

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

EMERGENCY INSTRUCTION S01-1.2-1.1

LOSS OF REACTOR COOLANT

I. PURPOSE:

The purpose of this instruction is to establish and verify short term core cooling to prevent or minimize damage to the fuel cladding and release of excessive radioactivity during a LOSS OF REACTOR COOLANT. Additionally this instruction directs the implementation of procedures to insure long term shutdown and cooling of the reactor.

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NOTE: Foldout page should be open.

CAUTION
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If core exit TCs exceed 1200 °F or RCS hot leg temperatures exceed 700 °F then go to S01-1.2-14, RESPONSE TO INADEQUATE CORE COOLING.

1. Check RWST Level:

a. RWST level - SLOWLY DECREASING.

a. IF RAPIDLY decreasing, AND approaching 21% level, THEN go to step 8.

CAUTION
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RWST level should be monitored until SI is terminated.

2. Check Containment Conditions:

a. Containment sump level - INCREASING.

OR

b. Containment radiation on ARMS 1232 - INCREASING.

a. IF neither condition is increasing, THEN rediagnose event, go to S01-1.2-1.0, REACTOR TRIP OR SAFETY INJECTION, step 29.

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CAUTION

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AFW pump water supply must be maintained to ensure adequate heat sink.

3

Check CST Level:

a. CST level - GREATER THAN 4 FT.

a. IF CST level low, THEN transfer to alternate AFW water supply per S01-7-3, AUXILIARY FEEDWATER SYSTEM.

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4	<u>Check Steam Generator Levels:</u>	
	a. Narrow range level - GREATER THAN 26%.	a. <u>IF</u> less than 26%, <u>THEN</u> maintain:
		1) Total AFW flow - GREATER THAN 250 GPM.
		2) AFW flow per SG - LESS THAN 150 GPM
	b. Throttle AFW flow to maintain narrow range level at 50%.	b. <u>IF</u> narrow range level in one SG continues to increase, <u>THEN</u> :
		1) Secure AFW to that SG.
		2) Request activity sample of that SG. <u>IF</u> high activity present, <u>THEN</u> go to S01-1.2-1.3, STEAM GENERATOR TUBE RUPTURE.
		3) For a RAPID level increase in one SG, go to S01-1.2-1.3, STEAM GENERATOR TUBE RUPTURE.

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Check Pressurizer PORVs And
Block Valves:

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|-------------------------------------|---|
| a. Power available to block valves. | a. Restore power to block valves. |
| b. PORVs - CLOSED. | b. IF RCS pressure less than 2100 PSIG, THEN manually close PORVs. IF any PORV cannot be closed, THEN manually close its block valve. |
| c. Block valves - OPEN. | c. Open block valve unless it was closed to isolate a faulty PORV. |

CAUTION

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If any pressurizer PORV opens because of high RCS pressure, repeat step 5 after pressure drops below PORV setpoint.

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Check If SI Can Be Terminated:

- | | |
|--|---|
| a. RCS pressure - GREATER THAN 1400 PSIG <u>AND</u> INCREASING. | a. DO NOT TERMINATE SI, go to step 8. |
| b. Pressurizer level - GREATER THAN 50%. | b. IF level is NOT increasing, THEN DO NOT TERMINATE SI, go to step 8. IF level is increasing, THEN continue monitoring of step 6 until level conditions are met. |
| c. RCS subcooling - GREATER THAN 400F. | c. DO NOT TERMINATE SI, go to step 8. |
| d. Secondary heat sink:

Total flow to SGs with established AFW flow - GREATER THAN 250 GPM. | d. IF neither condition <u>IS</u> satisfied, THEN DO NOT TERMINATE SI, go to step 8. |

OR

Narrow range level in at least one SG with established AFW flow - GREATER THAN 10%.

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7	<u>Terminate SI:</u> a. Go to S01-1.2-1.11, SI TERMINATION FOLLOWING LOSS OF REACTOR COOLANT.	
8	<u>Compare RCS And Steam Header Pressure:</u> a. RCS pressure - GREATER THAN OR EQUAL TO STEAM HEADER PRESSURE.	a. IF RCS pressure less than steam header pressure, <u>THEN</u> go to step 10.
9	<u>Decrease Steam Header Pressure To 785 PSIG:</u> a. Place steam dump mode selector switch to - PRESSURE CONTROL, CONDENSER. b. Maintain an RCS cooldown rate of LESS THAN 500F/HR while adjusting steam dump pressure controller setpoint to 785 PSIG.	a. If steam dump to condenser NOT available, place steam dump mode selector switch to - PRESSURE CONTROL, ATMOS.
10	<u>Perform Post LOCA Cooldown And Depressurization:</u> a. Implement S01-1.2-1.12, POST LOCA COOLDOWN AND DEPRESSURIZATION.	

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Align SI System For Cold Leg
Recirculation:

a. RWST level - LESS THAN 12%.

ORContainment water level
- GREATER THAN OR EQUAL
TO GRADE MINUS 3 FT.b. Align SI system for cold leg
recirculation per S01-1.2-1.13,
TRANSFER TO COLD LEG
INJECTION AND RECIRCULATION,
AND continue with this
procedure.a. Until RWST reaches
12% OR containment
water level rises to
grade minus 3 FT.,
evaluate plant status
per steps 12 through
15.

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12	<u>Check Containment Spray System:</u>	
	a. Refueling water pump breakers - CLOSED.	a. IF pumps NOT running, <u>AND</u> containment pressure less than 1.4 psig, <u>THEN</u> go to step 13.
	b. Containment pressure - LESS THAN 1.4 PSIG.	b. IF pressure high, <u>THEN</u> maintain containment spray until contain- ment pressure is less than 1.4 psig.
	c. Stop containment spray and place in standby:	
	1) Reset CSAS Trains A <u>AND</u> B.	
	2) Stop both hydrazine additive pumps.	
	3) Close spray additive pump discharge valves SV 600 <u>AND</u> SV 601.	
	4) Close spray valves CV 82 <u>AND</u> CV 114.	
	5) Stop both refueling water pumps.	
13	<u>Check Reactor Auxiliary Building Radiation:</u>	
	a. Radiation level on ARMS 1234 - LESS THAN ALARM SET POINT.	a. Try to identify and isolate source of high radiation.

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- 14 Initiate Post Accident Sampling:
- a. Direct Chemistry Department to obtain appropriate post accident samples.
- 15 Determine And Evaluate Plant Systems Status:
- a. Inservice safety systems.
 - b. Standby safety systems.
 - c. Balance of plant systems as appropriate.
 - b. Evaluate long term plant status.
 - o IF any unsatisfactory plant condition is identified, THEN notify Emergency Coordinator.
- 16 Subsequent Action Determination:
- a. Emergency Coordinator should determine if the reactor vessel head should be vented per S01-4-33, REACTOR COOLANT VENT SYSTEM.
- 17 Align SI For Hot Leg Recirculation:
- a. At 19 hours after event initiation, align SI system for hot leg recirculation per S01-1.2-1.14, TRANSFER TO HOT LEG RECIRCULATION.

-END-

H. E. MORGAN
MANAGER, STATION OPERATIONS

MOTOR DRIVEN AFW PUMP RESTART CRITERIA

- a. IF a motor driven AFW pump trips on low discharge pressure, THEN:
- 1) Lower AFW flow controllers.
 - 2) Reset AND restart pump.

SI TERMINATION CRITERIA FOLLOWING LOSS OF REACTOR COOLANT

- a. Terminate SI when ALL parameters listed below are met:
- 1) RCS Pressure - GREATER THAN 1400 PSIG.
 - 2) RCS Subcooling - 40 °F.
 - 3) Pressurizer Level - GREATER THAN 50%.
 - 4) Heat Sink:
 - (a) SG Level - 10% N. R.
 - (b) AFW Flow OR - 250 GPM.

SI REINITIATION CRITERIA FOLLOWING LOSS OF REACTOR COOLANT

- a. Reinitiate SI if ANY ONE of the parameters listed below occurs:
- 1) RCS Pressure LESS THAN 1400 PSIG.
 - 2) RCS Subcooling LESS THAN 40 °F.
 - 3) Pressurizer Level LESS THAN 20%.

COLD LEG RECIRCULATION SWITCHOVER CRITERIA

- a. IF RWST level less than 21%, THEN align SI system for cold leg injection and recirculation per S01-1.2-1.13, TRANSFER TO COLD LEG INJECTION AND RECIRCULATION.

SYMPTOMS FOR RESPONSE TO INADEQUATE CORE COOLING

- a. Go to S01-1.2-14, RESPONSE TO INADEQUATE CORE COOLING, when ANY ONE of the following symptoms occur:
- 1) Five or more core exit TCs - GREATER THAN 1200 °F.
 - OR
 - 2) RCS hot leg temperatures - GREATER THAN 700 °F.

SYMPTOMS FOR RESPONSE TO LOSS OF SECONDARY HEAT SINK

- a. Go to S01-1.2-15, RESPONSE TO LOSS OF SECONDARY HEAT SINK, IF AFW Flow is NOT AVAILABLE.

IF EVENTS REQUIRE IMPLEMENTATION OF THIS PROCEDURE

- a. Notify Watch Engineer.
- b. Notify Shift Technical Advisor.
- c. Notify Shift Communicator.
- d. Determine if event is classified as an emergency and requires notification of offsite agencies and implementation of the Emergency Plan per S0123-VIII-11, RECOGNITION AND CLASSIFICATION OF EMERGENCIES.
- e. IF event is NOT classified as an emergency in d above THEN determine if notification of the NRC is required within one hour per S01-14-13, NOTIFICATION TO NRC OF SIGNIFICANT EVENTS.