

Exhibit B

Technical Specification Pages Marked Up
With Proposed Changes

**Monticello Nuclear Generating Plant
Supplement 1 to
License Amendment Request Dated July 5, 1995**

Exhibit B consists of existing Technical Specification pages marked up with the proposed changes. The pages included in this exhibit are as listed below:

Pages

30

32

33

34*

42

50*

51

52*

53*

54*

55

59*

Addendum to page 59 which creates new page 59a.

60d*

61*

62*

* Contains Supplement 1 changes. Note: Supplement 1 deleted change to page 34, therefore, it is not included in Exhibit C.

Exhibit C

Revised Technical Specification Pages

**Monticello Nuclear Generating Plant
Supplement 1 to
License Amendment Request Dated July 5, 1995**

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59a

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Table 3.1.1 - Continued

- 6 Deleted.
7. Trips upon loss of oil pressure to the acceleration relay.
8. Limited trip setting refers to the volume of water in the discharge volume receiver tank and does not include the volume in the lines to the level switches.
9. High reactor pressure is not required to be operable when the reactor vessel head is unbolted.

* Required Conditions when minimum conditions for operation are not satisfied. (ref. 3.1.B)

- A. All operable control rods fully inserted ~~within 8 hours.~~
- B. Power on IRM range or below and reactor in Startup, Refuel, or Shutdown mode.
- C. Reactor in Startup or Refuel mode and pressure below 600 psig.
- D. Reactor power less than 45% (798.75 MWt.).

change a)

** Allowable Bypass Conditions

It is permissible to bypass:

- a. The scram discharge volume High Water Level scram function in the refuel mode to allow reactor protection system reset. A rod block shall be applied while the bypass is in effect.
- b. The Low Condenser vacuum and MSIV closure scram function in the Refuel and Startup modes if reactor pressure is below 600 psig.
- c. Deleted.
- d. The turbine stop valve closure and fast control valve closure scram functions when the reactor thermal power is $\leq 45\%$ (798.75 MWt).

3.1/4.1

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H, 50

TABLE 4.1.1

SCRAM INSTRUMENT FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION AND CONTROL CIRCUITS

<u>INSTRUMENTATION CHANNEL</u>	<u>FUNCTIONAL TEST</u>	<u>MINIMUM FREQUENCY (4)</u>
High Reactor Pressure	Trip Channel and Alarm	Quarterly
High Drywell Pressure	Trip Channel and Alarm	Quarterly
Low Reactor Water Level (2, 5)	Trip Channel and Alarm	Quarterly
High Water Level in Scram Discharge Volume	Trip Channel and Alarm	Quarterly
Condenser Low Vac	Trip Channel and Alarm	Once each month
Main Steam Line Isolation Valve Closure	Trip Channel and Alarm	Quarterly
Turbine Stop Valve Closure	Trip Channel and Alarm	Quarterly
Manual Scram	Trip Channel and Alarm	Weekly
Turbine Control Valve Fast Closure	Trip Channel and Alarm	Quarterly
APRM/Flow Reference (5)	Trip Output Relays	Quarterly
IRM (5)	Trip Channel and Alarm	
Mode Switch in Shutdown	Place mode switch in shutdown	Quarterly

Change b)

Note 3
 Every Operating Cycle 1
~~Each refueling outage~~

Change C)

delete

TABLE 4.1.1 (Continued)

- Note 1: Deleted.
- Note 2: A sensor check shall be performed on low reactor water level once per day, ~~and on high steam line radiation once per shift.~~
- Note 3: Perform functional test prior to every startup, and demonstrate that the IRM and APRM channels overlap at least 1/2 decade prior to every normal shutdown.
- Note 4: Functional 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.
- Note 5: A functional test of this instrument means the injection of a simulated signal into the instrument (not primary sensor) to verify the proper instrument channel response, alarm, and/or initiating action.

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

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

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. (Deleted).
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 functional testing.

5. A sensor check shall be performed on APRM recirculation flow signals once per day.

- *GROUPS:
- A. Passive type devices.
 - B. Vacuum tube or semiconductor devices and detectors that drift or lose sensitivity.

Do not make these changes
 Supplement 1

Operating cycle (5)

Change d)

change e)

Bases:

- 4.1 The instrumentation in this section will be functionally tested and calibrated at regularly scheduled intervals. Specific surveillance intervals and surveillance and maintenance outage times have been determined in accordance with NEDC-30851P, "Technical Specification Improvement Analysis for BWR Reactor Protection System," as approved by the NRC and documented in the SER dated July 15, 1987 (letter to T A Pickens from A Thadani).

Calibration frequency of the instrument channel is divided into two groups as defined on Table 4.1.2.

Experience with passive type instruments indicates that a yearly calibration is adequate. Where possible, however, quarterly calibration is performed. For those devices which employ amplifiers etc., drift specifications call for drift to be less than 0.5%/month; i.e., in the period of a month a drift of 0.5% would occur and thus provide for adequate margin. For the APRM system drift of electronic apparatus is not the only consideration in determining a calibration frequency. Change in power distribution and loss of chamber sensitivity dictate a calibration every three days. Calibration on this frequency assures plant operation at or below thermal limits.

Lines added - Supplement 1

TABLE 3.2.1 - (Continued)

Function	Trip Settings	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (1,2)	Required Conditions
b. High Drywell Pressure (5)	≤2 psig	2	2	D
3. Reactor Cleanup System (Group 3)				
a. Low Reactor Water Level	≥7" (annulus)	2	2	E
b. High Drywell Pressure	≤2 psig	2	2	E
4. HPCI Steam Lines (Group 4)				
a. HPCI High Steam Flow	≤150,000 lb/hr with ≤60 second time delay	2(4)	2	F
b. HPCI High Steam Flow	≤300,000 lb/hr	2(4)	2	F
c. HPCI Steam Line Area High Temp.	≤200°F	16(4)	16	F
5. RCIC Steam Lines (Group 5)				
a. RCIC High Steam Flow	≤45,000 lb/hr with 5 ± 2 sec time delay	2(4)	2	G
b. RCIC Steam Line Area	≤200°F	16(4)	16	G
6. Shutdown Cooling Supply Isolation				
a. Reactor Pressure Interlock	≤75 psig at the reactor steam dome	2(4)	2	C

Change f.

Change g)

(a shared channel is considered one channel)

Table 3.2.1 - Continued

NOTES:

(1) ~~For Groups 1, 2 and 3.~~ There shall be two operable or tripped trip systems for each function. A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.

~~For Groups 4, 5 and Reactor Pressure Interlocks there shall be two operable or tripped trip systems for each function.~~

(2) ~~For Groups 1, 2 and 3,~~ Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated as follows:

- (a) With one required instrument channel inoperable in one or more trip functions, place the inoperable channel(s) or trip system in the tripped condition within 12 hours, or
- (b) With more than one instrument channel inoperable for one or more trip functions, immediately satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
- (c) Place the plant under the specified required conditions using normal operating procedures.

~~For Groups 4, 5 and Reactor Pressure Interlocks upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated to:~~

- ~~(a) Satisfy the requirements by placing appropriate channels or systems in the tripped condition.~~
- ~~(b) Place the plant under the specified required conditions using normal operating procedures.~~

(3) Low pressure in main steam line only need to be available in the RUN position.

(4) All instrument channels are shared by both trip systems.

(5) May be bypassed when necessary only by closing the manual containment isolation valves during purging for containment inerting or de-inerting. Verification of the bypass condition shall be noted in the control room log. Also, need not be operable when primary containment integrity is not required.

* Required conditions when minimum conditions for operation are not satisfied.

- A. Group 1 isolation valves closed.
- B. Reactor Power on IRM range or below and reactor in startup, refuel, or shutdown mode.
- C. Isolation Valves closed for: Shutdown Cooling System, and Reactor Head Cooling Line.
- D. Comply with Condition C. above.
- E. Isolation Valves closed for: Reactor Cleanup System.
- F. HPCI steam line isolated. (See specification 3.5 for additional requirements.)
- G. RCIC steam line isolated.

Change h)

Table 3.2.2
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3) ⁽⁶⁾	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System ⁽⁶⁾ (3)	Required Conditions*
A. <u>Core Spray and LPCI</u>					
1. Pump Start					
a. Low Low Reactor Water Level and	$\geq 6'6" \leq 6'10"$	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	B.
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.

Lines added - Supplement 1

Table 3.2.2
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3)(6)	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (3)(6)	Required Conditions*
B. HPCI System					
1. High Drywell Pressure (1)	≤2 psig	1	4	4	A.
2. Low-Low Reactor Water Level	≥6'6" ≤6'10"	1	4	4	A.
C. Automatic Depressurization					
1. Low-Low Reactor Water Level and	≥6'6" ≤6'10"	2	2	2	B.
2. Auto Blowdown Timer and	≤120 seconds	2	1	1	B.
3. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	≥60 psig ≤150 psig	2	12(4)	12(4)	B.

Change h)

Lines added - Supplement I

Lines added - Supplement 1

Change h)

Table 3.2.2 - (Continued)
Instrumentation That Initiates Emergency Core Cooling System

Function	Trip Setting	Min. No. of Operable or Operating Trip Systems (3)	Total No. of Instrument Channels Per Trip System (4)	Min. No. of Operable or Operating Instrument Channels Per Trip System (5)	Required Conditions* (6)
D. Diesel Generator					
1. Degraded or Loss of Voltage Essential Bus (5)					
2. Low Low Reactor Water Level	$\geq 6'6" \leq 6'10"$	2	4(4)	4	C.
3. High Drywell Press	≤ 2 psig	2	4(4)	4	C.

NOTES:

1. High drywell pressure may be bypassed when necessary only by closing the manual containment isolation valves during purging for containment inerting or de-inerting. Verification of the bypass condition shall be noted in the control room log. Also need not be operable when primary containment integrity is not required.
2. One instrument channel is a circuit breaker contact and the other is an undervoltage relay.

- a. With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours or
- b. With more than one instrument channel per trip system inoperable, immediately

Table 3.2.2 - Continued

change h)

Notes:

3. Upon discovery that minimum requirements for the number of operable or operating trip systems, or instrument channels are not satisfied action shall be initiated ~~to~~ as follows:

→ (a) ~~satisfy~~ satisfy the requirements by placing appropriate channels or systems in the tripped condition, or

C. (b) Place the plant under the specified required conditions using normal operating procedures.

4. All instrument channels are shared by both trip systems.

5. See table 3.2.6.

* Required conditions when minimum conditions for operation are not satisfied.

A. Comply with Specification 3.5.A.

B. Reactor pressure ≤ 150 psig.

C. Comply with Specification 3.9.B.

6. A channel (a shared channel is considered one channel) may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.

Lines added - Supplement 1

change i)

Table 3.2.4
Instrumentation That Initiates Reactor Building Ventilation Isolation
And Standby Gas Treatment System Initiation

Function	Trip Settings	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (Notes 1, 2)	Required Conditions*
1. Low Low Reactor Water Level (Note 3)	$\geq 6'-6"$, $\leq 6'-10"$	2	2 (Notes 1, 3, 5, 6)	A. or B.
2. High Drywell Pressure (Note 3)	≤ 2 psig	2	2 (Notes 1, 3, 5, 6)	A. or B.
3. Reactor Building Plenum Radiation Monitors	≤ 100 mR/hr	1	1 (Notes ^{1,2} 4)	A. or B.
4. Refueling Floor Radiation Monitors	≤ 100 mR/hr	1	1 (Notes ^{1,2} 4)	A. or B.

Notes:

(1) There shall be two operable or tripped trip systems for each function with two instrument channels per trip system and there shall be one operable or tripped trip system for each function with one instrument channel per trip system.

(2) Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated to:

- (a) Satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
- (b) Place the plant under the specified required conditions using normal operating procedures.

(3) Need not be operable when primary containment integrity is not required.

(4) One of the two monitors may be bypassed for maintenance and/or testing.

FOR NOTES 5 and 6; SEE ATTACHED SHEET

* Required Conditions when minimum conditions for operation are not satisfied.

A. The reactor building ventilation system isolated and the standby gas treatment system operating.

B. Establish conditions where secondary containment is not required.

- (5) Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated as follows:
- (a) With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours, or
 - (b) With more than one instrument channel per trip system inoperable, immediately satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
 - (c) Place the plant under the specified required conditions using normal operating procedures.
- (6) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
- ^ ^
That other

Continuation of page 59.

- a. With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours or
- b. With more than one instrument channel per trip system inoperable, immediately

Change j)

Table 3.2.8
Other Instrumentation

Function	Trip Setting	Minimum No. of Operable or Operating Trip System (1)(2)	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (1)(2)	Required Conditions*
A. RCIC Initiation					
1. Low-Low Reactor Level	$\geq 6'6''$ & $\leq 6'10''$ above top of active fuel	1	24	24	B
B. HPCI/RCIC Turbine Shutdown					
a. High Reactor Level	$\leq 14'6''$ above top of active fuel	1	2	2	A
C. HPCI/RCIC Turbine Suction Transfer					
a. Condensate Storage Tank Low Level	$\geq 2'0''$ above tank bottom	1	2	2	C

Lines added - Supplement I

NOTE:

1. Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied, action shall be initiated ~~to~~ as follows:

- a. Satisfy the requirements by placing the appropriate channels or systems in the tripped condition, ~~or (Turbine/Feedwater Trip only), or~~
- b. Place the plant under the specified required condition using normal operating procedures.

* Required conditions when minimum conditions for operation are not satisfied:

- A. ~~Reactor in Startup, Refuel, or Shutdown Mode.~~ Comply with Specification 3.5.A.
- B. Comply with Specification 3.5.D.
- C. Align HPCI and RCIC suction to the suppression pool. Restore channels to operable status within 30 days or place the plant in Required Condition A. for HPCI, or B for RCIC.

3.2/4.2

60d

2. A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.

Lines added - Supplement 1

Change K)

Added Supplement 1

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/months (Note 5)	Every Operating Cycle - Transmitter Once/3 months - Trip Unit	Once/Shift
2. Drywell High Pressure	Once/months	Once/3 months	None
3. Reactor Low Pressure (Pump Start)	Once/months	Once/3 months	None
4. Reactor Low Pressure (Valve Permissive)	Once/months	Once/3 months	None
5. Undervoltage Emergency Bus	Refueling Outage	Refueling Outage	None
6. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	Once/months	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/months (Note 5)	Every Operating Cycle - Transmitter Every 3 months - Trip Unit	Once/Shift

ROD BLOCKS

1. APRM Downscale	Once/months (Note 5)	Once/3 months	None
2. APRM Flow Variable	Once/months (Note 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/months (Note 5)	Once/3 months	None
6. RBM Downscale	Once/months (Note 5)	Once/3 months	None
7. SRM Upscale	Notes (2,5)	Note 2	Note 2
8. SRM Detector Not-Full-In Position	Notes (2,9)	Note 2	None
9. Scram Discharge Volume-High Level	Once/3 months	Refueling outage	None

MAIN STEAM LINE (GROUP I) ISOLATION

1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	None
2. Steam Line High Flow	Once/3 months	Once/3 Months	Once/Shift

Lines added - Supplement 1

Change K)

Added - Supplement 1

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 4. Reactor Low Low Water Level	Once/3 months Once/3 months (Note 5)	Once/3 months Every Operating Cycle- Transmitter Once/3 Months-Trip Unit	None Once/shift
<u>CONTAINMENT ISOLATION (GROUPS 2 & 3)</u>			
1. Reactor Low Water Level (Note 10) 2. Drywell High Pressure (Note 10)	- -	- -	- -
<u>HPCI (GROUP 4) ISOLATION</u>			
1. Steam Line High Flow 2. Steam Line High Temperature	Once/months Once/months 3	Once/3 months Once/3 months	None None
<u>RCIC (GROUP 5) ISOLATION</u>			
1. Steam Line High Flow 2. Steam Line High Temperature	Once/months Once/months 3	Once/3 months Once/3 months	None None
<u>REACTOR BUILDING VENTILATION & STANDBY GAS TREATMENT</u>			
1. Reactor Low Low Water Level	Once/3 months (Note 5)	Every Operating Cycle - Transmitter Once/3 months - Trip Unit	Once/shift
2. Drywell High Pressure (Note 10) 3. Radiation Monitors (Plenum) 4. Radiation Monitors (Refueling Floor)	Once/months Once/months 3	Once/3 months Once/3 months	Once/day Note 4
<u>RECIRCULATION PUMP TRIP AND ALTERNATE ROD INJECTION</u>			
1. Reactor High Pressure	Once/months (Note 5)	Once/Operating Cycle- Transmitter Once/3 Months-Trip Unit	Once/Day
2. Reactor Low Low Water Level	Once/months (Note 5)	Once/Operating Cycle- Transmitter Once/3 Months-Trip Unit	Once/shift
<u>SHUTDOWN COOLING SUPPLY ISOLATION</u>			
1. Reactor Pressure Interlock	Once/months 3	Once/3 Months	None

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Table 3.1.1 - Continued

6. Deleted.
7. Trips upon loss of oil pressure to the acceleration relay.
8. Limited trip setting refers to the volume of water in the discharge volume receiver tank and does not include the volume in the lines to the level switches.
9. High reactor pressure is not required to be operable when the reactor vessel head is unbolted.

* Required Conditions when minimum conditions for operation are not satisfied. (ref. 3.1.B)

- A. All operable control rods fully inserted.
- B. Power on IRM range or below and reactor in Startup, Refuel, or Shutdown mode.
- C. Reactor in Startup or Refuel mode and pressure below 600 psig.
- D. Reactor power less than 45% (798.75 MWt.).

** Allowable Bypass Conditions

It is permissible to bypass:

- a. The scram discharge volume High Water Level scram function in the refuel mode to allow reactor protection system reset. A rod block shall be applied while the bypass is in effect.
- b. The Low Condenser vacuum and MSIV closure scram function in the Refuel and Startup modes if reactor pressure is below 600 psig.
- c. Deleted.
- d. The turbine stop valve closure and fast control valve closure scram functions when the reactor thermal power is \leq 45% (798.75 MWt.).

3.1/4.1

TABLE 4.1.1

SCRAM INSTRUMENT FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION AND CONTROL CIRCUITS

<u>INSTRUMENTATION CHANNEL</u>	<u>FUNCTIONAL TEST</u>	<u>MINIMUM FREQUENCY (4)</u>
High Reactor Pressure	Trip Channel and Alarm	Quarterly
High Drywell Pressure	Trip Channel and Alarm	Quarterly
Low Reactor Water Level (2, 5)	Trip Channel and Alarm	Quarterly
High Water Level in Scram Discharge Volume	Trip Channel and Alarm	Quarterly
Condenser Low Vac	Trip Channel and Alarm	Once each month
Main Steam Line Isolation Valve Closure	Trip Channel and Alarm	Quarterly
Turbine Stop Valve Closure	Trip Channel and Alarm	Quarterly
Manual Scram	Trip Channel and Alarm	Weekly
Turbine Control Valve Fast Closure	Trip Channel and Alarm	Quarterly
APRM/Flow Reference (5)	Trip Output Relays	Quarterly
IRM (5)	Trip Channel and Alarm	Note 3
Mode Switch in Shutdown	Place mode switch in shutdown	Every Operating Cycle

TABLE 4.1.1 (Continued)

- Note 1: Deleted.
- Note 2: A sensor check shall be performed on low reactor water level once per day.
- Note 3: Perform functional test prior to every startup, and demonstrate that the IRM and APRM channels overlap at least 1/2 decade prior to every normal shutdown.
- Note 4: Functional 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.
- Note 5: A functional test of this instrument means the injection of a simulated signal into the instrument (not primary sensor) to verify the proper instrument channel response, alarm, and/or initiating action.

Bases 4.1:

The instrumentation in this section will be functionally tested and calibrated at regularly scheduled intervals. Specific surveillance intervals and surveillance and maintenance outage times have been determined in accordance with NEDC-30851P, "Technical Specification Improvement Analysis for BWR Reactor Protection System," as approved by the NRC and documented in the SER dated July 15, 1987 (letter to T A Pickens from A Thadani).

Calibration frequency of the instrument channels is divided into two groups as defined on Table 4.1.2.

Experience with passive type instruments indicates that a yearly calibration is adequate. Where possible, however, quarterly calibration is performed. For those devices which employ amplifiers etc., drift specifications call for drift to be less than 0.5%/month; i.e., in the period of a month a drift of 0.5% would occur and thus provide for adequate margin. For the APRM system, drift of electronic apparatus is not the only consideration in determining a calibration frequency. Change in power distribution and loss of chamber sensitivity dictate a calibration every three days. Calibration on this frequency assures plant operation at or below thermal limits.

Table 3.2.1 (Continued)

Function	Trip Settings	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (1, 2)	Required Conditions
b. High Drywell Pressure (5)	≤ 2 psig	2	2	D
3. <u>Reactor Cleanup System (Group 3)</u>				
a. Low Reactor Water Level	≥ 7 " (annulus)	2	2	E
b. High Drywell Pressure	≤ 2 psig	2	2	E
4. <u>HPCI Steam Lines (Group 4)</u>				
a. HPCI High Steam Flow	$\leq 150,000$ lb/hr with ≤ 60 second time delay	2(4)	2	F
b. HPCI High Steam Flow	$\leq 300,000$ lb/hr	2(4)	2	F
c. HPCI Steam Line Area High Temp.	$\leq 200^\circ\text{F}$	16(4)	16	F
5. <u>RCIC Steam Lines (Group 5)</u>				
a. RCIC High Steam Flow	$\leq 45,000$ lb/hr with 5 ± 2 sec time delay	2(4)	2	G
b. RCIC Steam Line Area	$\leq 200^\circ\text{F}$	16(4)	16	G
6. <u>Shutdown Cooling Supply Isolation</u>				
a. Reactor Pressure Interlock	≤ 75 psig at the reactor steam dome	2(4)	2	C

Table 3.2.1 (Continued)

NOTES:

- (1) There shall be two operable or tripped trip systems for each function. A channel (a shared channel is considered one channel) may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.
- (2) Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated as follows:
 - (a) With one required instrument channel inoperable in one or more trip functions, place the inoperable channel(s) or trip system in the tripped condition within 12 hours, or
 - (b) With more than one instrument channel inoperable for one or more trip functions, immediately satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
 - (c) Place the plant under the specified required conditions using normal operating procedures.
- (3) Low pressure in main steam line only need to be available in the RUN position.
- (4) All instrument channels are shared by both trip systems.
- (5) May be bypassed when necessary only by closing the manual containment isolation valves during purging for containment inerting or de-inerting. Verification of the bypass condition shall be noted in the control room log. Also, need not be operable when primary containment integrity is not required.
- * Required conditions when minimum conditions for operation are not satisfied.
 - A. Group 1 isolation valves closed.
 - B. Reactor Power on IRM range or below and reactor in startup, refuel, or shutdown mode.
 - C. Isolation Valves closed for: Shutdown Cooling System, and Reactor Head Cooling Line.
 - D. Comply with Condition C. above.
 - E. Isolation Valves closed for: Reactor Cleanup System.
 - F. HPCI steam line isolated. (See specification 3.5 for additional requirements.)
 - G. RCIC steam line isolated.

Table 3.2.2
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3) (6)	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (3) (6)	Required Conditions *
A. Core Spray and LPCI					
1. Pump Start					
a. Low Low Reactor Water Level and	$\geq 6' 6'' \leq 6' 10''$	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	B.
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 3.2.2
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3) (6)	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (3) (6)	Required Conditions *
B. <u>HPCI System</u>					
1. High Drywell Pressure (1)	≤ 2 psig	1	4	4	A.
2. Low-Low Reactor Water Level	≥ 6' 6" ≤ 6' 10"	1	4	4	A.
C. <u>Automatic Depressurization</u>					
1. Low-Low Reactor Water Level and	≥ 6' 6" ≤ 6' 10"	2	2	2	B.
2. Auto Blowdown Timer and	≤ 120 seconds	2	1	1	B.
3. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	≥ 60 psig ≤ 150 psig	2	12(4)	12(4)	B.

Table 3.2.2 - (Continued)
Instrumentation That Initiates Emergency Core Cooling Systems

Function	Trip Setting	Minimum No. of Operable or Operating Trip Systems (3) (6)	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (3) (6)	Required Conditions *
D. Diesel Generator					
1. Degraded or Loss of Voltage Essential Bus (5)					
2. Low Low Reactor Water Level	$\geq 6' 6" \leq 6' 10"$	2	4(4)	4	C.
3. High Drywell Press	≤ 2 psig	2	4(4)	4	C.

NOTES:

1. High drywell pressure may be bypassed when necessary only by closing the manual containment isolation valves during purging for containment inerting or de-inerting. Verification of the bypass condition shall be noted in the control room log. Also need not be operable when primary containment integrity is not required.
2. One instrument channel is a circuit breaker contact and the other is an undervoltage relay.

Table 3.2.2 - Continued

Notes:

3. Upon discovery that minimum requirements for the number of operable or operating trip systems, or instrument channels are not satisfied action shall be initiated as follows:
 - (a) With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours or
 - (b) With more than one instrument channel per trip system inoperable, immediately satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
 - (c) Place the plant under the specified required conditions using normal operating procedures.
4. All instrument channels are shared by both trip systems.
5. See table 3.2.6.
6. A channel (a shared channel is considered one channel) may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.
- * Required conditions when minimum conditions for operation are not satisfied.
 - A. Comply with Specification 3.5.A.
 - B. Reactor pressure \leq 150 psig.
 - C. Comply with Specification 3.9.B.

Table 3.2.4
Instrumentation That Initiates Reactor Building Ventilation Isolation
And Standby Gas Treatment System Initiation

Function	Trip Settings	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System	Required Conditions *
1. Low Low Reactor Water Level	$\geq 6'-6"$, $\leq 6'-10"$	2	2 (Notes 1, 3, 5, 6)	A. or B.
2. High Drywell Pressure	≤ 2 psig	2	2 (Notes 1, 3, 5, 6)	A. or B.
3. Reactor Building Plenum Radiation Monitors	≤ 100 mR/hr	1	1 (Notes 1, 2, 4)	A. or B.
4. Refueling Floor Radiation Monitors	≤ 100 mR/hr	1	1 (Notes 1, 2, 4)	A. or B.

Notes:

- (1) There shall be two operable or tripped trip systems for each function with two instrument channels per trip system and there shall be one operable or tripped trip system for each function with one instrument channel per trip system.
- (2) Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated to:
 - (a) Satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
 - (b) Place the plant under the specified required conditions using normal operating procedures.
- (3) Need not be operable when primary containment integrity is not required.
- (4) One of the two monitors may be bypassed for maintenance and/or testing.

Notes: (cont'd)

- (5) Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied action shall be initiated as follows:
 - (a) With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours, or
 - (b) With more than one instrument channel trip system inoperable, immediately satisfy the requirements by placing appropriate channels or systems in the tripped condition, or
 - (c) Place the plant under the specified required conditions using normal operating procedures.
- (6) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other OPERABLE channel in the same trip system is monitoring that parameter.
- * Required Conditions when minimum conditions for operation are not satisfied.
 - A. The reactor building ventilation system isolated and the standby gas treatment system operating.
 - B. Establish conditions where secondary containment is not required.

Table 3.2.8
Other Instrumentation

Function	Trip Setting	Minimum No. of Operable or Operating Trip System (1) (2)	Total No. of Instrument Channels Per Trip System	Minimum No. of Operable or Operating Instrument Channels Per Trip System (1) (2)	Required Conditions*
A. RCIC Initiation 1. Low-Low Reactor Level	$\geq 6' 6''$ & $\leq 6' 10''$ above top of active fuel	1	4	4	B
B. HPCI/RCIC Turbine Shutdown a. High Reactor Level	$\leq 14' 6''$ above top of active fuel	1	2	2	A
C. HPCI/RCIC Turbine Suction Transfer a. Condensate Storage Tank Low Level	$\geq 2' 0''$ above tank bottom	1	2	2	C

NOTE:

1. Upon discovery that minimum requirements for the number of operable or operating trip systems or instrument channels are not satisfied, action shall be initiated as follows:
 - a. With one required instrument channel inoperable per trip function, place the inoperable channel or trip system in the tripped condition within 12 hours, or
 - b. With more than one instrument channel per trip system inoperable, immediately satisfy the requirements by placing the appropriate channels or systems in the tripped condition, or
 - c. Place the plant under the specified required condition using normal operating procedures.
2. A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided that at least one other operable channel in the same trip system is monitoring that parameter.

- * Required conditions when minimum conditions for operation are not satisfied:
- A. Comply with Specification 3.5.A.
 - B. Comply with Specification 3.5.D.
 - C. Align HPCI and RCIC suction to the suppression pool. Restore channels to operable status within 30 days or place the plant in Required Condition A for HPCI, or B for RCIC.

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/3 months (Note 5)	Every Operating Cycle - Transmitter Once/3 months - Trip Unit	Once/Shift
2. Drywell High Pressure	Once/3 months	Once/3 months	None
3. Reactor Low Pressure (Pump Start)	Once/3 months	Once/3 months	None
4. Reactor Low Pressure (Valve Permissive)	Once/3 months	Once/3 months	None
5. Undervoltage Emergency Bus	Refueling Outage	Refueling Outage	None
6. Low Pressure Core Cooling Pumps Discharge Pressure Interlock	Once/3 months	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/3 months (Note 5)	Every Operating Cycle - Transmitter Every 3 months - Trip Unit	Once/Shift
ROD BLOCKS			
1. APRM Downscale	Once/3 months (Note 5)	Once/3 months	None
2. APRM Flow Variable	Once/3 months (Note 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/3 months (Note 5)	Once/3 months	None
6. RBM Downscale	Once/3 months (Note 5)	Once/3 months	None
7. SRM Upscale	Notes (2,5)	Note 2	Note 2
8. SRM Detector Not-Full-In Position	Notes (2,9)	Note 2	None
9. Scram Discharge Volume-High Level	Once/3 months	Refueling Outage	None
MAIN STEAM LINE (GROUP 1) ISOLATION			
1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	None
2. Steam Line High Flow	Once/3 months	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	Once/3 months	Once/3 months	None
4. Reactor Low Low Water Level	Once/3 months (Note 5)	Every Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/shift
<u>CONTAINMENT ISOLATION (GROUPS 2 & 3)</u>			
1. Reactor Low Water Level (Note 10)	-	-	-
2. Drywell High Pressure (Note 10)	-	-	-
<u>HPCI (GROUP 4) ISOLATION</u>			
1. Steam Line High Flow	Once/3 months	Once/3 months	None
2. Steam Line High Temperature	Once/3 months	Once/3 months	None
<u>RCIC (GROUP 5) ISOLATION</u>			
1. Steam Line High Flow	Once/3 months	Once/3 months	None
2. Steam Line High Temperature	Once/3 months	Once/3 months	None
<u>REACTOR BUILDING VENTILATION & STANDBY GAS TREATMENT</u>			
1. Reactor Low Low Water Level	Once/3 months (Note 5)	Every Operating Cycle - Transmitter Once/3 months - Trip Unit	Once/shift
2. Drywell High Pressure (Note 10)	-	-	-
3. Radiation Monitors (Plenum)	Once/3 months	Once/3 months	Once/day
4. Radiation Monitors (Refueling Floor)	Once/3 months	Once/3 months	Note 4
<u>RECIRCULATION PUMP TRIP AND ALTERNATE ROD INJECTION</u>			
1. Reactor High Pressure	Once/3 months (Note 5)	Once/Operating Cycle-Transmitter Once/3 Months-Trip Unit	Once/Day
2. Reactor Low Low Water Level	Once/3 months (Note 5)	Once/Operating Cycle- Transmitter Once/3 Months-Trip Unit	Once/shift
<u>SHUTDOWN COOLING SUPPLY ISOLATION</u>			
1. Reactor Pressure Interlock	Once/3 months	Once/3 Months	None