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ED 6926

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SECTION 1

PROCEDURE TITLE AND NUMBER
SFAS SP 1105.03
REASON FOR CHANGE

The Safety Tagging Procedure has provisions for documenting the removal and replacement of fuses.
There are no provisions for holding SP 1105.03 while a fuse is removed.

CHANGE
Delete documentation section after step 10.2.4
Add after step 10.2.4:
Section 10 completed for deenergization/reenergization on valve _____ by _____.

8507300128 850306
PDR ADOCK 05000346
P PDR

IS PROCEDURE REVISION REQUIRED		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	If no, this modification is valid until _____
PREPARED BY	<u>D.P. Ricci</u>	DATE	<u>2/24/85</u>	
APPROVED BY	<u>H. Lamm</u>	DATE	<u>2/26/85</u>	
APPROVED BY	<u>Thyler</u>	DATE	<u>2/26/85</u>	
SUBMITTED BY (Section Head)	<u>D. Lee</u>	DATE	<u>2-25-85</u>	
RECOMMENDED BY (SRB Chairman)	<u>[Signature]</u>	DATE	<u>MAR 6 1985</u>	
QA APPROVED BY (Manager of Quality Assurance)	<u>[Signature]</u>	DATE		
APPROVED BY (Station Superintendent)	<u>[Signature]</u>	DATE	<u>MAR 6 1985</u>	

Max

N/A

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SECTION 1

PROCEDURE TITLE AND NUMBER

SAFETY FEATURES ACTUATION System

SP 1105.03

REASON FOR CHANGE

- ① Discrepancy between this procedure and EP 1202.01 specific rules concerning overriding safety equipment
- ② T-mod Dated 2/9/85 Did not cover all discrepancies Between the SP and EP 1202.01

CHANGE Change Step 3.6.2 to Read:

3.6.2 DO NOT OVERRIDE ANY SAFETY EQUIPMENT EXCEPT AS LISTED IN SPECIFIC RULES #2 AND #4 in EP 1202.01, RPS, SFAS, SFRCS TRIP or SG TUBE RUPTURE.

In addition to these, if a Diesel Generator was previously being operated on the hydraulic governor, it may be blocked, stopped, and restarted in the "Safety mode".

Delete T-mod Dated 2/9/85 (T-8905)

IS PROCEDURE REVISION REQUIRED

Yes



No



If no, this modification is valid until _____

PREPARED BY

Dave Estelmas

DATE

2-20-85

APPROVED BY

R. H. Michaels

DATE

2/20/85

APPROVED BY

Dave Estelmas

DATE

2-20-85

SUBMITTED BY (Section Head)

Bill Lee

DATE

2-24-85

RECOMMENDED BY (SRB Chairman)

[Signature]

DATE

FEB 27 1985

QA APPROVED BY (Manager of Quality Assurance)

[Signature]

DATE

APPROVED BY (Station Superintendent)

[Signature]

DATE

FEB 27 1985

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 1 CTMB 1 ITC Affix
 4 CTM file

SECTION 1

PROCEDURE TITLE AND NUMBER

Safety Features Actuation System SP1105.03

REASON FOR CHANGE

To add guidance on deenergizing a SFAS Cabinet. To point out that turning off DC power will cause solenoids powered from the affected Channel to deenergize and may reposition vlv. CORRECTIVE ACTION FOR JUNE 23, 1984
 EVENT

CHANGE

6. Add to 2nd Note → turning off DC power will cause solenoids powered from the affected channel to deenergize and may reposition vlv. DC power should be left on unless absolutely required ^{to be deenergized} for maintenance.

Steps 6.1.1, 6.1.2, 6.2.3 as per attached

voids T-8075

IS PROCEDURE REVISION REQUIRED

Yes ☒

No ☐

If no, this modification is valid until _____

PREPARED BY

J. Simon

DATE

6-25-84

APPROVED BY

W. O'Connor

DATE

6-25-84

APPROVED BY

Dennis J. Peterson

DATE

6-25-84

SUBMITTED BY (Section Head)

B. B. Boyer

DATE

7/3/84

RECOMMENDED BY (SRB Chairman)

Sam J. J. J.

DATE

7/10/84

QA APPROVED BY (Manager of Quality Assurance)

N/A

DATE

APPROVED BY (Station Superintendent)

Tommy

DATE

7/10/84

BISTABLES

CTMT Radiation
CTMT Pressure Hi
CTMT Pressure Hi Hi
BWST Level Lo

- ____ 5.2.11 If the RCS pressure is below 280 psig the trip light on the DH valves permission to operate bistable should be on.
- ____ 5.2.12 If the RCS pressure is below 800 psig the trip light on the CF valves permission to operate bistable should be on.
- ____ 5.2.13 Run those sections of the SFAS Monthly Test, ST 5031.01 which are applicable to the present mode.
- ____ 5.2.14 Perform ST 5099.01 "Miscellaneous Instrument Shift Check" on the affected channel(s).
- ____ 5.2.15 Return the SFAS door key to the Shift Supervisor.

Section 5 Completed _____ Date _____

6. DEENERGIZING A SFAS CABINET

NOTE: See Precaution and Limitation 3.5 and 3.6.

NOTE: AC or DC power may be left on if desired by the Shift Supervisor.

6.1 Prerequisites

- 6.1.1 A situation exists requiring that a SFAS cabinet be deenergized. *(Loss of AC power due to the loss of Y1, Y2, Y3, or Y4 does NOT require deenergization of an SFAS cabinet per this paragraph)*
- ____ 6.1.2 If the main steam isolation valves are open, verify that both solenoids are energized (Total green lights in SFAS cabinets should be on).

- ____ 6.1.3 In the three (3) cabinets NOT being deenergized all output modules and output relays are in service and there are NOT any bistable trips except that the RCS pressure bistables may be tripped if blocked.

In the three cabinets that are to remain energized verify that one of the following conditions exist.

- a) All output modules are reset, all output relays are in service and all bistables are reset.

- b) All output modules are reset, all output relays are in service and all bistables are reset except for the RCS pressure bistables which are blocked.
- c) For any other conditions contact the I&C Engineer for guidance.

6.1.4 The Shift Supervisor has given permission to deenergize the SFAS channel and has issued one SFAS door key.

6.2 Procedure

CAUTION: This procedure will NOT remove all power from the SFAS cabinet. Consult the I&C Engineer if all power must be off.

6.2.1 Turn the range switch on the Victoreen model to the off position.

6.2.2 Turn the AC switch on the SFAS Channel to the OFF position. (Switch is in back)

6.2.3 Trip the AC ~~and DC~~ essential instrument breakers for the affected cabinet only, as per the following table:

SFAS CAB	AC BREAKER	DC BREAKER
1	Y 107	D1P 18
2	Y 207	D2P 19
3	Y 307	D1P 19
4	Y 407	D2P 18

6.2.4 CAUTION: Opening the DC breaker will remove power from valves ~~not~~ fused in the cabinet and may reposition valves.

6.2.5 Hang tags on the switches/breakers tripped in 6.2.3 and 6.2.4. *If required per the Shift Supervisor, Trip the DC breaker for the affected cabinet only per the following table:*

6.2.6 Return the SFAS door key to the Shift Supervisor.

Section 6 Completed by _____ Date _____

7. SFAS CABINET OPERATION DURING RCS PRESSURIZATION

7.1 Prerequisites

NOTE: During RCS heatup section 7 must be completed to prevent equipment actuation.

SFAS Cab	DC Breaker
1	D1P18
2	D2P19
3	D1P19
4	D2P18

Unit No. 1

System Procedure: SP 1105.03

SAFETY FEATURES ACTUATION SYSTEM

4

NUCLEAR SAFETY RELATED

Record of Approval and Changes

Prepared by J. Orkins 6/7/74
Date

Submitted by [Signature] 7/23/74
Section Head Date

Recommended by [Signature] 7/23/74
SRB Chairman Date

QA Approved [Signature] 4/8/75
Manager of Quality Assurance Date

Approved by [Signature] 4/8/75
Station Superintendent Date

Revision No.	SRB Recommendation	Date	QA Approved	Date	Sta. Supt. Approved	Date
1	[Signature]	5/17/77	NA		[Signature]	6/2/77
2	[Signature]	4/24/78	NA		TO Munn	12/31/78
3	[Signature]	4/17/79	NA		TO Munn	4/18/79
4	[Signature]	4/24/79	NA		TO Munn	4/25/79
5	[Signature]	5/18/79	NA		TO Munn	5/21/79
6	[Signature]	5/13/80	NA		TO Munn	5/17/80
7	B R Beyer	8/11/80	NA		TO Munn	7/8/80
8	B R Beyer	3/13/81	NA		TO Munn	4/1/81
9	[Signature]	1/9/82	NA		TO Munn	1/9/82
10	[Signature]	4/5/83	NA		TO Munn	4/14/83
11	[Signature]	4/11/84	NA		TO Munn	5/14/84

1. PURPOSE

- 1.1 To detail the procedures necessary to perform the following operations associated with the Safety Features Actuation System, (SFAS).

Energization and Resetting the SFAS Cabinets	Section 5.0
Deenergizing a SFAS Cabinet	Section 6.0
SFAS Cabinet Operations during RCS Pressurization	Section 7.0
SFAS Operations during RCS Depressurization	Section 8.0
CTRM Operating Switches and Indications	Section 9.0
Deenergizing and Reenergizing the SFAS Solenoid Valves	Section 10.0

2. DISCUSSION

The purpose of the Safety Features Actuation System is to automatically prevent or limit fission product and energy release from the core, to isolate the containment vessel (CV), and to initiate the operation of the ESF equipment in the event of a loss of coolant accident. The SFAS performs this by monitoring the CV radiation level, the CV pressure and the RCS pressure initiates the operation of the appropriate equipment when any two or more of the four sensors for any parameter sense a value which exceeds the trip setpoint. The equipment which is actuated is listed on Bechtel Drawing E17B (6 sheets) and the logic for this actuation is shown on Bechtel Drawing E-16 (2 sheets).

Other station procedures which pertain to the SFAS are:

- 2.2 ST 5099.01, "Miscellaneous Instrument Shift Checks" which checks the input parameter for correct value for the plant status and between channels.
- 2.3 ST 5031.01, "SFAS Monthly Test" which checks one channel per week for correct logic and setpoint. This procedure also discusses and uses the switches and indications in the cabinets.
- 2.4 ST 5031.07, "SFAS Refueling Period Test" is an integrated test of the entire SFAS including operation of the controls.
- 2.5 ST 5031.02, 5031.03, 5031.04, 5031.05 are calibrations of the RCS pressure, CTMT pressure, CTMT radiation, and BWST level sensors each refueling period.

- 2.6 ST 5031.17, SFAS Sequence Logic Channels Operable, which provides a monthly check of a) essential bus feeder trip undervoltage relays, and b) diesel generator start, load shed on essential bus undervoltage.

11 | 2.7 ST 5031.06, SFAS Overall Time Response.

- 2.8 EP 1202.06, "Loss of RC and RC Pressure" explains the actions to take on a SFAS trip including spurious trip.

3. PRECAUTIONS AND LIMITATIONS

- 3.1 During RCS (Reactor Coolant System) heatups or cooldown it is mandatory that section 7 or 8 respectively of this procedure be performed between RCS pressure of 1800 and 1600 psig (cooldown), 1600 and 1800 psig (heatup), between 600 and 400 psig (cooldown) and 400 and 600 psig (heatup). Otherwise a trip will be generated and appropriate equipment will be actuated.

- 3.2 If it is necessary to deenergize a SFAS channel, all operators should be aware that the system is in a one out of three trip logic and that the possibility for an inadvertent trip due to equipment failure is more likely.

- 3.3 If an SFAS level 2 trip has occurred and the EDG's are supplying C-1 and D-1 buses, DO NOT reset SFAS until offsite power is restored.

- 3.4 Whenever a channel is deenergized the output relays in that channel are deenergized. For this reason the monthly test can NOT be performed on the complementary channel as this would trip the ESF equipment for that actuation channel. Channels 1 and 3 are complementary as are 2 and 4. In addition the monthly test on the SFRCS (Steam & Feedwater Rupture Control System) cannot be performed during the testing.

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- 3.5 Deenergization of two or more SFAS channels is not covered by this procedure. If the situation ever develops a special procedure must be written to cover this evolution.

- 3.6 If an SFAS actuation occurs, the following requirements apply:

11 |

- 3.6.1 If an SFAS signal to certain ESF equipment is "BLOCKED" (i.e. overridden), that equipment is incapable of responding to either any subsequent automatic actuation signal or the system-level manual actuate ("TRIP") pushbuttons. Before an operator "BLOCKS" any SFAS signal, he must assure that the safety function of that equipment is no longer needed. Afterward the

operator is totally responsible for the proper operation of that equipment, including re-actuation if required, until the "Block" is removed.

Re-actuation, subsequent to a "BLOCK", can be accomplished two ways. First, at the equipment level, "BLOCKED" equipment will respond to the individual control switches for that piece of equipment. Second, at the SFAS system level, operation of the system-level "RESET" pushbutton (on Panel C5717) will clear any output logic "BLOCKS" in the system. (Output logic "BLOCKS" are the block switches next to the SAM lights and on the output modules). The equipment will then respond to the system level manual actuate ("TRIP") pushbutton and to automatic actuation signals.

3.6.2

DO NOT OVERRIDE ANY SAFETY EQUIPMENT EXCEPT AS LISTED BELOW:

1. RCS Makeup - The RCS makeup isolation valve may be overridden to the open position when RCS pressure is greater than 400 psig.
2. Reactor Coolant Pump (RCP) Seal Injection and Return - The RCP Seal Injection and Return Isolation Valves may be overridden to the open position when RCS pressure is greater than 400 psig.
3. RCS Letdown - The letdown isolation valve may be opened as required to control RCS inventory when the RCS pressure is greater than 400 psig given that no seismic event occurred.
4. Containment Gaseous and Particulate Monitors Sample Lines - The associated sample line isolation valves may be opened as soon as it is necessary to sample the CV.
5. Decay Heat (DH) Cooler Outlet Valves - The DH cooler outlet valves may be throttled in the event of a failure of one DH pump which then requires the remaining pump feed through both Low Pressure Injection (LPI) lines.
6. High Pressure Injection may be stopped or throttled provided:
 - (1) All hot and cold leg temperatures are at least 50 degrees below the saturation temperature for the existing RCS pressure

and NOT more than 50°F above the secondary side saturation temperature. The degree of subcooling beyond 50°F and the length of time HPI is in operation shall be limited by pressure/temperature considerations for vessel integrity (when below 400°F).

- (2) Pressurizer level is being maintained.

CAUTION: Do NOT rely entirely on pressurizer level indication to determine the inventory of the RCS. If the RCS temperature is NOT 50 degrees below the saturation temperature for the RCS pressure, a steam void may exist in the RCS.

If both of these conditions are satisfied, the HPI may be stopped by blocking and stopping these pumps.

CAUTION: If 50°F subcooling cannot be maintained after stopping HPI, the HPI shall be restarted.

HPI may also be throttled if the flow exceeds 900 gpm per pump. This would occur during the latter stages of depressurization. HPI flow may be stopped if both low pressure injection pumps are in operation with a flow of at least 1000 gpm per pump, and the RCS conditions have been stable for 20 minutes.

7. Component Cooling Water Valve to Makeup Pump - The CCW to Makeup Pump Valve may be overridden to the open position when RCS pressure is greater than 400 psig given no seismic event occurred.
8. Diesel Generator - If a diesel was previously being operated on the hydraulic governor, it may be blocked, stopped, and restarted in the "safety mode".
9. Atmospheric vent valves - The atmospheric vent valves may be opened if required for secondary pressure control.
10. If plant conditions are stable at normal operating or hot standby conditions after a transient with

no evidence of an RCS leak, systems may be bypassed with the Shift Supervisor's permission.

11. If there are any questionable conditions or any sign of an RCS leak, no safety system should be bypassed without approval of Station Management (Station Superintendent or his designee).

4. REFERENCES

- (TS) 11| 4.1 Technical Specifications 3.6.1.1, 3.6.1.2, 3.6.1.7, 3.6.3
 4.2 USAR Section 7
 4.3 SFAS Instrumentation Manual - Consolidated Controls Corporation
 4.4 AD 1803.00, "Safety Tagging"
 4.5 E17B, SFAS Actuated Equipment Tabulation - Bechtel
 4.6 E16B, SFAS Signal Diagram - Bechtel
 4.7 EP 1202.06, Loss of RC and RC Flow

5. ENERGIZATION AND RESETTING THE SFAS CABINETS

5.1 Prerequisites

NOTE: If an SFAS Level 2 trip has occurred and the EDG's are supplying C1 and D1 buses, DO NOT reset SFAS until offsite power is restored.

- ____ 5.1.1 Essential instrument AC and DC distribution panels are energized for the affected cabinet(s).

<u>SFAS CAB</u>	<u>AC PANEL</u>	<u>DC PANEL</u>
1	Y1	D1P
2	Y2	D2P
3	Y3	D1P
4	Y4	D2P

- ____ 5.1.2 The Shift Supervisor has given permission to energize the cabinet and has issued one SFAS door key.

5.2 Procedure

- ____ 5.2.1 Check that the AC switch on the SFAS cabinet is "OFF".

- ____ 5.2.2 Check that the Victoreen module range switch is off.
- ____ 5.2.3 Clear tags from the associated breaker and close the essential instrument AC breaker according to the following:

<u>SFAS CAB</u>	<u>BREAKER</u>
1	Y 107
2	Y 207
3	Y 307
4	Y 407

- ____ 5.2.4 Close the essential instrument DC breaker according to the following:

<u>SFAS CAB</u>	<u>BREAKER</u>
1	D1P 18
2	D2P 19
3	D1P 19
4	D2P 18

- ____ 5.2.5 Place the AC switch in the back of the SFAS cabinet to the "ON" position.
- ____ 5.2.6 Turn on the Victoreen module and place the range switch at "ALL". Wait approximately one minute or until the indication on the module has stabilized and then depress the red and yellow pushbuttons if on and they should go out. Then depress the green pushbutton if off and it should come on.
- ____ 5.2.7 If the RCS is depressurized, the RCS pressure LO block and Lo Lo block bistable should be tripped. Depress the block pushbutton on the front of these modules and ensure that the "Block" light comes on.
- ____ 5.2.8 If the RCS pressure is above 400 psig depress the reset pushbutton on the RCS pressure Lo Lo bistable, trip light should go out.
- ____ 5.2.9 If the RCS pressure is above 1600 psig depress the reset pushbutton on the RCS pressure Lo bistable, trip light should go out.
- ____ 5.2.10 Depress the reset pushbutton on the following bistables if tripped and any tripped output modules and verify the trip lights, all 1/5, and all output module block lights are off.

BISTABLES

CTMT Radiation
CTMT Pressure Hi
CTMT Pressure Hi Hi
BWST Level Lo

- ____ 5.2.11 If the RCS pressure is below 280 psig the trip light on the DH valves permission to operate bistable should be on.
- ____ 5.2.12 If the RCS pressure is below 800 psig the trip light on the CF valves permission to operate bistable should be on.
- ____ 5.2.13 Run those sections of the SFAS Monthly Test, ST 5031.01 which are applicable to the present mode.
- ____ 5.2.14 Perform ST 5099.01 "Miscellaneous Instrument Shift Check" on the affected channel(s).
- ____ 5.2.15 Return the SFAS door key to the Shift Supervisor.

Section 5 Completed _____ Date _____

6. DEENERGIZING A SFAS CABINET

NOTE: See Precaution and Limitation 3.5 and 3.6.

NOTE: AC or DC power may be left on if desired by the Shift Supervisor.

6.1 Prerequisites

- 6.1.1 A situation exists requiring that a SFAS cabinet be deenergized.
- ____ 6.1.2 If the main steam isolation valves are open, verify that both solenoids are energized (local green lights should be on).
- ____ 6.1.3 In the three (3) cabinets NOT being deenergized all output modules and output relays are in service and there are NOT any bistable trips except that the RCS pressure bistables may be tripped if blocked.

In the three cabinets that are to remain energized verify that one of the following conditions exist.

- a) All output modules are reset, all output relays are in service and all bistables are reset.

- b) All output modules are reset, all output relays are in service and all bistables are reset except for the RCS pressure bistables which are blocked.
- c) For any other conditions contact the I&C Engineer for guidance.

____ 6.1.4 The Shift Supervisor has given permission to deenergize the SFAS channel and has issued one SFAS door key.

6.2 Procedure

CAUTION: This procedure will NOT remove all power from the SFAS cabinet. Consult the I&C Engineer if all power must be off.

____ 6.2.1 Turn the range switch on the Victoreen model to the off position.

____ 6.2.2 Turn the AC switch on the SFAS Channel to the OFF position. (Switch is in back)

____ 6.2.3 Trip the AC and DC essential instrument breakers for the affected cabinet only, as per the following table:

<u>SFAS CAB</u>	<u>AC BREAKER</u>	<u>DC BREAKER</u>
1	Y 107	D1P 18
2	Y 207	D2P 19
3	Y 307	D1P 19
4	Y 407	D2P 18

CAUTION: Opening the DC breaker will remove power from valves NOT fused in the cabinet.

____ 6.2.4 Hang tags on the switches/breakers tripped in 6.2.3 and 6.2.4.

____ 6.2.5 Return the SFAS door key to the Shift Supervisor.

Section 6 Completed by _____ Date _____

7. SFAS CABINET OPERATION DURING RCS PRESSURIZATION

7.1 Prerequisites

NOTE: During RCS heatup section 7 must be completed to prevent equipment actuation.

____ 7.1.1 The RCS is being pressurized.

____ 7.1.2 The Shift Supervisor has issued one SFAS door key.

7.2 Procedure

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____ 7.2.1 At a RCS pressure of approximately 301 psig, verify that the trip light on the two DH valve permission to operate bistables go off.

____ 7.2.2 At a RCS pressure between 400 and 550 psig, depress the reset pushbutton on the RCS pressure Lo trip bistable in SFAS channel #1 and verify that the trip light goes off.

____ 7.2.3 Repeat 7.2.2 in SFAS Ch 2

____ 7.2.4 Repeat 7.2.2 in SFAS Ch 3

____ 7.2.5 Repeat 7.2.2 in SFAS Ch 4

CAUTION: Do NOT pressurize above 550 psig until at least three of the steps 7.2.2 through 7.2.5 are satisfactorily completed to prevent an inadvertent actuation.

____ 7.2.6 At a RCS pressure of approximately 800 psig, verify that the trip light on the two CF valve permission to operate bistables go off.

____ 7.2.7 At a RCS pressure between 1600 and 1750 psig, depress the reset pushbutton on the RCS pressure Lo trip bistable in SFAS channel #1 and verify that the trip light goes OFF.

____ 7.2.8 Repeat 7.2.7 for SFAS Channel #2

____ 7.2.9 Repeat 7.2.7 for SFAS Channel #3

____ 7.2.10 Repeat 7.2.7 for SFAS Channel #4

CAUTION: Do NOT pressurize above 1750 psig until at least three of the steps 7.2.7 through 7.2.10 are complete to prevent an inadvertent actuation.

____ 7.2.11 Return the SFAS door key to the Shift Supervisor.

8. SFAS OPERATIONS DURING RCS DEPRESSURIZATION

8.1 Prerequisites

NOTE: During RCS cooldown Section 8 must be completed to prevent equipment actuation.

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8.1.1 The RCS is being depressurized.

8.2 Procedure

NOTE: Blocking of "SFAS RC PRESS" within this procedure is intended to prevent an inadvertent initiation of SFAS during normal depressurization. The operator must note that changes in plant conditions may warrant the initiation of SFAS. This is the responsibility of the operator performing the block. SFAS initiation on high containment pressure, high containment radiation and from the manual actuation switches will function normally with the RCS low pressure "BLOCKS" in. To manually actuate the SFAS in response to RCS low pressure the operator can actuate all the necessary equipment for the required incident level component by component from each component control switch OR manual actuation at the system level from the manual actuation switches as described in Step 5.2.5.

8.2.1 Upon receipt of the "SFAS RC Press <1800 psig Blk Permit" alarm, depress the Lo RC Pressure trip block pushbuttons (4) on CTRM panel C5705 and verify that on the RC Pressure Lo block bistables (4-on per channel), the block light is on.

CAUTION: Do NOT depressurize below 1650 psig before this step is satisfactorily completed on at least three SFAS channels to prevent an inadvertent actuation.

8.2.2 Verify that at a RCS pressure of approximately 795 psig, that the trip lights illuminate on the CF valve permission to operate bistables (2).

NOTE: The CF tank isolation valves can now be closed.

8.2.3 Upon receipt of the "SFAS RC Pressure <600 psig Blk Permit" alarm, depress the Lo Lo RC Pressure trip block pushbuttons (4) on the CTRM panel C5705 and verify that on the RC Pressure Lo Lo block bistables (4 - one per channel), block lights is on.

CAUTION: Do NOT depressurize below 450 psig before this step is satisfactorily completed on at least three SFAS channels to prevent an inadvertent actuation.

- 8.2.4 Verify that at a RCS pressure of approximately 275 psig, that the trip light illuminates on the DH valve permission to operate bistables (2).

NOTE: DH-11 and DH-12 isolation valves may be opened.

9. CTRM OPERATING SWITCHES AND INDICATIONS (Normal Operation)

9.1 Prerequisites

None, this is a discussion section.

9.2 Procedure

- 9.2.1 The block switches on panel C5705 are to allow the RCS to be depressurized without having a SFAS trip. (See Section 8).

- 9.2.2 The block switches on panels C5715, C5716, and C5717 (Amber light and white pushbutton) are to permit the operator to take manual control of the ESF equipment after a SFAS trip using the normal control switches. The amber light is referenced to as the "SAM" light. (See 9.2.4).

NOTE: Re-actuation, subsequent to a "BLOCK", can be accomplished two ways. First, at the equipment level, "BLOCKED" equipment will respond to the individual control switches for that piece of equipment. Second, at the system level, operation of the system-level "RESET" pushbutton will clear any output logic "BLOCKS" in the system. (Output logic "BLOCKS" are the block switches next to the SAM lights and on the output modules.) The equipment will then respond to the system level manual actuate ("TRIP") pushbutton and to automatic actuation signals.

- 9.2.3 The input parameter meters are on panel C-5716 and show the value the SFAS is receiving from the field transmitters.
- 9.2.4 The SAM (Safety Actuation Monitoring) lights are designed to aid the operator to quickly determine the situation after a SFAS trip. They have a total of eight possible conditions, however, only four of these are relevant to plant operation. They are:

<u>LIGHT STATUS</u>	<u>CONDITIONS</u>
OFF	No SFAS trip or SFAS trip and the Equipment did NOT operate
DIM	SFAS trip and the equipment operated properly
BRIGHT	Dim conditions plus the block switch has been depressed indicating that the operator can take normal control of the component
FLASHING	Bright conditions plus the equipment has been placed in its NON-Safety actuated position.

9.2.5 If NO output logic is "BLOCKED", manual actuation of SFAS may be accomplished as in the following Steps 1, 2, and 3. If ANY output logic is "BLOCKED", proceed directly to Step 9.2.6.

11|

1. To manually actuate all SFAS equipment except for the Containment Spray Pumps depress the manual actuation pushbuttons (2) labelled SFAS (HIS 2022 and HIS 2023) on C-5717. Each pushbutton actuates approximately one half of the ESF equipment.
2. To actuate the Containment Spray (CS) Pumps, depress the manual actuation pushbutton (2) labelled SPRAY on C-5717 (HIS 2020 for CS 1-1 and HIS 2021 for CS 1-2).
3. To reset the above trips, first press the OFF button located on the trip switch itself (this clears the trip signal); then depress the reset pushbuttons located next to the trip switches (this resets the output modules).

9.2.6 If ANY output logic is "BLOCKED", press the reset pushbutton located next to the manual trip switch to clear the "BLOCK" and then return to Step 9.2.5.

10. DEENERGIZING AND REENERGIZING THE SFAS SOLENOID VALVES

10.1 Prerequisites

- ____ 10.1.1 Maintenance is to be performed on one or more of the SFAS solenoid valves.

NOTE: These are identified as RC type 4 on Bechtel Drawing E17B. Also the valve will go to the "Function" position listed on E17B when it is deenergized.

- ____ 10.1.2 The Shift Supervisor has given permission to deenergize the valve and has issued one SFAS door key.

10.2 Procedure

- ____ 10.2.1 Obtain a copy of Drawing E17B "Safety Features Actuated Equipment".
- ____ 10.2.2 Find the valve on E17B and the associated fuses in the fuse column.

NOTE: There are two fuses per valve in the same cabinet except for the main steam isolation valves which have two sets of two in two separate cabinets.

- ____ 10.2.3 Remove the fuses and tag the fuse location and the CTRM switch(s). Return the key to the Shift Supervisor.
- ____ 10.2.4 When the work is complete replace the fuses and clear the tags in the same manner as above.

Section 10 completed on valve _____
Date out of service _____ by _____
Date Returned to service _____ by _____

END