Docket No.: 50-445

OCT 19 1984

Mr. M. D. Spence
President
Texas Utilities Generating Company
400 N. Olive Street
Lock Box 81
Dallas, Texas 75201

Dear Mr. Spence:

Subject: Changes to Final Draft of Technical Specification of Comanche Peak Steam Electric Station, Unit 1

Enclosed are changes made to the final draft of the Technical Specifications submitted by letter to you dated September 6, 1984. The enclosed Technical Specification changes are primarily editorial in nature and reflect changes recommended by your staff and the NRC staff reviewers. The Technical Specification pages enclosed replace those contained in the initial Final Draft.

Sincerely,

ORIGINAL SIGNED BY:

B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

Enclosure:
As stated

cc: See next page

CONCURRENCES:

DL:LB#1	~~SEPR~~ DL/AD-SA	ORAB	AD/SA
JStefano	~~DBrinkman~~:es	JZwolinski	DCrutchfield
10/17/84	10/17/84	10/18/84	10/19/84

10-19-84

DIST: *w/o encl.

Docket File	*J. Zwolinski
NRC PDR	*D. Brinkman
Local PDR	*F. Anderson
PRC System	*V. Noonan
NSIC	*S. Burwell
LB#1 Rdg	
MRushbrook	
JStefano	
OELD, Attorney	
ACRS (16)	
EJordan	
NGrace	

8411140091 841019
PDR ADOCK 05000445
A PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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As stated

cc: See next page

COMANCHE PEAK

Mr. M. D. Spence
President
Texas Utilities Generating Company
400 N. Olive St., L.B. 81
Dallas, Texas 75201

cc: Nicholas S. Reynolds, Esq.
Bishop, Liberman, Cook,
Purcell & Reynolds
1200 Seventeenth Street, N. W.
Washington, D. C. 20036

Robert A. Wooldridge, Esq.
Worsham, Forsythe, Sampels &
Wooldridge
2001 Bryan Tower, Suite 2500
Dallas, Texas 75201

Mr. Homer C. Schmidt
Manager - Nuclear Services
Texas Utilities Generating Company
Skyway Tower
400 North Olive Street
L. B. 81
Dallas, Texas 75201

Mr. H. R. Rock
Gibbs and Hill, Inc.
393 Seventh Avenue
New York, New York 10001

Mr. A. T. Parker
Westinghouse Electric Corporation
P. O. Box 355
Pittsburgh, Pennsylvania 15230

Renea Hicks, Esq.
Assistant Attorney General
Environmental Protection Division
P. O. Box 12548, Capitol Station
Austin, Texas 78711

Mrs. Juanita Ellis, President
Citizens Association for Sound
Energy
1426 South Polk
Dallas, Texas 75224

Ms. Nancy H. Williams
CYGNA
101 California Street
San Francisco, California 94111

Mr. James E. Cummins
Resident Inspector/Comanche Peak
Nuclear Power Station
c/o U. S. Nuclear Regulatory
Commission
P. O. Box 38
Glen Rose, Texas 76043

Mr. John T. Collins
U. S. NRC, Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Mr. Lanny Alan Sinkin
114 W. 7th, Suite 220
Austin, Texas 78701

B. R. Clements
Vice President Nuclear
Texas Utilities Generating Company
Skyway Tower
400 North Olive Street
L. B. 81
Dallas, Texas 75201

William A. Burchette, Esq.
1200 New Hampshire Avenue, N. W.
Suite 420
Washington, D. C. 20036

Ms. Billie Pirner Garde
Citizens Clinic Director
Government Accountability Project
1901 Que Street, N. W.
Washington, D. C. 20009

David R. Pigott, Esq.
Orrick, Herrington & Sutcliffe
600 Montgomery Street
San Francisco, California 94111

Anthony Z. Roisman, Esq.
Trial Lawyers for Public Justice
2000 P. Street, N. W.
Suite 611
Washington, D. C. 20036

cc: Mr. Dennis Kelley
Resident Inspector - Comanche Peak
c/o U. S. NRC
P. O. Box 1029
Granbury, Texas 76048

Mr. John W. Beck
Manager - Licensing
Texas Utilities Electric Company
Skyway Tower
400 N. Olive Street
L. B. 81
Dallas, Texas 75201

Mr. Jack Redding
Licensing
Texas Utilities Generating Company
4901 Fairmont Avenue
Bethesda, Maryland 20014

BASES

SECTION PAGE

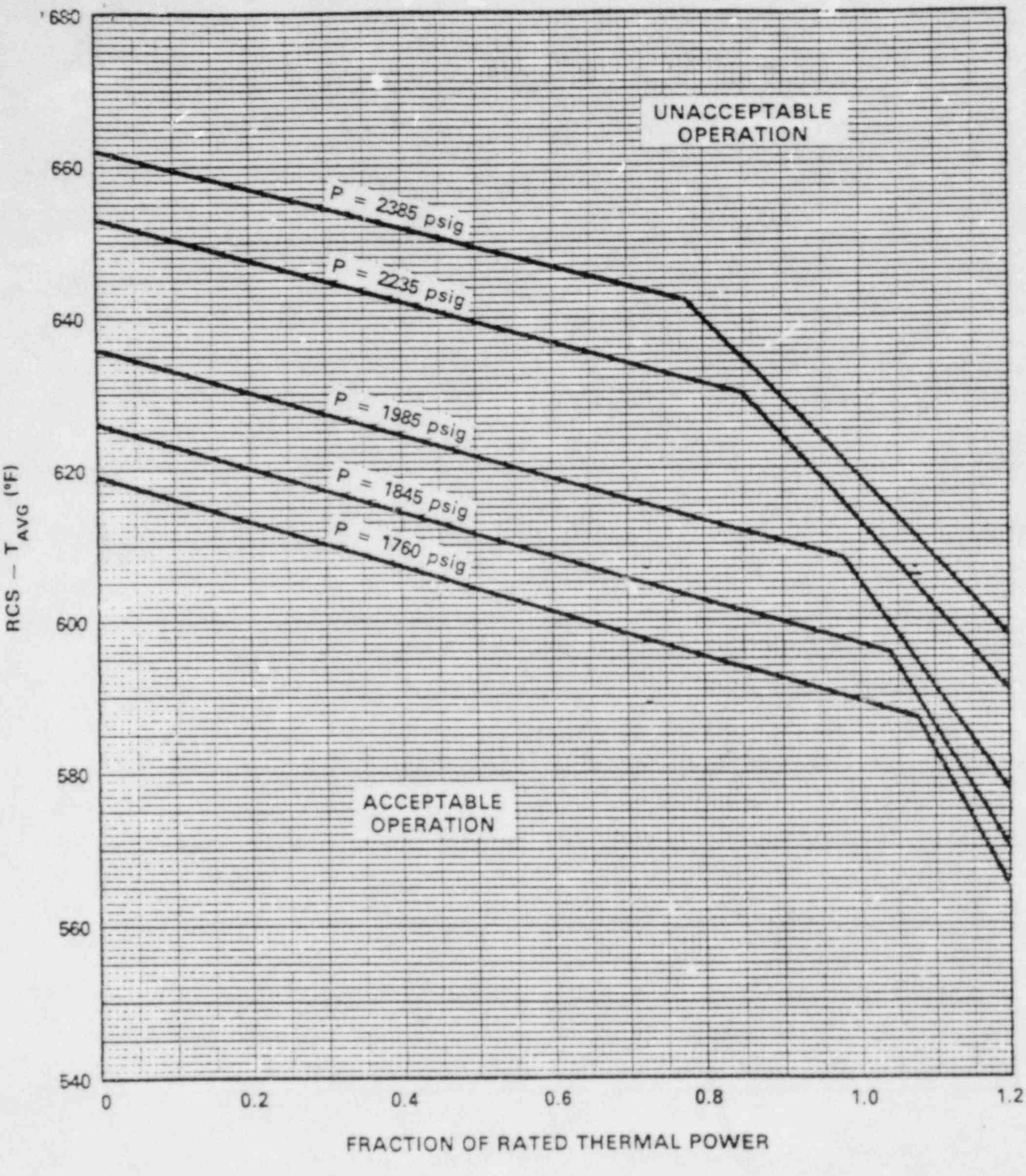

FIGURE 2.1-1
REACTOR CORE SAFETY LIMIT - FOUR LOOPS IN OPERATION

TABLE 2.2-1 (Continued)

TABLE NOTATIONS

NOTE 1: Overtemperature N-16

$$N = K_1 - K_2 \left[\frac{1+\tau_1 S}{1+\tau_2 S} T_c - T_c^{o}\right] + K_3 (P-P') - f_1 (\Delta q)$$

Where:

N	=	Measured N-16 concentration by ion chambers,
T_c	=	Cold leg temperature, °F,
T_c^o	=	559.6°F, Reference T_c at RATED THERMAL POWER,
K_1	=	1.078,
K_2	=	0.00948/°F,
$\frac{1 + \tau_1 S}{1 + \tau_2 S}$	=	The function generated by the lead-lag compensator for measured T_c,
τ_1, τ_2	=	Time constants utilized in the lead-lag compensator for T_c, τ_1 = 10 s, and τ_2 = 3 s,
K_3	=	0.000494/psig,

2.2.1 REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

The Reactor Trip Setpoint Limits specified in Table 2.2-1 are the nominal values at which the Reactor trips are set for each functional unit. The Trip Setpoints have been selected to ensure that the core and Reactor Coolant System are prevented from exceeding their Safety Limits during normal operation and design basis anticipated operational occurrences and to assist the Engineered Safety Features Actuation System in mitigating the consequences of accidents. The Setpoint for a Reactor Trip System or interlock function is considered to be adjusted consistent with the nominal value when the "as measured" Setpoint is within the band allowed for calibration accuracy.

To accommodate the instrument drift assumed to occur between operational tests and the accuracy to which Setpoints can be measured and calibrated, Allowable Values for the Reactor Trip Setpoints have been specified in Table 2.2-1. Operation with Setpoints less conservative than the Trip Setpoint but within the Allowable Value is acceptable since an allowance has been made in the safety analysis to accommodate this error. An optional provision has been included for determining the OPERABILITY of a channel when its trip Setpoint is found to exceed the Allowable Value. The methodology of this option utilizes the "as found" deviation from the specified calibration point for rack and sensor components in conjunction with a statistical combination of the other uncertainties of the instrumentation to measure the process variable and the uncertainties in calibrating the instrumentation. In Equation 2.2-1, $Z + R + S \leq TA$, the interactive effects of the errors in the rack and the sensor, and the "as found" values of the errors are considered. Z, as specified in Table 2.2-1, in percent span, is the statistical summation of errors assumed in the analysis excluding those associated with the sensor and rack drift and the accuracy of their measurement. TA or Total Allowance is the difference, in percent span, between the Trip Setpoint and the value used in the analysis of Reactor trip. R or Rack Error is the "as found" deviation, in percent span, for the affected channel from the specified Trip Setpoint. S or Sensor Error is either the "as found" deviation of the sensor from its calibration point or the value specified in Table 2.2-1, in percent span, from the analysis assumptions. Use of Equation 2.2-1 allows for a sensor drift factor, an increased rack drift factor, and provides a threshold value for REPORTABLE EVENTS.

The methodology to derive the Trip Setpoints is based upon combining all of the uncertainties in the channels. Inherent to the determination of the Trip Setpoints are the magnitudes of these channel uncertainties. Sensors and other instrumentation utilized in these channels are expected to be capable of operating within the allowances of these uncertainty magnitudes. Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Being that there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 One centrifugal charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no centrifugal charging pump OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required centrifugal charging pump shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure of greater than or equal to 2350 psid is developed when tested pursuant to Specification 4.0.5.

4.1.2.3.2 All centrifugal charging pumps, excluding the above required OPERABLE pump, shall be demonstrated inoperable at least once per 31 days, except when the reactor vessel head is removed, by verifying that the motor circuit breakers are secured in the open position.

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two# centrifugal charging pumps shall be OPERABLE.

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

ACTION:

With only one centrifugal charging pump OPERABLE, restore at least two centrifugal charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F within the next 6 hours; restore at least two centrifugal charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 At least two centrifugal charging pumps shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure of greater than or equal to 2350 psid is developed when tested pursuant to Specification 4.0.5.

4.1.2.4.2 All centrifugal charging pumps, except the above allowed OPERABLE pump, shall be demonstrated inoperable at least once per 31 days whenever the temperature of one or more of the RCS cold legs is less than or equal to 308.7°F by verifying that the motor circuit breakers are secured in the open position.

#A maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is less than or equal to 308.7°F.

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 As a minimum, the following borated water source(s) shall be OPERABLE as required by Specification 3.1.2.2:

a. A boric acid storage tank with:

1) A minimum contained borated water volume of 22,870 gallons,

2) A minimum boron concentration of 7000 ppm, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank (RWST) with:

1) A contained borated water volume of between 479,900 and 526,300 gallons,

2) A minimum boron concentration of 2000 ppm,

3) A minimum solution temperature of 40°F, and

4) A maximum solution temperature of 120°F.

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

ACTION:

a. With the boric acid storage tank inoperable and being used as one of the above required borated water sources, restore the tank to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F; restore the boric acid storage tank to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

CONTROL ROD INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The control banks shall be limited in physical insertion as shown in Figure 3.1-1.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

With the control banks inserted beyond the above insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2:

a. Restore the control banks to within the limits within 2 hours, or

b. Reduce THERMAL POWER within 2 hours to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the bank position using the above figures, or

c. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each control bank shall be determined to be within the insertion limits at least once per 12 hours except during time intervals when the Rod Insertion Limit Monitor is inoperable, then verify the individual rod positions at least once per 4 hours.

---

*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

#With K_{eff} greater than or equal to 1.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.1 AXIAL FLUX DIFFERENCE

LIMITING CONDITION FOR OPERATION

3.2.1 The indicated AXIAL FLUX DIFFERENCE (AFD) shall be maintained within the following target band (flux difference units) about the target flux difference:

a. ± 5% for core average accumulated burnup of less than or equal to 3000 MWD/MTU; and

b. + 3%, -12% for core average accumulated burnup of greater than 3000 MWD/MTU.

The indicated AFD may deviate outside the above required target band at greater than or equal to 50% but less than 90% of RATED THERMAL POWER provided the indicated AFD is within the Acceptable Operation Limits of Figure 3.2-1 and the cumulative penalty deviation time does not exceed 1 hour during the previous 24 hours.

The indicated AFD may deviate outside the above required target band at greater than 15% but less than 50% of RATED THERMAL POWER provided the cumulative penalty deviation time does not exceed 1 hour during the previous 24 hours.

APPLICABILITY: MODE 1, above 15% of RATED THERMAL POWER.*

ACTION:

a. With the indicated AFD outside of the above required target band and with THERMAL POWER greater than or equal to 90% of RATED THERMAL POWER, within 15 minutes, either:

   1. Restore the indicated AFD to within the target band limits, or

   2. Reduce THERMAL POWER to less than 90% of RATED THERMAL POWER.

b. With the indicated AFD outside of the above required target band for more than 1 hour of cumulative penalty deviation time during the previous 24 hours or outside the Acceptable Operation Limits of Figure 3.2-1 and with THERMAL POWER less than 90% but equal to or greater than 50% of RATED THERMAL POWER, reduce:

   1. THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes, and
   2. The Power Range Neutron Flux - High** Setpoints to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

---

*See Special Test Exceptions Specification 3.10.2.

**Surveillance testing of the Power Range Neutron Flux channel may be performed pursuant to Specification 4.3.1.1 provided the indicated AFD is maintained within the Acceptable Operation Limits of Figure 3.2-1. A total of 16 hours operation may be accumulated with the AFD outside of the above required target band during testing without penalty deviation.

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

c. With the indicated AFD outside of the above required target band for more than 1 hour of cumulative penalty deviation time during the previous 24 hours and with THERMAL POWER less than 50% but greater than 15% of RATED THERMAL POWER, the THERMAL POWER shall not be increased equal to or greater than 50% of RATED THERMAL POWER until the indicated AFD is within the above required target band.

SURVEILLANCE REQUIREMENTS

4.2.1.1 The indicated AFD shall be determined to be within its limits during POWER OPERATION above 15% of RATED THERMAL POWER by:

a. Monitoring the indicated AFD for each OPERABLE excore channel:

   1) At least once per 7 days when the AFD Monitor Alarm is OPERABLE, and

   2) At least once per hour for the first 24 hours after restoring the AFD Monitor Alarm to OPERABLE status.

b. Monitoring and logging the indicated AFD for each OPERABLE excore channel at least once per hour for the first 24 hours and at least once per 30 minutes thereafter, when the AFD Monitor Alarm is inoperable. The logged values of the indicated AFD shall be assumed to exist during the interval preceding each logging.

4.2.1.2 The indicated AFD shall be considered outside of its target band when two or more OPERABLE excore channels are indicating the AFD to be outside the target band. Penalty deviation outside of the above required target band shall be accumulated on a time basis of:

a. One minute penalty deviation for each 1 minute of POWER OPERATION outside of the target band at THERMAL POWER levels equal to or above 50% of RATED THERMAL POWER, and

b. One-half minute penalty deviation for each 1 minute of POWER OPERATION outside of the target band at THERMAL POWER levels between 15% and 50% of RATED THERMAL POWER.

4.2.1.3 The target flux difference of each OPERABLE excore channel shall be determined by measurement at least once per 92 Effective Full Power Days. The provisions of Specification 4.0.4 are not applicable.

4.2.1.4 The target flux difference shall be updated at least once per 31 Effective Full Power Days by either determining the target flux difference pursuant to Specification 4.2.1.3 above or by linear interpolation between the most recently measured value and 0% at the end of the cycle life. The provisions of Specification 4.0.4 are not applicable.

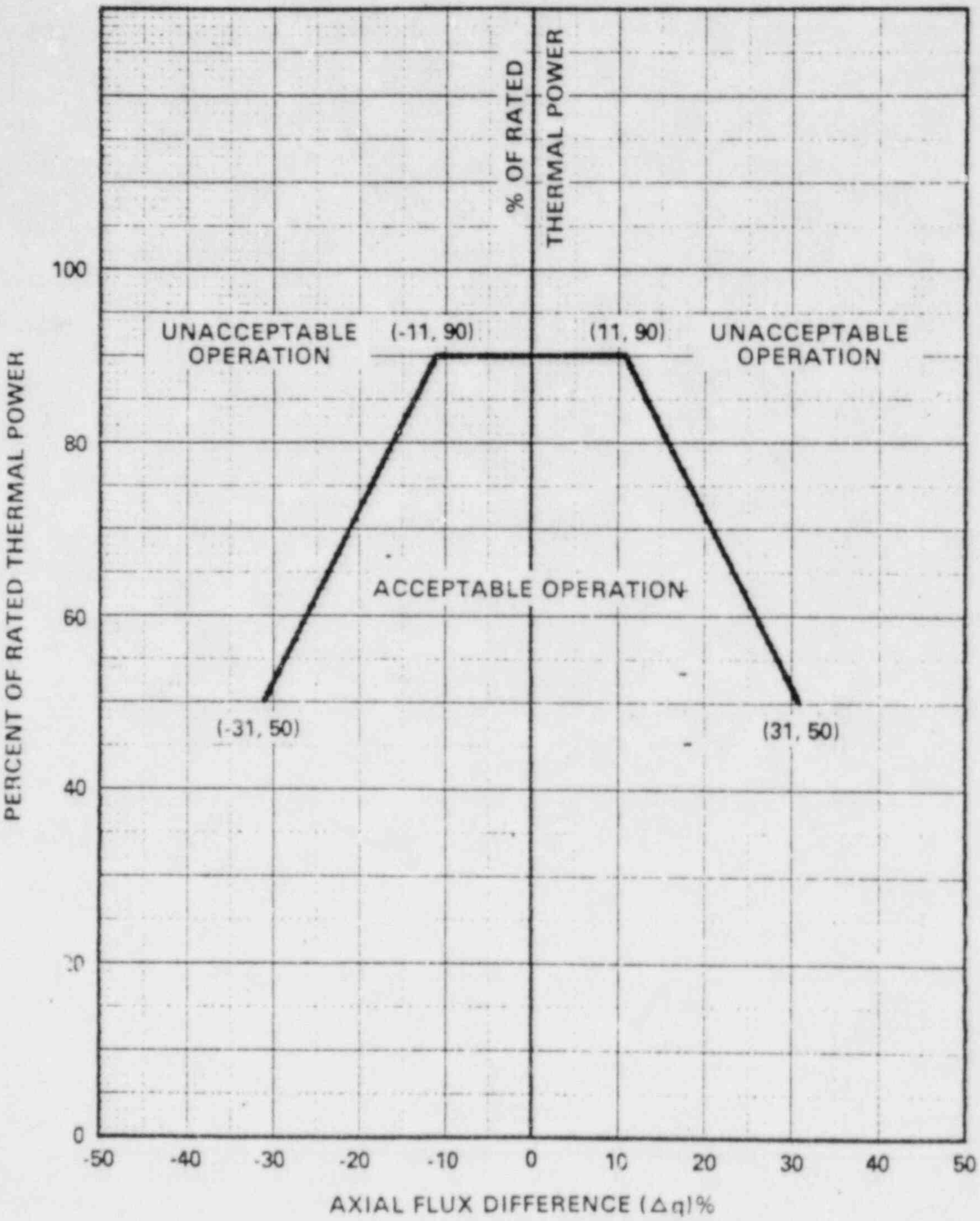

FIGURE 3.2-1

AXIAL FLUX DIFFERENCE LIMITS AS A
FUNCTION OF RATED THERMAL POWER

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

b. Within 24 hours of initially being outside the above limits, verify through incore flux mapping and RCS total flow rate comparison that the combination of R and RCS total flow rate are restored to within the above limits, or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 2 hours.

c. Identify and correct the cause of the out-of-limit condition prior to increasing THERMAL POWER above the reduced THERMAL POWER limit required by ACTION a.2. and/or b., above; subsequent POWER OPERATION may proceed provided that the combination of R and indicated RCS total flow rate are demonstrated, through incore flux mapping and RCS total flow rate comparison, to be within the region of acceptable operation shown on Figure 3.2-3 prior to exceeding the following THERMAL POWER levels:

   1. A nominal 50% of RATED THERMAL POWER,

   2. A nominal 75% of RATED THERMAL POWER, and

   3. Within 24 hours of attaining greater than or equal to 95% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 The combination of indicated RCS total flow rate and R shall be determined to be within the region of acceptable operation of Figure 3.2-3:

a. Prior to operation above 75% of RATED THERMAL POWER after each fuel loading, and

b. At least once per 31 Effective Full Power Days.

4.2.3.3 The indicated RCS total flow rate shall be verified to be within the region of acceptable operation of Figure 3.2-3 at least once per 12 hours when the most recently obtained value of R, obtained per Specification 4.2.3.2, are assumed to exist.

4.2.3.4 The RCS total flow rate indicators shall be subjected to a CHANNEL CALIBRATION at least once per 18 months. The measurement instrumentation shall be calibrated within 7 days prior to the performance of the calorimetric flow measurement.

4.2.3.5 The RCS total flow rate shall be determined by precision heat balance measurement at least once per 18 months.

TABLE 3.2-1

DNB PARAMETERS

PARAMETER	LIMITS Four Loops in Operation
Indicated Reactor Coolant System T_{avg}	$\leq$ 593°F
Indicated Pressurizer Pressure	$\geq$ 2230 psig*

*Limit not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% of RATED THERMAL POWER.

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2	1	2	1, 2	1
	2	1	2	3*, 4*, 5*	10
2. Power Range, Neutron Flux					
a. High Setpoint	4	2	3	1, 2	2#
b. Low Setpoint	4	2	3	1###, 2	2#
3. Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2#
4. Power Range, Neutron Flux High Negative Rate	4	2	3	1, 2	2#
5. Intermediate Range, Neutron Flux	2	1	2	1###, 2	3
6. Source Range, Neutron Flux					
a. Startup	2	1	2	2##**	4
b. Shutdown	2	1	2	3, 4, 5	5
7. Overtemperature, N-16					
Four Loop Operation	4	2	3	1, 2	6#
8. Overpower, N-16					
Four Loop Operation	4	2	3	1, 2	6#

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
9. Pressurizer Pressure-Low (above P-7)	4	2	3	1	6#
10. Pressurizer Pressure-High	4	2	3	1, 2	6#
11. Pressurizer Water Level-High (above P-7)	3	2	2	1	7#
12. Reactor Coolant Flow-Low					
a. Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in any operating loop	1	7#
b. Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	7#
13. Steam Generator Water Level-Low-Low	4/stm. gen.	2/stm. gen in any operating stm. gen.	3/stm. gen. each operating stm. gen.	1, 2	6#
14. Undervoltage-Reactor Coolant Pumps (above P-7)	4-1/bus	2	3	1	6#
15. Underfrequency-Reactor Coolant (above P-7)	4-1/bus	2	3	1	6#
16. Turbine Trip (above P-7)					
a. Low Fluid Oil Pressure	3	2	2	1	7#
b. Turbine Stop Valve Closure	4	4	1	1	11#

TABLE 3.3-1 (Continued)

TABLE NOTATIONS

*Only if the Reactor Trip System breakers happen to be in the closed position and the Control Rod Drive System is capable of rod withdrawal.

**The boron dilution flux doubling signals may be blocked during reactor startup.

#The provisions of Specification 3.0.4 are not applicable.

##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 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 at least once per 12 hours per Specification 4.2.4.2.

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.

ACTION 5 - 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 within the next hour, open the Reactor trip breakers, suspend all operations involving positive reactivity changes and verify Valves 1CS-8560, FCV-111B, 1CS-8439, 1CS-8441, and 1CS-8453 are closed and secured in position.

ACTION 6 - 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, and

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 Specification 4.3.1.1.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required ANALOG CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

ACTION 9 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

ACTION 10 - 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 open the Reactor trip breakers within the next hour.

ACTION 11 - With the number of OPERABLE channels less than the Total Number of Channels, operation may continue provided the inoperable channels are placed in the tripped condition within 1 hour.

TABLE 3.3-2 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

FUNCTIONAL UNIT	RESPONSE TIME
12. Reactor Coolant Flow-Low	
a. Single Loop (Above P-8)	≤ 1 second
b. Two Loops (Above P-7 and below P-8)	≤ 1 second
13. Steam Generator Water Level--Low-Low	≤ 2 seconds
14. Undervoltage-Reactor Coolant Pumps	≤ 1.5 seconds
15. Underfrequency-Reactor Coolant Pumps	≤ 0.6 second
16. Turbine Trip	
a. Low Fluid Oil Pressure	N.A.
b. Turbine Stop Valve Closure	N.A.
17. Safety Injection Input from ESF	N.A.
18. Reactor Trip System Interlocks	N.A.
19. Reactor Trip Breakers	N.A.
20. Automatic Trip and Interlock Logic	N.A.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Safety Injection (Reactor Trip, Phase "A" Isolation, Auxiliary Feedwater-Motor-Driven Pump, Turbine Trip, Control Room Emergency Recirculation, Feedwater Isolation, Component Cooling Water, Emergency Diesel Generator Operation, Safety Chilled Water, Containment Vent Isolation, and Station Service Water).					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Containment Pressure-High-1	3	2	2	1, 2, 3	15*
d. Pressurizer Pressure - Low	4	2	3	1, 2, 3#	19*
e. Steam Line Pressure-Low					
Four Loops Operating	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	15*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. Turbine Trip & Feedwater Isolation					
a. Automatic Logic and Actuation Relay	2	1	2	1, 2	25
b. Steam Generator Water Level--High-High (P-14)	3/stm. gen.**	2/stm. gen. in any operating stm gen.	2/stm. gen. in each operating stm. gen.	1, 2	15*
c. Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
6. Auxiliary Feedwater					
a. Manual Initiation	2	1	2	1, 2, 3	22
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	21
c. Stm. Gen. Water Level - Low-Low					
1) Start Motor-Driven Pumps	4/stm. gen.	2/stm. gen. in any operating stm gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	19*
2) Start Turbine-Driven Pump	4/stm. gen.	2/stm. gen. in any 2 operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	19*

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
9. Safety Chilled Water System Actuation (Continued)					
c. Loss-of-Offsite Power	N.A.	N.A.	N.A.	N.A.	N.A.
10. Control Room Emergency Recirculation					
a. Manual Initiation	N.A.	N.A.	N.A	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Loss-of-Offsite Power	N.A.	N.A.	N.A.	N.A.	N.A.
d. Safety Injection	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.				
11. Engineered Safety Features Actuation System Interlocks					
a. Pressurizer Pressure, P-11	N.A.	N.A.	N.A.	$\leq$ 1960 psig	$\leq$ 1971 psig
b. Low-Low T_{avg}, P-12	N.A.	N.A.	N.A.	$\geq$ 553°F	$\geq$ 549°F
c. Reactor Trip, P-4	N.A.	N.A.	N.A.	N.A.	N.A.
d. Steam Generator Water Level, P-14	See Item 5.b. above for Steam Generator Water Level Trip Setpoint and Allowable Value.				

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
3. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	$\leq 27^{(1)}/12^{(4)}$
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 7
3) Phase "A" Isolation	$\leq 17^{(2)}/27^{(1)}$
4) Containment Vent Isolation	$\leq 25^{(1)}/10^{(2)}$
5) Auxiliary Feedwater	≤ 60
6) Station Service Water	$\leq 47^{(1)}/37^{(2)}$
7) Component Cooling Water	N.A
8) Safety Chilled Water	N.A.
9) Emergency Diesel Generator Operation	≤ 10
10) Turbine Trip	N.A.
11) Control Room Emergency Recirculation	N.A.
4. Steam Line Pressure-Low	
a. Safety Injection (ECCS)	$\leq 22^{(3)}/12^{(4)}$
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 7
3) Phase "A" Isolation	$\leq 17^{(2)}/27^{(1)}$
4) Containment Vent Isolation	$\leq 25^{(1)}/10^{(2)}$
5) Auxiliary Feedwater	≤ 60
6) Station Service Water	$\leq 47^{(1)}/37^{(2)}$
7) Component Cooling Water	N.A.
8) Safety Chilled Water	N.A.
9) Emergency Diesel Generator Operation	≤ 10
10) Turbine Trip	N.A.
11) Control Room Emergency Recirculation	N.A.
b. Steam Line Isolation	≤ 7
5. Containment Pressure-High-3	
a. Containment Spray	$\leq 45^{(2)}/57^{(1)}$
b. Phase "B" Isolation	$\leq 65^{(1)}/75^{(2)}$

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. Steam Line Isolation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Containment Pressure-High-2	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Line Pressure-Low	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure-Negative Rate - High	S	R	M	N.A.	N.A.	N.A.	N.A.	3
5. Turbine Trip and Feedwater Isolation								
a. Automatic Actuation Logic and Actuation Relay	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
b. Steam Generator Water Level-High-High	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2
c. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
6. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation and Actuation Relay	N.A.	N.A	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3

TABLE 4.3-6 (Continued)

REMOTE SHUTDOWN MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
10. 6.9 kV Bus Onsite Source - Amperes Source-Amperes Indicator	M	R
11. 6.9 kV Bus Alternate Offsite Indicator	M	R
12. Steam Generator - Level Indicator	M	R
13. Steam Generator - Pressure Indicator	M	R
14. Pressurizer-Pressure Indicator	M	R
15. Pressurizer-Level Indicator	M	R
16. Condensate Storage Tank-Level	M	R
17. Wide Range RCS Temp - T_c	M	R
18. Source Range-Neutron Flux	M	R

TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION	FIRE ZONE	ROOM	ELEV.	TOTAL NUMBER OF INSTRUMENTS* HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
2. Auxiliary Building (Continued)						
	33	205	810' 6"			1/0
	38	245	873' 6"			34/0
	39	244	873' 6"			22/0
		244	873' 6"	0/8		
	40	239				3/0
		246	886' 6"			14/0
		246	886' 6"	0/8		
3. Electrical & Control Building						
	43	113	778' 0"			31(1)/0
	44	114	778' 0"			4/0
	47	115	778' 0"			3/0
	49	117	792' 0"			2/0
	51	119	792' 0"			2/0
	153	115A	792' 0"			5/0
	154	115B	778' 0"			5/0
	149	115D	778' 0"			2/0
	150	115C	778' 0"			2/0
	48	116	792' 0"			2/0
	50	118	792' 0"			2/0
	52	120	792' 0"			2/0
	53	121	792' 0"			2/0
	54	122	792' 0"			3/0
	55	123	792' 0"			2/0
	56	124	792' 0"			2/0
	57	125	792' 0"			3/0
	58	126	792' 0"			2/0
	59	128	792' 0"			2/0
	60	127	792' 0"			2/0
	61	129	792' 0"			2/0

TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION	FIRE ZONE	ROOM	ELEV.	TOTAL NUMBER OF INSTRUMENTS* HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
3. Electrical & Control Building (Continued)						
	63	134	807' 0"			0/27(1)(6)
	64	133	807' 0"			0/27(1)(6)
(Unit 1 MCB)	65	135	830' 0"			11/0
(Unit 2 MCB)		135	830' 0"			11/0
(Unit 1 Relay Rack)		135	830' 0"			26/0
(Unit 2 Relay Rack)		135	830' 0"			26/0
(Oper. Area)		135	830' 0"			8/0
(Above False Ceiling)		135	830' 0"			27(1)/0
	65	148	840' 6"			1/0
(Mech. Equip. Room)	74	150A	854' 4"			1(2)/0
		(Control Room Air Supply Duct Detectors)				
	74	150A	854' 4"			1(3)/0
		150A	854' 4"			1(5)/0
		150A	854' 4"			1(5)/0
		150A	854' 4"			1(3)/0
	73	150	854' 4"			1(2)/0
		150	854' 4"			1(4)/0
		150	854' 4"			1(5)/0
		150	854' 4"			1(4)/0
	66	136	830' 0"			0/3
		136	Above False Ceiling			1/0
	67	137	830' 0"			1/0
	68	148	830' 0"			1/0
	69	147	830' 0"			0/3
		147	830' 0"			1/0
	70	149A	840' 6"			2/0

TABLE 3.3-12

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release		
a. Liquid Radwaste Effluent Line (XRE-5253)	1	35
b. Turbine Building (Floor Drains) Sumps Effluent Line (1RE-5100)	1	36
2. Radioactivity Monitors Providing Alarm But Not Providing Automatic Termination of Release		
Service Water Effluent Line (1RE-4269/4270)	1	36
3. Flow Rate Measurement Devices		
Liquid Radwaste Effluent Line (XFE-5288)	1	37

TABLE 4.3-8

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release				
a. Liquid Radwaste Effluent Line (XRE-5253)	D	P	R(4)	Q(1)
b. Turbine Building (Floor Drains) Sumps Effluent Line (1RE-5100)	D	M	R(4)	Q(2)
2. Radioactivity Monitors Providing Alarm But Not Providing Automatic Termination of Release				
Service Water Effluent Line (1RE-4269/4270)	D	M	R(4)	Q(3)
3. Flow Rate Measurement Devices				
Liquid Radwaste Effluent Line (XFE-5288)	D(5)	N.A.	R	Q

TABLE 4.3-9 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
2. WASTE GAS HOLDUP SYSTEM Explosive Gas Monitoring System					
a. Hydrogen Monitor	D	N.A.	Q(4)	M	**
b. Hydrogen Monitor (alternate)	D	N.A.	Q(4)	M	**
c. Oxygen Monitor	D	N.A.	Q(5)	M	**
d. Oxygen Monitor (alternate)	D	N.A.	Q(5)	M	**
3. WASTE GAS HOLDUP SYSTEM					
Noble Gas Activity Monitor (XRE-5701)	D	M	R(3)	Q(1)	*

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 At least two of the reactor coolant loops listed below shall be OPERABLE and at least one of these reactor coolant loops shall be in operation:*

a. Reactor Coolant Loop A and its associated steam generator and reactor coolant pump,

b. Reactor Coolant Loop B and its associated steam generator and reactor coolant pump,

c. Reactor Coolant Loop C and its associated steam generator and reactor coolant pump, and

d. Reactor Coolant Loop D and its associated steam generator and Reactor Coolant pump.

APPLICABILITY: MODE 3.**

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required reactor coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 The required steam generators shall be determined OPERABLE by verifying secondary side water level to be greater than or equal to 17% at least once per 12 hours.

4.4.1.2.3 At least one reactor coolant loop shall be verified in operation and circulating reactor coolant at least once per 12 hours.

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*All reactor coolant pumps may be de-energized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

**See Special Test Exceptions Specification 3.10.4.

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ACCUMULATORS

LIMITING CONDITION FOR OPERATION

3.5.1 Each Reactor Coolant System accumulator shall be OPERABLE with:

a. The isolation valve open and power removed,

b. A contained borated water volume of between 6190 and 6560 gallons,

c. A boron concentration of between 1900 and 2100 ppm, and

d. A nitrogen cover-pressure of between 603 and 686 psig.

APPLICABILITY: MODES 1, 2, and 3*.

ACTION:

a. With one accumulator inoperable, except as a result of a closed isolation valve, restore the inoperable accumulator to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1.1 Each accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1) Verifying, by the absence of alarms, the contained borated water volume and nitrogen cover-pressure in the tanks, and

2) Verifying that each accumulator isolation valve is open.

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 101 gallons by verifying the boron concentration of the accumulator solution; and

*Pressurizer pressure above 1000 psig.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 31 days when the RCS pressure is above 1000 psig by verifying that power to the isolation valve operator is disconnected by locking the breaker in the open position.

4.5.1.2 Each accumulator water level and pressure channel shall be demonstrated OPERABLE:

a. At least once per 31 days by the performance of an ANALOG CHANNEL OPERATIONAL TEST, and

b. At least once per 18 months by the performance of a CHANNEL CALIBRATION.

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.7 Each containment purge supply and exhaust isolation valves shall be OPERABLE and:

a. Each 48-inch and 12-inch containment purge supply and/or exhaust isolation valve shall be locked closed, and

b. The 18-inch containment pressure relief exhaust isolation valves may be open for up to 500 hours during a calendar year.

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

ACTION:

a. With any 48-inch or 12-inch containment purge supply and/or exhaust isolation valve open or not locked close, lock close that valve or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the 18-inch containment pressure relief exhaust isolation valve(s) open for more than 500 hours during a calendar year, close the open 18-inch valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

c. With a containment pressure relief exhaust isolation valve(s) having a measured leakage rate in excess of the limit of Specification 4.6.1.7.4 or with a containment purge supply or exhaust isolation valve(s) having a measured leakage rate in excess of the limit of Specification 4.6.1.7.3, restore the inoperable valve(s) to OPERABLE status within 24 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.7.1 Each 48-inch and 12-inch containment purge supply and exhaust isolation valve shall be verified to be locked closed at least once per 31 days.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.7.2 The cumulative time that all 18-inch containment pressure relief exhaust isolation valves have been open during a calendar year shall be determined at least once per 7 days.

4.6.1.7.3 At least once per 6 months on a STAGGERED TEST BASIS, the inboard and outboard valves with resilient material seals in each locked closed 48-inch or 12-inch containment purge supply and/or exhaust penetration shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than 0.05 L_a when pressurized to P_a.

4.6.1.7.4 At least once per 3 months each 18-inch containment pressure relief exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than 0.01 L_a when pressurized to P_a.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Containment Spray System capable of taking suction from the RWST and transferring suction to the containment sump.

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

ACTION:

With one Containment Spray System inoperable, restore the inoperable Containment Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Containment Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. By verifying that, in the test mode, each train provides a discharge flow through the test header of greater than or equal to 5800 gpm with the pump eductor line open when tested pursuant to Specification 4.0.5;

c. At least once per 18 months during shutdown, by:

   1) Verifying that each automatic valve in the flow path actuates to its correct position on a Containment Spray Actuation test signal, and

   2) Verifying that each spray pump starts automatically on a Containment Spray Actuation or Safety Injection test signal.

d. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.2 The Spray Additive System shall be OPERABLE with:

a. A spray additive tank containing a volume of between 4900 and 5167 gallons of between 28 and 30% by weight NaOH solution, and

b. Two spray additive eductor trains each capable of adding NaOH solution from the chemical additive tank to respective Containment Spray System pump flow.

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

ACTION:

With the Spray Additive System inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the Spray Additive System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.2 The Spray Additive System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. At least once per 6 months by:

1) Verifying the contained solution volume in the tank, and

2) Verifying the concentration of the NaOH solution by chemical analysis.

c. At least once per 18 months during shutdown, by verifying that each automatic valve in the flow path actuates to its correct position on a Containment Spray Actuation test signal; and

d. At least once per 5 years by verifying: 1) the flow path through the spray additive supply line, and 2) RWST test water flow rates of between 50 gpm and 100 gpm through the eductor test loop of each train of the Spray Additive System.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NO.	FSAR TABLE REFERENCE NO.*	LINE OR SERVICE	ISOLATION TIME (Seconds)	TYPE LEVEL TESTING
1. Phase "A" Isolation Valves				
1-8881	43	SI to RC System Hot Leg Loops #2 & #3	10	Note 2 Note 9
1-8824	44	SI to RC System Hot Leg Loops #1 & #4	10	Note 2 Note 9
1-8823	45	SI to RC System Cold Leg Loops #1, #2, #3, & #4	10	Note 2 Note 9
1-8100	51	Seal Water Return and Excess Letdown	10	C
1-8112	51	Seal Water Return and Excess Letdown	10	C
1-7136	52	RCDT Heat Exchanger to Waste Hold Up Tank	10	C
LCV-1003	52	RCDT Heat Exchanger to Waste Hold Up Tank	10	C
1HV-5365	60	Demineralized Water Supply	5	C Note 9
1HV-5366	60	Demineralized Water Supply	5	C Note 9
1HV-5157	61	Containment Sump Pump Discharge	5	C
1HV-5158	61	Containment Sump Pump Discharge	5	C
1HV-3487	62	Instrument Air to Containment	5	C
1-8825	63	RHR to Hot Leg Loops #2 & #3	15	Note 2 Note 9
1HV-2405	73	Sample from Steam Generator #1	5	Note 1
1HV-4170	74	RC Sample From Hot Legs	5	C Note 9

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NO.	FSAR TABLE REFERENCE NO.*	LINE OR SERVICE	ISOLATION TIME (Seconds)	TYPE LEVEL TESTING
3. Containment Ventilation Isolation Valves (Continued)				
1HV-5539	110	Containment Purge Air Exhaust	5	C Note 9
1HV-5548	122	Containment Pressure Relief	5	C
1HV-5549	122	Containment Pressure Relief	5	C
4. Manual Valves				
1FW-158	20b	Chemical Feed to Steam Generator #1	N.A.	Note 1
1FW-106	20c	N_2 Supply to Steam Generator #1	N.A.	Note 1
1FW-157	22b	Chemical Feed to Steam Generator #2	N.A.	Note 1
1FW-104	22c	N_2 Supply to Steam Generator #2	N.A.	Note 1
1FW-156	24b	Chemical Feed to Steam Generator #3	N.A.	Note 1
1FW-102	24c	N_2 Supply to Steam Generator #3	N.A.	Note 1
1FW-159	26b	Chemical Feed to Steam Generator #4	N.A.	Note 1
1FW-108	26c	N_2 Supply to Steam Generator #4	N.A.	Note 1
1-8708B	33	RHR From Hot Leg Loop #4 (Relief)	N.A.	Note 5
1-8708A	34	RHR From Hot Leg Loop #1 (Relief)	N.A.	Note 5
1-7135	52	RCDT Heat Exchanger to Waste Holdup Tank	N.A.	C

TABLE 3.6-1 (Continued)

TABLE NOTATIONS

*Identification code for containment penetration and associated isolation valves in FSAR Tables 6.2.4-1, 6.2.4-2, and 6.2.4-3.

Note 1: These are closed systems which meet the requirements of NUREG-0800 Section 6.2.4, II.6, paragraph o. These valves are therefore not required to be tested.

Note 2: These valves inside containment are part of closed systems outside containment which are in service post accident at a pressure in excess of containment design pressure and satisfy single failure criterion. These valves are therefore not required to be tested.

Note 3: These are closed systems outside containment which are in service post accident and have a water-filled loop seal on the containment side of the valves for a period greater than 30 days following the accident. These valves are therefore leak rate tested with water.

Note 4: These ESF valves are normally open and remain open during post-accident conditions. Postaccident they are continually pressurized in excess of containment pressure from an ESF source which meets the single failure criterion. These valves are therefore not required to be tested.

Note 5: An effective fluid seal on these penetrations is provided by the suction sources to the residual heat removal pumps during and following an accident. In addition, these containment isolation valves are non-automatic, are not required to operate postaccident and are located inside containment. These valves are therefore not required to be tested.

Note 6: These ESF valves are normally closed, but are designed to open during post-accident conditions. They are part of closed systems outside containment which are in service post accident at a pressure in excess of containment design pressure and satisfy single failure criteria. In the event the valve is not opened post-accident, leakage of containment atmosphere is prevented by pump pressure on the system side and a water seal on the containment side of the valve. The combination of the valve disc seal and the double stem seals preclude the possibility of significant stem leakage under the low containment pressure conditions seen in the postulated post-accident condition. Therefore, these valves are not required to be tested.

Note 7: These are parallel ESF valves that are normally closed, but are designed to open during post-accident conditions. Failure of one valve to open will not prevent system pressurization on both sides of both valves in excess of containment pressure. These valve are therefore not required to be tested.

TABLE 3.6-1 (Continued)

TABLE NOTATIONS

Note 8: These valves located outside containment are normally closed and see a pressure in excess of containment pressure in post-accident conditions. A valve stem leakage check will be performed on a quarterly basis to assure no significant stem leakage would occur in post-accident conditions.

Note 9: These valves are classified as "passive" in accordance with Specification 4.0.5 and are stroke time-tested only following maintenance which could effect the stroke time of the valve.

Note 10: These valves require steam to be tested and are thus not required to be tested until the plant is in MODE 3.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3 At least two independent component cooling water loops shall be OPERABLE.

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

ACTION:

With only one component cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3 At least two component cooling water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months during shutdown, by verifying that:

   1) Each automatic valve servicing safety-related equipment actuates to its correct position on a Safety Injection or Containment Spray Actuation test signal, or Phase "B" Isolation test signal, as appropriate, and

   2) Each Component Cooling Water System pump starts automatically on a Safety Injection test signal.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the sytem flow rate is 8000 cfm ± 10% for the Recirculation System and 800 cfm ± 10% from the Emergency Pressurization System;

2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 0.2%; and

3) Verifying a system flow rate of 8000 cfm ± 10% during Recirculation System operation and 800 cfm ± 10% during Emergency Pressurization System operation when tested in accordance with ANSI N510-1980.

d. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 0.2%;

e. At least once per 18 months by:

1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 7.7 inches Water Gauge while operating the Recirculation System at a flow rate of 8000 cfm ± 10% and is less than 9.25 inches Water Gauge while operating the Emergency Pressurization System at a flow rate of 800 cfm ± 10%;

2) Verifying that on a Loss-of-Offsite Power, or Intake Vent-High Radiation, or Plant Vent-High Radiation test signal, the system automatically switches into an emergency recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks;

SURVEILLANCE REQUIREMENTS (Continued)

3) Verifying a system flow rate of 15,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980.

c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 0.2%;

d. At least once per 18 months by:

1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks of less than 8.25 inches Water Gauge while operating the system at a flow rate of 15,000 cfm ± 10%,

2) Verifying that the system starts on a Safety Injection test signal, and

3) Verifying that the heaters dissipate 100 ± 5 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 15,000 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 15,000 cfm ± 10%.

3/4.7.9 SNUBBERS

LIMITING CONDITION FOR OPERATION

3.7.9 All snubbers shall be OPERABLE. Snubbers excluded from this requirement are those installed on nonsafety-related systems, and then only if their failure or failure of the system on which they are installed would have no adverse effect on any safety-related system.

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

ACTION:

With one or more snubbers inoperable on any system, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation per Specification 4.7.9g. on the attached component or declare the attached system inoperable and follow the appropriate ACTION statement for that system.

SURVEILLANCE REQUIREMENTS

4.7.9 Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program in lieu of the requirements of Specification 4.0.5.

a. Inspection Types

As used in this specification, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

b. Visual Inspections

Snubbers are categorized as inaccessible or accessible during reactor operation. Each of these groups (inaccessible and accessible) may be inspected independently according to the schedule below. The first inservice visual inspection of each type of snubber shall be performed after 4 months but within 10 months of commencing POWER OPERATION and shall include all snubbers. If all snubbers of each type are found OPERABLE during the first inservice visual inspection, the second inservice visual inspection on that type shall be performed at the first refueling outage. Otherwise, subsequent visual inspections shall be performed in accordance with the following schedule:

SURVEILLANCE REQUIREMENTS (Continued)

No. of Inoperable Snubbers of Each Type per Inspection Period	Subsequent Visual Inspection Period*#
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%
3,4	124 days ± 25%
5,6,7	62 days ± 25%
8 or more	31 days ± 25%

c. Visual Inspection Acceptance Criteria

Visual inspections shall verify that: (1) there are no visible indications of damage or impaired OPERABILITY, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, provided that: (1) 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 (2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per Specification 4.7.9f. All snubbers connected to an inoperable common hydraulic fluid reservoir shall be counted as inoperable snubbers.

d. Transient Event Inspection

An inspection shall be performed of all snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data. A visual inspection of those systems shall be performed within 6 months following such an event. In addition to satisfying the visual inspection acceptance criteria, freedom-of-motion of mechanical snubbers shall be verified using at least one of the following: (1) manually induced snubber movement; or (2) evaluation of in-place snubber piston setting; or (3) stroking the mechanical snubber through its full range of travel.

*The inspection interval for each type of snubber shall not be lengthened more than one step at a time unless a generic problem has been identified and corrected; in that event the inspection interval may be lengthened one step the first time and two steps thereafter if no inoperable snubbers of that type are found.

#The provisions of Specification 4.0.2 are not applicable.

SURVEILLANCE REQUIREMENTS (Continued)

e. Functional Tests

During the first refueling shutdown and at least once per 18 months thereafter during shutdown, a representative sample of snubbers of each type shall be tested using one of the following sample plans. The sample plan for each type shall be selected prior to the test period and cannot be changed during the test period. 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:

1) At least 10% of the total of each type of snubber shall be functionally tested either in-place or in a bench test. For each snubber of a type that does not meet the functional test acceptance criteria of Specification 4.7.9f., 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; or

2) A representative sample of each type of snubber shall be functionally tested in accordance with Figure 4.7-1. "C" is the total number of snubbers of a type found not meeting the acceptance requirements of Specification 4.7.9f. 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 4.7-1. 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; or

3) 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 3.7-3 (Continued)

SPRAY/SPRINKLER SYSTEMS

BUILDING	AREA DESCRIPTION	FIRE ZONES AFFECTED
Auxiliary	Mech. Equip. Area 873'-6" Stair Area A-10 El. 831'-6", 842'-0"	38, 21f, 21d
	South Half Corr. El. 831'-6"	21d
	North Half Corr. El. 831'-6"	21d
	North Half Corr. El. 810'-6"	21b
	South Half Corr. El. 810'-6"	21b
	Heat Exchange & Tube Removal Area El. 790'-6"	21a
	North Aux. Corr. El. 790'-6" Chiller Eq. Area (Unit 2) El. 778'-0" Batt. Rm. Corr. El. 792'-0" & Mech. Eq. Area El. 778'-0"	43,** 44,** 21a,** 54,** 154**
	South Aux. Corr. El. 790'-6" Chiller Eq. Area (Unit 1) El. 778'-0" Batt. Rm. Corr. El. 792'-0" & Mech. Eq. Area El. 778'-0"	43,** 47,** 21a, 57,** 153**
Service Water Intake Structure	Diesel Fire Pump Area El. 796'-0"	103
	SWIS (General Area) El. 796'-0", El. 810'6"	104a, 104b
Containment	CP1-VAFUPK-17	101e
	CP1-VAFUPK-18	101e

TABLE NOTATIONS

*Fire zones are located in Safeguards Building.

**Fire zones are located in E&C Building.

TABLE 3.7-4 (Continued)

FIRE HOSE STATIONS

BUILDING	HOSE STATION TAG NO.	ELEVATION	ZONES AFFECTED
Service Water Intake Struc.	CPX-FPFEIH-01	796'-0"	104c, 104b, 103
Auxiliary	CPX-FPFEXH-01	790'-6"	21a, 154*
	CPX-FPFEXH-02	790'-6"	21a, 153*
	CPX-FPFEXH-05	810'-6"	21b, 21c, 27, 28, 29, 30, 33
	CPX-FPFEXH-06	810'-6"	21b, 21c, 23, 24, 25, 26, 32
	CPX-FPFEXH-21	831'-6"	21d
	CPX-FPFEXH-09	831'-6"	21d, 34, 36
	CPX-FPFEXH-08	831'-6"	21b, 21h, 31b, 35, 37
	CPX-FPFEXH-20	831'-6"	21d
	CPX-FPFEXH-22	842'-0"	21d, 21e
	CPX-FPFEXH-23	842'-0"	21d, 21e
	CPX-FPFEXH-11	852'-6"	21f
	CPX-FPFEXH-10	852'-6"	21f
	CPX-FPFEXH-13	873'-6"	39
	CPX-FPFEXH-17	886'-6"	40
Containment Unit	CP1-FPFECH-01	808'-0"	101b
	CP1-FPFECH-02	808'-0"	101b
	CP1-FPFECH-03	808'-0"	101b
	CP1-FPFECH-04	832'-6"	101d
	CP1-FPFECH-05	832'-6"	101d
	CP1-FPFECH-06	832'-6"	101d
	CP1-FPFECH-07	852'-6"	101f
	CP1-FPFECH-08	852'-6"	101f
	CP1-FPFECH-09	852'-6"	101f
	CP1-FPFECH-10	905'-0"	101h
	CP1-FPFECH-11	905'-0"	101h
Turbine Building	CP1-FPFETH-13	810'-6"	111
	CP1-FPFETH-24	810'-6"	111

TABLE NOTATION

*Fire zones are located in E&C Building.

SURVEILLANCE REQUIREMENTS (Continued)

4.7.12.2 Each of the above required fire doors shall be verified OPERABLE by inspecting the automatic hold-open, release and closing mechanism and latches at least once per 6 months, and by verifying:

a. The OPERABILITY of the fire door supervision system for each electrically supervised fire door by performing a TRIP ACTUATING DEVICE OPERATIONAL TEST at least once per 31 days,

b. That each locked closed fire door is closed at least once per 7 days,

c. That doors with automatic hold-open and release mechanisms are free of obstructions at least once per 24 hours, and a functional test is performed at least once per 18 months, and

d. That each normally closed unlocked fire door without electrical supervision is closed at least once per 24 hours.

3/4.7.13 AREA TEMPERATURE MONITORING

LIMITING CONDITION FOR OPERATION

3.7.13 The temperature limit of each area given in Table 3.7-6 shall not be exceeded for more than 8 hours or by more than 30°F.

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

ACTION:

a. With one or more areas exceeding the temperature limit(s) shown in Table 3.7-6 for more than 8 hours, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report 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 the continued OPERABILITY of the affected equipment. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

b. With one or more areas exceeding the temperature limit(s) shown in Table 3.7-6 by more than 30°F, prepare and submit a Special Report as required by ACTION a. above and within 4 hours either restore the area(s) to within the temperature limit(s) or declare the equipment in the affected area(s) inoperable.

SURVEILLANCE REQUIREMENTS

4.7.13 The temperature in each of the areas shown in Table 3.7-6 shall be determined to be within its limit at least once per 12 hours.

after the start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2e.6)b);*

8) Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 7000 kW;

9) Verifying the diesel generator's capability to:

   a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

   b) Transfer its loads to the offsite power source, and

   c) Be restored to its standby status.

10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;

11) Verifying that the fuel transfer pump transfers fuel from the fuel storage tank to the day tank of its associated diesel via the installed lines;

12) Verifying that the automatic load sequence timers are OPERABLE with the interval between each load block within ± 10% of its design interval;

13) Verifying that the following diesel generator lockout features prevent diesel generator starting by an SI signal:

   a) Barring device engaged (PS-13B closed), or
   b) Maintenance lock out mode.

g. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 450 rpm in less than or equal to 10 seconds; and

*If Specification 4.8.1.1.2f.6)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated between 5800 and 5980 kW for 1 hour or until operating temperature has stabilized.

TABLE 3.8-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1. 6.9 KVAC from Switchgears	
a. Switchgear Bus 1A1	RCP #11
1) Primary Breaker 1PCPX1	
a) Relay 50M1-51	
b) Relay 26	
c) Relay 86M	
2) Backup Breakers 1A1-1 or 1A1-2	
a) Relay 51M2	
b) Relay 51 for 1A1-1	
c) Relay 51 for 1A1-2	
d) Relay 86/1A1	
b. Switchgear Bus 1A2	RCP #12
1) Primary Breaker 1PCPX2	
a) Relay 50M1-51	
b) Relay 26	
c) Relay 86M	
2) Backup Breakers 1A2-1 or 1A2-2	
a) Relay 51M2	
b) Relay 51 for 1A2-1	
c) Relay 51 for 1A2-2	
d) Relay 86/1A2	
c. Switchgear Bus 1A3	RCP #13
1) Primary Breaker 1PCPX3	
a) Relay 50M1-51	
b) Relay 26	
c) Relay 86M	
2) Backup Breaker 1A3-1 or 1A3-2	
a) Relay 51M2	
b) Relay 51 for 1A3-1	
c) Relay 51 for 1A3-2	
d) Relay 86/1A3	

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1. 6.9 KVAC from Switchgears (Continued)	
d. Switchgear Bus 1A4	RCP #14
1) Primary Breaker 1PCPX4	
a) Relay 50M1-51	
b) Relay 26	
c) Relay 86M	
2) Backup Breaker 1A4-1 or 1A4-2	
a) Relay 51M2	
b) Relay 51 for 1A4-1	
c) Relay 51 for 1A4-2	
d) Relay 86/1A4	
2. 480 VAC from Switchgears	
2.1 Device Location - 480V Switchgears 1EB1, 1EB2, 1EB3 and 1EB4	Containment Recirc. Fans and CRDM Vent Fans
a. Primary Breakers - 1FNAV1, 1FNAV2, 1FNAV3, 1FNAV4, 1FNCB1 and 1FNCB2	
b. Backup Breakers - 1EB1-1, 1EB2-1, 1EB3-1 and 1EB4-1	
1) Long Time & Instantaneous Relays*	
$\frac{50/51}{\text{1FNAV1}}$ (1EB1-1) $\frac{50/51}{\text{1FNAV2}}$ (1EB2-1)	
$\frac{50/51}{\text{1FNAV3}}$ (1EB3-1) $\frac{50/51}{\text{1FNAV4}}$ (1EB4-1)	
$\frac{50/51}{\text{1FNCB1}}$ (1EB3-1) $\frac{50/51}{\text{1FNCB2}}$ (1EB4-1)	

*Associated circuit breaker shown in parentheses; e.g., 1EB3-1, is backup to 1FNAV3 and 1FNCB1.

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR
OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2. 480 VAC from Switchgears (Continued)	
2) Time Delay Relays	
$\frac{62}{1FNAV1}$ (1EB1-1) $\frac{62}{1FNAV2}$ (1EB2-1)	
$\frac{62}{1FNVA3}$ (1EB3-1) $\frac{62}{1FNAV4}$ (1EB4-1)	
$\frac{62}{1FNCB1}$ (1EB3-1) $\frac{62}{1FNCB2}$ (1EB4-1)	
2.2 Device Location - 480V Switchgear 1EB4	Containment Polar Crane
a. Primary Breaker - 1SCCP1	
b. Backup Breaker 1EB4-1	
1) $\frac{51}{1SCCP1}$	
2) $\frac{62}{1SCCP1}$	

3. 480VAC from Motor Control Centers

3.1 Device Location - MCC 1EB1-2 Containment Numbers listed below.

Primary and Backup Breakers - Both primary and backup breakers have identical trip ratings and are in the same MCC Compt. These breakers are General Electric type THED or THFK with thermal-magnetic trip elements.

MCC 1EB1-2 COMPT. NO.	G.E. BKR. TYPE	SYSTEM POWERED
4G	THED	Motor Operated Valve 1-TV-4691
4M	THED	Motor Operated Valve 1-TV-4693
3F	THED	Containment Drain Tank Pump-03
9H	THED	Reactor Cavity Sump Pump-01

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION

3. 480VAC from Motor Control Centers (Continued)

MCC 1EB1-2 COMPT. NO.	G.E. BKR. TYPE	SYSTEM POWERED
2M	THED	RC Drain Tank Pump No. 1
2F	THED	Containment Ltg XFMR-16 (PNL C7 & C9)
1M	THED	Containment Ltg XFMR-12 (PNL C1 & C5)
3M	THED	Preaccess Fan No. 11

3.2 Device Location - MCC 1EB2-2 Containment Numbers listed below.

Primary and Backup Breakers - Both primary and backup breakers have identical trip ratings and are located in the same MCC compt. These breakers are General Electric type THED and THFK with thermal-magnetic trip elements.

MCC 1EB2-2 COMPT. NO.	G.E. BKR. TYPE	SYSTEM POWERED
4G	THED	Motor Operated Valve 1-TV-4692
4M	THED	Motor Operated Valve 1-TV-4694
3F	THED	Containment Drain Tank Pump-04
7H	THED	Containment Sump No. 2 Pump-03
7M	THED	Containment Sump No. 2 Pump-04
6H	THED	RCP No. 12 Motor Space Heater-02
6M	THED	RCP No. 14 Motor Space Heater-04
5B	THED	Incore Detector Drive "C"
2B	THED	Incore Detector Drive "D"
7B	THED	Incore Detector Drive "E"
5D	THED	Containment Fuel Storage Crane-01
3B	THED	Stud Tensioner Hoist Outlet-02
4B	THED	Containment Solid Rad Waste Compactor-01
10B	THED	RCC Change Fixture Hoist Drive-01
10F	THED	Refueling Cavity Skimmer Pump-01
12B	THED	Power Receptacles (Cont. El. 841')

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR
OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
4. 480VAC From Panelboards For Pressurizer Heaters	Pressurizer Heaters

a. Primary Breakers - General Electric Type TJJ Thermal Magnetic breaker.

Breaker No. & Location - Ckt. Nos. 2 thru 4 of Panelboards 1EB1-1, 1EB1-2, 1EB2-2, 1EB3-2, 1EB4-1, 1EB4-2 and Ckt. Nos. 2 thru 5 of Panelboards 1EB2-1 and 1EB3-1.

b. Backup Breakers - General Electric Type THJS with longtime and insts solid state trip device with 400 Amp. sensor.

Breaker No. & Location - Ckt. No. 1 of Panelboards 1EB1-1, 1EB1-2, 1EB2-1, 1EB2-2, 1EB3-1, 1EB3-2, 1EB4-1 and 1EB4-2.

5. DC Power From Rod Control Power Cabinets	Rod control

Fuse Location - Rod control power Cabinets 1AC, 1BD, 2AC, 2BD and SCDE.

a. Primary Fuses

FUSE LOCATION & NUMBER	SYSTEM POWERED
FU13 to FU20	Stationary Gripper Coils
FU21 to FU24	Moving Gripper Coils
FU25 to FU32	Stationary Gripper Coils
FU33 to FU36	Moving Gripper Coils
FU37 to FU44	Stationary Gripper Coils
FU45 to FU52	Moving Gripper Coils
A51/FU1 & FU2 to A58/FU1 & FU2	Lift Coils

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR
OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED

5. DC Power From Rod Control Power Cabinets (Continued)

b. Backup Fuses

FUSE LOCATION AND NUMBER	SYSTEM POWERED
FU1 to FU9	Stationary Gripper Coils
Movable Bus-Duct Plug-in Unit A102-FU1 to FU3	Moving Gripper Coils
Lift Bus-Duct Plug-in Unit A101-FU1 to FU3	Lift Coils

6. 120V Space Heater Circuits from 480V Switchgears — Containment Recirc. Fan and CRDM Vent. Fan Motor Space Heaters

a. Primary Breakers

BKR. LOCATION & NUMBER	WESTINGHOUSE BKR. TYPE
Swgr. 1EB1, Cubicle 3A CP1-VAFNAV-01 Space Heater Bkr.	EB1010
Swgr. 1EB2, Cubicle 3A CP1-VAFNAV-02 Space Heater Bkr.	EB1010
Swgr. 1EB3, Cubicle 9A CP1-VAFNAV-03 Space Heater Bkr.	EB1010
Swgr. 1EB4, Cubicle 9A CP1-VAFNAV-04 Space Heater Bkr.	EB1010
Swgr. 1EB3, Cubicle 8A, CP1-VAFNCB-01 Space Heater Bkr.	EB1010

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR
OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER
AND LOCATION

6. 120V Space Heater Circuits from 480V Switchgears (Continued)

BKR. LOCATION & NUMBER	WESTINGHOUSE BKR. TYPE
Swgr. 1EB4, Cubicle 8A CP1-VAFNAV-02 Space Heater Bkr.	EB1010

b. Backup Breakers

Panel 1EC3-2 Ckt. No. 3	TED
Panel 1EC3-2 Ckt. No. 4	TED
Panel 1EC4-2 Ckt. No. 3	TED
Panel 1EC4-2 Ckt. No. 4	TED

7. 120V Space Heater Circuits From 480V MCC's

a. Primary Fuses

Location - Each MCC Starter Compartment MCC's 1EB1-2, 1EB2-2, 1EB3-2 and 1EB4-2.

b. Backup Fuses

FUSE LOCATION AND NUMBER	SYSTEM POWERED
MCC 1EB1-2 Compt. 12E, 1FU	Space Heater Circuits from MCC1EB1-2
MCC 1EB2-2 Compt. 12F, 1FU	Space Heater Circuits from MCC 1EB2-2
MCC 1EB3-2 Compt. 7C, 1FU	Space Heater Circuits from MCC 1EB3-2

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER AND LOCATION	SYSTEM POWERED

7. 120V Space Heater Circuits From 480V MCC's (Continued)

FUSE LOCATION AND NUMBER	SYSTEM POWERED
MCC 1EB4-2 Compt. 6C, 1FU	Space Heater Circuits from MCC 1EB4-2

8. 125V DC Lighting — Emergency DC Lighting

a. Primary Breaker

BREAKER LOCATION AND NUMBER	G.E. Bkr. TYPE
DC Panelboard 1D2-1, Ckt #6	TFJ

b. Backup Fuse

FUSE LOCATION AND NUMBER
DC Switchbcard 1D2, Ckt. #1-2

9. 125V DC Control Power — Various

a. Primary Devices - 3 Amp fuses in termination cabinets listed below with backup devices.

b. Backup Breakers

CAB. NO.	PANELBOARD NO.	CKT. NO.	GENERAL ELECTRIC BREAKER TYPE
01	XED1-1	1	TED
02	XED2-1	1	TED
03	XD2-3	8	TED
04	XED1-1	1	TED
05	1ED2-1	17	TED

3/4.10.4 REACTOR COOLANT LOOPS

LIMITING CONDITION FOR OPERATION

3.10.4 The limitations of the following requirements may be suspended:

a. Specification 3.4.1-1 - During the performance of STARTUP and PHYSICS TESTS in MODE 1 or 2 provided:

1) The THERMAL POWER does not exceed the P-7 Interlock Setpoint, and

2) The Reactor Trip Setpoints on the OPERABLE Intermediate and Power Range channels are set less than or equal to 25% of RATED THERMAL POWER.

b. Specification 3.4.1.2 - During the performance of natural circulation tests in MODE 3 provided at least three reactor coolant loops as listed in Specification 3.4.1.2 are OPERABLE.

APPLICABILITY: During operation below the P-7 Interlock Setpoint or performance of natural circulation tests.

ACTION:

a. With the THERMAL POWER greater than the P-7 Interlock Setpoint during the performance of STARTUP and PHYSICS TESTS, immediately open the Reactor trip breakers.

b. With less than the above required reactor coolant loops OPERABLE during the performance of the natural circulation tests, immediately place two reactor coolant loops in operation.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The THERMAL POWER shall be determined to be less than P-7 Interlock Setpoint at least once per hour during STARTUP and PHYSICS TESTS.

4.10.4.2 Each Intermediate and Power Range channel, and P-7 Interlock shall be subjected to an ANALOG CHANNEL OPERATIONAL TEST within 12 hours prior to initiating STARTUP and PHYSICS TESTS.

4.10.4.3 At least the above required reactor coolant loops shall be determined OPERABLE within 4 hours prior to the initiation of the natural circulation tests and at least once per 4 hours during the natural circulation tests by verifying correct breaker alignments and indicated power availability.

LIQUID RADWASTE TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.11.1.3 The Liquid Radwaste Treatment System shall be OPERABLE and appropriate portions of the system shall be used to reduce releases of radioactivity when the projected doses due to the liquid effluent, from each unit, to UNRESTRICTED AREAS (see Figure 5.1-4) would exceed 0.06 mrem to the whole body or 0.2 mrem to any organ in a 31-day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged without treatment and in excess of the above limits and any portion of the Liquid Radwaste Treatment System not in operation, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that includes the following information:

   1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,

   2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

   3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3.1 Doses due to liquid releases from each unit to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM when Liquid Radwaste Treatment Systems are not being fully utilized.

4.11.1.3.2 The installed Liquid Radwaste Treatment System shall be considered OPERABLE by meeting Specifications 3.11.1.1 and 3.11.1.2.

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS[1]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
2. Airborne Radioiodine and Particulates	Samples from five locations: Three samples from close to the three SITE BOUNDARY locations, in different sectors, of the highest calculated annual average ground-level D/Q; One sample from the vicinity of a community having the highest calculated annual average ground-level D/Q; and One sample from a control location, as for example 15 to 30 km distant and in the least prevalent wind direction.[3]	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Cannister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter charge;[4] and gamma isotopic analysis(of composite (by location) quarterly.
3. Waterborne			
a. Surface[6]	Squaw Creek Reservoir and Lake Granbury. Control-Brazos River upstream of Lake Granbury.	Monthly[7].	Gamma isotopic analysis[5] monthly. Composite for tritium analysis quarterly
b. Ground	Samples from one or two sources, only if likely to be affected[8].	Quarterly.	Gamma isotopic[5] and tritium analysis quarterly

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS[1]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. Waterborne (Continued)			
c. Drinking	One sample of each of one to three of the nearest water supplies that could be affected by its discharge. One sample from a control location.	Grab sample at least once per 2-week period[7] when I-131 analysis is performed; monthly grab sample otherwise.	I-131 analysis on each grab sample when the dose calculated for the consumption of the water is greater than 1 mrem per year[6]. Gross beta and gamma isotopic analyses[5] monthly. Composite for tritium analysis quarterly.
d. Sediment from Shoreline	One sample from downstream area with existing or potential recreational value.	Semiannually.	Gamma isotopic analysis[5] semiannually.
4. Ingestion			
a. Milk	Samples from available milking animals in three locations within 5 km distance having the highest dose potential. If there are none, sample from available milking animals in each of three areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per yr.[9] One sample from milking animals at a control location, 15 to 30 km distant and in the least prevalent wind direction.	Semimonthly when animals are on pasture; monthly at other times.	Gamma isotopic[5] and I-131 analysis semimonthly when animals are on pasture; monthly at other times.

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 of 1.30 throughout each analyzed transient. The indicated T_{avg} value of 593°F and the indicated pressurizer pressure value of 2230 psig correspond to analytical limits of 595°F and 2205 psig respectively, with allowance for measurement 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. Measurement uncertainties must be accounted for during the periodic surveillance.

INTERNAL PRESSURE (Continued)

limit the total pressure to 48.1 psig, which is less than design pressure and is consistent with the safety analyses.

3/4.6.1.5 AIR TEMPERATURE

The limitations on containment average air temperature ensure that the overall containment average air temperature does not exceed the initial temperature condition assumed in the safety analysis for a LOCA and steam line break accident. Measurements shall be made at all listed locations, whether by fixed or portable instruments, prior to determining the average air temperature.

3/4.6.1.6 CONTAINMENT VESSEL STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the containment will withstand the maximum pressure of 48.1 psig in the event of a LOCA. A visual inspection in conjunction with the Type A leakage tests is sufficient to demonstrate this capability.

3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM

The 48-inch and 12-inch containment purge supply and exhaust isolation valves are required to be locked closed during plant operations since these valves have not been demonstrated capable of closing during a LOCA or steam line break accident. Maintaining these valves locked closed during plant operation ensures that excessive quantities of radioactive materials will not be released via the Containment Ventilation System. To provide assurance that these containment valves cannot be inadvertently opened, the valves are locked closed in accordance with Standard Review Plan 6.2.4 which includes mechanical devices to seal or lock the valve closed, or prevents power from being supplied to the valve operator.

The use of the containment ventilation systems during operations is restricted to the 18-inch pressure relief line since, unlike the 48-inch and 12-inch valves, the 18-inch valves are capable of closing during a LOCA or steam line break accident. Therefore, the SITE BOUNDARY dose guideline of 10 CFR Part 100 would not be exceeded in the event of an accident during containment purging operations. Operations with these lines open will be limited to 500 hours during a calendar year. The total time these valves may be open is a function of anticipated need and operating experience. Only safety-related reasons, e.g., containment pressure control or the reduction of airborne radioactivity to facilitate personnel access for surveillance and maintenance activities, may be used to support additional time requests.

Leakage integrity tests with a maximum allowable leakage rate for containment purge supply and exhaust supply valves will provide early indication of resilient material seal degradation and will allow opportunity for repair

BASES

3/4.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

The OPERABILITY of the WASTE GAS HOLDUP SYSTEM and the VENTILATION EXHAUST TREATMENT SYSTEM ensures that the systems will be available for use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of these sytems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This specification implements the requirements of 10 CFR 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Section II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

This specification applies to the release of radioactive materials in gaseous effluents from each unit at the site. When shared Radwaste Treatment Systems are used by more than one unit on a site, the wastes from all units are mixed for shared treatment; by such mixing, the effluent releases cannot accurately be ascribed to a specific unit. An estimate should be made of the contributions from each unit based on input conditions, e.g., flow rates and radioactivity concentrations, or, if not practicable, the treated effluent releases may be allocated equally to each of the radioactive waste producing units sharing the Radwaste Treatment System. For determining conformance to LCOs, these allocations from shared Radwaste Treatment Systems are to be added to the releases specifically attributed to each unit to obtain the total releases per unit.

3/4.11.2.5 EXPLOSIVE GAS MIXTURE

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

3/4.11.2.6 GAS DECAY TANKS

The tanks included in this specification are those tanks for which the quantity of radioactivity contained is not limited directly or indirectly by another Technical Specification. Restricting the quantity of radioactivity contained in each gas decay tank provides assurance that in the event of an uncontrolled release of the tank's contents, the resulting whole body exposure

GAS DECAY TANKS (Continued)

to a MEMBER OF THE PUBLIC at the nearest SITE BOUNDARY will not exceed 0.5 rem. This is consistent with Standard Review Plan 11.3, Branch Technical Position ETSB 11-5, "Postulated Radioactive Releases Due to a Waste Gas System Leak or Failure," in NUREG-0800, July 1981. Since only the gamma body dose factor (DFB_i) is used in the analysis, the Xe-133 equivalent is determined from the DFB_i value for Xe-133 as compared to the composite DFB_i for the actual mixture in the tank.

3/4.11.3 SOLID RADIOACTIVE WASTES

This specification implements the requirements of 10 CFR 50.36a and General Design Criterion 60 of Appendix A to 10 CFR Part 50. The process parameters included in establishing the PROCESS CONTROL PROGRAM may include, but are not limited to waste type, waste pH, waste/liquid/SOLIDIFICATION agent/catalyst ratios, waste oil content, waste principal chemical constituents, and mixing and curing times.

3/4.11.4 TOTAL DOSE

This specification is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The specification requires the preparation and submittal of a Special Report whenever the calculated doses due to releases of radioactivity and to radiation from uranium fuel cycle sources exceed 25 mrems to the whole body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems. For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR Part 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units and outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR Part 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER of the PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in Specifications 3.11.1.1 and 3.11.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle.