UNITS 1 AND 2
PROPOSED CHANGES

1.0 DEFINITIONS (Cont'd)

V. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors.

2. Channel - A channel is an arrangement of a sensor(s) and associated components used to evaluate plant variables and produce discrete outputs used in logic. A channel terminates and loses its identity where individual channel outputs are combined in logic.

3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.

4. Instrument Check - An instrument check is qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.

5. Logic System Functional Test - A logic system functional test means a test of all relays and contacts of a logic circuit to insure all components are operable per design intent. Where practicable, action will go to completion; i.e., pumps will be started and valves operated.

6. Trip System - A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish a protective trip function. A trip system may require one or more instrument channel trip signals related to one or more plant parameters in order to initiate trip system action. Initiation of protective action may require the tripping of a single trip system or the coincident tripping of two trip systems.

7. Protective Action - An action initiated by the protection system when a limit is reached. A protective action can be at a channel or system level.

8. Protective Function - A system protective action which results from the protective action of the channels monitoring a particular plant condition.

9. Simulated Automatic Actuation - Simulated automatic actuation means applying a simulated signal to the sensor to actuate the circuit in question.

TABLE 3.2.A (Continued)

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
2 (10)	Instrument Channel - Main Steam Line Tunnel High Temperature	$\leq$ 200°F	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	$\leq$ 100 mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.
1	Instrument Channel - Reactor Building Ventilation High Radiation Refueling Zone	$\leq$ 100 mr/hr or downscale	F	1. 1 upscale or 2 downscale will a. Initiate SGTS. b. Isolate refueling floor. c. Close atmosphere control system.
2 (7)(8)	Instrument Channel SGTS Flow - Train A Heaters	Charcoal Heaters $\leq$ 2000 cfm R. H. Heaters $\leq$ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R. H. heaters will shut off.
2 (7)(8)	Instrument Channel SGTS Flow - Train B Heaters	Charcoal Heaters $\leq$ 2000 cfm R.H. Heaters $\leq$ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R.H. heaters will shut off.
2 (7)(8)	Instrument Channel SGTS Flow - Train C Heaters	Charcoal Heaters $\leq$ 2000 cfm R.H. Heaters $\leq$ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R.H. heaters will shut off.

TABLE 3.2.A (Continued)

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
1	Reactor Building Isolation Timer (refueling floor)	$0 \leq t \leq 2$ secs.	H or F	1. Below trip setting prevents spurious trips and system perturbations from initiating isolation
1	Instrument Channel - Static Pressure Control Permissive (refueling floor)	N/A	H or F	1. Located in unit 1 only 2. Permissive for static pressure control (SGTS A, B, or C on). Channel shared by permissive on reactor zone static pressure cont.
1	Static Pressure Control Pressure Regulator (Refueling Floor)	$\leq$ 1/2" H_2O	H or F	1. Located in unit 1 only 2. Controls static pressure of refueling floor during reactor building isolation with SGTS running
1	Reactor Building Isolation Timer (reactor zone)	$0 \leq t \leq 2$ secs.	G or A or H	1. Below trip setting prevents spurious trips and system perturbations from initiating isolation
1(9)	Instrument Channel - Static Pressure Control Permissive (reactor zone)	N/A	I	1. Permissive for static pressure control (SGTS A, B, or C on). Channel shared by permissive on refueling floor static pressure control.
1(9)	Static Pressure Control Pressure Regulator (reactor zone)	$\leq$ 1/2" H_2O	I	1. Controls static pressure of reactor zone during reactor building isolation with SGTS running.
2	Group 1 (Initiating) Logic	N/A	A	1. Refer to Table 3.7.A for list of valves.
1	Group 1 (Actuation) Logic	N/A	B	1. Refer to Table 3.7.A for list of valves.

TABLE 3.2.A (Continued)

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
2	Group 2 (Initiating) Logic	N/A	A or (B and E)	1. Refer to Table 3.7.A for list of valves.
1	Group 2 (RHR Isolation-Actuation) Logic	N/A	D	
1	Group 2 (Tip-Actuation) Logic	N/A	J	
1	Group 2 (Drywell Sump Drains-Actuation) Logic	N/A	K	
1	Group 2 (Reactor Building & Refueling Floor, and Drywell Vent and Purge-Actuation) Logic	N/A	F and G	1. Part of Group 6 Logic
2	Group 3 (Initiating) Logic	N/A	C	1. Refer to Table 3.7.A for list of valves.
1	Group 3 (Actuation) Logic	N/A	C	
1	Group 6 Logic	N/A	F and G	1. Refer to Table 3.7.A for list of valves.
1	Group 8 (Initiating) Logic	N/A	J	1. Refer to Table 3.7.A for list of valves. 2. Same as Group 2 initiating logic
1	Reactor Building Isolation (refueling floor) Logic	N/A	H or F	1. Logic has permissive to refueling floor static pressure regulator.
1	Reactor Building Isolation (reactor zone) Logic	N/A	H or G or A	1. Logic has permissive to reactor zone static pressure regulator.

TABLE 3.2.A (Continued)

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
1(7)(8)	SGTS Train A Logic	N/A	L or (A and F)	
1(7)(8)	SGTS Train B Logic	N/A	L or (A and F)	
1(7)(8)	SGTS Train C Logic	N/A	L or (A and F)	
1	Static Pressure Control (refueling floor) Logic	N/A	H or F	1. Located in unit 1 only
1(9)	Stacic Pressure Control (reactor zone) Logic	N/A	I	

Refer to Table 3.2.B ror RCIC and HPCI functions including Groups 4, 5, and 7 valves.

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be operable, there shall be two operable or tripped trip systems for each function.

   If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.

   A. Initiate an orderly shutdown and have the reactors in Cold Shutdown Condition in 24 hours.

   B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Isolate Shutdown Cooling

   E. Initiate primary containment isolation within 24 hours.

   F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.

   G. Isolate the reactor building and start the standby gas treatment system.

   H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.

   I. No action required. Reactor zone walls and ceiling designed above suction pressure of the SGTS.

   J. Withdraw TIP.

   K. Manually isolate the affected lines. Refer to section 4.2.E for the requirements of an inoperable system.

   L. If one SGTS train is inoperable take actions H or action A and F. If two SGTS trains are inoperable take actions A and F.

2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.

3. There are four sensors per steam line of which two must be operable.

4. Only required in Run Mode (interlocked with Mode Switch).

5. Not required in Run Mode (bypassed by mode switch).

2380 236

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.

7. A train is considered a trip system.

8. Two out of three SGTS trains required. A failure of more than one will require action A and F.

9. There is only one trip system with auto transfer to two power sources.

10. A channel contains four sensors, all of which must be operable for the channel to be operable.

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves		Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
		Inboard	Outboard			
1	Main steamline isolation valves (PCV-1-14,26,37,65; 1-15, 27, 38, & 52)	4	4	3 < T < 5	O	GC
1	Main steamline drain isolation valves PCV-1-55 & 1-56	1	1	15	O	GC
1	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RHRS shutdown cooling supply isolation valves FCV-74-48 & 47	1	1	40	C	SC
2	RHRS - LPCI to reactor FCV-74-53, 67		2	30	C	SC
2	Reactor vessel head spray isolation valves FCV-74-77, 78	1	1	30	C	SC
2	RHRS flush and drain vent to suppression chamber FCV-74-102, 103, 119, & 120		4	20	C	SC
2	Suppression Chamber Drain FCV-74-57, 58		2	15	C	SC
2	Drywell equipment drain discharge isolation valves FCV-77-15A, & 15B		2	15	O	GC
2	Drywell floor drain discharge isolation valves FCV-77-2A & 2B		2	15	O	GC

250

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UNIT 3
PROPOSED CHANGES

3. Core Maximum Fraction of Limiting Power Density (CMFLPD) - The highest ratio, for all fuel types in the core, of the maximum fuel rod power density (kW/ft) for a given fuel type to the limiting fuel rod power density (kW/ft) for that fuel type.

4. Average Planar Linear Heat Generation Rate (ALPHGR) - The Average Planar Heat Generation Rate is applicable to a specific planar height and is equal to the sum of the linear heat generation rates for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle.

V. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors.

2. Channel - A channel is an arrangement of sensor(s) and associated components used to evaluate plant variables and produce discrete outputs used in logic. A channel terminates and loses its identity where individual channel outputs are combined in logic.

3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.

4. Instrument Check - An instrument check is qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.

5. Logic System Functional Test - A logic system functional test means a test of all relays and contacts of a logic circuit to insure all components are operable per design intent. Where practicable, action will go to completion; i.e., pumps will be started and valves operated.

6. Trip System - A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish

Revised: 11-9-79

TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - Reactor Low Water Level (6)	≥ 538" above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure	100 ± 15 psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D, SW #1)	≥ 470" above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PS-64-56A-D)	≤ 2.5 psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	≤ 3 times normal rated full power background	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line	≥ 850 psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line	≤ 140% of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2 (10)	Instrument Channel - Main Steam Line Tunnel High Temperature	≤ 200°F	B	1. Above trip setting initiates Main Steam Line Isolation.

Amendment No. 26

2280 211

TABLE 3.2.A

PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	≤ 100 mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.
1	Instrument Channel - Reactor Building Ventilation High Radiation - Refueling Zone	≤ 100 mr/hr or downscale	F	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate refueling floor. c. Close atmosphere control system
2(7) (8)	Instrument Channel SGTS Flow - Train A Heaters	Charcoal Heaters ≤ 2000 cfm R.H. Heaters ≤ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R.H. heaters will shut off.
2(7) (8)	Instrument Channel SGTS Flow - Train B Heaters	Charcoal Heaters ≤ 2000 cfm R.H. Heaters ≤ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R.H. heaters will shut off.
2(7) (8)	Instrument Channel SGTS Flow - Train C Heaters	Charcoal Heaters ≤2000 cfm R.H. Heaters ≤ 2000 cfm	H and (A or F)	1. Below 2000 cfm, trip setting charcoal heaters will turn on. 2. Below 2000 cfm, trip setting R.H. heaters will shut off.

TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
1	Reactor Building Isolation Timer (refueling floor)	0 ≤ t ≤ 2 secs.	H or F	1. Below trip setting prevents spurious trips and system perturbations from initiating isolation
1	Instrument Channel - Static Pressure Control Permissive (refueling floor)	N/A	H or F	1. Located in unit 1 only 2. Permissive for static pressure control (SGTS A, B, or C on). Channel shared by permissive on reactor zone static pressure cont.
1	Static Pressure Control Pressure Regulator (Refueling Floor)	≤ 1/2" H O	H or F	1. Located in unit 1 only 2. Controls static pressure of refueling floor during reactor building isolation with SGTS running.
1	Reactor Building Isolation Timer (reactor zone)	0 ≤ t ≤ 2 secs.	G or A or H	1. Below trip setting prevents spurious trips and system perturbations from initiating isolation
1(9)	Instrument Channel - Static Pressure Control Permissive (reactor zone)	N/A	I	1. Permissive for static pressure control (SGTS A, B, or C on). Channel shared by permissive on refueling floor static pressure control.
1(9)	Static Pressure Control Pressure Regulator (reactor zone)	≤ 1/2" H O	I	1. Controls static pressure of reactor zone during reactor building isolation with SGTS running.
2	Group 1 (Initiating) Logic	N/A	A	1. Refer to Table 3.7.A for list of valves.
1	Group 1 (Actuation) Logic	N/A	B	1. Refer to Table 3.7.A for list of valves.

TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
2	Group 2 (Initiating) Logic	N/A	A or (B and E)	1. Refer to Table 3.7.A for list of valves.
1	Group 2 (RHR Isolation-Actuation) Logic	N/A	D	
1	Group 2 (Tip-Actuation) Logic	N/A	J	
1	Group 2 (Drywell Sump Drains-Actuation) Logic	N/A	K	
1	Group 2 (Reactor Building & Refueling Floor, and Drywell Vent and Purge-Actuation) Logic	N/A	F and G	1. Part of Group 6 Logic.
2	Group 3 (Initiating) Logic	N/A	C	1. Refer to Table 3.7.A for list of valves.
1	Group 3 (Actuation) Logic	N/A	C	
1	Group 6 Logic	N/A	F and G	1. Refer to Table 3.7.A for list of valves.
1	Group 8 (Initiating) Logic	N/A	J	1. Refer to Table 3.7.A for list of valves. 2. Same as Group 2 initiating logic.
1	Reactor Building Isolation (refueling floor) Logic	N/A	H or F	1. Logic has permissive to refueling floor static pressure regulator.
1	Reactor Building Isolation (reactor zone) Logic	N/A	H or G or A	1. Logic has permissive to reactor zone static pressure regulator.

TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable per Trip Sys(1)	Function	Trip Level Setting	Action (1)	Remarks
1(7)(8)	SGTS Train A Logic	N/A	L or (A and F)	
1(7)(8)	SGTS Train B Logic	N/A	L or (A and F)	
1(7)(8)	SGTS Train C Logic	N/A	L or (A and F)	
1	Static Pressure Control (refueling floor) Logic	N/A	H or F	1. Located in unit 1 only.
1(9)	Static Pressure Control (reactor zone) Logic	N/A	I	

Refer to Table 3.2.B for RCIC and HPCI functions including Groups 4, 5, and 7 valves.

3. There are four sensors per steam line of which two must be operable.

4. Only required in Run Mode (interlocked with Mode Switch).

5. Not required in Run Mode (bypassed by mode switch).

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.

7. A train is considered a trip system.

8. Two out of three SGTS trains required. A failure of more than one will require action A and F.

9. There is only one trip system with auto transfer to two power sources.

10. A channel contains four sensors, all of which must be operable for the channel to be operable.

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
1	Main steamline isolation valves (PCV-1-14, 26, 37, & 51; 1-15, 27, 38 & 52)	4	4	3 < T < 5	0	GC
1	Main steamline drain isolation valves (PCV-1-55 & 1-56)	1	1	15	0	GC
1	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RHRS shutdown cooling supply isolation valves (PCV-74-48 & 47)	1	1	40	C	SC
2	RHRS - LPCI to reactor (PCV-74-53 & 67)		2	30	C	SC
2	Reactor vessel head spray isolation valves (PCV-74-77 & 78)	1	1	30	C	SC
2	RHRS flush and drain vent to suppression chamber (PCV-74-102, 103, 119, & 120)		4	20	C	SC
2	Suppression Chamber Drain (PCV-75-57 & 58)		2	15	C	SC
2	Drywell equipment drain discharge isolation valves (PCV-77-15A & 15B)		2	15	0	GC
2	Drywell floor drain discharge isolation valves (PCV-77-2A & 2B)		2	15	0	GC

ENCLOSURE 2
JUSTIFICATION

UNITS 1 AND 2 - pages 6, 56, 60, and 61
UNIT 3 - pages 6, 57, and 63

These pages are being revised to clarify the technical specification requirements regarding isolation of main steam lines following main steam line high temperature logic actuation. The variation in interpretation led to a reportable occurrence on Browns Ferry. (See Reportable Occurrence Report BFRO-50-259/7925 submitted by letter from J. R. Calhoun (TVA) to James P. O'Reilly (NRC/Region II) dated October 9, 1979.) This technical specification revision is a corrective action committed to in that RO. These revision will eliminate the variation in interpretation and help to decrease the number of reportable occurrence reports filed.

UNITS 1 AND 2 - page 250
UNIT 3 - Page 262

FCV 1-55 and 1-56 drain valves are required to be open for extended periods during power operation. Therefore, these valves will be considered as normally open and technical specification surveillance requirement 4.7.D.1.b will apply.