a failure of or presents a challenge to the integrity of a fission product barrier (Ref. 2).

TR

TR 3.8.1 requires that all circuit breakers actuated by fault currents that are used as isolation devices protecting 1E busses from non-qualified loads, associated circuits or insufficiently separated cables shall be OPERABLE. These breakers are identified on Drawing Series 45B710-1 (Ref. 3) and 45B710-2 (Ref. 4). This Technical Requirement satisfies testing specified in Sections 8.3.3.3 (2) and 8.3.3.3 (3) of the Safety Evaluation Report (Ref. 5). The OPERABILITY of these devices helps ensure that the Class 1E subsystem will be protected from faults that occur on the non-Class 1E portion of the distribution system.

(continued)

BASES (continued)

APPLICABILITY

The Class 1E AC and DC electrical distribution systems are required to supply power to those systems necessary to mitigate the consequences of DBAs or Transients that could occur in MODES 1, 2, 3, or 4. Isolation devices are therefore required to protect the Class 1E distribution systems in these MODES.

ACTIONS

A.1, A.2.1, and A.2.2

With one or more of the required circuit breakers inoperable, the Class 1E distribution system is not isolated from faults on non-Class 1E portions of the distribution system, on non-Class 1E associated cables routed in Class 1E cable trays, or on Non-Class 1E cables insufficiently separated from Class 1E cables.

Action must be taken to restore this isolation. One possible solution is to restore the circuit breaker(s) to OPERABLE status. If this cannot be done, the isolation can be achieved manually by tripping or removing the inoperable circuit breaker(s). Removing the inoperable breaker(s) ensures that they will not be inadvertently closed before they can be restored to OPERABLE status. The Completion Time of 8 hours takes into consideration the low probability of a fault occurring on the distribution system, on an associated non-Class 1E circuit or on an insufficiently separated non-Class 1E cable, concurrent with an event requiring the safety systems supplied by the Class 1E system. It also represents a reasonable time to repair or trip (or remove) the inoperable circuit breaker(s)..

To ensure that the inoperable circuit breaker(s) are not inadvertently reenergized before they are returned to OPERABLE status, it is necessary to periodically verify that they remain tripped or removed. The period of 7 days takes into consideration the unlikelihood that a plant operation or maintenance activity would result in the reenergization of these breaker(s) from the deenergized condition.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the Required Action and associated Completion Time of Condition A cannot be met, the Class 1E system remains unprotected from faults on non-Class 1E portions of the distribution system, on non-Class 1E associated cables routed in Class 1E cable trays or on non-Class 1E cables insufficiently separated from Class 1E cables. Since this condition cannot be allowed for an extended period of time, it is necessary to place the plant in a condition where the isolation devices are not required to be OPERABLE. This is done by placing the plant in MODE 3 in 6 hours and then in MODE 5 in the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.8.1.1

This surveillance requires the performance of a functional test on a representative sample of ≥ 10% of each type of molded-case circuit breaker used as an isolation device. This sample size is sufficiently large to represent the actual failure distribution within the whole population of circuit breakers of a given type used in the plant. If there are any failure mechanisms that could affect the OPERABILITY of the circuit breaker(s) they are likely to have occurred in the sample tested. The 18 month Frequency takes into consideration the infrequent operation of the breakers and their correspondingly low failure rate. The Surveillance is augmented by three Notes. The first Note states that the breakers shall be selected for testing on a rotating basis. This ensures that all of the breakers will eventually be tested and those failures that may not have been discovered in the initial 10% samples will eventually be discovered.

The second Note describes the functional test procedure and the response to be verified to ensure OPERABILITY.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

The third Note states that for each device found inoperable during functional tests an additional representative sample of ≥ 10% of the defective type molded-case circuit breakers shall be functionally tested until no more defective breakers are found or all the devices of that type have been tested. This helps to ensure that a failure discovered in the representative sample was not caused by a failure mechanism that could systematically affect other breakers in the overall population of breakers of the same type.

TSR 3.8.1.2

This surveillance requires the performance of a functional test on a representative sample of ≥ 10% of each type of electrically-operated circuit breaker used as an isolation device. This sample size is sufficiently large to represent the actual failure distribution within the whole population of circuit breakers of a given type used in the plant. If there are any failure mechanisms that could affect the OPERABILITY of the circuit breaker(s), they are likely to have occurred in the sample tested. The 18-month Frequency takes into consideration the infrequent operation of the breakers and their correspondingly low failure rate.

The Surveillance is augmented by three Notes. The first Note states that the breakers shall be selected for testing on a rotating basis. This ensures that all of the breakers will eventually be tested and those failures that may not have been discovered in the initial 10% samples will eventually be discovered. The second Note describes the functional test procedure and the response to be verified to ensure OPERABILITY.

The third Note states that for each device found inoperable during functional tests an additional representative sample of ≥ 10% of the defective type electrically-operated circuit breakers shall be functionally tested until no more defective breakers are found or all the devices of that type have been tested. This helps to ensure that a failure discovered in the representative sample was not caused by a failure mechanism that could systematically affect other breakers in the overall population of breakers of the same type.

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

TSR 3.8.1.3

This surveillance requires the inspection of each circuit breaker and the performance of procedures prepared in conjunction with the manufacturer's recommendations. By performance of recommended maintenance, the likelihood for the circuit breakers to become inoperable can be minimized. The 60 month Frequency takes into consideration the low frequency of operation of the circuit breakers and the low likelihood that operation and maintenance activities at the plant could adversely affect the OPERABILITY of the circuit breaker.

REFERENCES

1. Watts Bar FSAR, Section 6.0, "Engineered Safety Feature," and Section 15.0, "Accident Analyses."
2. WCAP-13470, "Watts Bar Unit 1 Technical Specifications Criteria Application Report," dated August, 1992.
3. Watts Bar Wiring Diagram Series 45B710-1, "Periodic Breaker Test."
4. Watts Bar Wiring Diagram Series 45B710-2, "Periodic Breaker Test."
5. NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2" including Supplement 3 dated January, 1985.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 Containment Penetration Conductor Overcurrent Protection Devices

BASES

BACKGROUND

General Design Criterion (GDC), "Containment Design Basis," of Appendix A to 10 CFR 50 requires, in part, that the reactor containment structure be designed so that the containment structure can, without exceeding design leakage rate, accommodate the calculated pressure, temperature, and other environmental conditions resulting from any loss-of-coolant accident. One consideration in meeting the requirements of this GDC is the design of electrical penetrations.

Reference 1 describes a method of complying with GDC Appendix A with respect to the requirements for design, qualification, construction, installation and testing of electric penetration assemblies. It specifies that the electric penetration assembly should be designed to withstand, without loss of mechanical integrity, the maximum short-circuit current vs. time conditions that could occur given single random failures of circuit overload protection devices.

The function of electrical protective devices is to detect and isolate faults that could occur on the electrical distribution system. These devices therefore provide an effective means of preventing fault currents from challenging the design limit of the penetrations. Containment penetration conductor overcurrent protective devices are installed to further protect the penetration conductors from faults on components inside containment or improper operation of other protective devices in addition to that provided by the distribution system.

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment includes the requirement that the containment must withstand the pressures and temperatures of the limiting DBA without exceeding the design leakage rate. The design of the

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

electrical penetrations must therefore provide that they remain intact in the event of faults on components inside containment or penetration conductors that supply these components. The containment penetration conductor overcurrent protective devices provide additional fault protection of the penetrations and help ensure that the design limits of the penetrations are not challenged. However, these overcurrent protective devices are not a structure, system, or component that is part of the primary success path and which actuates to mitigate a DBA or transient that either assumes a failure of or presents a challenge to the integrity of a fission product barrier (Ref. 2).

TR

TR 3.8.2 requires that all containment penetration conductor overcurrent protection devices be OPERABLE. These protection devices are identified on Drawing Series 45B710-3 (Ref. 3). This assures that the design limits of the containment electrical penetrations will not be challenged as a result of electrical faults on the penetration conductors or the equipment that they supply in containment.

APPLICABILITY

The OPERABILITY of the containment penetration conductor overcurrent protection devices is required when the containment is required to be OPERABLE. In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5, and 6 the probability and consequences of these events are reduced because of the pressure and temperature limitations of these MODES. The containment penetration conductor overcurrent protection devices are, therefore, required to be OPERABLE in MODES 1, 2, 3, and 4.

ACTIONS

A.1, A.2.1, A.2.2 and A.2.3

With one or more containment penetration conductor overcurrent protection devices inoperable, the circuit(s) associated with the inoperable protection device(s) must

(continued)

BASES

ACTIONS (continued)

be placed in a condition that would preclude the possibility of a fault that could overload the circuit(s). To accomplish this the circuit is deenergized by either tripping the circuit's backup circuit breaker or by removing the inoperable circuit breaker. Since systems or components supplied by the affected circuit will no longer have power, they must be declared inoperable.

The 72 hour Completion Time takes into account the design of the electrical penetration for maximum fault current, the availability of backup circuit protection on the distribution system and the low probability of a DBA occurring during this period. This Completion Time is also considered reasonable to perform the necessary repairs or circuit alterations to restore or otherwise deenergize the affected circuit.

In order to assure that any electrical penetration which is not protected by an overcurrent device remains deenergized, it is necessary to periodically verify that its backup circuit breaker is tripped or that the inoperable circuit breaker is removed. A Completion Time of once per 7 days is considered sufficient due to the infrequency of plant operations that could result in reenergizing a circuit that has been deenergized in this manner.

B.1 and B.2

If the inoperable containment penetration conductor overcurrent protection devices are not able to be restored to OPERABLE status and the associated circuit cannot be deenergized within 72 hours, the containment penetration is vulnerable to the mechanical effects of a short circuit, should one occur. These effects can challenge

(continued)

BASES

ACTIONS (continued)

the design capability of the penetration and therefore pose a threat to containment integrity. To protect against this possibility, the plant must be placed in a condition where the TR is not applicable. This is done by placing the plant in MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are considered reasonable based on operating experience to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

As described by Technical Surveillance Requirements general surveillance Note 1, the surveillances for this TR are necessary to assure that the overcurrent protection devices given in Drawing Series 45B710-3 are demonstrated OPERABLE. Note 2 explains that the surveillance requirements apply to at least one Reactor Coolant Pump (RCP) such that all RCP circuits are demonstrated OPERABLE at least once per 72 month period. This recognizes the importance of the RCP circuits to the safe operation of the plant as well as the potentially large amount of short circuit current associated with a fault on these circuits.

TSR 3.8.2.1

This surveillance requires the performance of a CHANNEL CALIBRATION of all protective relays associated with containment penetration overcurrent devices. A CHANNEL CALIBRATION assures that the relays will be able to detect overcurrent conditions on the penetration conductors. The Frequency of 18 months is consistent with the typical industry refueling cycle.

PROPOSED REVISION

TSR 3.8.2.2

medium voltage [TBD]

This surveillance requires the performance of an integrated system functional test which verifies that the relays and associated circuit breakers function as designed to isolate fault currents. An integrated test assures that the individual elements of the protection scheme, the relays, breakers and other control circuits, interact as designed. The functionality of the circuit breakers and the relays is verified in Surveillance

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

Requirements 3.8.2.1 and 3.8.2.3. This integrated functional test therefore needs only to be performed on each unique type of breaker. However, the surveillance has been modified by a Note stating that if a failure is discovered in the integrated functional test, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be tested to assure that there is no common cause failure mechanism that could systematically affect all breakers of a given type.

The Frequency of 18 months coincides with the typical industry refueling cycle.

lower voltage

PROPOSED REVISION

TSR 3.8.2.3

This surveillance requires that a sample of ≥ 10% of each type of electrically-operated circuit breaker be functionally tested. This is a large enough sample to provide confidence that any failure mechanism that systematically affects circuit breakers of a given type will be detected. The surveillance is modified by a Note 1 stating that the breakers selected for testing shall be chosen on a rotating basis.. This assures that all breakers are tested within several testing periods. Notes 2 and 3 describe the type of functional test to be performed and provide guidance concerning what to do when the an inoperable breaker is identified. Note 4 states that if the initial sample of ≥ 10% includes an inoperable circuit breaker, then an additional sample of ≥ 10% of the defective type must be tested to assure that the identified defect is not a common cause failure affecting other circuit breakers of the same type.

The Frequency of 18 months coincides with the typical industry refueling cycle.

TR 3.8.2.4

This surveillance requires the inspection of each circuit breaker and the performance of preventive maintenance in accordance with procedures prepared in conjunction with the manufacturers recommendation. Performance of recommended preventive maintenance helps ensure the operability of the circuit breakers. The 60 month Frequency takes into consideration known failure rates for the circuit breakers and operating experience.

(continued)

BASES (continued)

REFERENCES

1. Regulatory Guide 1.63 "Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants" Revision 3.
2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.
3. Watts Bar Wiring Diagram Series 45B710-3, "Periodic Breaker Test."

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Motor Operated Valves Thermal Overload Bypass Devices

BASES

BACKGROUND

Motor operated valves with thermal overload protection devices for the valve motors are used in safety systems and in their auxiliary supporting systems. Operating experience has shown that indiscriminate application of thermal overload protection devices to these valve motors could result in needless hinderance to successful completion of safety functions (Ref. 1).

Thermal overload relays are designed primarily to protect continuous-duty motors while they are running rather than during starting. Use of these overload devices to protect intermittent-duty motors may therefore result in undesired actuation of the devices if the cumulative effect of heating caused by successive starts at short intervals is not taken into account in determining the overload trip setting.

The accuracy obtainable with the thermal overload relay trip generally varies from -5% to 0% of trip setpoint. Since the primary concern in the application of overload devices is to protect the motor windings against excessive heating, the above negative tolerance in trip characteristics of the protection device is considered in the safe direction for motor protection. However, this conservative design feature built into these overload devices for motor protection could interfere in the successful functioning of a safety related system. An improper thermal overload setting could prevent a vital piece of equipment from performing its intended function.

Reference 1 states that one alternative to "ensure that safety-related motor operated valves whose motors are equipped with thermal overload protection devices...will perform their function" is that those thermal overload protection devices that are normally in force during plant operation should be bypassed under accident conditions.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The Watts Bar Unit 1 accident analysis (Ref. 2) assumes the availability of the Engineered Safeguards Features to mitigate the consequences of a DBA or transient. The safety design basis of the containment includes the requirement that the containment must withstand the limiting DBA without exceeding the design leakage rate. Both of these requirements depend upon the actuation of motor-operated valves to perform their safety function. Thermal overload bypasses minimize the probability that a motor-operated valve will fail to perform its intended safety function due to an unnecessary operation of the thermal overload trip device.

However, these thermal overload protective devices are not a structure, system, or component that is part of the primary success path and which actuates to mitigate a DBA or Transient that either assumes a failure of or presents a challenge to the integrity of a fission product barrier (Ref. 3).

TR

TR 3.8.3 requires that all thermal overload bypass devices, integral with the motor starter of each valve listed in Table 3.8.3-1, shall be OPERABLE. The OPERABILITY of the motor-operated valves thermal overload bypass devices ensures that thermal overload devices will not prevent safety-related valves from performing their function.

APPLICABILITY

The OPERABILITY of the motor-operated valves thermal overload bypass devices ensures that these devices will not prevent safety-related valves from performing their function. They therefore help ensure the OPERABILITY of these motor-operated valves and are required to be operable whenever the valves that they are designed to ensure operable are required to be OPERABLE.

(continued)

BASES (continued)

ACTIONS

A.1 and A.2

With thermal overload protection not bypassed when required for one or more of the valves listed in Table 3.8.3-1, the actuation of the thermal overload trip device could open or remove power from a motor before the safety function has been completed or even started. Providing an alternate means to bypass the thermal overload would effectively prevent the removal of power from a motor by the thermal overload device. An 8-hour Completion Time takes into consideration the low probability of these motor-operated valves being required to operate during this period, and is considered to be a reasonable amount of time to either restore the bypass device to OPERABLE status or provide an alternative means of bypassing the thermal overload device.

B.1 and B.2

If the Required Actions and associated Completion Times of Condition A cannot be met, then motor-operated valves with inoperable thermal overload bypass devices cannot be considered OPERABLE. Declaring these valves inoperable and applying the appropriate ACTION statement(s) of the affected systems ensures the inoperability of a bypass device will not result in unacceptable deviations from any TRs or LCOs applicable to their associated valves.

TECHNICAL SURVEILLANCE REQUIREMENTS

PROPOSED REVISION

TSR 3.8.3.1

This surveillance requires that a TADOT be performed ~~periodically and following maintenance of motor starter(s)~~ every 18 months. This ensures continued functional reliability and accuracy of the trip point. The ~~92-day~~ Frequency is based upon the known reliability of the thermal overload bypass device and has been shown to be acceptable through operating experience. ~~To assure that motor starter maintenance does not result in alteration of the trip setpoint for the bypass devices the operational test is also required to be performed on the affected bypass circuits following such maintenance.~~

(continued)

BASES (continued)

REFERENCES

1. Regulatory Guide 1.63 "Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants" Revision 3.

2. Watts Bar FSAR, section 15 "Accident Analysis".

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 Submerged Component Circuit Protection

BASES

BACKGROUND

Electrical equipment located inside containment has been designed to maintain equipment safety functions and to prevent unacceptable spurious actuations. All power cables feeding equipment inside containment are provided with individual breakers to protect the power sources (both Class 1E and non-Class 1E) from the effects of electrical shorts. Reactor coolant pumps have two circuit breakers. All other power cables are provided with a cable protector fuse which, in the event of a breaker failure, is designed to protect the containment penetration. These breakers and protector fuses ensure that, should an electrical short occur inside containment, the electrical power source will not be affected.

A failure analysis has been made on the ability of the electrical power (both AC and DC) systems to withstand failure of submerged electrical components from the postulated LOCA flood levels inside containment (Ref. 1). Some of the identified components are automatically deenergized in event of a LOCA. The remaining components that are powered from a Class 1E source were assumed to have a high impedance fault for the analysis. The magnitude of the leakage currents used in the analysis is the maximum value of current that each protective device would carry for an indefinite period (i.e., the protective device's thermal rating). The results of the evaluations indicate that the submergence of electrical components will not prevent the Class 1E electric (either AC or DC) systems from performing their intended safety function for the postulated submerged condition.

A listing of major non-safety related electrical components located inside containment that may be inundated following a LOCA is found in Reference 2 along with an explanation of the safety significance of the failure of the equipment due to flooding. These components are automatically de-energized by the accident signal and the accident signal must be reset to remove the automatic trip signal from each component.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The Watts Bar Unit 1 Accident Analysis (Ref. 3) assumes the availability of the Engineered Safeguards Features to mitigate the consequences of a DBA or Transient. The safety design basis of the containment includes the requirement that the containment must withstand the limiting DBA without exceeding the design leakage rate. Both of these requirements depend upon the actuation of motors and valves to perform their safety function. An electrical or mechanical failure on a submerged component has the potential to interfere with the ability of some other safety component or system to perform its intended function. By de-energizing their associated component on accident conditions, submerged component circuits minimize the potential for this type of interference with safety functions. They are not, however, systems or components that are part of the primary success path and which actuate to mitigate a DBA or Transient that either assumes a failure of or presents a challenge to the integrity of a fission product barrier (Ref. 4).

TR

TR 3.8.4 requires that all submerged component circuits associated with valves 1-FCV-74-1 and 1-FCV-74-9, and with each component listed in Table 3.8.4-1 shall be OPERABLE. The OPERABILITY of the submerged component circuits ensures that electrical or mechanical faults on submerged components will not interfere with the ability of other safety related equipment, or the class 1E distribution, to perform its safety function.

APPLICABILITY

Electrical or mechanical faults on the valves 1-FCV-74-1 and 1-FCV-74-9, and the components listed in Table 3.8.4-1 could potentially affect systems or components necessary to mitigate the consequences of DBAs or Transients that could occur in MODES 1, 2, 3, or 4. The submerged component circuits are therefore required to be OPERABLE during these MODES in order to de-energize potentially submerged components.

(continued)

BASES (continued)

ACTIONS

A.1

With one or more submerged components circuits inoperable, the associated submerged components could remain energized in the event of an accident. In order to prevent the adverse effects of a potential fault on an energized submerged component during an accident, it is necessary to restore the ability to automatically de-energize the component under accident conditions. This can be done by restoring the inoperable circuit to OPERABLE status. The Completion Time of 7 days takes into consideration the low probability of an accident occurring which would cause the components to be submerged. It is a reasonable amount of time to complete the work necessary to restore the circuits to OPERABLE status.

B.1 and B.2

If the submerged component circuits cannot be restored to OPERABLE status within the 7 day Completion Time, it is necessary to place the plant in a Condition where the function of the circuits is not needed. This can be accomplished by first placing the plant in MODE 3 and then in MODE 5. The Completion Time of 6 hours to reach MODE 3 and 36 hours to reach MODE 5, are considered to be reasonable times for placing the plant into a condition where the TR is not applicable in a controlled manner.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.8.4.1

This surveillance requires verification that valves 1-FCV-74-1 and 1-FCV-74-9 are de-energized. These valves are required to be shut in MODES 1,2,3, and 4, and are interlocked so that they cannot be opened until RCS Pressure is reduced to < 425 psig. The Frequency of 31 days is considered reasonable based on plant operating experience.

TSR 3.8.4.2

This surveillance requires verification that the components shown in Table 3.8.4-1 are automatically de-energized on a simulated accident signal. Since the function of OPERABLE submerged component circuits for the valves shown in the Table is to de-energize the components under accident

(continued)

BASES

TECHNICAL SURVEILLANCE REQUIREMENTS (continued)	conditions, verification that the valves are, in fact, de-energized on a simulated accident signal also constitutes verification that the submerged component circuits are OPERABLE. The 18 month Frequency corresponds to the availability of the components for testing during plant refueling.
REFERENCES	1. Watts Bar FSAR, Section 8.3.1.2.3, "Safety-Related Equipment in Potentially Hostile Environment." 2. Watts Bar FSAR, Table 8.3-28, "Major Non-Safety Related Electrical Equipment that could become submerged following a LOCA." 3. Watts Bar FSAR, Section 15.0, "Accident Analyses." 4. WCAP-13470, "Watts Bar Unit 1 Technical Specifications Criteria Application Report," dated August, 1992.

B 3.9 REFUELING OPERATIONS

B 3.9.1 Decay Time

BASES

BACKGROUND	Three analyses of a postulated fuel handling accident are performed: 1) a realistic analysis, 2) a conservative analysis, and 3) an analysis based on Regulatory Guide 1.25 (Ref. 1). Both the conservative analysis and the Regulatory Guide 1.25 analysis assume that the accident occurs 100 hours after plant shutdown. Radioactive decay of the fission product inventory during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pit is taken into account. It is also necessary to consider a fuel handling accident occurring inside the primary containment. The assumption that the accident occurs 100 hours after plant shutdown is also applicable to this analysis (Ref. 2).
APPLICABLE SAFETY ANALYSES	The minimum requirement of 100 hours of reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is an initial condition of a Postulated Fuel Handling Accident. Therefore, Reference 3 concludes that this requirement should be retained as a revised Technical Specification. However, in subsequent discussions with the NRC Staff, it was concluded that decay time was not strictly a process variable, and should be removed from the revised Technical Specifications.
TR	TR 3.9.1 requires the reactor to be subcritical for at least 100 hours. Implicit in this TR is the Applicability (during movement of irradiated fuel in the reactor vessel). This ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products, thus reducing the fission product inventory and reducing the effects of a fuel handling accident.

(continued)

BASES (continued)

APPLICABILITY

This TR is applicable only during movement of irradiated fuel in the reactor vessel. Therefore, it effectively prohibits movement of irradiated fuel in the reactor vessel during the first 100 hours following reactor shutdown.

ACTIONS

A.1

With the reactor subcritical less than 100 hours, all movement of irradiated fuel in the reactor vessel must be suspended. As stated above, movement of irradiated fuel in the reactor vessel is prohibited during the first 100 hours following reactor shutdown.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.9.1.1

Since movement of irradiated fuel in the reactor vessel is prohibited during the first 100 hours following reactor shutdown, a verification of time subcritical must be made prior to movement of irradiated fuel in the reactor vessel. This is done by confirming the date and time of subcriticality and verifying that at least 100 hours have elapsed. The Frequency of "prior to movement of irradiated fuel in the reactor vessel" ensures that the TR is met before irradiated fuel is moved in the reactor vessel.

REFERENCES

1. Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors."

2. Watts Bar FSAR, Section 15.5.6, "Environmental Consequences of a Postulated Fuel Handling Accident."

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.9 REFUELING OPERATIONS

B 3.9.2 Communications

BASES

BACKGROUND	During CORE ALTERATIONS communication ability must be retained between the control room and personnel on the refueling machine. This is needed to allow the refueling personnel to be informed of any significant changes in the unit status or core reactivity conditions.
APPLICABLE SAFETY ANALYSES	This requirement helps assure direct communications between the control room and refueling personnel during refueling, which would help to preclude inadvertent criticality. It also ensures that the refueling personnel are able to inform the control room if there are any problems or accidents during the refueling process. Refueling operations are not addressed in PRA studies and would not be important in accident sequences that are commonly found to dominate risk (Ref. 1).
TR	TR 3.9.2 requires that direct communications be maintained between the control room and personnel at the refueling station. This ensures that information can be exchanged between the two groups if any unplanned events occur or if any significant changes occur in the unit status or core reactivity conditions.
APPLICABILITY	TR 3.9.2 is only applicable during CORE ALTERATIONS (MODE 6). In all other MODES refueling procedures do not take place and are therefore not applicable.

(continued)

BASES (continued)

ACTIONS

A.1

If direct communications between the control room and the personnel at the refueling station cannot be maintained, all CORE ALTERATIONS must be suspended immediately. This is to ensure that the unit remains in a safe condition and that the workers are not placed in an unsafe situation.

Suspension of CORE ALTERATIONS shall not preclude completion of actions to establish a safe condition.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.9.2.1

TSR 3.9.2.1 requires that a demonstration be made to verify that direct communications between the control room and personnel at the refueling station are established. The Surveillance is to be performed within 1 hour prior to the start of the CORE ALTERATIONS and every 12 hours during the CORE ALTERATIONS. The Frequency of 12 hours is based on engineering judgement and on the very small likelihood of the communication abilities being broken.

REFERENCES

1. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.9 REFUELING OPERATIONS

B 3.9.3 Refueling Machine

BASES

BACKGROUND

The refueling machine is used during CORE ALTERATIONS to either move fuel assemblies to new positions in the core, load new fuel assemblies, or unload spent fuel assemblies. The refueling machine consists of a rectilinear bridge and trolley crane with a vertical mast extending down into the refueling water. The bridge and trolley motions are used to position the vertical mast over a fuel assembly in the core. A long tube with a pneumatic gripper on the end is lowered down out of the mast to grip the fuel assembly and manipulate it so that it can be transported to its new position.

The refueling machine has two auxiliary monorail hoists which are located on each side of the bridge. The auxiliary hoists are used for the movement of control rod drive shafts in order to facilitate the refueling process. Before using the hoist, the drive shafts must be disconnected from their respective control rods and, with the upper internals, removed from the vessel (Ref. 1).

APPLICABLE SAFETY ANALYSES

This requirement ensures that the refueling machine and auxiliary hoists have sufficient load capacity to lift a fuel assembly or a drive shaft, respectively. This is to prevent a load from being accidentally dropped during the refueling process. The requirement also ensures that load limiting devices are available to prevent damage to a fuel assembly during fuel movement. These requirements have not been identified as a significant risk contributor (Ref. 2).

(continued)

BASES (continued)

TR

TR 3.9.3 requires that the refueling machine and auxiliary hoist shall be used for the movement of fuel assemblies or drive shafts and that they shall be OPERABLE with certain requirements as discussed below. The refueling machine shall have a capacity of at least 3150 pounds, with an electrical overload cutoff limit of at most 2850 pounds, and a mechanical overload cutoff limit of at most 3400 pounds (Although the manufacturer's dynamic capacity rating of the refueling machine is 4000 pound, only a capacity of 3150 pounds is required for movement of fuel assemblies or drive shafts). The auxiliary hoist shall have a capacity of at least 1200 pounds and a load indicator which shall be used to prevent the lifting of loads which are greater than 1190 pounds. These load requirements are specified in order to ensure that the equipment can handle the nominal weights of the components it must manipulate, while assuring that core components are not damaged from excessive lifting forces.

APPLICABILITY

TR 3.9.3 is applicable only during the movement of fuel assemblies or drive shafts within the reactor pressure vessel. The refueling machine's and auxiliary hoist's maximum loads and limitations are required when used for these purposes only, so the requirements are not applicable at any other times.

ACTIONS

A.1

If the refueling machine does not meet the requirements above, it is considered inoperable. Therefore, its use involving the movement of fuel assemblies within the reactor pressure vessel must be suspended immediately.

Suspension of the refueling operations shall not preclude completion of actions to establish a safe condition.

B.1

If the auxiliary hoist does not meet the requirements above, it is considered inoperable. Therefore, its use involving the movement of drive shafts within the reactor pressure vessel must be suspended immediately.

Suspension of the refueling operations shall not preclude completion of actions to establish a safe condition.

BASES (continued)

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.9.3.1

TSR 3.9.3.1 requires the performance of three tests on the refueling machine. A load test of 3150 pounds must be performed on the refueling machine to verify its capacity. A test must be performed to demonstrate an automatic electrical load cutoff when the crane load is greater than 2850 pounds. A test must also be performed to demonstrate an automatic mechanical load cutoff before the crane load is greater than 3400 pounds. These tests verify that the capacity and the load limits are still within the Technical Requirements. This surveillance is to be performed within 100 hours prior to starting the movement of fuel assemblies within the reactor pressure vessel. The surveillance frequency is based on engineering judgement and the fact that the refueling machine is an infrequently used and reliable piece of equipment.

TSR 3.9.3.2

TSR 3.9.3.2 requires a load test of at least 1200 pounds be performed on each required auxiliary hoist and its associated load indicator. This test verifies that the capacity is within the technical requirement and that the load indicator is functional. This surveillance is to be performed within 100 hours prior to starting the movement of the drive shafts within the reactor pressure vessel. The surveillance frequency is based on engineering judgement and the fact that the auxiliary hoist is an infrequently used and reliable piece of equipment.

REFERENCES

1. Watts Bar FSAR, Section 9.1.4, "Fuel Handling System."
2. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.

B 3.9 REFUELING OPERATIONS

B 3.9.4 Crane Travel - Spent Fuel Storage Pool Building

BASES

BACKGROUND

The spent fuel pool is a reinforced concrete structure with a stainless steel liner for leak tightness. The spent fuel storage racks consist of stainless steel structures with receptacles for nuclear fuel assemblies as they are used in a reactor, receptacles for neutron poison assemblies, and a supporting structure. Design of these storage racks is in accordance with Reference 1.

The racks can withstand the drop of a fuel assembly from its maximum supported height and the drop of tools used in the pool. Crane travel in the spent fuel storage pool building is limited through electrical and mechanical stops which prevent the movement of heavy objects, including shipping casks, over the spent fuel pool. The movement of casks is restricted to the cask loading area and areas away from the pool (Ref. 2).

APPLICABLE SAFETY ANALYSES

The release of radioactive material from fuel may occur during the refueling process, and at other times, as a result of fuel-cladding failures or mechanical damage caused by the dropping of fuel elements or the dropping of objects onto fuel elements (Ref. 1). The restriction on the movement of loads in excess of the nominal weight of a fuel and control rod assembly and the associated handling tool over other fuel assemblies in the storage pool areas ensures that, in the event this load is dropped, the activity release will be limited to that contained in a single fuel assembly, and that any possible distortion of fuel in the storage racks will not result in a critical array. These are design basis type accidents that have not been significant to risk when analyzed in environmental reports (Ref. 3).

TR

TR 3.9.4 requires that loads greater than 2100 pounds shall be prohibited from travel over fuel assemblies in the spent fuel pool. This ensures that objects traversing the pool are within the design basis and will not cause an unsafe condition if accidentally dropped.

(continued)

BASES (continued)

APPLICABILITY

TR 3.9.4 is applicable only when fuel assemblies are in the spent fuel pool. If there are no fuel assemblies in the pool, there is no danger of damaging a fuel assembly with a dropped load, therefore, the TR does not apply. The Applicability has been modified by a Note stating that the provisions of TR 3.0.3 do not apply.

ACTIONS

A.1

If a load in excess of 2100 pounds is allowed to traverse fuel assemblies in the spent fuel pool, the load must immediately be placed in a safe condition. This entails moving the load to a position which is not over the spent fuel pool.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.9.4.1

TSR 3.9.4.1 requires that the crane interlocks and physical stops, which prevent crane travel over fuel assemblies, are demonstrated to be OPERABLE. This surveillance must be performed within 7 days prior to using the crane and at least once per 7 days thereafter during crane operation. The Frequency of 7 days corresponds to ANSI B30.2, "Frequent Inspection for Heavy to Severe Service."

REFERENCES

1. Regulatory Guide 1.13, "Spent Fuel Storage Facility Design Basis."

2. Watts Bar FSAR, Section 9.1.2, "Spent Fuel Storage."

3. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989.
