TABLE 4.1.1

SCRAM INSTRUMENT FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION AND CONTROL CIRCUITS

INSTRUMENT CHANNEL	GROUP*	FUNCTIONAL TEST	MINIMUM FREQUENCY (4)
High Reactor Pressure	A	Trip Channel and Alarm	Note 1
High Drywell Pressure	A	Trip Channel and Alarm	Note 1
Low Reactor Water Level ~~(2)~~ (2, 5)	~~A~~ B	Trip Channel and Alarm	Note 1
High Water Level in Scram Discharge	A, B	Trip Channel and Alarm	Once each month
Condenser Low Vac	A	Trip Channel and Alarm	Note 1
Main Steam Line Isolation Valve Closure	A	Trip Channel and Alarm	Note 1
Turbine Stop Valve Closure	A	Trip Channel and Alarm	Note 1
Manual Scram	A	Trip Channel and Alarm	Note 1
Turbine Control Valve Fast Closure	A	Trip Channel and Alarm	Note 1
APRM/Flow Reference (5)	B	Trip Output Relays	Once each week
IRM (5)	C	Trip Channel and Alarm	Note 3
High Steam Line Rad. (5)	B	Trip Channel and Alarm	Once each week
Mode Switch in Shutdown	C	Place mode switch in shutdown	Each refueling outage

TABLE 4.1.2

SCRAM INSTRUMENT CALIBRATION

MINIMUM CALIBRATION FREQUENCES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

INSTRUMENT CHANNEL	GROUP	CALIBRATION METHOD	MINIMUM FREQUENCY (2)
APRM	E	Heat Balance	Once every 3 days (4)
IRM	E	Heat Balance	See Note 1
High Reactor Pressure	D	Pressure Standard	Every 3 months
High Drywell Pressure	D	Pressure Standard	Every 3 months
Low Reactor Water	~~D~~ E	Pressure Standard	~~Every 3 months~~
High Water Level in Scram Discharge	D or E	Water Level	Every 3 months
Condenser Low Vacuum	D	Vacuum Standard	Every 3 months
High Steam Line Radiation	E	See Note 3	See Note 3
Main Steamline Isolation Valve Closure	D	Observation	Every Operating Cycle
Turbine Control Valve Fast Closure	D	Pressure Standard	Every 3 months
Turbine Stop Valve Closure	D	Observation	Every Operating Cycle
Recirculation Flow Meters & Flow Instrumentation	-	Pressure Standard	Every 3 months

Every Operating Cycle - Transmitter
Every 3 months - Trip Unit

Notes:

1. Perform calibration test during every startup and normal shutdown.
2. Calibration tests are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.
3. This instrument will be calibrated every three months by means of a build-in current source, and each refueling outage with a known radioactive source.
4. This calibration is performed by taking a heat balance and adjusting the APRM to agree with the heat balance. Alarms and trips will be verified and calibrated if necessary during weekly functional test.

*GROUPS:

D. Passive type devices.
E. Vacuum tube or semiconductor devices and detectors that drift or lose sensitivity.

Bases Continued:

3.1 The requirement that the IRM's be inserted in the core until the APRM's read at least 3/125 of full scale assures that there is proper overlap in the neutron monitoring systems and thus, that adequate coverage is provided for all ranges of reactor operation.

Although the operator will set the set points within the trip settings specified on Table 3.1.1, the actual values of the various set points can differ appreciably from the value the operator is attempting to set. The deviations could be caused by inherent instrument error, operator setting error, drift of the set point, etc. Therefore, such deviations have been accounted for in the various transient analysis and the actual trip settings may vary by the following amounts.

Trip Function	Deviation	Trip Function	Deviation
3. High Flux IRM	+2/125 of scale	(*) 7. Reactor Low Water Level	-6 inches
5. High Reactor Pressure	+10 psi	8. Scram Discharge Volume High Level	+1 gallon
6. High Drywell Pressure	+1 psi	9. Turbine Condenser Low Vacuum	$-\frac{1}{2}$ in. Hg

* This indication is reactor coolant temperature sensitive. The calibration is thus made for rated conditions. The level error at low pressures and temperatures is bounded by the safety analysis which reflects the weight-of-coolant above the lower tap, and not the indicated level.

A violation of this specification is assumed to occur only when a device is knowingly set outside of the limiting trip setting, or a sufficient number of devices have been affected by any means such that the automatic function is incapable of operating within the allowable deviation while in a reactor mode in which the specified function must be operable, or the actions specified in 3.1.B.2 are not initiated as specified.

If an unsafe failure is detected during surveillance testing, it is desirable to determine as soon as possible if other failures of a similar type have occured and whether the particular function involved is still operable or capable of meeting the single failure criterion. To meet the requirements of Table 3.1.1, it is necessary that all instrument channels in one trip system be operable

Table 3.2.2
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Min. No. of Operable or Operating Trip Systems(3)	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Chanels Per Trip System (3)	Required Conditions*
A. Core Spray and LPCI					
1. Pump Start					
a. Low Low Reactor Water Level and	≥ 6'6" ≤ 6'10"	2	4(4)	4	A.
~~b. Reactor Low Pressure Permissive~~	~~≥ 450 psig~~	~~2~~	~~2(4)~~	~~2~~	~~A.~~
c. High Drywell Pressure (1)	≤ 2 psig	2	4(4)	4	A.
2. Low Reactor Pressure (Valve Permissive)	≥ 450 psig	2	2(4)	2	A.
3. Loss of Auxiliary Power	-----	2	2(2)	2	A.

3.2/4.2

b.i. Reactor Low Pressure Permissive	≥ 450 psig	2	2(4)	2	A.	52 REV
or						
b.ii. Reactor Low Pressure Permissive Bypass Timer	20 ± 1 min	2	1	1	C.	

Table 3.2.2 - Continued
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Min. No. of Operable or Operating Trip Systems(3)	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (3)	Required Conditions*
B. HPCI System					
1. High Drywell Pressure (1)	≤ 2 psig	1	4	4	B.
2. Low Low Reactor Water Level	≥ 6'6" ≤6'10"	1	4	4	B.
C. Automatic Depressurization					
~~1. High Drywell Pressure (1)~~	~~2 psig~~	~~2~~	~~2~~	~~2~~	~~C.~~
~~and~~					
1. ~~2.~~ Low Low Reactor Water Level	≥ 6'6" ≤6'10"	2	2	2	C.
and					
2. ~~3.~~ Auto Blowdown Timer	≤120 seconds	2	1	1	C.
and					
3. ~~4.~~ Low Pressure Core Cooling Pumps Discharge Pressure Interlock	≤100 psig	2	12(4)	12(4)	C.

TABLE 3.2.7

Instrumentation for Safety/Relief Valve Low-Low Set Logic

Function	Trip Setting	Min. No. of Operable or Operating Trip Systems	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System	Required Conditions
Reactor Scram Detection		2(2)	2	2	A or B or C
Reactor Coolant System Pressure for Opening/ Closing (1)	1072±3/992±3 psig 1062±3/982±3 psig 1052±3/972±3 psig	2(2)	2	2	A or B or C
Discharge Pipe Pressure Inhibit and Position Indication	~~50±1 psid (3)~~ 30±1 psid (3)	2(2)	2	2	A or B or C
Inhibit Timers	10±1 sec	2(2)	2	2	A or B or C

Table 4.2.1
Minimum Test and Calibration Frequency For Core Cooling
Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
ECCS INSTRUMENTATION			
1. Reactor Low-Low Water Level	Once/month (Note 5)	~~Once/3 months~~	Once/shift
2. Drywell High Pressure	Once/month	Once/3 months	None
3. Reactor Low Pressure (Pump Start)	Note 1	Once/3 months	None
4. Reactor Low Pressure (Valve Permissive)	Note 1	Once/3 months	None
5. Undervoltage Emergency Bus	Refueling Outage	Refueling Outage	None
6. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	Note 1	Once/3 months	None
7. Loss of Auxiliary Power	Refueling Outage	Refueling Outage	None
8. Condensate Storage Tank Level	Refueling Outage	Refueling Outage	None (Once/Shift)
9. Reactor High Water Level	Once/month (Note 5)	~~Once/3 months~~	~~Once/day~~
ROD BLOCKS		Once/Operating Cycle - Transmitter Once/3 months - Trip Unit	
1. APRM Downscale	Notes (1,5)	Once/3 months	None
2. APRM Flow Variable	Notes (1,5)	Once/3 months	None
3. IRM Upscale	Notes (2,5)	Note 2	Note 2
4. IRM Downscale	Notes (2,5)	Note 2	Note 2
5. RBM Upscale	Once/month Note (5)	Once/3 months	None
6. RBM Downscale	Once/month Note (5)	Once/3 months	None
7. SRM Upscale	Notes (2,5)	Note 2	Note 2
8. SRM Detector not in Start-up Position	Note 2	Note 2	Note 2
9. Scram Discharge Volume-High Level	Once/3 months	Refueling outage	None
MAIN STEAM LINE ISOLATION			
1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	None
2. Steam Line High Flow	Note 1	Once/3 months	Once/Shift

Table 4.2.1 - Continued

Minimum Test and Calibration Frequency For Core Cooling
Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
3. Steam Line Low Pressure	Note 1	Once/3 months	None
4. Steam Line High Radiation	Once/week ~~(5)~~ (Note 5)	Note 6	Once/shift
HPCI ISOLATION			
1. Steam Line High Flow	Once/month	Once/3 months	None
2. Steam Line High Temperature	Once/month	Once/3 months	None
RCIC ISOLATION			
1. Steam Line High Flow	Once/month	Once/3 months	None
2. Steam Line High Temperature	Note 1	Once/3 months	None
REACTOR BUILDING VENTILATION			
1. Radiation Monitors (Plenum)	Once/month	Once/3 months	Once/day
2. Radiation Monitors (Refueling Floor)	Note 1	Once/3 months	(4)
3. Wide Range Gas Monitors	-	See Table 4.8.2	-
RECIRCULATION PUMP TRIP AND ALTERNATE ROD INJECTION			
1. Reactor High Pressure	~~Note 1~~ (Notes (1,5)	Once/Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/Day
2. Reactor Low Low Water Level	Once/month (Note 5)	Once/Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/shift
SHUTDOWN COOLING SUPPLY ISOLATION			
1. Reactor Pressure Interlock	Note 1	Once/3 Months	None

Table 4.2.1 - Continued

Minimum Test and Calibration Frequency for Core Cooling, Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
SAFEGUARDS BUS VOLTAGE			
1. Degraded Voltage Protection	Note 1	Quarterly	Not applicable
2. Loss of Voltage Protection	Note 1	Once/Operating Cycle	Not applicable
SAFETY/RELIEF VALVE LOW-LOW SET LOGIC			
1. Reactor Scram Sensing	Once/Shutdown ~~(8)~~ Note 8	-	-
2. Reactor Pressure - Opening	Once/3 months Note 5	Once/Operating Cycle	Once/day
3. Reactor Pressure - Closing	Once/3 months Note 5	Once/Operating Cycle	Once/day
4. Discharge Pipe Pressure	Once/3 months Note 5	~~Once/Operating Cycle~~	-
5. Inhibit Timer	Once/3 months	Once/Operating Cycle	-

See Table 4.14.1

	Trip Function	Deviation
Reactor Building Ventilation Isolation and Standby Gas Treatment System Initiation Specification 3.2.E.3 and Table 3.2.4	Reactor Building Vent Plenum Monitors	+5 mR/hr
	Refueling Floor Radiation Monitors	+5 mR/hr
	Low Reactor Water Level	-6 inches
	High Drywell Pressure	+1 psi
Primary Containment Isolation Functions Table 3.2.1	Low Low Water Level	-3 inches
	High Flow in Main Steam Line	+2%
	High Temp. in Main Steam Line Tunnel	+10°F
	Low Pressure in Main Steam Line	-10 psi
	High Drywell Pressure	+1 psi
	Low Reactor Water Level	-6 inches
	HPCI High Steam Flow	+7,500 lb/hr
	HPCI Steam Line Area High Temp.	+2°F
	RCIC High Steam Flow	+2250 lb/hr
	RCIC Steam Line Area High Temp	+2°F
	Shutdown Cooling Supply ISO	+7 psi

	Trip Function	Deviation
Instrumentation That Initiates Emergency Core Cooling Systems Table 3.2.2	Low-Low Reactor Water Level	-3 Inches
	Reactor Low Pressure (Pump Start) Permissive	-10 psi
	High Drywell Pressure	+1 psi
	Low Reactor Pressure (Valve Permissive)	-10 psi
Instrumentation That Initiates Rod Block Table 3.2.3	IRM Downscale	-2/125 of Scale
	IRM Upscale	+2/125 of Scale
	APRM Downscale	-2/125 of Scale
	APRM Upscale	See Basis 3.2
	RBM Downscale	-2/125 of Scale
	RBM Upscale	+2/125 of Scale
	Scram Discharge Volume-High Level	+ 1 gallon
Instrumentation That Initiates Recirculation Pump Trip and Alternate Rod Injection	High Reactor Pressure	+ 12 psi
	Low-Low Reactor Water Level	-3 Inches
Instrumentation for Safeguards Bus Protection	Degraded Voltage	≥3897 volts (trip) ≤3975 volts (reset) ≥5 sec ≤10 sec (delay)
	Loss of Voltage	<3000 volts >2000 volts
	Reactor Low Pressure (Pump Start) Permissive Bypass Timer	>10 min <24 min

	Trip Function	Deviation
Instrumentation for Safety/Relief Valve Low Low Set Logic	Reactor Coolant System Pressure for Opening/Closing	±20 psig
	Opening - Closing Pressure	≥60 psi
	Discharge Pipe Pressure Inhibit	±10 psid
	Timer Inhibit	-3 sec +10 sec
Other Instrumentation	High Reactor Water Level *	+6 inches
	Low-Low Reactor Water Level *	-3 inches
	Low Condensate Storage Level	-6 inches

* This indication is reactor coolant temperature sensitive. The calibration is thus made for rated conditions. The level error at low pressures and temperatures is bounded by the safety analysis which reflects the weight-of-coolant above the lower tap, and not the indicated level.

A violation of this specification is assumed to occur only when a device is knowingly set outside of the limiting trip settings, or, when a sufficient number of devices have been affected by any means such that the automatic function is incapable of operating within the allowable deviation while in a reactor mode in which the specified function must be operable or when actions specified are not initiated as specified.

3.0 LIMITING CONDITIONS FOR OPERATION

1. Except as specified in 3.5.E.2 and 3.5.E.3 below, the entire automatic pressure relief system shall be operable at any time the reactor pressure is above 150 psig and irradiated fuel is in the reactor vessel.

2. From and after the date that one of the automatic pressure relief system valves is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such valve is sooner made operable, provided that during such seven days both remaining automatic relief system valves and the HPCI system are operable.

3. From and after the date that more than one of the automatic pressure relief valves are made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 24 hours unless repairs are made and provided that during such time the HPCI system is operable.

4. If the requirements of 3.5.E.1-3 cannot be met, an orderly reactor

4.0 SURVEILLANCE REQUIREMENTS

1. Testing:

Item	Frequency
Valve operability	Each operating cycle
Simulated automatic actuation test	Each operating cycle
ADS Inhibit Switch	Each operating cycle

NOTE: Safety/relief valve operability is verified by cycling the valve and observing a compensating change in turbine bypass valve position.

2. When it is determined that one or more automatic pressure relief valves of the Automatic Pressure Relief system is inoperable, the HPCI system shall be demonstrated to be operable immediately and weekly thereafter.

3.0 LIMITING CONDITIONS FOR OPERATION

E. Safety/Relief Valves

1. During power operating conditions and whenever reactor coolant pressure is greater than 110 psig and temperature is greater than 345°F.

   a. The safety valve function (self-actuation) of seven safety/relief valves shall be operable.

   b. The solenoid activated relief function (Automatic Pressure Relief) shall be operable as required by Specification 3.5.E.

C. 2. The Low-Low Set function for three non-Automatic Pressure Relief valves shall be Operable ~~as specified in Section 3.2.1.~~

4.0 SURVEILLANCE REQUIREMENTS

E. Safety/Relief Valves

1. a. A minimum of seven safety/relief valves shall be bench checked or replaced with a bench checked valve each refueling outage. The nominal self-actuation setpoints are specified in Section 2.4.B.

   b. At least two of the safety/relief valves shall be disassembled and inspected each refueling outage.

   c. The integrity of the safety/relief valve bellows shall be continuously monitored.

   d. The operability of the bellows monitoring system shall be demonstrated at least once every three months.

2. Low-Low Set Logic surveillance shall be performed in accordance with Table 4.2.1.

EXHIBIT C

License Amendment Request Dated December 5, 1986
Docket No. 50-263 License No. DPR-22

Exhibit C consists of retyped pages for the Monticello Nuclear Generating Plant Technical Specifications with the proposed changes incorporated.

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TABLE 4.1.1

SCRAM INSTRUMENT FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION AND CONTROL CIRCUITS

INSTRUMENT CHANNEL	GROUP*	FUNCTIONAL TEST	MINIMUM FREQUENCY (4)
High Reactor Pressure	A	Trip Channel and Alarm	Once each month
High Drywell Pressure	A	Trip Channel and Alarm	Once each month
Low Reactor Water Level (2, 5)	B	Trip Channel and Alarm	Once each month
High Water Level in Scram Discharge	A, B	Trip Channel and Alarm	Once each month
Condenser Low Vac	A	Trip Channel and Alarm	Once each month
Main Steam Line Isolation Valve Closure	A	Trip Channel and Alarm	Once each month
Turbine Stop Valve Closure	A	Trip Channel and Alarm	Once each month
Manual Scram	A	Trip Channel and Alarm	Once each month
Turbine Control Valve Fast Closure	A	Trip Channel and Alarm	Once each month
APRM/Flow Reference (5)	B	Trip Output Relays	Once each week
IRM (5)	C	Trip Channel and Alarm	Note 3
High Steam Line Rad. (5)	B	Trip Channel and Alarm	Once each week
Mode Switch in Shutdown	C	Place mode switch in shutdown	Each refueling outage

Table 4.1.2
SCRAM INSTRUMENT CALIBRATION
MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

INSTRUMENT CHANNEL	GROUP	CALIBRATION METHOD	MINIMUM FREQUENCY (2)
APRM	E	Heat Balance	Once every 3 days (4)
IRM	E	Heat Balance	See Note 1
High Reactor Pressure	D	Pressure Standard	Every 3 months
High Drywell Pressure	D	Pressure Standard	Every 3 months
Low Reactor Water	E	Pressure Standard	Every Operating Cycle - Transmitter Every 3 months - Trip Unit
High Water Level in Scram Discharge	D or E	Water Level	Every 3 months
Condenser Low Vacuum	D	Vacuum Standard	Every 3 months
High Steamline Radiation	E	See Note 3	See Note 3
Main Steamline Isolation Valve Closure	D	Observation	Every Operating Cycle
Turbine Control Valve Fast Closure	D	Pressure Standard	Every 3 months
Turbine Stop Valve Closure	D	Observation	Every Operating Cycle
Recirculation Flow Meters & Flow Instrumentation	-	Pressure Standard	Every 3 months

Notes:

1. Perform calibration test during every startup and normal shutdown.
2. Calibration test are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.
3. This instrument will be calibrated every three months by means of a built-in current source, and each refueling outage with a known radioactive source.
4. This calibration is performed by taking a heat balance and adjusting the APRM to agree with the heat balance. Alarms and trips will be verified and calibrated if necessary during the weekly functional test.

Groups:

D. Passive type devices.
E. Vacuum tube or semiconductor devices and detectors that drift or lose sensitivity.

Bases Continued:

3.1 The requirement that the IRM's be inserted in the core until the APRM's read at least 3/125 of full scale assures that there is proper overlap in the neutron monitoring systems and thus, that adequate coverage is provided for all ranges of reactor operation.

Although the operator will set the set points within the trip setting specified on Table 3.1.1, the actual values of the various set points can differ appreciably from the value the operator is attempting to set. The deviations could be caused by inherent instrument error, drift of the set point, etc. Therefore, such deviations have been accounted for in the various transient analyses and the actual trip settings may vary by the following amounts.

Trip Function	Deviation	Trip Function	Deviation
3. High Flux IRM	+2/125 of scale	*7. Reactor Low Water Level	-6 inches
5. High Reactor Pressure	+10 psi	8. Scram Discharge Volume High Level	+1 gallon
6. High Drywell Pressure	+1 psi	9. Turbine Condenser Low Vacuum	½ in. Hg

* This indication is reactor coolant temperature sensitive. The calibration is thus made for rated conditions. The level error at low pressures and temperatures is bounded by the safety analysis which reflects the weight-of-coolant above the lower tap, and not the indicated level.

A violation of this specification is assumed to occur only when a device is knowingly set outside of the limiting trip setting, or a sufficient number of devices have been affected by any means such that the automatic function is incapable of operating within the allowable deviation while in a reactor mode in which the specified function must be operable, or the actions specified in 3.1.B.2 are not initiated as specified.

If an unsafe failure is detected during surveillance testing, it is desirable to determine as soon as possible if other failures of a similar type have occurred and whether the particular function involved is still operable or capable of meeting the single failure criterion. To meet the requirements of Table 3.1.1, it is necessary that all instrument channels in one trip system be operable

Table 3.2.5
Instrumentation that Initiates Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3)	Total No. of Instrument Channels per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (3)	Required Conditions*
A. Core Spray and LPCI					
1. Pump Start					
a. Low-Low Reactor Water Level and	≥ 6'6" ≤ 6'10"	2	4(4)	4	A.
b. i. Reactor Low Pressure Permissive or	≥ 450 psig	2	2(4)	2	A.
ii. Reactor Low Pressure Permissive Bypass Timer	20±1 min	2	1	1	C.
c. High Drywell Pressure (1)	≤ 2 psig	2	4(4)	4	A.
2. Low Reactor Pressure (Valve Permissive)	≥ 450 psig	2	2(4)	2	A.
3. Loss of Auxiliary Power	-----	2	2(2)	2	A.

Table 3.2.5
Instrumentation that Initiates Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3)	Total No. of Instrument Channels per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (3)	Required Conditions*
B. HPCI System					
1. High Drywell Presssure (1)	$\leq$ 2 psig	1	4	4	B.
2. Low-Low Reactor Water Level	$\geq$ 6'6"$\leq$6'10	1	4	4	B.
C. Automatic Depressurization					
1. Low-Low Reactor Water Level	$\geq$ 6'6"$\leq$6'10	2	2	2	C.
and					
2. Auto Blowdown Timer	$\leq$ 120 seconds	2	2	1	C.
and					
3. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	$\leq$ 100 psig	2	12(4)	12(4)	C.

TABLE 3.2.7

Instrumentation for Safety/Relief Valve Low-Low Set Logic

Function	Trip Setting	Min. No. of Operable or Operating Trip Systems	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System	Required Conditions
Reactor Scram Detection		2(2)	2	2	A or B or C
Reactor Coolant System Pressure for Opening/ Closing (1)	1072±3/992±3 psig 1062±3/982±3 psig 1052±3/972±3 psig	2(2)	2	2	A or B or C
Discharge Pipe Pressure Inhibit and Position Indication	30±1 psid(3)	2(2)	2	2	A or B or C
Inhibit Timers	10±1 sec	2(2)	2	2	A or B or C

TABLE 4.2.1

Minimum Test and Calibration Frequency For Core Cooling
Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
ECCS INSTRUMENTATION			
1. Reactor Low-Low Water Level (Note 7)	Once/month (Note 5)	Every Operating Cycle - Transmitter Once/3 months - Trip Unit	Once/Shift
2. Drywell High Pressure (Note 7)	Once/month	Once/3 months	None
3. Reactor Low Pressure (Pump Start)	Note 1	Once/3 months	None
4. Reactor Low Pressure (Valve Permissive)	Note 1	Once/3 months	None
5. Undervoltage Emergency Bus	Refueling Outage	Refueling Outage	None
6. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	Note 1	Once/3 months	None
7. Loss of Auxiliary Power	Refueling Outage	Refueling Outage	None
8. Condensate Storage Tank Level	Refueling Outage	Refueling Outage	None
9. Reactor High Water Level	Once/month (Note 5)	Every Operating Cycle - Transmitter Every 3 months - Trip Unit	Once/Shift
ROD BLOCKS			
1. APRM Downscale	Notes (1,5)	Once/3 months	None
2. APRM Flow Variable	Notes (1,5)	Once/3 months	None
3. IRM Upscale	Notes (2,5)	Note 2	Note 2
4. IRM Downscale	Notes (2,5)	Note 2	Note 2
5. RBM Upscale	Once/month Note (5)	Once/3 months	None
6. RBM Downscale	Once/month Note (5)	Once/3 months	None
7. SRM Upscale	Notes (2,5)	Note 2	Note 2
8. SRM Detector not in Start-up Position	Note 2	Note 2	Note 2
9. Scram Discharge Volume-High Level	Once/3 months	Refueling outage	None
MAIN STEAM LINE ISOLATION			
1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	None
2. Steam Line High Flow	Note 1	Once/3 months	Once/Shift

TABLE 4.2.1 - Continued
Minimum Test and Calibration Frequency For Core Cooling
Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
3. Steam Line Low Pressure	Note 1	Once/3 months	None
4. Steam Line High Radiation	Once/week (Note 5)	Note 6	Once/shift
HPCI ISOLATION			
1. Steam Line High Flow	Once/Month	Once/3 months	None
2. Steam Line High Temperature	Once/Month	Once/3 months	None
RCIC ISOLATION			
1. Steam Line High Flow	Once/month	Once/3 months	None
2. Steam Line High Temperature	Note 1	Once/3 months	None
REACTOR BUILDING VENTILATION			
1. Radiation Monitors (Plenum)	Once/month	Once/3 months	Once/day
2. Radiation Monitors (Refueling Floor)	Note 1	Once/3 months	(4)
3. Wide Range Gas Monitors	-	See Table 4.8.2	-
RECIRCULATION PUMP TRIP AND ALTERNATE ROD INJECTION			
1. Reactor High Pressure	Notes (1,5)	Once/Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/Day
2. Reactor Low Low Water Level (Note 7)	Once/month (Note 5)	Once/Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/shift
SHUTDOWN COOLING SUPPLY ISOLATION			
1. Reactor Pressure Interlock	Note 1	Once/3 months	None

Table 4.2.1 - Continued

Minimum Test and Calibration Frequency for Core Cooling, Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
SAFEGUARDS BUS VOLTAGE			
1. Degraded Voltage Protection	Note 1	Quarterly	Not applicable
2. Loss of Voltage Protection	Note 1	Once/Operating Cycle	Not applicable
SAFETY/RELIEF VALVE LOW-LOW SET LOGIC			
1. Reactor Scram Sensing	Once/Shutdown (Note 8)	-	-
2. Reactor Pressure - Opening	Once/3 months (Note 5)	Once/Operating Cycle	Once/day
3. Reactor Pressure - Closing	Once/3 months (Note 5)	Once/Operating Cycle	Once/day
4. Discharge Pipe Pressure	Once/3 months (Note 5)	See Table 4.14.1	-
5. Inhibit Timer	Once/3 months	Once/Operating Cycle	-

	Trip Function	Deviation
Reactor Building Ventilation Isolation and Standby Gas Treatment System Initiation Specification 3.2.E.3 and Table 3.2.4	Reactor Building Vent Plenum Monitors	+5 mR/hr
	Refueling Floor Radiation Monitors	+5 mR/hr
	Low Reactor Water Level	-6 inches
	High Drywell Pressure	+1 psi
Primary Containment Isolation Functions Table 3.2.1	* Low Low Water Level	-3 inches
	High Flow in Main Steam Line	+2%
	High Temp. in Main Steam Line Tunnel	+10°F
	Low Pressure in Main Steam Line	-10 psi
	High Drywell Pressure	+1 psi
	* Low Reactor Water Level	-6 inches
	HPCI High Steam Flow	+7,500 lb/hr
	HPCI Steam Line Area High Temp.	+2°F
	RCIC High Steam Flow	+2250 lb/hr
	RCIC Steam Line Area High Temp	+2°F
	Shutdown Cooling Supply ISO	+7 psi

	Trip Function	Deviation
Instrumentation That Initiates Emergency Core Cooling Systems Table 3.2.2	*Low-Low Reactor Water Level	-3 Inches
	Reactor Low Pressure (Pump Start) Permissive	-10 psi
	Reactor Low Pressure (Pump Start) Permissive Bypass Timer	>10 min <24 min
	High Drywell Pressure	+1 psi
	Low Reactor Pressure (Valve Permissive)	-10 psi
Instrumentation That Initiates Rod Block Table 3.2.3	IRM Downscale IRM Upscale	-2/125 of Scale +2/125 of Scale
	APRM Downscale APRM Upscale	-2/125 of Scale See Basis 3.2
	RBM Downscale RBM Upscale Scram Discharge Volume-High Level	-2/125 of Scale +2/125 of Scale + 1 gallon
Instrumentation That Initiates Recirculation Pump Trip	High Reactor Pressure *Low Reactor Water Level	+ 12 psi -3 Inches
Instrumentation for Safeguards Bus Protection	Degraded Voltage	≥3897 volts (trip) ≤3975 volts (reset) ≥5 sec ≤10 sec (delay)
	Loss of Voltage	<3000 volts >2000 volts

	Trip Function	Deviation
Instrumentation for Safety/Relief Valve Low Low Set Logic	Reactor Coolant System Pressure for Opening/Closing	±20 psig
	Opening - Closing Pressure	≥60 psi
	Discharge Pipe Pressure Inhibit	±10 psid
	Timer Inhibit	-3 sec +10 sec
Other Instrumentation	*High Reactor Water Level	+6 inches
	*Low-Low Reactor Water Level	-3 inches
	Low Condensate Storage Level	-6 inches

* This indication is reactor coolant temperature sensitive. The calibration is thus made for rated conditions. The level error at low pressures and temperatures is bounded by the safety analysis which reflects the weight-of-coolant above the lower tap, and not the indicated level.

A violation of this specification is assumed to occur only when a device is knowingly set outside of the limiting trip settings, or, when a sufficient number of devices have been affected by any means such that the automatic function is incapable of operating within the allowable deviation while in a reactor mode in which the specified function must be operable or when actions specified are not initiated as specified.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
1. Except as specified in 3.5.E.2 and 3.5.E.3 below, the entire automatic pressure relief system shall be operable at any time the reactor pressure is above 150 psig and irradiated fuel is in the reactor vessel 2. From and after the date that one of the automatic pressure relief system valves is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such valve is sooner made operable, provided that during such seven days both remaining automatic relief system valves and the HPCI system are operable. 3. From and after the date that more than one of the automatic pressure relief valves are made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 24 hours unless repairs are made and provided that during such time the HPCI system is operable. 4. If the requirements of 3.5.E.1-3 cannot be met, an orderly reactor	1. Testing: Item — Frequency Valve operability — Each operating cycle Simulated automatic actuation test — Each operating cycle ADS Inhibit Switch — Each operating cycle NOTE: Safety/relief valve operability is verified by cycling the valve and observing a compensating change in turbine bypass valve position. 2. When it is determined that one or more automatic pressure relief valves of the Automatic Pressure Relief system is inoperable, the HPCI system shall be demonstrated to be operable immediately and weekly thereafter.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
E. Safety/Relief Valves	E. Safety/Relief Valves
1. During power operating conditions and whenever reactor coolant pressure is greater than 110 psig and temperature is greater than 345°F:	1. a. A minimum of seven safety/relief valves shall be bench checked or replaced with a bench checked valve each refueling outage. The nominal self-actuation setpoints are specified in Section 2.4.B.
a. The safety valve function (self-actuation) of seven safety/relief valves shall be operable.	b. At least two of the safety/relief valves shall be disassembled and inspected each refueling outage.
b. The solenoid activated relief function (Automatic Pressure Relief) shall be operable as required by Specification 3.5.E.	c. The integrity of the safety/relief valve bellows shall be continuously monitored.
c. The Low-Low Set function for three non-Automatic Pressure Relief valves shall be Operable.	d. The operability of the bellows monitoring system shall be demonstrated at least once every three months.
	2. Low-Low Set Logic surveillance shall be performed in accordance with Table 4.2.1.