Enclosure B

INSTRUMENTATION

DRAFT

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each functional unit affected by bypass operation.

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME of each SFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times 18 months where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3. } ? Clarify

JAN 12 1977

TABLE 3.3-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
1. INSTRUMENT STRINGS					
a. Containment Radiation - High	4	2	3	All MODES	9#
b. Containment Pressure - High	4	2	3	1, 2, 3	9#
c. Containment Pressure - High-High	4	2	3	1, 2, 3	9#
d. RCS Pressure - Low	4	2	3	1, 2, 3*	9#
e. RCS Pressure - Low-Low	4	2	3	1, 2, 3**	9#
f. BWST Level - Low	4	2	3	1, 2, 3	9#
2. OUTPUT LOGIC					
a. Incident Level #1: Containment Isolation	NA 2	NA 1	NA 2	All MODES	10
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	NA 2	NA 1	NA 2	1, 2, 3	10
c. Incident Level #3: Low Pressure Injection	NA 2	NA 1	NA 2	1, 2, 3	10
d. Incident Level #4: Containment Spray	NA 2	NA 1	NA 2	1, 2, 3	10
e. Incident Level #5: Containment Sump Recirculation	NA 2	NA 1	NA 2	1, 2, 3	10

Why not condition 4

2

Check with RSB

Check with RSB to include condition 4

There are two Trains of incident levels. either train is capable of actuating the Safety features Subsystems & both have to be operable up through condition mode 4

DRAFT

TABLE 3.3-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	ALL MODES	11
b. Containment Spray	2	2	2	1, 2, 3, 4	11
4. SEQUENCE LOGIC CHANNELS	4	2***	4	1, 2, 3	9#

Why not condition 4 a loca in condition 4 is the worst case I believe condition 4 should be included (Check with RSB)

DAVIS-BESSE, UNIT 1

3/4 3-11

JAN 12 1977

DRAFT

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
INSTRUMENT STRINGS		
a. Containment Radiation	≤ 25 mR/hr	≤ 25 mR/hr
b. Containment Pressure - High	≤ 18.4 psia	≤ 18.4 psia
c. Containment Pressure - High-High	≤ 38.4 psia	≤ 38.4 psia
d. RCS Pressure - Low	≥ 1600 psig	≥ 1600 psig
e. RCS Pressure - Low-Low	≥ 400 psig	≥ 400 psig
f. BWST Level	≥ 36 in. H_2O	≥ 36 in. H_2O
SEQUENCE LOGIC CHANNELS		
a. Undervoltage Condition	0000 ± 00 Volts	0000 ± 00 Volts

These should be fixed values with specified margins. (Rev. 26 provides this information FSAR Pg 7-89)

THIS PAGE OPEN PENDING RECEIPT OF INFORMATION FROM THE APPLICANT

DRAFT

DAVIS-BESSE, UNIT 1

3/4 3-13

JAN 12 1977

DRAFT

TABLE 3.3-5 (Continued)

SAFETY FEATURES SYSTEM RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
n. Steam and Feedwater Isolation Valves (continued)	
2. Main Feedwater Stop	NA
3. Main Steam Warmup	NA
Automatic —— ?	
2. Containment Pressure - High	
a. Fans	
1. Emergency Vent Fans	≤ 25*
2. Containment Cooler Fans	≤ 45*
b. HV & AC Isolation Valves	
1. ECCS Room	≤ 75*
2. Emergency Ventilation	≤ 75*
3. Containment Air Sample	≤ 25*
4. Containment Purge	≤ NA*
5. Penetration Room Purge	≤ 75*
c. Control Room HV & AC Units	≤ 10*
d. High Pressure Injection	
1. High Pressure Injection Pumps	≤ 30*
2. High Pressure Injection Valves	≤ 30*
e. Component Cooling Water	
1. Component Cooling Water Pumps	≤ 180*
2. Component Cooling Aux. Equip. Inlet Valves	≤ 180*
3. Component Cooling to Air Compressor Valves	≤ 180*
f. Service Water System	
1. Service Water Pumps	≤ 45*
2. Service Water From Component Cooling Heat Exchanger Isolation Valves	≤ NA*
g. Containment Spray Isolation Valves	≤ 80*
h. Emergency Diesel Generator	≤ 15*

2. Not True if D.G. response is 15 sec.

If these are Pneumatic Valves the Automatic should be Removed.

DRAFT

TABLE 3.3-5 (Continued)

SAFETY FEATURES SYSTEM RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
2. Containment Pressure - High (Continued)	
i. Containment Isolation Valves	
1. Vacuum Relief	≤ 25*
2. Normal Sump	≤ 25*
3. RCS Letdown Delay Coil Outlet	≤ 30*
4. RCS Letdown High Temperature	≤ 30*
5. Pressurizer Sample	≤ 48*
6. Service Water to Cooling Water	≤ 45*
7. Vent Header	≤ 15*
8. Drain Tank	≤ 15*
9. Core Flood Tank Vent	≤ 15*
10. Core Flood Tank Fill	≤ 15*
11. Steam Generator Sample	≤ 15*
12. Atmospheric Vent	≤ 17*
13. Quench Tank	≤ 15*
14. Emergency Sump	≤ 90*
15. RCP Seal Return	≤ 30*
16. Air System	≤ 15*
17. N_2 System	≤ 15*
18. Quench Tank Sample	≤ 35*
19. Main Steam Warmup Drain	≤ 15*
20. Makeup	≤ 30*
21. RCP Seal Inlet	≤ 30*
22. Core Flood Tank Sample	≤ 15*
23. RCP Standpipe Demin Water Supply	≤ 15*
24. Containment H_2 Dilution Inlet	≤ 25*
25. Containment H_2 Dilution Outlet	≤ 25*
j. BWST Outlet Valves	≤ 30*
k. Low Pressure Injection	
1. Decay Heat Pumps	≤ 30*
2. Low Pressure Injection Valves	≤ NA*
3. Decay Heat Pump Suction Valves	≤ 30*
4. Decay Heat Cooler Outlet Valves	≤ NA*
5. Decay Heat Cooler Bypass Valves	≤ NA*
3. Containment Pressure--High-High	
a. Containment Spray Pump	≤ 80*
b. Component Cooling Isolation Valves	
1. Inlet to Containment	≤ 25*
2. Outlet from Containment	≤ 25*

Impossible if D.G. Response is 15 sec. See note on Pg 16

JAN 12 1977

TABLE 3.3-5 (Continue

SAFETY FEATURES SYSTEM RESPONSE TIMES

DRAFT

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
b. Component Cooling Isolation Valves (Continued)	
3. Inlet to CRDM's	≤ 35*
4. CRDM Booster Pump Suction	≤ 35*
5. Component Cooling from Decay Heat Cooler	≤( )*
c. Steam and Feedwater Isolation Valves	
1. Main Steam Line	≤ 10*
2. Main Feedwater Stop	≤ 30*
3. Main Steam Warmup	≤ 15*
4. RCS Pressure-Low	
a. Fans	
1. Emergency Vent Fans	≤ 25*
2. Containment Cooler Fans	≤ 45*
b. HV & AC Isolation Valves	
1. ECCS Room	≤ 75*
2. Emergency Ventilation	≤ 75*
3. Containment Air Sample	≤ 25*
4. Containment Purge	≤ 11*
5. Penetration Room Purge	≤ 75*
c. Control Room HV & AC Units	≤ 10*
d. High Pressure Injection	
1. High Pressure Injection Pumps	≤ 30*
2. High Pressure Injection Valves	≤ 30*
e. Component Cooling Water	
1. Component Cooling Water Pumps	≤ 180*
2. Component Cooling Aux. Equipment Inlet Valves	≤ 180*
3. Component Cooling to Air Compressor Valves	≤ 180*
f. Service Water System	
1. Service Water Pumps	≤ 45*
2. Service Water from Component Cooling Heat Exchanger Isolation Valves	≤ NA*
g. Containment Spray Isolation Valves	≤ 80*
h. Emergency Diesel Generator	≤ 15*

THIS PAGE OPEN PENDING RECEIPT OF INFORMATION FROM THE APPLICANT

not Grace

See note on Pg 1L

This is also identified on Pg VIL

JAN 12 1977

TABLE 3.3-5 (Continued)

DRAFT

SAFETY FEATURES SYSTEM RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
4. RCS Pressure-Low (continued)	
i. Containment Isolation Valves	
1. Vacuum Relief	≤ 25*
2. Normal Sump	≤ 25*
3. RCS Letdown Delay Coil Outlet	≤ 30*
4. RCS Letdown High Temperature	≤ 30*
5. Pressurizer Sample	≤ 45*
6. Service Water to Cooling Water	≤ 45*
7. Vent Header	≤ 15*
8. Drain Tank	≤ 15*
9. Core Flood Tank Vent	≤ 15*
10. Core Flood Tank Fill	≤ 15*
11. Steam Generator Sample	≤ 15*
12. Atmospheric Vent	≤ 17*
13. Quench Tank	≤ 15*
14. Emergency Sump	≤ 90*
15. RCP Seal Return	≤ 30*
16. Air Systems	≤ 15*
17. N_2 System	≤ 15*
18. Quench Tank Sample	≤ 35*
19. Main Steam Warmup Drain	≤ 15*
20. Makeup	≤ 30*
21. RCP Seal Inlet	≤ 30*
22. Core Flood Tank Sample	≤ 15*
23. RCP Standpipe Demin Water Supply	≤ 15*
24. Containment H_2 Dilution Inlet	≤ 25*
25. Containment H_2 Dilution Outlet	≤ 25*
j. BWST Outlet Valves	≤ 90*
5. RCS Pressure--Low-Low	
a. Low Pressure Injection	
1. Decay Heat Pumps	≤ 30*
2. Low Pressure Injection Valves	≤ NA* ?
3. Decay Heat Pump Suction Valves	≤ 30*
4. Decay Heat Cooler Outlet Valves	≤ NA* ?
5. Decay Heat Cooler Bypass Valves	≤ NA* ?
b. Component Cooling Isolation Valves	
1. Auxiliary Equipment Inlet	≤ 90*
2. Inlet to Air Compressor	≤ 90*
3. Component Cooling from Decay Heat Cooler	≤ ( )*

Not possible See note on Pg 16

THIS PAGE OPEN PENDING RECEIPT OF INFORMATION FROM THE APPLICANT

Why not ? ?

JAN 12 1977

DRAFT

TABLE 3.3-5 (Continued)

SAFETY FEATURES SYSTEM RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Containment Radiation - High	
a. Emergency Vent Fans	≤ 25*
b. HV & AC Isolation Valves	
1. ECCS Room	≤ 75*
2. Emergency Ventilation	≤ 75*
3. Containment Air Sample	≤ 25*
4. Containment Purge	≤ 11*
5. Penetration Room Purge	≤ 75*
c. Control Room HV & AC Units	≤ 10*
7. Borated Water Storage Tank-Low	
a. Containment Sump Suction Valves	≤ 90*
b. BWST Outlet Valves	≤ 90*

Impossible

Impossible.

this takes 15 sec per note on Pg 16

TABLE NOTATION

* Diesel generator starting and sequence loading delays included. Response time limit includes movement of valves and attainment of pump or blower discharge pressure.

JAN 12 1977

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. Containment Radiation - High	S	R	M	All MODES
b. Containment Pressure - High	S	R	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	R	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M (?)	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M (?)	1, 2, 3
f. BWST Level - Low	S	R	M (?)	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	~~NA~~ S	NA Note	M	All MODES
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	~~NA~~ S	NA	M	1, 2, 3
c. Incident Level #3: Low Pressure Injection	~~NA~~ S	NA	M	1, 2, 3
d. Incident Level #4: Containment Spray	~~NA~~ S	NA	M	1, 2, 3
e. Incident Level #5: Containment Sump Recirculation	~~NA~~ S	NA	M	1, 2, 3
3. MANUAL ACTUATION				
a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	All MODES
b. Containment Spray	NA	NA	M(1)	1, 2, 3
4. SEQUENCE LOGIC CHANNELS	NA	NA	M	1, 2, 3

If these transmitters are the same as those provided for RPS system then they should be calibrated every 120 days (i.e. 4 months)

(2) as in note 4

See note on pg 10

Note: these logic channels should be calibrated every 18 months or verified operable if there is no calibration required

DRAFT

INSTRUMENTATION

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.2 The Steam and Feedwater Rupture Control System (SFRCS) instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-12 and with RESPONSE TIMES as shown in Table 3.3-13.

APPLICABILITY: MODES 1, 2 and 3. what about mode 4? check with RSB

ACTION:

a. With a SFRCS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-12, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-11, until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With a SFRCS instrumentation channel inoperable, take the action shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

4.3.2.2.1 Each SFRCS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-11.

4.3.2.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.2.3 The STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM RESPONSE TIME of each SFRCS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific SFRCS function as shown in the "Total No. of Channels" Column of Table 3.3-11. ? clarify

JAN 12 1977

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL S[illegible] NSTRUMENTATION

FUNCTIONAL UNIT			TOTAL OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
2. Feedwater/Steam Generator Differential Pressure - High Instrument Channels						
a.	PDS 2685A	Feedwater/Steam Generator 2	2	1	2	13
	PDS 2685B	Feedwater/Steam Generator 2				
b.	PDS 2685C	Feedwater/Steam Generator 2	2	1	2	13
	PDS 2685D	Feedwater/Steam Generator 2				
c.	PDS 2686A	Feedwater/Steam Generator 1	2	1	2	13
	PDS 2686B	Feedwater/Steam Generator 1				
d.	PDS 2686C	Feedwater/Steam Generator 1	2	1	2	13
	PDS 2686D	Feedwater/Steam Generator 1				
3. Steam Generator Level - Low Instrument Channels						
a.	LSL SP9B1	Steam Generator 1	2	1	2	13
	LSL SP9B2	Steam Generator 1				
b.	LSL SP9A3	Steam Generator 1	2	1	2	13
	LSL SP9A4	Steam Generator 1				
c.	LSL SP9A1	Steam Generator 2	2	1	2	13
	LSL SP9A2	Steam Generator 2				

Ck to see if these are the latest ones number because my drawing shows different ones as see drawing M057 Rev 9 & M051 Rev 11

DRAFT

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
3. Steam Generator Level - Low Instrument Channels (continued)				
d. LSL SP9B3 Steam Generator 2 LSL SP9B4 Steam Generator 3	2	1	2	13
4. Loss of RCP Channels				
a. SFRCS Channel #1	2	1	2	13
b. SFRCS Channel #2	2	1	2	13
5. Manual Initiation				
a. Steam Pressure - Low	4	4	4	14
b. Level Steam Generator - Low	2	2	2	14
c. Feedwater Δ P - High	2	2	2	14
d. Loss of RCP's	2	2	2	14

DAVIS-BESSE, UNIT 1

3/4 3-26

JAN 12 1977

DRAFT