NRR-PMDAPEm Resource

From: Jack Gadzala [jack.gadzala@dom.com]
Sent: Wednesday, November 09, 2011 12:55 PM
To: Feintuch, Karl
Cc: Lapinsky, George
Subject: RE: ME6288 - RE: Kewaunee CCW mod - IHPB request for clarification
Attachments: KW-PROC-000-E-0.pdf; SI Active Status Panel - SW-1306A_B highlight.pdf

Karl,

George Lapinsky is correct in stating that EOPs contain directions to confirm that automatic actions that occur as a result of a safety injection (SI) signal have initiated as expected from that signal. At Kewaunee, The automatic opening of service water valves SW-1306A and SW-1306B in response to a Safety Injection signal are verified by procedure steps in the applicable EOP.

During a Safety Injection actuation, operators perform Emergency Operating Procedure E-0, "Reactor Trip or Safety Injection" (current version is attached). At step 5 of E-0, the operator is directed to verify SI automatic actions per Attachment A of the procedure. In Attachment A, Step A.13 (page 33 of 38), the operator is directed to verify that SI Active Status Panel lights are all lit. The Active Status Panel lights are control board indications in the control room. There are two status lights for verifying valves SW-1306A and SW-1306B are open (see attached picture with the status lights circled in yellow). If the status lights are not lit, then the operator is directed by the RESPONSE NOT OBTAINED column of the procedure to take action to manually or locally align the valves.

As can be seen from the attached procedure, the Kewaunee EOPs are consistent with the standard Westinghouse plant EOPs.

Jack
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920-388-8604

From: Feintuch, Karl [mailto:Karl.Feintuch@nrc.gov]
Sent: Thursday, November 03, 2011 3:28 PM
To: Jack Gadzala (Generation - 4)
Cc: Lapinsky, George
Subject: ME6288 - RE: Kewaunee CCW mod - IHPB request for clarification

Reviewer Lapinsky has requested a clarification (an email response would be acceptable.) regarding the procedural and automatic actions associated with the subject process.

Routinely, Emergency Operating Procedures (EOPs) contain directions to confirm that automatic actions that occur as a result of a safety injection (SI) signal have initiated as expected from that signal.

Reviewer Lapinsky requests that you clarify whether this is done at Kewaunee for the Bypass Flow Control Valves that are taking over the automatic function of the Service Water (SW) main return valves? If so, is it (1) done by memory via training, or (2) documented in a revision to the relevant EOPs? (provide details or a copy of the procedure)

This question is in recognition that a procedural step associated with an automatic action implies a second action whereby the accomplishment of the automatic action is verified.

If a subsequent response more formal than an email is needed , I will inform you. (For example, if a formal supplement needs to be submitted.)

Please respond to this request for a clarification by email on or before November 9, 2011.

Hearing Identifier: NRR_PMDA
Email Number: 202

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Created By: jack.gadzala@dom.com

Recipients:
"Lapinsky, George" <George.Lapinsky@nrc.gov>
Tracking Status: None
"Feintuch, Karl" <Karl.Feintuch@nrc.gov>
Tracking Status: None

Post Office: DOM-MBX04.mbu.ad.dominionnet.com

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KW-PROC-000-E-0.pdf	309279	
SI Active Status Panel - SW-1306A_B highlight.pdf	1564217	

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Reply Requested: No
Sensitivity: Normal
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Recipients Received:

Kewaunee Power Station

Emergency Operating Procedure

Title

REACTOR TRIP OR SAFETY INJECTION

Procedure	Revision Number	Unit
E-0	44	N/A

Corrected step transition in Attachment A Step A14.a RNO to go Step A.15 if RCS pressure is greater than 2000 psig.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

1.0 PURPOSE

1.1 This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection, to assess plant conditions, and to identify the appropriate recovery procedure.

2.0 SYMPTOMS AND ENTRY CONDITIONS

2.1 The following are symptoms that require a reactor trip, if one has not occurred:

REACTOR TRIP SIGNAL	SETPOINT
OTΔT	Variable
OPΔT	Variable
NIS Power High Level	105%
NIS Power Low Level	25%
NIS Intermediate Range	20%
NIS Source Range	1E5 CPS
NIS Positive Rate	5% in 2 seconds
NIS Negative Rate	-5% in 2 seconds
PRZR High Pressure	2377 psig
PRZR Low Pressure	1904 psig
PRZR High Level	85%
Single Loop Low Flow	< 93% flow in 1 loop or one RXCP breaker open
Two Loop Low Flow	< 93% flow in 2 loops or both RXCP breakers open
Bus 1 and 2 Low Voltage	< 77% bus voltage for 0.1 seconds
SG Low-Low Level	17%
SG Low Feedwater Flow	SF > FF with SG level less than 25.5%
Turbine Trip	45 psig auto stop oil pressure or both turbine stop valves closed
Safety Injection	Refer to Step 2.3

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

2.2 The following are symptoms of a reactor trip:

- Any reactor trip annunciator lit.
- Rapid decrease in neutron level.
- Reactor trip and bypass breakers open.
- All rod bottom lights lit.

2.3 The following are symptoms that require a reactor trip and safety injection, if one has not occurred:

SAFETY INJECTION SIGNAL	SETPOINT
PRZR Low Pressure	1815 psig
SG Pressure Low	514 psig
Containment Pressure High	3.6 psig

2.4 The following are symptoms of a reactor trip and safety injection:

- Those indications listed in Step 2.2.
- Any SI annunciator lit.
- All lights on the SI active status panel lit.
- ECCS pumps running.

2.5 This procedure is entered from the following procedures if SI is actuated:

- ES-0.1, REACTOR TRIP RESPONSE, Foldout
- ES-0.2, NATURAL CIRCULATION COOLDOWN, Foldout
- ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL, Foldout

2.6 This procedure is entered from the following procedure when PRZR pressure is less than 1815 PSIG:

- ES-0.1, REACTOR TRIP RESPONSE, Step 10

2.7 This procedure is entered from the following procedure if PRZR level can not be maintained:

- FR-I.2, RESPONSE TO LOW PRESSURIZER LEVEL, Step 6

2.8 This procedure is entered from other plant procedures when a reactor trip or safety injection has occurred.

3.0 REFERENCES

3.1 WOG ERG-LP E-0, REACTOR TRIP OR SAFETY INJECTION

3.2 WOG ERG-LP Background Document E-0, REACTOR TRIP OR SAFETY INJECTION

3.3 WOG ERG-LP Executive Volume Generic Issues - FOLDOUT

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1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

3.4 Operations Response to EDSFI Question 244 [Steps 6 RNO, A3 RNO, A4 RNO, A5 RNO, A8 RNO, A9 RNO, A10 RNO]

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**ENSURE Reactor Trip:**	
	a. **CHECK** reactor trip and bypass breakers - ALL OPEN	a. **PERFORM** the following: 1. Manually **TRIP** Reactor. 2. **IF** any reactor trip breaker or bypass breaker **NOT** open, **THEN PERFORM** the following: a. **OPEN** Bus 33 and Bus 43 supply breakers. • 13301 for bus 33 • 14301 for bus 43 b. **IF** any bus supply breaker does **NOT** open, **THEN OPEN** associated transformer supply breaker. • 1-308 for bus 33 • 1-402 for bus 43 c. **DISPATCH** operator to locally open reactor trip and bypass breakers.
	b. **CHECK** Reactor - SUBCRITICAL • Reactor power - LESS THAN 5% • Neutron flux - STABLE OR DECREASING	b. **PERFORM** the following: 1. **ESTABLISH** control rod insertion at greater than or equal to 48 steps per minute in auto or manual. 2. **INITIATE** monitoring of CSF Status Trees per FR-0, CRITICAL SAFETY FUNCTION STATUS TREES. 3. **GO TO** FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**ENSURE Turbine Trip:** a. **CHECK** HP turbine impulse pressure - TRENDING TO ZERO • PI-485 • PI-486 b. **CHECK** both turbine stop valves CLOSED: 1. Stop Valve Closed green lights - BOTH LIT • SV-1 • SV-2 **OR** 2. Turbine Stop Valve Closed bistable lights - BOTH LIT • 44907-1107 for left SV • 44907-1108 for right SV	**SHUTDOWN** Turbine: 1. Manually **TRIP** Turbine. 2. **IF** Turbine will **NOT** trip, **THEN PERFORM** the following: a. **PLACE** both EH oil pumps in PULLOUT. • EH Pump A • EH Pump B b. Manually **RUN BACK** Turbine: 1. **DEPRESS** VVE POS LIMIT decrease pushbutton until VPL at 0%. 3. **IF** steam flow to Turbine can **NOT** be stopped, **THEN** manually **INITIATE** main steamline isolation.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**CHECK Both 4160V Emergency AC Buses Energized:**	
	a. **CHECK** Bus 5 energized	a. **IF** annunciator 47091-G, BUS 5 LOCKOUT clear, **THEN ENERGIZE** Bus 5: 1. **ENSURE** Diesel Engine A started. 2. **PLACE** BKR 1-509 43 Switch to MANUAL. 3. **PLACE** BKR 1-509 Sync Switch to ON. 4. **CLOSE** BKR 1-509 DG A TO Bus 5 breaker. 5. **PLACE** BKR 1-509 Sync Switch to OFF. 6. **IF** Bus 5 **NOT** energized, **THEN PLACE** Diesel Engine A in PULLOUT.
	b. **CHECK** Bus 6 energized	b. **IF** annunciator 47091-J, BUS 6 LOCKOUT clear, **THEN ENERGIZE** Bus 6: 1. **ENSURE** Diesel Engine B started. 2. **PLACE** BKR 1-603 43 Switch to MANUAL. 3. **PLACE** BKR 1-603 Sync Switch to ON. 4. **CLOSE** BKR 1-603 DG B TO Bus 6 breaker. 5. **PLACE** BKR 1-603 Sync Switch to OFF. 6. **IF** Bus 6 **NOT** energized, **THEN PLACE** Diesel Engine B in PULLOUT.
	c. **CHECK** at least one 4160V emergency AC bus - ENERGIZED	c. **GO TO** ECA-0.0, LOSS OF ALL AC POWER.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	**CHECK If SI Is Actuated:**	
	a. **CHECK** permissive status light SI SIGNAL ACTUATED - LIT • 44905-1201	a. **DETERMINE** appropriate recovery action: 1. **CHECK** if SI is required: • PRZR pressure - LESS THAN 1815 PSIG **OR** • PRZR level - LESS THAN 3% **OR** • RCS subcooling based on core exit TCs - LESS THAN 15°F **OR** • SG pressure - LESS THAN 500 PSIG **OR** • Containment pressure - GREATER THAN 4 PSIG 2. **IF** SI is required, **THEN** manually **ACTUATE** both trains of SI. 3. **IF** SI is **NOT** required, **THEN PERFORM** the following: a. **INITIATE** monitoring of CSF Status Trees per FR-0, CRITICAL SAFETY FUNCTION STATUS TREES. b. **GO TO** ES-0.1, REACTOR TRIP RESPONSE.
	b. **CHECK** both trains of SI - ACTUATED 1. Annunciator SI TRAIN A ACTUATED - LIT • 47021-A 2. Annunciator SI TRAIN B ACTUATED - LIT • 47021-B	b. Manually **ACTUATE** both trains of SI.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Foldout page shall be monitored throughout this procedure.

5 **ENSURE Automatic Actions Using ATTACHMENT A, SI AUTOMATIC ACTION VERIFICATION, While Continuing With This Procedure**

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION: When placing additional loads on the emergency diesel generators, do **NOT** exceed the maximum indicated DG load limit of 2829 KW.

6 **CHECK RXCP Seal Cooling Normal:**

a. **CHECK** RXCP thermal barrier temperatures - LESS THAN 160°F AND STABLE

- TI-614 for RXCP A
- TI-610 for RXCP B

b. **CHECK** RXCP bearing water temperatures - LESS THAN 225°F AND STABLE

- TI-132 for RXCP A
- TI-125 for RXCP B

IF CC to an RXCP is lost, **THEN PERFORM** the following:

1. **STOP** affected RXCP and **PLACE** in PULLOUT.

- RXCP A
- RXCP B

2. Manually **CLOSE** associated spray valve for non-running RXCPs.

- PS-1A for RXCP A
- PS-1B for RXCP B

3. **IF** seal outlet temperature less than 235°F **AND** bearing water temperature less than 225°F, **THEN ESTABLISH** seal injection flow:

a. **ENSURE** charging pump load within capacity of power source and **START** one charging pump at minimum speed.

- Charging Pump A - 81 kW
- Charging Pump B - 81 kW
- Charging Pump C - 81 kW

b. **ADJUST** Charging Line Flow Control valve as necessary to maintain RXCP seal injection flow between 6 gpm and 13 gpm.

- CVC-7

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**(CAS) CHECK RCS Temperature Control:** a. **CHECK** RCS cold leg temperatures: • LESS THAN OR EQUAL TO 547°F **AND** • STABLE	**PERFORM** the following: 1. **POSITION** Main Steam Dump Control Mode Selector to RESET and then to STM PRESS. 2. **IF** temperature less than 547°F **AND** temperature decreasing, **THEN PERFORM** the following: a. **STOP** dumping steam. b. **IF** SG pressure less than 1005 psig, **THEN ENSURE** SG PORV closed. c. **IF** at least one MD AFW Pump running, **THEN PLACE** T/D AFW pump in PULLOUT. d. **IF** cooldown continues, **THEN CONTROL** feed flow: 1. **REDUCE** total feed flow. 2. **MAINTAIN** total feed flow between 210 gpm and 250 gpm until narrow range level greater than 5% [13%] in at least one SG. e. **IF** cooldown continues, **THEN CLOSE** main steam isolation and bypass valves. • MS-1A and MS-2A for SG A • MS-1B and MS-2B for SG B 3. **IF** temperature greater than 547°F **OR** temperature increasing, **THEN STABILIZE** temperature at or below 547°F as follows: • **DUMP STEAM** to condenser. **OR** • **DUMP STEAM** using atmospheric steam dumps. **OR** • **DUMP STEAM** using SG PORVs.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**CHECK PRZR PORVs - BOTH CLOSED** • PR-2A • PR-2B	**IF** PRZR pressure less than 2315 psig, **THEN STOP** PORV flow: a. Manually **CLOSE** PORV(s). b. **IF** any PORV can **NOT** be closed, **THEN** manually **CLOSE** associated block valve. • PR-1A for PR-2A • PR-1B for PR-2B c. **IF** any open PORV can **NOT** be isolated, **THEN PERFORM** the following: 1. **INITIATE** monitoring of CSF Status Trees per FR-0, CRITICAL SAFETY FUNCTION STATUS TREES. 2. **DO NOT CONTINUE** until Attachment A complete. 3. **GO TO** E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

9 **CHECK Pressurizer Spray Valves Closed:**

a. **CHECK** normal PRZR spray valves - BOTH CLOSED

- PS-1A
- PS-1B

a. **IF** PRZR pressure less than 2260 psig, **THEN STOP** spray flow:

1. Manually **CLOSE** valve(s).

2. **IF** valve(s) will **NOT** close, **THEN STOP** RXCP(s) supplying failed spray valve(s) and **PLACE** in PULLOUT.

   - RXCP A for PS-1A
   - RXCP B for PS-1B

3. **IF** pressure continues to decrease, **THEN STOP** the other RXCP and **PLACE** in PULLOUT.

b. **CHECK** Auxiliary Spray Valve - CLOSED

- CVC-15

b. **ISOLATE** auxiliary spray:

1. Manually **CLOSE** valve.

2. **IF** valve can **NOT** be closed, **THEN** manually **CLOSE** Charging Line Flow Control valve.

   - CVC-7

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

10 **CHECK If RXCPs Should Remain Running:**

a. **CHECK** RXCPs - ANY RUNNING

- RXCP A
- RXCP B

a. **GO TO** Step 11.

b. **CHECK** RCS subcooling based on core exit thermocouples - GREATER THAN OR EQUAL TO 15°F [37°F]

b. **IF** at least one SI pump running and capable of delivering flow **AND** operator controlled cooldown **NOT** in progress, **THEN STOP** both RXCPs and **PLACE** in PULLOUT.

- RXCP A
- RXCP B

NOTE: A transition from E-0 to a FR procedure shall **NOT** be made until ATTACHMENT A has been completed.

11 **INITIATE Monitoring Of CSF Status Trees Per FR-0, CRITICAL SAFETY FUNCTION STATUS TREES**

12 **CHECK If Any SG Faulted:**

a. **CHECK** both SGs:

- ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER

OR

- ANY SG COMPLETELY DEPRESSURIZED

a. **GO TO** Step 13.

b. **DO NOT CONTINUE** until Attachment A complete

c. **GO TO** E-2, FAULTED STEAM GENERATOR ISOLATION

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	**CHECK If Steam Generator Tubes Are Intact:** a. Air Ejector Exhaust Monitor - NORMAL • R-15 **AND** b. S/G Blowdown Liquid Monitor - NORMAL • R-19 **AND** c. Main Steamline radiation - NORMAL • R-31 for SG A on SPDS • R-33 for SG B on SPDS **AND** d. Main Steamline N-16 Monitors response before trip - NORMAL • R-42 for SG A • R-43 for SG B **AND** e. Steam flow/feed flow and narrow range SG level response before trip - NORMAL	**IF** conditions indicate a steam generator tube rupture, **THEN PERFORM** the following: 1. **DO NOT CONTINUE** until Attachment A complete. 2. **GO TO** E-3, STEAM GENERATOR TUBE RUPTURE.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

14 **CHECK If RCS Is Intact Inside Containment:**

a. **CHECK** containment pressure - NORMAL

AND

b. **CHECK** containment radiation - NORMAL

- R-2
- R-7

AND

c. **CHECK** Containment Sump A level - NORMAL

1. Annunciator Containment Sump A Level High - CLEAR

   - 47031-Q

2. Annunciator Containment Sump A Level Hi-Hi - CLEAR

   - 47031-P

AND

d. **CHECK** Containment Sump B level- NORMAL

- Channel 1
- Channel 2

PERFORM the following:

1. **DO NOT CONTINUE** until Attachment A complete.

2. **GO TO** E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	**CHECK If SI Flow Should Be Terminated:**	
	a. **CHECK** RCS subcooling based on core exit thermocouples - GREATER THAN 15°F	a. **GO TO** Step 16.
	b. **CHECK** RCS pressure: • GREATER THAN 2000 PSIG **AND** • STABLE OR INCREASING	b. **GO TO** Step 16.
	c. **CHECK** secondary heat sink: • Total feed flow to steam generators - GREATER THAN 210 GPM **OR** • Narrow range level in at least one steam generator - GREATER THAN 5%	c. **IF NEITHER** condition satisfied, **THEN GO TO** Step 16.
	d. **CHECK** pressurizer level - GREATER THAN 3%	d. **STABILIZE** RCS pressure using normal spray. **GO TO** Step 16.
	e. **DO NOT CONTINUE** until Attachment A complete	
	f. **GO TO** ES-1.1, SI TERMINATION	

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	**(CAS) MAINTAIN Steam Generator Levels:** a. **CHECK** narrow range SG levels - GREATER THAN 5% b. **CONTROL** feed flow to maintain narrow range SG levels between 5% and 50%	a. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level greater than 5% in at least one SG. b. **IF** narrow range level in any SG continues to increase in an uncontrolled manner, **THEN PERFORM** the following: 1. **DO NOT CONTINUE** until Attachment A complete. 2. **GO TO** E-3, STEAM GENERATOR TUBE RUPTURE.
17	**CHECK Main Steamline Radiation Channels - NORMAL** • R-31 for SG A on SPDS • R-33 for SG B on SPDS	**IF** conditions indicate a steam generator tube rupture, **THEN PERFORM** the following: a. **DO NOT CONTINUE** until Attachment A complete. b. **GO TO** E-3, STEAM GENERATOR TUBE RUPTURE.
18	**CHECK If RCS Is Intact Outside Containment:** a. **CHECK** Auxiliary Building radiation - NORMAL • R-13 • R-14 • R-22 b. **CHECK** annunciator RHR PUMP PIT A/B LEVEL HIGH - CLEAR • 47032-Q c. **CHECK** annunciator AUX BLDG FLOOD LEVEL HIGH - CLEAR • 47033-R	**PERFORM** the following: 1. **EVALUATE** cause of abnormal conditions. 2. **IF** cause is a loss of RCS inventory outside containment, **THEN PERFORM** the following: a. **DO NOT CONTINUE** until Attachment A complete. b. **GO TO** ECA-1.2, LOCA OUTSIDE CONTAINMENT.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	**CHECK PRT Conditions - NORMAL** a. **CHECK** PRT pressure - LESS THAN 8 PSIG • PI-440 b. **CHECK** PRT liquid temperature - LESS THAN 125°F • TI-439 c. **CHECK** PRT level - LESS THAN 76% • LI-442	**EVALUATE** cause of abnormal conditions.

CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.

20 **RESET SI**

21 **RESET Containment Isolation**

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	**CHECK Instrument Air To Containment Established:**	
	a. **ENSURE** Instrument Air To Containment Isolation valve - OPEN • IA-101	
	b. **CHECK** reactor building header pressure - GREATER THAN 60 PSIG	b. **ENSURE** air compressor load within capacity of power source and **START** air compressors as necessary to establish instrument air to containment. • Air compressor A - 32 kW • Air compressor B - 32 kW • Air compressor C - 32 kW

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION: If RCS pressure decreases in an uncontrolled manner below 270 psig, the RHR pumps must be manually restarted to supply water to RCS.

23 **(CAS) CHECK If RHR Pumps Should Be Stopped:**

a. **CHECK** RCS pressure - GREATER THAN 270 PSIG

a. **PERFORM** the following:

1. **ENSURE** both RHR pumps running.
   - RHR Pump A
   - RHR Pump B
2. **DO NOT CONTINUE** until Attachment A complete.
3. **GO TO** E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

b. **CHECK** RCS pressure - STABLE OR INCREASING

b. **GO TO** Step 24.

c. **STOP** both RHR pumps and **PLACE** in AUTO
   - RHR Pump A
   - RHR Pump B

24 **CHECK Power Supply To Charging Pumps - OFFSITE POWER AVAILABLE**

IF adequate diesel capacity to run charging pumps **NOT** available, **THEN SHED** non-essential loads as necessary to establish adequate capacity.

- Charging Pump A - 81 kW
- Charging Pump B - 81 kW
- Charging Pump C - 81 kW

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

25 **CHECK Charging Flow Established:**

a. **CHECK** charging pumps - AT LEAST ONE RUNNING

- Charging Pump A
- Charging Pump B
- Charging Pump C

a. **PERFORM** the following:

1. **IF** CC flow to RXCP(s) thermal barrier is lost, **THEN** locally **CLOSE** RXCP seal supply line throttle valve to affected RXCP(s) before starting charging pumps.

   - CVC-204A for RXCP A
   - CVC-204B for RXCP B

2. **ENSURE** charging pump load within capacity of power source and **START** at least one charging pump.

   - Charging Pump A - 81 kW
   - Charging Pump B - 81 kW
   - Charging Pump C - 81 kW

b. **ADJUST** charging pump speed and **START** second charging pump as necessary to maintain PRZR level greater than 3%

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1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
26	**CHECK If Diesel Generators Should Be Stopped:**	
	a. **CHECK** 4160V emergency AC buses - ENERGIZED BY OFFSITE POWER • Bus 5 • Bus 6	a. **PERFORM** the following: 1. **RESTORE** offsite power to 4160V emergency AC buses. 2. **ENSURE** diesel generator load less than 2829 KW.
	b. **STOP** all unloaded diesel generators: 1. **CHECK** diesel generators -TWO RUNNING UNLOADED	1. **PERFORM** the following: a. **STOP** unloaded diesel generator and then **PLACE** in AUTO. b. **GO TO** Step 27.
	2. **STOP** one unloaded diesel generator and then **PLACE** in AUTO 3. **WAIT** 30 SECONDS 4. **STOP** the other unloaded diesel generator and then **PLACE** in AUTO	
27	**GO TO Step 7**	

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1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 1 of 12)

A.1 **NOTIFY** Plant Personnel Using Gaitronics:

a. **ANNOUNCE** the following:

"Attention in the plant.
Attention in the plant.
Safety injection has occurred.
Safety injection has occurred."

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 2 of 12)

A.2 CHECK Feedwater Isolation:

a. **ENSURE** Main Feedwater Flow Control Valves - BOTH CLOSED

- FW-7A for SG A
- FW-7B for SG B

b. **ENSURE** Main Feedwater Bypass Flow Control Valves - BOTH CLOSED

- FW-10A for SG A
- FW-10B for SG B

c. **ENSURE** Feedwater Isolation valves - BOTH CLOSED

- FW-12A for SG A
- FW-12B for SG B

c. Locally **ISOLATE** main feedline:

1. **IF** FW-12A will **NOT** close, **THEN CLOSE** the following:

   - FW-6A or FW-8A

   AND

   - FW-9A or FW-11A

2. **IF** FW-12B will **NOT** close, **THEN CLOSE** the following:

   - FW-6B or FW-8B

   AND

   - FW-9B or FW-11B

d. **ENSURE** main feedwater pumps - BOTH OFF

- FW Pump A
- FW Pump B

d. Locally **TRIP** main feedwater pumps.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 3 of 12)

CAUTION: Feed flow should **NOT** be reestablished to any faulted SG unless that SG is needed for RCS temperature control.

A.3 (CAS) **CHECK** AFW Pumps Running:

a. **CHECK** Motor Driven AFW Pumps - BOTH RUNNING

- AFW Pump A
- AFW Pump B

a. **ESTABLISH** AFW flow:

1. **WHEN** SI sequencer complete, **THEN START** pump(s).

2. **IF** pump(s) will **NOT** start, **THEN PERFORM** the following:

a. **ENSURE** T/D AFW Pump running.

b. **IF** TD AFW Pump will **NOT** start, **THEN** locally **OPEN** at least one Steam Supply To T/D AFW Pump valve.

- MS-100A for SG A
- MS-100B for SG B

c. **GO TO** Step A.4.

b. **STOP** T/D AFW Pump and **PLACE** in PULLOUT

A.4 **CHECK** SI Pumps - BOTH RUNNING

- SI Pump A
- SI Pump B

WHEN SI sequencer is complete, **THEN** manually **START** pumps.

A.5 **CHECK** RHR Pumps - BOTH RUNNING

- RHR Pump A
- RHR Pump B

WHEN SI sequencer is complete, **THEN** manually **START** pumps.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 4 of 12)

A.6 **CHECK** CC Pumps - BOTH RUNNING

- CC Pump A
- CC Pump B

ESTABLISH component cooling flow:

a. **IF NO** CC pumps running, **THEN PERFORM** the following:

1. **STOP** all RXCPs and **PLACE** in PULLOUT.

   - RXCP A
   - RXCP B

2. **WHEN** SI sequencer complete, **THEN** manually **START** both CC pumps.

b. **IF** one CC pump running **AND** SI sequencer is complete, **THEN** manually **START** non-running pump.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 5 of 12)

A.7 **CHECK** Containment And Containment Ventilation Isolation:

a. **CHECK** CI Active Status Panel lights - ALL LIT

a. **ISOLATE** flow path(s):

1. Manually **ACTUATE** CI.

2. **IF** flow path **NOT** isolated, **THEN ISOLATE** flow path using Attachment B, CONTAINMENT ISOLATION VERIFICATION as follows:

- **ENSURE** associated In-Line Isolation CLOSED.

OR

- Manually or locally **CLOSE** valve or damper.

OR

- Locally **CLOSE** Manual In-Line Isolation.

b. **PLACE** control switches for Letdown Orifice Isolation valves to CLOSE

- LD-4A
- LD-4B
- LD-4C

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1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 6 of 12)

A.8 **CHECK** If Main Steam Lines Can Remain Open:

a. **CHECK** main steam isolation and bypass valves - ANY OPEN

- MS-1A for SG A
- MS-2A for SG A
- MS-1B for SG B
- MS-2B for SG B

a. **GO TO** Step A.9.

b. **CHECK** containment pressure - HAS REMAINED LESS THAN 17 PSIG

b. **PERFORM** the following:

1. Manually **INITIATE** both trains of main steam isolation.

2. **GO TO** Step A.9.

c. **CHECK** MS Header HI-HI steam flow bistable lights - OFF

- 44908-0601 for header A
- 44908-0602 for header A
- 44908-0607 for header B
- 44908-0608 for header B

c. **PERFORM** the following:

1. Manually **INITIATE** main steam isolation for affected MS header.

2. **GO TO** Step A.9.

d. **CHECK** MS Header HI steam flow bistable lights - OFF

- 44908-0501 for header A
- 44908-0502 for header A
- 44908-0507 for header B
- 44908-0508 for header B

d. **IF** Tavg less than 540°F, **THEN** manually **INITIATE** main steam isolation for affected MS header.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 7 of 12)

A.9 (CAS) **CHECK** Containment Spray **NOT** Required:

a. **CHECK** containment pressure - HAS REMAINED BELOW 23 PSIG

ESTABLISH containment spray:

1. **CHECK** containment spray actuated:

   a. Annunciator CONTAINMENT SPRAY ACTUATED lit.

      - 47021-F

2. **IF** containment spray has **NOT** actuated, **THEN** manually **ACTUATE** containment spray.

3. **ENSURE** all Containment Spray Pump Discharge valves open.

   - ICS-5A for pump A
   - ICS-6A for pump A
   - ICS-5B for pump B
   - ICS-6B for pump B

4. **WHEN** SI sequencer is complete, **THEN** **ENSURE** ICS pumps running.

   - ICS Pump A
   - ICS Pump B

5. **ENSURE** both Caustic Additive To Containment Spray valves OPEN.

   - CI-1001A
   - CI-1001B

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 8 of 12)

A.10 **CHECK** Service Water Alignment:

a. **CHECK** service water pumps - ALL RUNNING

- SW Pump A1
- SW Pump A2
- SW Pump B1
- SW Pump B2

a. **WHEN** SI sequencer is complete, **THEN** manually **START** pumps.

b. **CHECK** SW header pressures - BOTH GREATER THAN 82.5 PSIG

- Header A
- Header B

b. **IF** SW header selected on Turbine Bldg SW Header Selector switch less than 82.5 psig, **THEN** **PLACE** Turbine Bldg SW Header Selector switch in ISOL.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 9 of 12)

A.11 **CHECK** Containment Cooling:

a. **CHECK** containment fan coil units - ALL RUNNING

- CFCU A
- CFCU B
- CFCU C
- CFCU D

a. **WHEN** SI sequencer is complete, **THEN** manually **START** fan coil units.

b. **ENSURE** Containment Fan Coil Unit SW Return Isolation valves - ALL OPEN

- SW-903A
- SW-903B
- SW-903C
- SW-903D

c. **CHECK** Shroud Cooling Coil Bypass valves - ALL OPEN

- SW-901A-1
- SW-901B-1
- SW-901C-1
- SW-901D-1

c. Manually **OPEN** valves:

1. **PLACE** associated Shroud Cooling Coil Inlet Isolation control switch to PULLOUT.

- SW-911A/B
- SW-911C/D

d. (CAS) **CHECK** containment pressure- HAS REMAINED BELOW 4 PSIG

d. **ENSURE** all Containment Fan Coil Unit Emergency Discharge Dampers OPEN.

- RBV-150A
- RBV-150B
- RBV-150C
- RBV-150D

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 10 of 12)

A.12	**CHECK** Auxiliary Building Special Ventilation Running:	
	a. **CHECK** annunciator ZONE SV BNDRY DAMPER NOT CLOSED - CLEAR • 47052-G	a. **PLACE** Aux Bldg Special Vent Boundary Dampers Control switch to CLOSE.
	b. **CHECK** Zone SV fans - ALL RUNNING	b. **PLACE** ASV Exhaust Filter Inlet Damper control switch to OPEN. • ASV-90A for train A • ASV-90B for train B
A.13	**CHECK** SI Active Status Panel Lights - ALL LIT	Manually or locally **ALIGN** equipment.

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 11 of 12)

A.14 **CHECK** SI Flow:

a. **CHECK** RCS pressure - LESS THAN 2000 PSIG

a. **GO TO** Step A.15.

b. **CHECK** SI pumps - FLOW INDICATED

- FI-925

b. **CHECK** SI valve alignment:

1. Manually or locally **ENSURE** the following valves OPEN:

- SI-4A(B), RWST Supply To SI Pumps
- SI-5A(B), SI Pump Suction Isolation
- SI-9A, SI To RCS Cold Legs
- SI-11A(B), SI To Loop Cold Leg

c. **CHECK** RCS pressure - LESS THAN 270 PSIG [300 PSIG]

c. **GO TO** Step A.15.

d. **CHECK** RHR pumps - FLOW INDICATED

- FI-626 for pump A
- FI-928 for pump B

d. **CHECK** RHR valve alignment:

1. Manually or locally **ENSURE** the following valves OPEN:

- SI-300A(B), RWST Supply To RHR Pumps
- SI-302A(B), RHR Pump Injection To Reactor Vessel
- RHR-8A(B), RHR Heat Exchanger Flow CV

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT A.
SI AUTOMATIC ACTION VERIFICATION
(Page 12 of 12)

A.15 **CHECK** Secondary Heat Sink:

- **ENSURE** total AFW flow - GREATER THAN 210 GPM

OR

- **ENSURE** SG narrow range level - GREATER THAN 5% [13%] IN ANY SG

PERFORM the following:

a. **ALIGN** valves and **START** AFW pumps as necessary to establish AFW flow.

b. **IF NEITHER** condition can be maintained, **THEN PERFORM** the following:

1. **INITIATE** monitoring of CSF Status Trees per FR-0, CRITICAL SAFETY FUNCTION STATUS TREES.

2. **GO TO** FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

A.16 **RETURN** To Procedure And Step In Effect

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

ATTACHMENT B
CONTAINMENT ISOLATION VERIFICATION
(Page 1 of 3)

Component	Name	In CNMT	In-Line Isolation	Manual In-Line Isolation
LD-4A LD-4B LD-4C	Letdown Orifice 1A Letdown Orifice 1B Letdown Orifice 1C	YES	LD-2 OR LD-3	NONE
WG-311	DDT Vent	YES	WG-310	WG-309
MD(R)-323A	DDT Isolation	NO	NONE	MD(R)-322A AND MD(R)-322B
LD-6	LD HX Flow	NO	NONE	LD-7
CC-653	EXCS LD HX	NO	NONE	CC-654
CVC-54	VCT Vent	NO	CVC-51 OR CVC-52	CVC-50
WG-310	DDT Vent	NO	WG-311	WG-309
MD(R)-323B	DDT Isolation	NO	NONE	MD(R)-322A AND MD(R)-322B
BT-2A	S/G 1A BD	YES	BT-3A	BT-1000A
BT-2B	S/G 1B BD	YES	BT-3B	BT-1000B
BT-31A	S/G 1A Sample	YES	BT-32A	BT-33A AND BT-33A-1
BT-31B	S/G 1B Sample	YES	BT-32B	BT-33B AND BT-33B-1
CVC-211	Seal Water Leakoff	YES	CVC-212	NONE
BT-3A	S/G 1A BD	NO	BT-2A	BT-1000A
BT-3B	S/G 1B BD	NO	BT-2B	BT-1000B
BT-32A	S/G 1A Sample	NO	BT-31A	BT-33A AND BT-33A-1
BT-32B	S/G 1B Sample	NO	BT-31B	BT-33B AND BT-33B-1
NG-107	ACMTR N2 SPLY	NO	NONE	NG-100A AND NG-100B
CVC-212	Seal Water Leakoff	NO	CVC-211	NONE

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
   b. RCS subcooling based on core exit thermocouples - LESS THAN 15°F [37°F]
   c. Operator controlled cooldown - **NOT** IN PROGRESS

2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

3. **RUPTURED SG ISOLATION CRITERIA**
   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
. AFW-10A for SG A	AFW-10B for SG B
. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
   IF CST level decreases to less than 20%, **THEN SWITCH** to alternate AFW supply per OP-KW-AOP-AFW-001, ABNORMAL AUXILIARY FEEDWATER SYSTEM OPERATION.

5. **ADVERSE CONTAINMENT CRITERIA**
   IF any of the following conditions occur, **THEN USE** adverse containment values designated in brackets []:
   . Containment pressure - GREATER THAN 4 PSIG
   OR
   . Containment radiation - GREATER THAN 10^5 R/HR
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

ATTACHMENT B
CONTAINMENT ISOLATION VERIFICATION
(Page 2 of 3)

Component	Name	In CNMT	In-Line Isolation	Manual In-Line Isolation
RC-402	PRZR STM SMPL	YES	RC-403	RC-404
RC-412	PRZR LIQ SMPL	YES	RC-413	RC-414
RC-422	RCS Hotleg B Sample Valve	YES	RC-423	RC-424
RC-403	PRZR STM SMPL	NO	RC-402	RC-404
RC-413	PRZR LIQ SMPL	NO	RC-412	RC-414
RC-423	RCS Hotleg B Sample Valve	NO	RC-422	RC-424
MG(R)-512	PRT Gas ANZR	NO	MG(R)-513	MG(R)-514-2
MG(R)-513	PRT Gas ANZR	NO	MG(R)512	MG(R)-514-2
NG-302	PRT N2 SPLY	NO	NONE	NG-303
MU1010-1	PRT Make-Up	NO	NONE	MU-1010
LOCA 2B	H2 Vent Isol	YES	NONE	NONE
LOCA 201B	H2 RCMBR To CNTMT	YES	SA-7003B	IA-1002B AND SA-7001B
LOCA 100B	H2 RCMBR	NO	LOCA-2B	LOCA-202 AND LOCA-101B
SA7003B	H2 Dilute	NO	NONE	IA-1002B AND SA-7001B
AS-32	R-11/12 Sample Isol	NO	AS-31	AS-31-1
ICS-201	CNTMT Spray Test Line	NO	ICS-202	ICS-200A AND ICS-200B
ICS-202	CNTMT Spray Test Line	NO	ICS-201	ICS-200A AND ICS-200B
VB-10A	Vacuum BKR	NO	NONE	NONE

FOLDOUT PAGE FOR E-0

1. **RXCP TRIP CRITERIA**
   IF all conditions listed below occur, **THEN STOP** both RXCPs and **PLACE** in PULLOUT:
   a. SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
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2. **FAULTED SG ISOLATION CRITERIA**
   IF any SG is faulted (pressure decreasing in an uncontrolled manner or completely depressurized) **AND** remaining SG is intact, **THEN** the following may be performed:
   a. **ISOLATE** all feed flow to faulted SG by closing the following AFW control valves:

. AFW-2A for SG A	AFW-2B for SG B
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. AFW-201B for SG A	AFW-201A for SG B

   b. **MAINTAIN** total feed flow greater than 210 gpm until narrow range level in at least one SG is greater than 5% [13%].

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   IF any SG is ruptured (level rising in an uncontrolled manner or abnormal radiation) **AND** affected SG narrow range level is greater than 5% [13%], **THEN ISOLATE** feed flow to the ruptured SG(s) by closing the following AFW control valves:.

. AFW-2A for SG A	AFW-2B for SG B
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. AFW-201B for SG A	AFW-201A for SG B

4. **AFW SUPPLY SWITCHOVER CRITERIA**
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   OR
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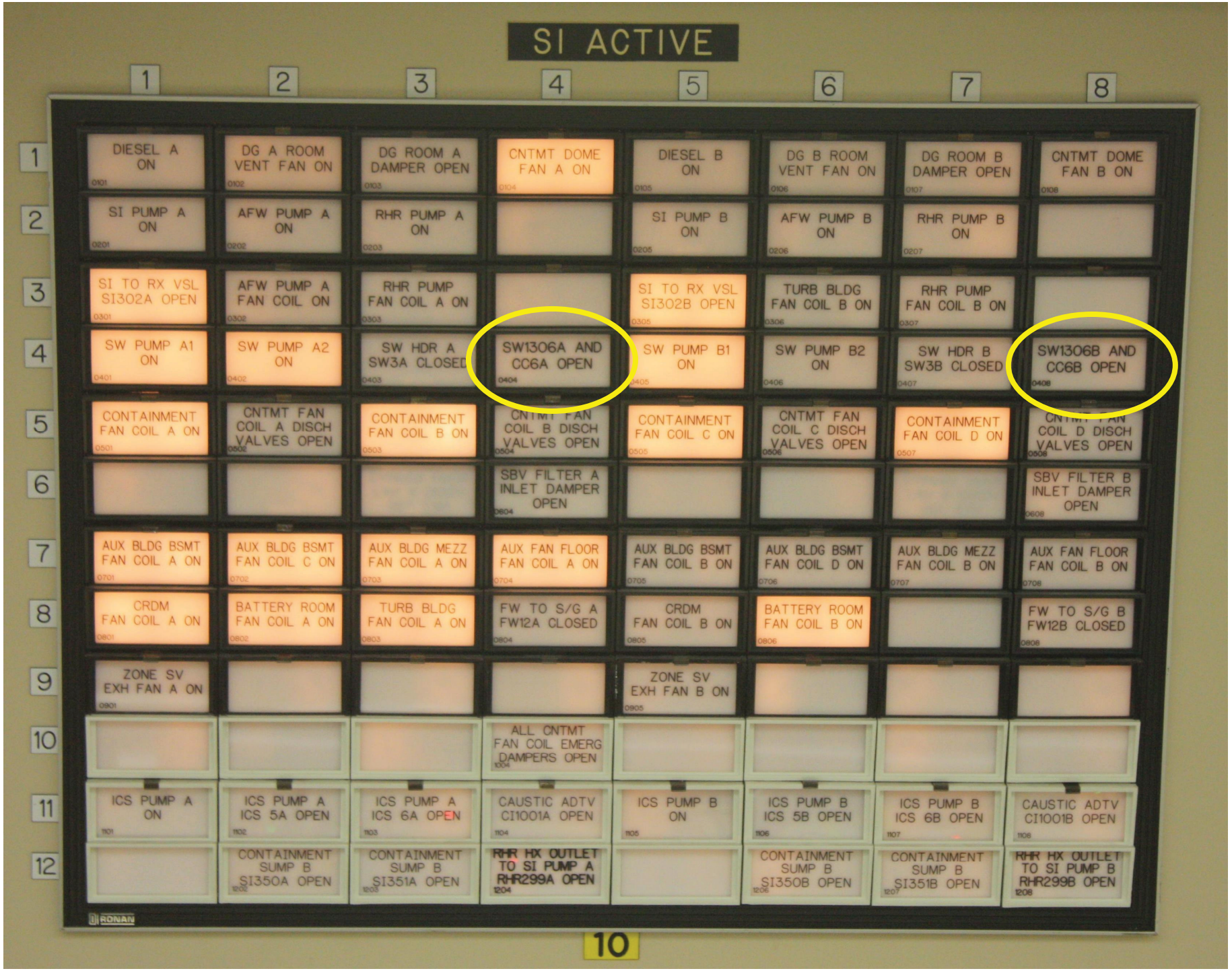
   OR
   . Containment radiation integrated dose - GREATER THAN 10^6 R

ATTACHMENT B
CONTAINMENT ISOLATION VERIFICATION
(Page 3 of 3)

Component	Name	In CNMT	In-Line Isolation	Manual In-Line Isolation
VB-10B	Vacuum BKR	NO	NONE	NONE
RBV-2	Containment Purge	YES	RBV-1 OR TAV-12	NONE
RBV-3	Containment Vent	YES	RBV-4 OR RBV-5	NONE
MG(R)-503	RCDT Gas ANZR	NO	MG(R)-504	MG(R)-505-2
MG(R)-509	RCDT Vent	NO	MG(R)-510	NONE
RC-507	RCDT Pumps	NO	RC-508	NONE
MD(R)-134	Containment Sump Pump	NO	MG(R)-135	NONE
AS-1	R11/12 Sample Isol	NO	AS-2	AS-4
RBV-1	Containment Purge	NO	RBV-2 OR TAV-12	NONE
RBV-4	Containment Vent	NO	RBV-3 OR RBV-5	NONE
MG(R)-504	RCDT Gas ANZR	NO	MG(R)-503	MG(R)-505-2
MG(R)-510	RCDT Vent	NO	MG(R)-509	NONE
RC-508	RCDT Pumps	NO	RC-507	NONE
MD(R)-135	Containment Sump Pump	NO	MG(R)-134	NONE
AS-2	R11/12 Sample Isol	NO	AS-1	AS-4
TAV-12	Containment Purge	NO	RBV-1 OR RBV-2	NONE
RBV-5	Containment Vent	NO	RBV-3 OR RBV-4	NONE


SI ACTIVE
1 2 3 4 5 6 7 8
DIESEL A ON 0101
DG A ROOM VENT FAN ON 0102
DG ROOM A DAMPER OPEN 0103
CNTMT DOME FAN A ON 0104
DIESEL B ON 0105
DG B ROOM VENT FAN ON 0106
DG ROOM B DAMPER OPEN 0107
CNTMT DOME FAN B ON 0108
SI PUMP A ON 0201
AFW PUMP A ON 0202
RHR PUMP A ON 0203
SI PUMP B ON 0205
AFW PUMP B ON 0206
RHR PUMP B ON 0207
SI TO RX VSL SI302A OPEN 0301
AFW PUMP A FAN COIL ON 0302
RHR PUMP FAN COIL A ON 0303
SI TO RX VSL SI302B OPEN 0305
TURB BLDG FAN COIL B ON 0306
RHR PUMP FAN COIL B ON 0307
SW PUMP A1 ON 0401
SW PUMP A2 ON 0402
SW HDR A SW3A CLOSED 0403
SW1306A AND CC6A OPEN 0404
SW PUMP B1 ON 0405
SW PUMP B2 ON 0406
SW HDR B SW3B CLOSED 0407
SW1306B AND CC6B OPEN 0408
CONTAINMENT FAN COIL A ON 0501
CNTMT FAN COIL A DISCH VALVES OPEN 0502
CONTAINMENT FAN COIL B ON 0503
CNTMT FAN COIL B DISCH VALVES OPEN 0504
CONTAINMENT FAN COIL C ON 0505
CNTMT FAN COIL C DISCH VALVES OPEN 0506
CONTAINMENT FAN COIL D ON 0507
CNTMT FAN COIL D DISCH VALVES OPEN 0508
SBV FILTER A INLET DAMPER OPEN 0604
SBV FILTER B INLET DAMPER OPEN 0608
AUX BLDG BSMT FAN COIL A ON 0701
AUX BLDG BSMT FAN COIL C ON 0702
AUX BLDG MEZZ FAN COIL A ON 0703
AUX FAN FLOOR FAN COIL A ON 0704
AUX BLDG BSMT FAN COIL B ON 0705
AUX BLDG BSMT FAN COIL D ON 0706
AUX BLDG MEZZ FAN COIL B ON 0707
AUX FAN FLOOR FAN COIL B ON 0708
CRDM FAN COIL A ON 0801
BATTERY ROOM FAN COIL A ON 0802
TURB BLDG FAN COIL A ON 0803
FW TO S/G A FW12A CLOSED 0804
CRDM FAN COIL B ON 0805
BATTERY ROOM FAN COIL B ON 0806
FW TO S/G B FW12B CLOSED 0808
ZONE SV EXH FAN A ON 0901
ZONE SV EXH FAN B ON 0905
ALL CNTMT FAN COIL EMERG DAMPERS OPEN 1004
ICS PUMP A ON 1101
ICS PUMP A ICS 5A OPEN 1102
ICS PUMP A ICS 6A OPEN 1103
CAUSTIC ADTV CI1001A OPEN 1104
ICS PUMP B ON 1105
ICS PUMP B ICS 5B OPEN 1106
ICS PUMP B ICS 6B OPEN 1107
CAUSTIC ADTV CI1001B OPEN 1108
CONTAINMENT SUMP B SI350A OPEN 1202
CONTAINMENT SUMP B SI351A OPEN 1203
RHR HX OUTLET TO SI PUMP A RHR299A OPEN 1204
CONTAINMENT SUMP B SI350B OPEN 1206
CONTAINMENT SUMP B SI351B OPEN 1207
RHR HX OUTLET TO SI PUMP B RHR299B OPEN 1208
RONAN
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