

BASES

BORATION SYSTEMS (Continued)

The charging pumps are demonstrated to be OPERABLE by testing as required by Section XI of the ASME code or by specific surveillance requirements in the specification. These requirements are adequate to determine OPERABILITY because no safety analysis assumption relating to the charging pump performance is more restrictive than these acceptance criteria for the pumps.

The boron concentration of the RWST in conjunction with manual addition of borax ensures that the solution recirculated within containment after a LOCA will be basic. The basic solution minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. The temperature requirements for the RWST are based on the containment integrity and large break LOCA analysis assumptions.

The OPERABILITY of one Boron Injection System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

The OPERABILITY requirement of 55°F and corresponding surveillance intervals associated with the boric acid tank system ensures that the solubility of the boron solution will be maintained. The temperature limit of 55°F includes a 5°F margin over the 50°F solubility limit of 3.5 wt.% boric acid. Portable instrumentation may be used to measure the temperature of the rooms containing boric acid sources and flow paths.

(\*)One channel of heat tracing is sufficient to maintain the specified temperature limit. Since one channel of heat tracing is sufficient to maintain the specified temperature, operation with one channel out-of-service is permitted for a period of 30 days provided additional temperature surveillance is performed.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits continue. OPERABLE condition for the analog rod position indicators is defined as being capable of indicating rod position to within ±12 steps of the demand counter position. For the Shutdown Banks and Control Banks A and B, the Position Indication requirement is defined as the group demand counter indicated position between 0 and 30 steps withdrawn inclusive, and between 200 and 230 steps withdrawn inclusive. This permits the operator to verify that the control rods in these banks are either fully withdrawn or fully inserted, the normal operating modes for these banks. Knowledge of these bank positions in these two areas satisfies all accident analysis assumptions concerning their position. For Control Banks C and D, the Position Indication requirement is defined as the group demand counter indicated position between 0 and 231 steps withdrawn inclusive.

(\*)This is no longer applicable once boric acid tanks inventory and boric acid source and flow path inventories have been diluted to less than or equal to 3.5 weight percent (wt%).



2) The following action shall be taken:

- a) Comply with the requirements of Specification 3.2.2 for  $F_Q^M(Z)$  exceeding its limit by the percent calculated above.

#### 4.2.2.2 MIDS

Operation is permitted at power above  $P_T$  where  $P_T$  equals the ratio of  $[F_Q]^L$  divided by  $[F_Q]^P$  if the following Augmented Surveillance (Movable Incore Detection System, MIDS) requirements are satisfied:

- a. The axial power distribution shall be measured by MIDS when required such that the limit of  $[F_Q]^L/P$  times  $K(Z)$  is not exceeded.  $F_j(Z)$  is the normalized axial power distribution from thimble  $j$  at core elevation  $(Z)$ .
1. If  $F_j(Z)$  exceeds  $[F_j(Z)]_s^*$  as defined in the bases by  $\leq 4\%$ , immediately reduce thermal power one percent for every percent by which  $[F_j(Z)]_s$  is exceeded.
  2. If  $F_j(Z)$  exceeds  $[F_j(Z)]_s$  by  $> 4\%$  immediately reduce thermal power below  $P_T$ . Corrective action to reduce  $F_j(Z)$  below the limit will permit return to thermal power not to exceed current  $P_L^{**}$  as defined in the bases.
- b.  $F_j(Z)$  shall be determined to be within limits by using MIDS to monitor the thimbles required per Specification 4.2.2.2.c at the following frequencies.
1. At least once every 24 hours, and
  2. Immediately following and as a minimum at 2, 4 and 8 hours following the events listed below and every 24 hours thereafter.
    - 1) Raising the thermal power above  $P_T$ , or
    - 2) Movement of control-bank D more than an accumulated total of 15 steps in any one direction.
- c. MIDS shall be operable when the thermal power exceeds  $P_T$  with:
1. At least two thimbles available for which  $\bar{R}_j$  and  $\sigma_j$  as defined in the bases have been determined.

\*  $[F_j(Z)]_s$  is the alarm setpoint for MIDS

\*\*  $P_L$  is reactor thermal power expressed as a fraction of the Rated Thermal Power that is used to calculate  $[F_j(Z)]_s$

### 3/4.3 INSTRUMENTATION

#### 3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

##### LIMITING CONDITION FOR OPERATION

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3.3.1 As a minimum, the Reactor Trip System instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

##### ACTION:

As shown in Table 3.3-1.

##### SURVEILLANCE REQUIREMENTS

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4.3.1.1 Each ~~Reactor~~<sup>R</sup> Trip System instrumentation channel and interlock and the automatic trip logic shall be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirement specified in Table 4.3-1.

TABLE 3.3-1 (Continued)  
REACTOR TRIP SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
16. Safety Injection Input from ESF	2	1	2	1, 2	8
17. Reactor Trip System Interlocks					
a. Intermediate Range Neutron Flux, P-6	2	1	2	2#	7
b. Low Power Reactor Trips Block, P-7					
P-10 Input	4	2	3	1	7
or					
Turbine First Stage Pressure	2	1	2	1	7
c. Power Range Neutron Flux, P-8	4	2	3	1	7
d. Power Range Neutron Flux, P-10	4	2	3	1, 2	7
18. Reactor Coolant Pump Breaker Position Trip					
a. Above P-8	1/breaker	1	1/breaker	1	11
b. Above P-7 and below P-8	1/breaker	2	1/breaker	1	11
19. Reactor Trip Breakers	2	1	2	1, 2	8, 10
	2	1	2	3*, 4*, 5*	9
20. Automatic Trip and Interlock Logic	2	1	2	1, 2	8
	2	1	2	3*, 4*, 5*	9

TABLE 3.3-1 (Continued)

TABLE NOTATION

\*When the Reactor Trip System breakers are in the closed position and the Control Rod Drive System is capable of rod withdrawal.

\*\*When the Reactor Trip System breakers are in the open position, one or both of the backup NIS instrumentation channels may be used to satisfy this requirement. For backup NIS testing requirements, see Specification 3/4.3.3.3, ACCIDENT MONITORING.

\*\*\*Reactor Coolant Pump breaker A is tripped by underfrequency sensor UF-3A1 (UF-4A1) or UF-3B1 (UF-4B1). Reactor Coolant Pump breakers B and C are tripped by underfrequency sensor UF-3A2 (UF-4A2) or UF-3B2 (UF-4B2).

#Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

##Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

ACTION STATEMENTS

ACTION 1 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

- a. The inoperable channel is placed in the tripped condition within 1 hour,
- b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per ~~per~~ Specification 4.3.1.1, and
- c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored per Specification 4.2.4.2.

## REFUELING OPERATIONS

### 3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

#### LIMITING CONDITION FOR OPERATION

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3.9.4 The containment building penetrations shall be in the following status:

- a. The equipment door closed and held in place by a minimum of four bolts,
- b. A minimum of one door in each airlock is closed, or, both doors of the containment personnel airlock may be open if:
  - 1) at least one personnel airlock door is capable of being closed,
  - 2) the plant is in MODE 6 with at least 23 feet of water above the fuel, and
  - 3) a designated individual is available outside the personnel airlock to close the door.
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either: \*
  - 1) Closed by an isolation valve, blind flange, or manual valve, or
  - 2) Be capable of being closed by an OPERABLE automatic containment ventilation isolation valve.

REACTOR VESSEL FLANGE

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

#### ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

#### SURVEILLANCE REQUIREMENTS

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4.9.4 Each of the above required containment building penetrations shall be determined to be either in its closed/isolated condition or capable of being closed by an OPERABLE automatic containment ventilation isolation valve within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by:

- a. Verifying the penetrations are in their closed/isolated condition, or
- b. Testing the containment ventilation isolation valves per the applicable portions of Specification 4.6.4.2.

\*Exception may be taken under Administrative Controls for opening of certain valves and airlocks necessary to perform surveillance or testing requirements.





## RADIOLOGICAL ENVIRONMENTAL MONITORING

### LIMITING CONDITION FOR OPERATION

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#### ACTION (Continued)

- c. With milk or broad leaf vegetation samples unavailable from one or more of the sample locations required by Table 3.12-1, identify specific locations for obtaining replacement samples and add them within 30 days to the Radiological Environmental Monitoring Program given in the ODCM. The specific locations from which samples were unavailable may then be deleted from the monitoring program. Pursuant to Specification 6.14, submit in the next ~~Semiannual~~ <sup>ANNUAL</sup> Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table for the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples and justifying the selection of the new location(s) for obtaining samples.
- d. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.12.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12-1 from the specific locations given in the table and figure(s) in the ODCM, and shall be analyzed pursuant to the requirements of Table 3.12-1 and the detection capabilities required by Table 4.12-1.



## RADIOLOGICAL ENVIRONMENTAL MONITORING

### 3/4.12.2 LAND USE CENSUS

#### LIMITING CONDITION FOR OPERATION

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3.12.2 A Land Use Census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence, and the nearest garden\* of greater than 50 m<sup>2</sup> (500 ft<sup>2</sup>) producing broad leaf vegetation.

APPLICABILITY: At all times.

#### ACTION:

- a. With a Land Use Census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.11.2.3, pursuant to Specification 6.9.1.4, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report.
- b. With a Land Use Census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained in accordance with Specification 3.12.1, add the new location(s) within 30 days to the Radiological Environmental Monitoring Program given in the ODCM. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after October 31 of the year in which this Land Use Census was conducted. Pursuant to Specification 6.14, submit in the next ~~Semiannual~~ Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table(s) for the ODCM reflecting the new location(s) with information supporting the change in sampling locations.
- c. The provisions of Specification 3.0.3 are not applicable.

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\*Broad leaf vegetation sampling may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 3.12-1, Part 4.b., shall be followed, including analysis of control samples.



## POWER DISTRIBUTION LIMITS

### BASES

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#### 3/4.2.4 QUADRANT POWER TILT RATIO

The QUADRANT POWER TILT RATIO limit assures that the radial power distribution satisfies the design values used in the power capability analysis. Radial power distribution measurements are made during STARTUP testing and periodically during power operation.

The limit of 1.02, at which corrective action is required, provides DNB and linear heat generation rate protection with x-y plane power tilts. A limit of 1.02 was selected to provide an allowance for the uncertainty associated with the indicated power tilt.

The 2-hour time allowance for operation with a tilt condition greater than 1.02 but less than 1.09 is provided to allow identification and correction of a dropped or misaligned control rod. In the event such action does not correct the tilt, the margin for uncertainty on  $F_Q(Z)$  is reinstated by reducing the maximum allowed power by 3% for each percent of tilt in excess of 1.

For purposes of monitoring QUADRANT POWER TILT RATIO when one excore detector is inoperable, the movable incore detectors or incore thermocouple map are used to confirm that the normalized symmetric power distribution is consistent with the QUADRANT POWER TILT RATIO. The incore detector monitoring is done with a full incore flux map or two sets of four symmetric thimbles. The two sets of four symmetric thimbles is a unique set of eight detector locations. These locations are C-8, E-5, E-11, H-3, H-13, L-5, L-11, N-8.

#### 3/4.2.5 DNB PARAMETERS

The limits on the DNB-related parameters assure that each of the parameters are maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the initial FSAR assumptions and have been analytically demonstrated adequate to maintain a minimum DNBR above the applicable design limits throughout each analyzed transient. The indicated  $T_{avg}$  value of 576.6°F and the indicated pressurizer pressure value of 2209 psig correspond to analytical limits of 578.2°F and 2185 psig respectively, with allowance for measurement uncertainty.

The indicated RCS flow value of 277,900 gpm corresponds to an analytical limit of 268,500 gpm which is assumed to have a 3.5% measurement uncertainty. The above measurement uncertainty estimates assume that these instrument channel outputs are averaged to minimize the uncertainty.

The 12-hour periodic surveillance of these parameters through instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation.



## PLANT SYSTEMS

### BASES

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#### STANDBY FEEDWATER SYSTEM (Continued)

tested to the nuclear unit's steam generators. Prior to this test, the refueling unit's C bus will be de-energized and the necessary loads will be transferred to the other unit's C bus.

This surveillance regimen will thus demonstrate operability of the entire flow path, backup non-safety grade power supply and pump associated with a unit at least each refueling outage. The pump, motor driver, and normal power supply availability would typically be demonstrated by operation of the pumps in the recirculation mode monthly on a staggered test basis.

#### 3/4.7.2 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single active failure, is consistent with the assumptions used in the safety analyses. One pump and two heat exchangers provide the heat removal capability for accidents that have been analyzed.

#### 3/4.7.3 INTAKE COOLING WATER SYSTEM

The OPERABILITY of the Intake Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The design and operation of this system, assuming a single active failure, ensures cooling capacity consistent with the assumptions used in the safety analyses.

#### 3/4.7.4 ULTIMATE HEAT SINK

~~The limitations on the ultimate heat sink temperature ensure that sufficient cooling capacity is available either: (1) to provide normal cooldown of the facility or (2) to mitigate the effects of accident conditions within acceptable limits.~~

INSERT A

Insert A

The limit on ultimate heat sink temperature in conjunction with the SURVEILLANCE REQUIREMENTS of Technical Specification 3/4.7.2 will ensure that sufficient cooling capacity is available either: (1) to provide normal cooldown of the facility, or (2) to mitigate the effects of accident conditions within acceptable limits.

With the implementation of the CCW heat exchanger performance monitoring program, the limiting UHS temperature can be treated as a variable with an absolute upper limit of 100°F without compromising and margin of safety. Demonstration of actual heat exchanger performance capability supports system operation with postulated canal temperatures greater than 100°F. Therefore, an upper Technical Specification limit of 100°F is conservative.





## ADMINISTRATIVE CONTROLS

### SAFETY LIMIT VIOLATION (Continued)

- b. A Licensee Event Report shall be prepared in accordance with 10 CFR 50.73.
- c. The License Event Report shall be submitted to the Commission in accordance with 10 CFR 50.73, and to the CNRB, and the President-Nuclear Division within 30 days after discovery of the event.
- d. Critical operation of the unit shall not be resumed until authorized by the Nuclear Regulatory Commission.

### 6.8 PROCEDURES AND PROGRAMS

6.8.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:

- a. The applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, Sections 5.1 and 5.3 of ANSI N18.7-1972;
- b. The emergency operating procedures required to implement the requirements of NUREG-0737 and Supplement 1 to NUREG-0737 as stated in Generic Letter No. 82-33;
- c. PROCESS CONTROL PROGRAM implementation;
- d. OFFSITE DOSE CALCULATION MANUAL implementation;
- e. Quality Control Program for effluent monitoring using the guidance in Regulatory Guide 1.21, Revision 1, June 1974;
- f. Facility Fire Protection Program;
- g. Quality Control Program for environmental monitoring using the guidance in Regulatory Guide 4.1, Revision 1, April 1975; and
- h. Diesel Fuel Oil Testing Program implementation.

6.8.2 Each procedure of Specification 6.8.1 (~~a through f~~), and changes thereto, shall be reviewed and approved prior to implementation and reviewed periodically as set forth in Specification 6.5.3 and administrative procedures. (ABOVE)

6.8.3 Temporary changes to procedures of Specification 6.8.1 (~~a through g~~) may be made provided: (ABOVE)

- a. The intent of the original procedure is not altered;

EXCEPT THE QUALITY CONTROL PROGRAM FOR ENVIRONMENTAL MONITORING,

