MILLSTONE POWER STATION

NRC SIMULATOR EXAM GUIDE APPROVAL SHEET

Exam Title: ATWS with Faulted S/G

Revision: 0

ID Number: 2K2 NRC-001

Submitted by:	Steve Jackson Developer	2/13/02 Date
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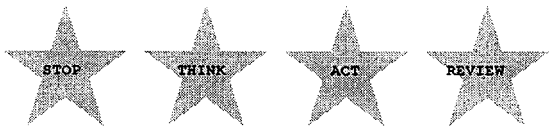
Approved by:	Training Supervisor	6/19/02 Date

SECTION 2

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER



SECTION 3

EXAM OVERVIEW

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Exam Brief:

1. The plant is at 50% power, EOL steady state operations with all control systems in automatic. The "A" PORV is out of service due to an electrical short in the control circuitry. The crew is directed to hold power at 50% and to Pump the Containment Drains Transfer Tank in accordance with OP 3335A, Reactor Plant Gaseous Drains, section 4.4.

   After the CDTT has been pumped a partial Loss of RCP B Cooling Water Supply will occur. The following alarms will actuate as their setpoints are reached: RCP B THERMAL BARRIER FLOW LOW (MB4B, 3-4A), RCP B COOLER SPLY PRES LOW (MB4B, 3-4B). The crew will primarily use MB4B, 3-4B to respond to this condition. Thrust bearing temperatures will remain <195° so a rapid downpower and reactor trip will not be implemented.

   After the partial Loss of RCP B Cooling Water has been addressed, a Loss of Instrument Bus VIAC-3 will occur. The crew will respond using AOP 3564, Loss of One Protective System Channel. Once the US has referred to Tech Specs (step 6), the next event will occur.

   The A Main Feed Regulating valve will fail closed over 1 minute. The BOP operator should attempt to take manual control of the valve but that will be ineffective. Once the crew realizes that S/G lo-lo is inevitable they should decide to trip the reactor in anticipation.

   The reactor trip will not occur automatically, MB4 nor MB7 trip switches will work, and 32N will not be able to be de-energized. The crew will enter FR-S.1, Response to Nuclear Power Generation/ATWS. When attempting to align a boration flowpath the normal charging flow control valve will not open requiring the use of the safety grade boration. At step 6 the PEO will successfully open the reactor breakers locally. When E-0 steps 1-14 are checked, the RO will discover that the SIH (HPSI) components did not actuate and will have to be manually started or aligned **[Critical Task]**. During the initial ATWS transient a Main Steam Line D Rupture Inside CTMT occurs. MSI Fails to Auto Actuate and will have to be manually actuated by the crew at least by step 13 of FR-S.1 path **[Critical Task]**.

   The crew will proceed through FR-S.1 to completion and then transition to E-0 step 15 (SI verification done within FR-S.1) and then to E-2, Faulted Steam Generator Isolation, at E-0 **[Critical Task]**, step 24. Conditions may require performing FR-Z.1.

   The scenario will end when the crew decides to make the transition to E-1.

2. The SM should classify this event as a **Site Area Emergency- Charlie Two** due to FR-S.1 being entered directly from E-0 (ES1).

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 60 minutes

Initial Dynamic Simulator Scenario

NUREG-1021, Appendix D, Attachment 1

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

I. Summary:

Facility: Millstone 3 PWR:_____ Scenario No: 2K2NRC-001 Op-Test No: 2K2

Examiners:_____ Operators:_____

Initial Conditions: IC-22; 50% power, end of life

The "A" PORV is out of service due to an electrical short in the control circuitry

Event No:	Malf. No.	Event Type *	Event Description
1		N(US)	Pump the Containment Drains Transfer Tank
2	CC03B	C(RO)	Partial Loss of RCP B Cooling water Supply
3	ED08C	C(ALL)	Loss of Instrument Bus VIAC-3
4	FW08A	I(BOP)	A S/G Feed Reg Valve Failure
5	I/Os 32N RP09A/B RP10A/B	M(ALL)	ATWS; 32N Fails to De-energize
6	CV18	C(RO)	Charging Flow Control Failure
7	RP11E	C(RO)	SIH Fails to Align on SIS
8	MS01D	M(ALL)	Main Steam Line D Rupture Inside CTMT
9	RP08	I(US/ BOP)	MSI Fails to Auto Actuate

*(N) ormal (R) eactivity (I) nstrument (C) omponent (M) ajor

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Exam Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Assessor: Steve Jackson

QUALITATIVE ATTRIBUTES

___Y__1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__2. The scenario consists mostly of related events.

___Y__3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point (if applicable)

___Y__4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__5. The events are valid with regard to physics and thermodynamics.

___Y__6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

_N/A__7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__8. The simulator modeling is not altered.

___Y__9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__10. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__11. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__12. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__13. Level of difficulty is appropriate to support licensing decisions for each crew position.

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ID Number: 2K2 NRC-001 Revision: 0

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required Total: 7
Loss of RCP B Cooling water Supply, Charging Flow Control Failure, MSI Fails to Auto Actuate, Main Steam Line D Rupture Inside CTMT, Loss of Instrument Bus VIAC-3, A S/G Feed Reg Valve Failure, SIH Fails to Align on SIS

02. Malf's after EOP entry (EM's)- 1 to 2 required Total: 2
SIH Fails to Align on SIS, MSI Fails to Auto Actuate,

03. Abnormal Events (AE)-2 to 4 required Total: 3
Loss of RCP B Cooling water Supply, Loss of Instrument Bus VIAC-3, A S/G Feed Reg Valve Failure

04. Major Transients (MT)-1 to 2 required Total: 2
ATWS/32N Fails to De-energize, Main Steam Line D Rupture Inside CTMT

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required Total: 2
E-0, E-2

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required Total: 2
FR-S.1, FR-Z.1

07. Critical Task (CT) - 2 to 3 required Total: 3

E-0—J:	*Establish flow from at least one SI pump before completion of the check of E-0, steps 1-14 in FR-S.1.*
E-0—P:	*Manually actuate MSI or close MSIV's before completion of FR-S.1 step 10.*
E-2—A:	*Isolate the faulted S/G before transition out of E-2*

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) Total: 70 min

09. EOP run time: Total: 40 min

10. Technical Specifications are exercised during the scenario. (Y/N)__Y__

NOTES: Reactivity Manipulation: None

SECTION 4

EVALUATION GUIDE

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

All Control Room Conduct, Operations and Communications shall be in accordance with MP-14-MMM.

"Review the Simulator Operating Limits(design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

SIMULATOR PROBLEMS DURING EXAMS

It is the responsibility of the Instructors in the simulator to insure that exam interruptions have a minimum negative impact on the Crew and the examinations we provide.

Be aware that at all times the Operators should treat the simulator as if it were the plant and you too should treat it as much like the plant as possible when they are in the simulator.

As soon as the Instructors are aware of a simulator problem that will adversely affect the exam in progress (computer fault, etc.) the Instructor should:

1. Place the simulator in FREEZE if possible.

2. Announce to the Crew that there is a simulator problem.

3. Request that the Crew leave the simulator control room. (The Crew should leave the simulator for problems which involve major switch alignments).

4. Deal with the problem (reboot, call STSB, etc.)

5. After the Instructors believe the simulator is restored to service, the Crew should be told how the exam will continue. If it is possible and felt to be acceptable to the evaluators, the examination can begin where it left off with an update on plant parameters and each Crew member is prepared to restart. If the examination will not begin where it left off, the crew should be told how and where the exam will begin again.

6. Once the Crew has been told how and where the exam will begin, have the crew conduct a brief so that the Instructor and evaluators can insure that the crew has all the necessary information to continue with the scenario.

7. Once all Crew members, Instructors and evaluators are satisfied that they have the necessary information to continue the scenario, place the simulator in RUN and announce to the Crew that you have continued the evaluation session.

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

Simulator Setup Instructions:

1. HANG Exam Placards on the simulator doors.
2. START the Sun Workstation.
   a. IF the Sun Workstation is running THEN go to SIM ACTIVE.
3. PLACE Recorder Power to ON.
4. VERIFY that the current approved training load is loaded.
5. REMOVE the step counter OVERRIDE and allow the counters to step out during the IC reset.
6. RESET to **IC 89: TEMP IC 2K2NRC-LOUT-002 (based on IC 22)**
7. ADJUST the various pot settings to the valued specified by the chart in the simulator booth or Notepad for the selected IC.
8. PLACE Simulator to RUN.
9. RESET the Plant Calorimetric at the Instructor Station PPC by Pressing "SHIFT LEFT" and "F6" simultaneously.
10. ENSURE Simulator fidelity items cleared.
    a. CHECK the STEP COUNTERS at correct position for plant conditions.
    b. PLACE **5** tiles under the DEMINS IN SERVICE lamacord label on MB6.
    c. PLACE the Main Turbine on the LOAD LIMITER and ENSURE Standby Load Set MATCHED if conditions require.
    d. PLACE the Westronic (5) and Gammametrics (2) recorders in active/run by depressing up or down arrow for each.
    e. CLEAR **DCS** alarms on MB7 and BOP console.
    f. VERIFY annunciator, "COMPUTER FAILURE" (MB4C, 1-11), is NOT LIT.

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

g. ENSURE NSSS Picture 1, MODES 1, 2, 3, 4; Burnup and Cb match lesson plan AND Cb sample date < 3 days old.

1. See laminated directions on clipboard in Sim booth.

2. RESET Computer Terminals to At Power displays if 100% power IC.

a. MB2, (AY6), CVCS Data Trend, 1 minute update, CHS-F132 (40-120), CHS-L112 (40-80), CHS-F121 (40-80), RCS-L461 (40-80)

b. MB4, (AY1), At Power Data Trend, 15 second update, CVQRPI, (3391-3428), CVQRPHRUN (3409-3413), CVQRP (3409-3413), RCL-T412*, (585-588)

c. MB4, (AY4), NSSS Picture 1, MODES 1, 2, 3, 4

d. BOP Console (AY5A), BOP Picture 26, Circ Water

e. STA Console, (AY3), NSSS Picture 15, RCP Seals

13. RESET Rad Monitor Screen to Status Grid.

14. OVERRIDE the annunciators that will be lit longterm in the CR, (as listed in the "Lit CRP Annunciators" section of the MP3 daily Status Report hanging near instructor booth door).

15. IF placing equipment OOS, THEN perform the necessary switch manipulations and hang appropriate tags, as required, listed under "Equipment OOS."

16. LOCK the Simulator Room front door.

17. **HANG** a Caution Tag on 3RCS*MV8000A stating, "Caution Tag 3RCS*MV8000A Closed and de-energized IAW Tech Spec 3.4.4, action b"

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

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PLACE THE FOLLOWING EQUIPMENT OOS: STANDARD 2K2NRC EXAM EQUIPMENT

Ensure CDTT Level Raised (~1000 gallons) to allow pumping during NORMAL Evolution

Initial Malfunctions

I/O	(RC)	3RCS*PCV455A	A PORV	OPEN - OFF		
I/O	(RC)	3RCS*PCV455A	A PORV	GREEN - OFF		
I/O	(RC)	3RCS*PCV455A	A PORV	RED - OFF		
I/O	(RC)	3RCS*MV8000A	A PORV Block Valve	GREEN - FALSE		
I/O	(RC)	3RCS*MV8000A	A PORV Block Valve	RED - FALSE		
I/O	(ED)	1-3NJSACB-BF		TRIP - OFF	32N Fails to Trip	
I/O	(ED)	1-3NNSACB-BF		TRIP - OFF	32N High Side Fails to Trip	
MALF		RP09A	Reactor Fails to Manually Trip from MB4			
MALF		RP09B	Reactor Fails to Manually Trip from MB7			
MALF		RP10A	'A' Train Reactor Fails to Auto Trip			
MALF		RP10B	'B' Train Reactor Fails to Auto Trip			
MALF		RP11E	Auto Actuation Failure: HPSI			
MALF		CV18	Charging Flow Control Failure	0%		BT13
MALF		RP08A	MSI Train A Fails to Auto Actuate			
MALF		RP08B	MSI Train B Fails to Auto Actuate			
MALF		MS01D	Main Steam Line D Rupture Inside CTMT	20%	60 second ramp	BT1

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

Event Malfunctions

MALF	CC03B	Loss of RCP B Cooling water Supply	40%	ramp 30 seconds	**RSCU 1**
MALF	ED08C	Loss of Instrument Bus VIAC-3			**RSCU 2**
MALF	FW08A	A S/G FRV Failure	0%	ramp 60 seconds	**RSCU 3**

Lead Examiner: **Refer to the "Briefing Script for the Operational Exam" and brief the crew.**

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T+1		**EVENT 1:** Pump the Containment Drains Transfer Tank **OP3335A** Reactor Plant Gaseous Drains, Rev. 7 **[Normal Evolution]**			
	WDR01	When directed as PEO use Remote to open 3DGS-V949. Delay 3 minutes before reporting back.	RO	IF CDTT is being pumped to the boron recovery tanks, UNLOCK and OPEN 3DGS-V949, gaseous drains to boron recovery isolation.	OP 3335A Step 4.4.1
			RO	OPEN the following: • 3GSN*CTV105, "N2 TO PRT" • 3GSN*CV8033, "N2 TO PRT"	OP 3335A Step 4.4.2
			RO	IF CDTT is being pumped to the radioactive gaseous waste degasifier, PEFORM the following: a. SELECT "DRAINS DEGAS" on the degasifier function selector switch (MB3). b. Go To step 4.4.4.	OP 3335A Step 4.4.3

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	START one containment drains transfer pump (MB1) • 3DGS-P1A, "CTMT DRAINS PPS""A" • 3DGS-P1B, "CTMT DRAINS PPS""B"	OP 3335A Step 4.4.4
			RO	IF the low pressure N2 regulator is bypassed, CYCLE one of the following as necessary to maintain pressure between 16 and 21 psia, as read on DGS-PI29 (MB1). • 3GSN*CTV105, "N2 TO PRT" • 3GSN*CV8033, "N2 TO PRT"	OP 3335A Step 4.4.5
			RO	WHEN CDTT level is less than 300 gallons, STOP the containment drains transfer pump (MB1) • 3DGS-P1A, "CTMT DRAINS PPS""A" • 3DGS-P1B, "CTMT DRAINS PPS""B"	OP 3335A Step 4.4.6

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	IF CDTT was being pumped to the radioactive waste degasifier, SELECT "LETDOWN DEGAS" on the degasifier function selector switch (MB3).	OP 3335A Step 4.4.7
			RO	CLOSE 3GSN*CTV105 and 3GSN*CV8033, "N2 TO PRT".	OP 3335A Step 4.4.8
			RO	IF CDTT was being pumped to the boron recovery tanks, CLOSE and LOCK 3DGS-V949, gaseous drains to boron recovery isolation.	OP 3335A Step 4.4.9
T= normal evolution complete	**MALF** CC03B 40% ramp 30 seconds	**EVENT 2:** Partial Loss of RCP B Cooling Water Supply **NOTE**: Modify MALF to about 55% after annunciator received and as necessary to maintain RCP bearing temperatures less than 195° F.			
		ARP OP3353.MB4B, 3-4B Rev. 004 RCP B COOLER SUPPLY PRES LO	US	IF a loss of RPCCW has occured, Go To AOP 3561, "Loss of Reactor Plant Component Cooling Water"	OP3353.MB 4B, 3-4B Step 1

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	CHECK the following parameters (MB1):	OP3353.MB 4B, 3-4B
				• 3CCP-FI15B, RPCCW containment supply flow, 600 to 1000 gpm	Step 2
				• 3CCP*MOV45B, Train B RPCCW supply containment isolation, open	
				• 3CCP*AOV179A, Train A RPCCW header division valve, closed	
				• 3CCP*AOV179B, Train B RPCCW header division valve, closed	
				• 3CCP*AOV180A, Train A RPCCW header division valve, closed	
				• 3CCP*AOV180B, Train B RPCCW header division valve, closed	

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	MONITOR the following RCP B thrust bearing and radial bearing temperature computer points ("RCP Status," NSSS, picture 15) • RCS-T480A, RCP B upper thrust bearing • RCS-T484A, RCP B upper radial bearing • RCS-T480B, RCP B lower thrust bearing • RCS-T484B, RCP B lower radial bearing	OP3353.MB 4B, 3-4B Step 3

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T= Step 4	**MODIFY MALF** CC03B to 55% **RSCU 1** Modify, as necessary to keep thrust bearing temps less than 195°F	**NOTE**: To Instructor, for this malfunction, as "valve" increases severity of malfunction decreases.	RO	IF at any time any RCP B thrust bearing or radial bearing temperature computer point is greater than 195°F, PERFORM the following: IF reactor power is greater than P-8 (37%) PERFORM the following: 1. TRIP the reactor 2. STOP RCP B 3. Go To E-0, "Reactor Trip or Safety Injection" Refer to AOP 3554, "RCP Trip or Stopping an RCP at Power", and REMOVE RCP B from service.	OP3353.MB 4B, 3-4B Step 4
				Refer to Technical Specifications, and DETERMINE Limiting Condition for Operation	OP3353.MB 4B, 3-4B Step 5
T= RCP Tech Specs addressed	**MALF** ED08C **RSCU 2**	**EVENT 3:** Loss of Instrument Bus VIAC-3			

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		AOP 3564, Loss of One Protective System Channel, Rev. 8	US	Loss of VIAC-1(2) results in diesel generator sequencer A(B) being de-energized. If an ESF actuation takes place during this condition, the following items will *not* occur automatically.	AOP 3564 Step 1 CAUTION
			RO	**Determine Plant Status**	AOP 3564 Step 1
				Check reactor status - TRIPPED	AOP 3564 Step 1a
				Proceed to Step 2	AOP 3564 Step 1a RNO
			CREW	**Check the Following Control Systems:** • Verify rod control - OPERATING NORMALLY IN AUTO • Verify SG level - OPERATING NORMALLY IN AUTO • Verify PZR level - OPERATING NORMALLY IN AUTO • Verify PZR pressure - OPERATING NORMALLY IN AUTO	AOP 3564 Step 2

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Perform the following:	AOP 3564 Step 2 RNO
				a. Place the affected controller in MANUAL.	
				b. Stabilize plant parameters.	
				c. Defeat the failed channel input.	
				d. Return the affected controller to AUTO.	
			RO	**Verify Normal Letdown - IN SERVICE**	AOP 3564 Step 3
			RO	**Verify Cold Overpressure Protection System - BLOCKED**	AOP 3564 Step 4
				Block the affected Train of Cold Overpressure Protection System	AOP 3564 Step 4 RNO
			RO	**Verify VCT Level (3CHS*LT112) *Using Computer Point 3CHS-L112* - CONTROLLING NORMALLY**	AOP 3564 Step 5
		[Tech Specs]	US	**Refer to the Following Technical Specifications for Applicable Actions:**	AOP 3564 Step 6

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• If in Mode 2 and LESS THAN 10^{-10} IR amps, 3.3.1 Reactor Trip System Instrumentation: Action 4 (FU 6.a) Action 8 (FU 17.a)	
				• 3.3.1 Reactor Trip System Instrumentation Action 8 (FU 17.b)	
		3.3.2 Action 17, the operable channel is placed in the bypass condition		• 3.3.2 ESF Actuation System Instrumentation: Action 16 (FU 7.d) Action 17 (FU 2.c & 3.b.3) Action 18 (FU 7.e) Action 20 (FU 8.a & 8.b)* **entry into T/S 3.0.3 required*	
				• If in Mode 5 or 6, 3.3.2 ESF Actuation System Instrumentation Action 26 (FU 3.c)	
				• If in Modes 4, 5 or 6, 3.4.9.3 Overpressure Protection Systems	
		3.8.3.1.e Action b, re-energize the AC vital bus within 2 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.		• 3.8.3.1 and 3.8.3.2, Onsite Power Distribution	

Lesson Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		NOTE: If PEO and/or Maintenance are dispatched to investigate VIAC they will find it de-energized and Maintenance will find the 150A input fuse blown. Report that they will begin procurement and replacement procedures. (Found on EE-1BA)	RO	**Check All Vital 120 VAC Instrument Buses - ENERGIZED**	AOP 3564 Step 6
T= VIAC Tech Specs addressed	**MALF** FW08A 0% 60 sec ramp **RSCU 3**	**EVENT 4:** Feed Reg Valve Failure **NOTE**: Loss of control at the Feed Station will require an anticipatory reactor trip			
T= AOP 3571, Att. B step 4	**MALF** I/Os 32N RP09A/B RP10A/B	**EVENT 5:** ATWS; 32N Fails to De-energize			
		FR-S.1, Response to Nuclear Power Generation/ATWS, Rev. 16	US	• If RHR is in service, all references to AFW are NOT applicable. • Immediate Boration (step 4, 5 and 6) may be performed in parallel with steps 1*, 2*, or 3, provided that efforts to initiate Immediate Boration do not preclude or delay completion of steps 1*, 2*, or 3.	EOP 35 FR-S.1 Step 1 NOTE

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Verify Reactor Trip**	EOP 35 FR-S.1 Step 1*
				• Check reactor trip and bypass breakers - OPEN • Check rod bottom lights - LIT • Check neutron flux - DECREASING	
			RO	**TRIP the reactor.**	EOP 35 FR-S.1 Step 1* RNO
				IF the reactor will NOT trip, THEN Drive rods in (AUTO or MANUAL).	
			BOP	**Verify Turbine Trip**	EOP 35 FR-S.1 Step 2*
				Check all turbine stop valves - CLOSED	EOP 35 FR-S.1 Step 2.a
			BOP	**Verify AFW Pumps Running**	EOP 35 FR-S.1 Step 3

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• Check MD pumps - RUNNING	
				START pumps	EOP 35 FR-S.1 Step 3 RNO
				• Check TD pump - RUNNING, IF NECESSARY	
				OPEN steam supply valves	EOP 35 FR-S.1 Step 3 RNO
T= @ reactor trip	**MALF** CV18	**EVENT 6:** Charging Flow Control Failure	RO	**Initiate Immediate Boration of RCS**	EOP 35 FR-S.1 Step 4
				Check SI - NOT ACTUATED	EOP 35 FR-S.1 Step 4.a
				Check one charging pump - RUNNING	EOP 35 FR-S.1 Step 4.b
				START one charging pump.	EOP 35 FR-S.1 Step 4.b RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Align boration path: 1) START at least one boric acid transfer pump 2) OPEN emergency boration valve (3CHS*MV8104)	EOP 35 FR-S.1 Step 4.c
				Check normal charging flow path aligned: 1. Charging flow control valve - OPEN OR THROTTLED AND CAPABLE OF BEING THROTTLED 2) Charging header loop isolation valve (3CHS*AV8146 or 3CHS*AV8147) - OPEN 3. Charging header isolation valves - OPEN • 3CHS*MV8106 • 3CHS*MV8105	EOP 35 FR-S.1 Step 4.d

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Position valves as required.	EOP 35 FR-S.1 Step 4.d RNO
		NOTE: Proceed To step 5		IF a controllable normal charging flow path can NOT be established, THEN Proceed to step 5.	
			RO	**Align Safety Grade Boration Path**	EOP 35 FR-S.1 Step 5
				Check busses 34C and 34D - BOTH ENERGIZED	EOP 35 FR-S.1 Step 5.a
				OPEN charging header flow control valve (3CHS*HCV190A)	EOP 35 FR-S.1 Step 5.b
				open CHARGING HEADER BYPASS ISOLATION (3CHS*MV8116)	EOP 35 FR-S.1 Step 5.c
				CLOSE charging flow control outlet isolation (3CHS*MV8106)	EOP 35 FR-S.1 Step 5.d

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T= FR-S.1 step 5 complete	**REMOVE** RP09A/B RP10A/B **INSERT** RP02A/B	**NOTE**: Call back as PEO as report reactor trip breakers open.		Proceed to step 6	EOP 35 FR-S.1 Step 5.e
T= FR-S.1 step 6	**MALF** MS01D, 20%, 60 second ramp	**EVENT 7:** Main Steam Line D Rupture Inside CTMT	RO	**Verify Boration Flow**	EOP 35 FR-S.1 Step 6
T= Initial	**MALF** RP08	**EVENT 8:** MSI Fails to Auto Actuate			
				Check PZR pressure - LESS THAN 2350 psia	EOP 35 FR-S.1 Step 6.a
				Check normal charging flow path - ALIGNED	EOP 35 FR-S.1 Step 6.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Perform the applicable action: • IF SI actuated, THEN Proceed to step 7. • IF a safety grade boration flow path is established, THEN 1. Using GA-14, Establish reactor vessel head vent letdown to the PRT. 2. Proceed to step 7.	EOP 35 FR-S.1 Step 6.b RNO
			US	**Check the Following Has Occurred**	EOP 35 FR-S.1 Step 7
				Verify reactor trip breakers - OPEN	EOP 35 FR-S.1 Step 7.a
				Verify turbine trip	EOP 35 FR-S.1 Step 7.b
			RO	**Check If SI Is Actuated**	EOP 35 FR-S.1 Step 8
				Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) - LIT	EOP 35 FR-S.1 Step 8.a.

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		[Critical Task] Establish flow from at least one SI pump before completion of the check of E-0, steps 1-14 in FR-S.1. Manually actuate MSI or close MSIV's before completion of FR-S.1 step 13. **NOTE**: Crew should notice MSI is required and actuate when reviewing Step 10 of **E-0**.		Verify steps 1-14 of E-0, Reactor Trip and Safety Injection	EOP 35 FR-S.1 Step 8.b.
			BOP	**Check AFW Suction Source**	EOP 35 FR-S.1 Step 9
				Check DWST level - LESS THAN 80,000 gal	EOP 35 FR-S.1 Step 9.a
				Proceed to step 10 and, IF DWST level decreases to LESS THAN 80,000 gal, THEN Perform step 9.b	EOP 35 FR-S.1 Step 9.a, RNO
			BOP	**Check SG Levels**	EOP 35 FR-S.1 Step 10

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Verify NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT)	EOP 35 FR-S.1 Step 10.a
				Perform the following: 1. Verify total feed flow is GREATER THAN 1150 gpm IF the flow is LESS THAN 1150 gpm THEN START pumps and Align valves as necessary. 2. Maintain total feed flow GREATER THAN 1150 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG.	EOP 35 FR-S.1 Step 10.a RNO
				Control feed flow to maintain NR level between 8% and 50% (42% and 50% ADVERSE CTMT)	EOP 35 FR-S.1 Step 10.b
				High Radiation Area Key and Locked Valve Key are required for performance of some local actions in the following step.	EOP 35 FR-S.1 Step 11 NOTE

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO/US/ PEO	**Verify All Dilution Paths Isolated**	EOP 35 FR-S.1 Step 11
		NOTE: As US request wait 3 minutes and report chemical mix tank outlet isolation valve (3CHS*V317) - CLOSED and manual dilution valve (3CHS*V305) - CLOSED		• Check primary makeup water to blender (3CHS*FCV111A) - CLOSED • Locally check chemical mix tank outlet isolation valve (3CHS*V317) - CLOSED • Locally check manual dilution valve (3CHS*V305) - CLOSED • Check BTRS - OFF AND BYPASSED	
			CREW	**Check for Reactivity Insertion From Uncontrolled RCS Cooldown.** • RCS temperature - DECREASING IN AN UNCONTROLLED MANNER OR • Any SG pressure - DECREASING IN AN UNCONTROLLED MANNER	EOP 35 FR-S.1 Step 12

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		[Critical Task] Manually actuate MSI or close MSIV's before completion of FR-S.1 step 13.	BOP	**Check MSIVs and MSIV Bypass Valves - CLOSED**	EOP 35 FR-S.1 Step 13
				CLOSE valves.	EOP 35 FR-S.1 Step 13 RNO
			BOP	**Identify Faulted SGs**	EOP 35 FR-S.1 Step 14
				Check pressures in all SGs:	EOP 35 FR-S.1 Step 14.a
				• ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED	
			US	• At least one SG must be maintained available for RCS cooldown.	EOP 35 FR-S.1 Step 15 CAUTION

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• If all SGs are faulted, at least 100 gpm feed flow should be maintained to each SG. • If the TD AFW pump is the only available source for feed flow, a steam supply to the TD AFW pump must be maintained from at least one SG.	
			BOP	**Isolate Each Faulted SG** • Isolate main feedline • Isolate AFW flow • CLOSE steam supply isolation valve to TD AFW pump • Verify SG atmospheric dump valve - CLOSED • Verify SG atmospheric dump bypass valve - CLOSED	EOP 35 FR-S.1 Step 15
			US/RO	**Check Core Exit TCs - LESS THAN 1200°F**	EOP 35 FR-S.1 Step 16

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Verify Reactor Subcritical**	EOP 35 FR-S.1 Step 17
				• Check power range channels - LESS THAN 5% • Check intermediate range channels - NEGATIVE STARTUP RATE	
			US	**Verify No Fuel Damage**	EOP 35 FR-S.1 Step 18
				Request Chemistry obtain RCS samples	EOP 35 FR-S.1 Step 18.a
				Request the ADTS obtain samples using any means possible.	EOP 35 FR-S.1 Step 18.a RNO
				Using MP-26-EPI-FAP06, "Classification and PARs," Evaluate for incident classification	EOP 35 FR-S.1 Step 18.b
			US	**Verify Security Has Checked SLCRS Doors - CLOSED**	EOP 35 FR-S.1 Step 19

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Request status of SLCRS doors from Security.	EOP 35 FR-S.1 Step 19 RNO
			US	Boration shall continue during subsequent actions until adequate shutdown margin is obtained.	EOP 35 FR-S.1 Step 20 CAUTION
			US	**Go to Procedure and Step in Effect and Initiate Monitoring of the CSF Status Trees**	EOP 35 FR-S.1 Step 20
		E-0, Reactor Trip or Safety Injection, Rev. 21			
			RO	**Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature GREATER THAN 180°F OR • Ctmt radiation GREATER THAN 10^5 R/hr	E-0, Step 15
			CREW	DO NOT use ADVERSE CTMT parameters.	E-0, Step 15, RNO

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Verify ECCS Flow**	E-0, Step 16
				Check charging pumps - FLOW INDICATED	E-0, Step 16.a
			RO	START pumps and Align valves.	E-0, Step 16.a, RNO
			RO	Check RCS pressure - GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)	E-0, Step 16.b
			US	Proceed to Step 16.d	E-0, Step 16.b, RNO
		CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.		Proceed to step 17.	E-0, Step 16.c
				Check SI pumps - FLOW INDICATED	E-0, Step 16.d
				START pumps and Align valves.	E-0, Step 16.d RNO
				Check RCS pressure - LESS THAN 300 psia (500 psia ADVERSE CTMT)	E-0, Step 16.e

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Proceed to step 17.	E-0, Step 16.e RNO
				Check RHR pumps - FLOW INDICATED.	E-0, Step 16.f
				START pumps and Align valves.	E-0, Step 16.f RNO
			BOP	**Verify Adequate Heat Sink**	E-0, Step 17
				Check NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT)	E-0, Step 17.a
			US	Proceed to Step 17.d.	E-0, Step 17.a, RNO
			BOP	Control feed flow to maintain NR level - BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)	E-0, Step 17.b
			US	Proceed to Step 18.	E-0, Step 17.c
			BOP	Verify Total AFW Flow - GREATER THAN 530 gpm	E-0, Step 17.d

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	START pumps and Align valves as necessary.	E-0, Step 17.d, RNO
			US	IF AFW Flow GREATER THAN 530 gpm can NOT be established, THEN Initiate monitoring of CSF Status Trees and Go to FR-H.1, Response to Loss of Secondary Heat Sink.	
			BOP	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 18
				Align valves	E-0, Step 18, RNO
			RO	**Verify ECCS Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 19
				Align valves	E-0, Step 19, RNO
			US	**Check Plant Status**	E-0, Step 20
BOOTH INST	NOTE	When asked, REPORT that "all SLCRS doors indicate closed."		Verify SLCRS doors - CLOSED	E-0, Step 20.a

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Request Security Close all SLCRS doors.	E-0, Step 20.a, RNO
			RO	Check CONTROL BUILDING ISOLATION annunciator (MB4D 3-6) - LIT	E-0, Step 20.b
			RO	Check if CBI is required	E-0, Step 20.b, RNO
			RO	• Ctmt pressure GREATER THAN 18 psia OR • Control Building radiation monitor in alarm OR • SI manually actuated	
			RO	IF CBI required, THEN Initiate CBI.	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	IF CBI is NOT required, THEN Proceed to Step 21.	
			RO	Verify ESF Group 2 CBI lights - LIT	E-0, Step 20.c
			RO	Align HVAC components as necessary for minimum safety function.	E-0, Step 20.c, RNO
			BOP	Verify control building purge supply fan and purge exhaust fan - NOT RUNNING	E-0, Step 20.d

			BOP	Perform the following:
				• Stop purge supply fan.
				• Stop purge exhaust fan.
				• Locally Close instrument air isolations
				  • 3IAS-V725 (CB 47' IRR stairwell)
				  • 3IAS-V726 (CB 47' IRR stairwell)
					E-0, Step 20.d, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• 3IAS-V644 (CB 66' west wall) • Locally Close instrument air isolation valve for 3HVC-AOD134	
			BOP	Control building air bank isolation valves - OPEN (after 60 seconds)	E-0, Step 20.e
			BOP	OPEN valves	E-0, Step 20.e, RNO
			BOP	IF at least one air bank isolation valve can NOT be opened, THEN Locally throttle Open at least one pair of air bank isolation bypass valves to maintain 0.125 inches water at Control Building ΔP indicator on VP1. • 3HVC*V750 and 3HVC*V751 • 3HVC*V758 and 3HVC*V759	
			BOP	STOP kitchen exhaust fan	E-0, Step 20.f

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
BOOTH INST	NOTE	When called, WAIT 3 - 5 min, Then REPORT "All Control Building pressure boundary doors are Closed and Dogged."	PEO	Close and Dog (as applicable) Control Building pressure boundary doors.	E-0, Step 20.g
			RO	**Check RCS Temperature**	E-0, Step 21
				Verify RCS cold leg WR temperature - BETWEEN 550°F and 560°F	E-0, Step 21.a
			US	Perform the applicable action:	E-0, Step 21.a, RNO
				• IF temperature is GREATER THAN 550°F AND 560°F, THEN 1) Dump steam to the condenser, if available OR Dump steam to atmosphere.	
			US	2) Proceed to Step 22.	
				• IF the temperature is LESS THAN 550° THEN Proceed to Step 21c.	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Proceed to Step 22	E-0, Step 21.b
			BOP	Maintain total feed flow BETWEEN 530 and 600 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG	E-0, Step 21.c
			BOP	CLOSE SG atmospheric dump and dump bypass valves	E-0, Step 21.d
			BOP	Check the following valves - CLOSED • MSIVs • MSIV bypass valves	E-0, Step 21.e
			US	Perform the following:	E-0, Step 21.e, RNO
			BOP	1. Place both condenser steam dump interlock selector switches to OFF.	
			BOP	2. IF unexpected cooldown continues, THEN CLOSE the MSIVs and MSIV bypass valves.	
			RO	**Check PZR Valves**	E-0, Step 22

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Verify PORVs - CLOSED	E-0, Step 22.a
			RO	IF PZR pressure LESS THAN 2350 psia, THEN CLOSE PORVs.	E-0, Step 22.a, RNO
			RO	IF any PORV can NOT be closed, THEN CLOSE its block valve.	
			RO	IF block valve can NOT be closed, THEN Initiate monitoring of CSF Status Trees and Go to E-1, Loss of Reactor or Secondary Coolant.	
			RO	Verify normal PZR spray valves - CLOSED	E-0, Step 22.b
			RO	IF PZR pressure LESS THAN 2270 psia THEN CLOSE valves.	E-0, Step22.b, RNO
			RO	IF valves can NOT be closed, THEN STOP RCPs 1 and 2	
			RO	Verify PZR safety valves - CLOSED	E-0, Step 22.c

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	IF PZR pressure decreasing in an uncontrolled manner, THEN initiate monitoring of CSF Status Trees and Go to E-1, Loss of Reactor or Secondary Coolant	E-0, Step 22.c, RNO
				Check PORV block valves - OPEN	E-0, Step 22.d
				OPEN energized block valves.	E-0, Step 22.d, RNO
			CREW	To prevent damage to the RCP seal(s), seal injection flow should be maintained to all RCPs.	E-0, Step 23, CAUTION
			RO	**Check If RCPs Should Be Stopped**	E-0, Step 23
				Verify RCPs - ANY RUNNING	E-0, Step 23.a
				Proceed to step 24.	E-0, Step 23.a, RNO.
			RO	Verify RCS pressure - LESS THAN 1500 psia (1800 psia ADVERSE CTMT)	EOP 35 E-0, Step 23.b

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Proceed to Step 24	E-0, Step 23.b, RNO
			RO	Verify charging or SI pumps - AT LEAST ONE RUNNING	E-0, Step 23.c
			US	Proceed to Step 24	E-0, Step 23.c RNO
			RO	STOP all RCPs	E-0, Step 23.d
			BOP/RO	**Check If SG Secondary Boundaries Are Intact**	E-0, Step 24
				Check pressure in all SGs • NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED	E-0, Step 24.a
			US	Initiate monitoring of CSF Status Trees and Go to E-2, Faulted Steam Generator Isolation.	E-0, Step 24.a RNO

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		E-2, Faulted Steam Generator Isolation, Rev. 8	US	At least one SG must be maintained available for RCS cooldown.	E-2 CAUTION
			US	Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown or sampling is required.	
			US	If RWST level decreases to LESS THAN 520,000 gal, Go to ES-1.3, Transfer to Cold Leg Recirculation, to align the ECCS system.	
			BOP US	**Check Main Steam Isolation And Bypass Valves - CLOSED**	E-2, Step 1
			US	**Check at least one SG boundary intact.**	E-2, step 2
			RO/ BOP	Check pressures in all SGs - AT LEAST ONE STABLE OR INCREASING	E-2, step 2.a
			US	**Identify Faulted SGS**	E-2, Step 3
			RO/ BOP	Check pressure in all SGs ANY SG PRESS DECREASING IN AN UNCONTROLLED MANNER OR	E-2, Step 3.a

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				ANY SG COMPLETELY DEPRESSURIZED	
				High radiation Area Key and Locked Valve Key are required for performance of some local actions in the following step.	E-2, Step 4 NOTE
		[Critical Task] Isolate the faulted S/G before transition out of E-2	RO/BOP	**Isolate each faulted SG.**	E-2, step 4
			RO/BOP	• Isolate main steam line	
				• Isolate main feed line	
				• TRIP TD FW pumps	
				• Place MD FW pump in PULL-TO-LOCK	
				• Isolate AFW flow path	
				• CLOSE steam supply isolation valve to TD AFW pump	
				• Verify SG atmospheric dump and bypass valves - CLOSED	
				• CLOSE SG blowdown isolation valve	
				• CLOSE SG blowdown sample isolation valve	
				• Verify main steam line drains	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

upstream of MSIVs and TD AFW pump - CLOSED

SG A	SG B	SG C	SG D
3DTM*AOV29A	3DTM*AOV29B	3DTM*AOV29C	3DTM*AOV29D
3DTM*AOV61A	3DTM*AOV61B	3DTM*AOV61C	3DTM*AOV61D
3DTM*AOV63A	3DTM*AOV63B	3DTM*AOV63D	
3DTM*AOV64A	3DTM*AOV64B	3DTM*AOV64D	

RO/ BOP/ US	Close valve(s) or isolation valve(s). IF flow path(s) can NOT be isolated, THEN Dispatch an operator to locally Close valve(s) using Attachment A for guidance	E-2 Step 4 RNO
US	**Check SG Code Safety Valves Closed.** • Flow switched (MB5) - NOT LIT	E-2, step 5
BOP	• Locally (MSVB Roof) - BY OBSERVATION	
PEO		
BOP	**Check DWST level - GREATER THAN 80,000 gallons.**	E-2, step 6
RO	**Check If SG Tubes Are Intact**	E-2, step 7

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	Verify trend history and alarm status of radiation monitors: • Main steam line - NORMAL • Condenser air ejector - NORMAL • SG blowdown - NORMAL	E-2, step 7.a
			BOP	Check steam generator levels - NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER	E-2, step 7.b
		NOTE: Acknowledge request as Chemistry. NOTE: sampling is to ensure a primary to secondary leak does not exist in any S/G. *WOG BKGD for E-2.*	RO	Align all SGs for activity sample. 1. RESET SG blowdown sample isolation 2) OPEN SG blowdown sample isolation valve(s)	E-2, step 7.c
			SM/ US	Request Chemistry provide activity samples using HP coverage	E-2, step 7.d
			CREW	**Go to E-1, Loss of Reactor or Secondary Coolant.**	E-2, step 8

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		FR-Z.1, Response to CTMT High Pressure, Rev. 10	US/RO	**Verify CIA (ESF Group 2 Status columns 2 Through 10)**	FR-Z.1, Step 1
		NOTE: If the crew anticipates high CTMT pressure they may not be directed to perform FR-Z.1	RO	Initiate CIA OR reposition valves for minimum safety function.	FR-Z.1, Step 1 RNO
			US	**Verify CIB**	FR-Z.1, Step 2
			RO	Check RPCCW Ctmt supply and return header isolation valves - CLOSED	FR-Z.1, Step 2.a
			RO	CLOSE valves.	FR-Z.1, Step 2.a, RNO
			RO	Check RPCCW pumps - STOPPED	FR-Z.1, Step 2.b
			RO	STOP pumps.	FR-Z.1, Step 2.b, RNO
			RO	STOP all RCPs	FR-Z.1, Step 2.c
				If ECA-1.1, Loss of Emergency Coolant Recirculation, is in progress, Ctmt spray should be operated as directed in ECA-1.1 rather than steps 3, 4, and 7	FR-Z.1, Step 3 CAUTION

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	**Verify Quench Spray System Operation**	FR-Z.1, Step 3
			RO	Check RWST level - GREATER THAN 100,000 gal (annunciator RWST EMPTY QSS PP OFF on MB2A 5-2 not lit)	FR-Z.1, Step 3.a
			RO	Verify quench spray pumps - RUNNING	FR-Z.1, Step 3.b
		[Critical Task]	RO	START pumps.	FR-Z.1, Step3.b, RNO
			RO	Verify quench spray pump discharge valves (3QSS*MOV34A and 3QSS*MOV34B) - OPEN	FR-Z.1, Step 3.c
		[Critical Task]	RO	OPEN valves.	FR-Z.1, Step 3.c, RNO
			RO	Check quench spray system - FLOW EXISTS IN AT LEAST ONE TRAIN	FR-Z.1, Step 3.d
			US	Proceed to step 5.	FR-Z.1, Step 3.e
			BOP	**STOP All Main Circulating Water Pumps**	FR-Z.1, Step 5
			BOP	**Check Containment Ventilation**	FR-Z.1, Step 6

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Verify CAR fans - STOPPED • Verify CRDM fans - STOPPED	
			BOP	STOP fans.	FR-Z.1, Step 6, RNO
			US	**Verify Recirculation Spray System Operation**	FR-Z.1, Step 7
			RO	Check CDA signal - PRESENT AFTER 11 minutes (annunciator CTMT RECIRC PUMP AUTO START SIGNAL on MB2B 1-8 lit)	FR-Z.1, Step 7.a
			US	Proceed to step 8 and, WHEN 11 minutes have elapsed since CDA initiation, THEN Perform steps 7b through 7e.	FR-Z.1, Step 7.a, RNO
			RO	Verify recirculation spray pumps - RUNNING	FR-Z.1, Step 7.b
			RO	WHEN Ctmt WR sump level is GREATER THAN 1.5 feed THEN START pumps.	FR-Z.1, Step 7.b, RNO
			RO	Verify recirculation spray pump suction isolation valves - OPEN	FR-Z.1, Step 7.c
			RO	OPEN valves.	FR-Z.1, Step 7.c, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Verify recirculation spray pump discharge isolation valves - OPEN	FR-Z.1, Step7.d
			RO	OPEN valves.	FR-Z.1, Step 7.d, RNO
			RO	Verify recirculation spray - FLOW EXISTS IN AT LEAST ONE TRAIN	FR-Z.1, Step 7.e
			RO	**Verify ESF Status Panel Group 4 Lights - LIT**	FR-Z.1, Step 8
			CREW	Operate components as necessary for minimum safety function.	FR-Z.1, Step 8, RNO
			US/ BOP	**Verify Main Steam Line Isolation** • Check MSIVs and MSIV bypass valves - CLOSED • Check ESF Status Group 3 lights - LIT	FR-Z.1, Step 9
			BOP	Initiate MSI.	FR-Z.1, Step 9, RNO
			BOP/RO	**Verify Main Feedwater Isolation** • Verify MD AND TD FW pumps - TRIPPED	FR-Z.1, Step 10

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Verify FW isolation trip valves - CLOSED	
				• Verify SG feed regulating valves - CLOSED	
				• Verify SG feed regulating bypass valves - CLOSED	
				• At least one SG must be maintained available for RCS cooldown.	FR-Z.1, Step 11, CAUTION
				• If all SGs are faulted, at least 100 gpm feed flow should be maintained to each SG.	FR-Z.1, Step 11, CAUTION
			US	**Check If Auxiliary Feedwater Flow Should Continue To All SGs**	FR-Z.1, Step 11
			BOP/RO	Check pressure in all SGs	FR-Z.1, Step 11.a
				• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER	
				• NO SG COMPLETELY DEPRESSURIZED	
			US	**Check Hydrogen Concentration**	FR-Z.1, Step 12

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			PEO	Using OP 3313A, "Hydrogen Recombiners and Recombiner Building Ventilation," Start the hydrogen monitoring system	FR-Z.1, Step 12.a
			US	Verify hydrogen concentration - LESS THAN 5%	FR-Z.1, Step 12.b
			US	Proceed to step 13.	FR-Z.1, Step 12.b, RNO
			US	**Notify ADTS of Hydrogen Concentration Inside Containment**	FR-Z.1, Step 13
			US	**Periodically Monitor Hydrogen Concentration (every 8 hours)**	FR-Z.1, Step 14
			US	**Go to Procedure and Step In Effect**	FR-Z.1, Step 15

TERMINATE UPON TRANSITION TO E-1, Loss of Reactor or Secondary Coolant.

SECTION 4

ID Number: 2K2 NRC-001 Revision: 0

EVALUATION GUIDE

I. SUMMARY

The following Critical Tasks are covered in this exam:

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS FOR SELECTION
Establish flow from at least one SI pump before completion of the check of E-0, steps 1-14 in FR-S.1.	E-0—J	007 EA2.02 4.3/4.6	Failure to manually start at least one intermediate - head ECCS pump under the postulated conditions constitutes "mis-operation or incorrect crew performance which leads to degraded ECCS capacity."
Manually actuate MSI or close MSIV's before completion of FR-S.1 step 13.	E-0—P	040 AA2.04 4.5/4.7	Failure to close the MSIVs challenges the CSFs beyond those irreparably introduced by the postulated conditions and constitutes a "demonstrated inability by the crew to recognize a failure of the auto actuation of an ESF system."
Isolate the faulted S/G before transition out of E-2	E-2—A	040 AA1.04 4.34.3	Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions.

Note: [*] Used to designate critical tasks. Should also be incorporated into column 3 or 4 of Instructor Guide.

SECTION 4

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

EVALUATION GUIDE

SECTION 5

SCENARIO INITIAL CONDITIONS

ID Number: 2K2 NRC-001 Revision: 0

Reactor Power:	50%, steady state Xenon
Operating History:	450 days on line
RCS Boron:	300 ppm
Core Burnup:	18,600 MWD/MTU
Condensate Demins:	5 demins in service
Evolutions in Progress:	NONE
Major Equipment OOS:	"A" PORV is inoperable due to an electrical short in the control circuitry. It has been out of service for 8 hours. Electrical maintenance estimates that the valve will be returned to service within 24 hours. The following Tech Specs are applicable: Tech Spec 3.4.4, action b 3TRM 7.4.1 action a.1 and a.3 for both the A PORV and the block valve 3RCS*MV8000A

Crew Instructions:

The unit downpowered in response to a severe weather threat. The next shift will begin the power increase. Maintain the plant at 50% power. Intake conditions are now Green.

The crew is directed to Pump the Containment Drains Transfer Tank in accordance with OP 3335A, Reactor Plant Gaseous Drains, section 4.4.

Plant/Simulator Differences:

- Real Time and Simulator Rad Monitor historical data not valid prior to the beginning of this exercise.
- Auto-log terminals need to be refreshed after entry is made.
- If not using the speed dial option on the phone system, the operator must dial either #3333 or #3334 to reach the person/department they desire.
- The following PPC programs do not function on the simulator:
    - Samarium Follow
    - Xenon Follow
    - Sequence of Events

SECTION 6

VALIDATION CHECKLIST

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

Remote functions:

All remote functions contained in the guide are certified.

Malfunctions:

All malfunctions contained in the guide are certified.

Initial Conditions:

The initial condition(s) contained in the guide are certified or have been developed from certified IC's in accordance with NSEM-4.02.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

Test Run:

The scenario contained in the guide has been test run and validated (validation sheet completed, next page)on the simulator. Simulator response is reasonable and as expected.

Examination Scenario Review

The dynamic examination review checklist is complete. (This is not required unless the exam will be used as an Annual Exam, then NUREG 1021 requirements apply.)

JMartin
Technical Reviewer

6/10/02
Date

SECTION 7

REFERENCE AND TASK TRACKING

Title: ATWS with Faulted S/G

ID Number: 2K2 NRC-001 Revision: 0

I. References:

OP3335A	Reactor Plant Gaseous Drains
ARP MB4B, 3-4B	RCP B Cooler Supply Pressure Low
AOP*3564	Loss of One Protective System Channel
EOP*E-0	Reactor Trip or Safety Injection
EOP*E-2	Faulted Steam Generator Isolation
EOP*FR-S.1	Response to Nuclear Power Generation / ATWS
EOP*ERG_EXE	Westinghouse Owners Group Executive Document
EOP* Step _DOC	MP3 step deviation Document
EOP*ERG_HP	Westinghouse Owners Group Background Document
FAP06*01	Event Assessment, Classification and Reportability
NUREG*1021 rev 8	Examiners Standards

MILLSTONE POWER STATION

NRC SIMULATOR EXAM GUIDE APPROVAL SHEET

Exam Title: SGTR WITHOUT PZR PRESSURE CONTROL

Revision: 0

ID Number: 2K2 NRC-002

Submitted by:	Steve Jackson Developer	2/13/02 Date
Validated by:	Martin Technical Reviewer	6/17/02 Date
Approved by:	Operation Manager (Optional)	Date
Approved by:	Training Supervisor	6/19/02 Date

STOP THINK ACT REVIEW

SECTION 2

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

SECTION 3

EXAM OVERVIEW

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Exam Brief:

1. The plant is at 100% power, EOL steady state operations with all control systems in automatic. The "A" PORV is out of service due to an electrical short in the control circuitry. The crew is initially directed to reduce CTMT pressure to 13.80 psia using OP 3313E, Containment Vacuum, section 4.2. After the evolution has commenced, the Digital Rod Position Indication system will experience a Data A failure on rod D12. AOP 3552, Malfunction of the Rod Drive System with Attachment C will direct the crew's actions. Tech Specs should be reviewed for this malfunction.

   After Tech Specs have been reviewed, a tube leak will occur on the "C" S/G. A small increase in charging flow and radiation alarms on ARC21, Air Ejector Rad Monitor, and N-16 alarms will indicate the problem to the crew. The crew may use the guidance in AOP 3573, Radiation Monitor Response, or may go directly to AOP 3555, Reactor Coolant System Leak. AOP 3555 and the N-16 ARP will direct the crew to AOP 3576, Steam Generator Tube Leak. Conditions are present to require a power reduction to be in MODE 3 within 6 hours (AOP 3576 step 9.j).

   When the decision to reduce power has been made a Rod Bank CB-D Continuous Rod Insertion will occur. The crew should place the control rod bank SEL switch in MAN and when this does not stop rod motion, trip the reactor and go to E-0, Reactor Trip or Safety Injection. At the time of the reactor trip the S/G leak will worsen into a SGTR **[Critical Task - 2: Isolate Steam and Isolate Feed]** and a loss of Offsite power will occur. The EDGs will both start and provide power to the emergency buses but offsite power will not return during the scenario. The B Service Water pump will trip at the reactor trip and the D SWP will not automatically start. Manual action will be required to start the D Service Water pump **[Critical Task].** The crew should proceed through E-0 and transition to E-3, Steam Generator Tube Rupture. At step 3.i of E-3 the "C" MSIV will not close and the RNO will be implemented. Time compression techniques are used to complete Attachment A referenced in the step 3.1. At step 18 of E-3 the crew will be unable to depressurize the RCS due to one PORV out of service (initial condition), one PORV failing to open, and auxiliary spray unavailable due to the CTMT Instrument Header isolation valve, 3IAS*MV72, failing to open. This will require the crew to transition to ECA-3.3, SGTR Without Pressure Control.

   The scenario will end when the crew has completed step 8 of ECA-3.3.

2. The SM should classify this event as a **Alert - Charlie One** due to Loss of RCS Barrier (RCB4).

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 60 minutes

Initial Dynamic Simulator Scenario

NUREG-1021, Appendix D, Attachment 1

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

I. Summary:

Facility: Millstone 3 PWR:_____ Scenario No: 2K2NRC-002 Op-Test No: 2K2

Examiners:_____ Operators:_____

Initial Conditions: IC-21; 100% power, end of life

The "A" PORV is out of service due to an electrical short in the control circuitry

Event No:	Malf. No.	Event Type *	Event Description
1		N(ALL)	Reduce CTMT Pressure
2	RD10-59	C(RO)	Control Rod Position Data A Failure
3	SG03C	C(ALL)	Steam Generator "C" Tube Leak
4	RD02I	C(RO)	Rod Bank CB-D Continuous Rod Insertion
5	SG01C ED01	M(ALL)	Steam Generator "C" Tube Rupture Loss of Offsite Power
6	SW01B SW02D	C(RO)	B SWP Trips D SWP Fails to Auto Start
7	MS12C	C(BOP)	MSIV on Ruptured S/G Fails to Close
8	I/Os: PCV455 PCV456 IAS*V72	M(ALL)	Inability to De-pressurize RCS

*(N) ormal (R) eactivity (I) nstrument (C) omponent (M) ajor

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Exam Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Assessor: Steve Jackson

QUALITATIVE ATTRIBUTES

___Y__1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__2. The scenario consists mostly of related events.

___Y__3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point (if applicable)

___Y__4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__5. The events are valid with regard to physics and thermodynamics.

___Y__6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

___Y__7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__8. The simulator modeling is not altered.

___Y__9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__10. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__11. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__12. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__13. Level of difficulty is appropriate to support licensing decisions for each crew position.

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Lesson Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total: 8

PORV failed closed, CTMT IAS valve will not open, S/G Tube Leak / Rupture, DPRI Data A Failure, Continuous Rod Insertion, Service Water Pumps Fail to Auto Start, Loss of Offsite Power , MSIV Fails Closed

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total: 2

PORV failed closed, MSIV Fails Closed

03. Abnormal Events (AE)-2 to 4 required — Total: 4

Service Water Pumps Fail to Auto Start, S/G Tube Leak, DPRI Data A Failure, Continuous Rod Insertion

04. Major Transients (MT)-1 to 2 required — Total: 2

S/G Tube Rupture / Loss of Offsite Power

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total: 2

E-0, E-3

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total: 1

ECA-3.3

07. Critical Task (CT) - 2 to 3 required — Total: 3

E-3—A:	Isolate feedwater flow to and steam flow from ruptured S/G before a transition to ECA-3.1 occurs at step 3 of E-3. (MSIV fails)
E-3—C:	Identify and Isolate ruptured S/G before narrow range level reaches 29%.
ECA-0.0--F:	Manually start the B Train Service Water Pump before transitioning from E-0.

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total: 60 min

09. EOP run time: — Total: 30 min

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

NOTES: Reactivity Manipulation: None

SECTION 4

EVALUATION GUIDE

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

All Control Room Conduct, Operations and Communications shall be in accordance with MP-14-MMM.

"Review the Simulator Operating Limits(design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

SIMULATOR PROBLEMS DURING EXAMS

It is the responsibility of the Instructors in the simulator to insure that exam interruptions have a minimum negative impact on the Crew and the examinations we provide.

Be aware that at all times the Operators should treat the simulator as if it were the plant and you too should treat it as much like the plant as possible when they are in the simulator.

As soon as the Instructors are aware of a simulator problem that will adversely affect the exam in progress (computer fault, etc.) the Instructor should:

1. Place the simulator in FREEZE if possible.

2. Announce to the Crew that there is a simulator problem.

3. Request that the Crew leave the simulator control room. (The Crew should leave the simulator for problems which involve major switch alignments).

4. Deal with the problem (reboot, call STSB, etc.)

5. After the Instructors believe the simulator is restored to service, the Crew should be told how the exam will continue. If it is possible and felt to be acceptable to the evaluators, the examination can begin where it left off with an update on plant parameters and each Crew member is prepared to restart. If the examination will not begin where it left off, the crew should be told how and where the exam will begin again.

6. Once the Crew has been told how and where the exam will begin, have the crew conduct a brief so that the Instructor and evaluators can insure that the crew has all the necessary information to continue with the scenario.

7. Once all Crew members, Instructors and evaluators are satisfied that they have the necessary information to continue the scenario, place the simulator in RUN and announce to the Crew that you have continued the evaluation session.

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard

Simulator Setup Instructions:

1. HANG Exam Placards on the simulator doors.
2. START the Sun Workstation.
   a. IF the Sun Workstation is running THEN go to SIM ACTIVE.
3. PLACE Recorder Power to ON.
4. VERIFY that the current approved training load is loaded.
5. REMOVE the step counter OVERRIDE and allow the counters to step out during the IC reset.
6. RESET to **IC 90: TEMP IC 2K2NRC-LOUT-002 (based on IC 21)**
7. ADJUST the various pot settings to the valued specified by the chart in the simulator booth or Notepad for the selected IC.
8. PLACE Simulator to RUN.
9. ADJUST MWt using Turbine Load Set to 3411, (+)0, (-)3 IF using 100% power IC.
10. RESET the Plant Calorimetric at the Instructor Station PPC by Pressing "SHIFT LEFT" and "F6" simultaneously.
11. ENSURE Simulator fidelity items cleared.
    a. CHECK the STEP COUNTERS at correct position for plant conditions.
    b. PLACE __7__ tiles under the DEMINS IN SERVICE lamacord label on MB6.
    c. PLACE the Main Turbine on the LOAD LIMITER and ENSURE Standby Load Set MATCHED if conditions require.
    d. PLACE the Westronic (5) and Gammametrics (2) recorders in active/run by depressing up or down arrow for each.
    e. CLEAR **DCS** alarms on MB7 and BOP console.
    f. VERIFY annunciator, "COMPUTER FAILURE" (MB4C, 1-11), is NOT LIT.

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard

g. ENSURE NSSS Picture 1, MODES 1, 2, 3, 4; Burnup and Cb match lesson plan AND Cb sample date < 3 days old.

1) See laminated directions on clipboard in Sim booth.

12. RESET Computer Terminals to At Power displays if 100% power IC.

a. MB2, (AY6), CVCS Data Trend, 1 minute update, CHS-F132 (40-120), CHS-L112 (40-80), CHS-F121 (40-80), RCS-L461 (40-80)

b. MB4, (AY1), At Power Data Trend, 15 second update, CVQRPI, (3391-3428), CVQRPHRUN (3409-3413), CVQRP (3409-3413), RCL-T412*, (585-588)

c. MB4, (AY4), NSSS Picture 1, MODES 1, 2, 3, 4

d. BOP Console (AY5A), BOP Picture 26, Circ Water

e. STA Console, (AY3), NSSS Picture 15, RCP Seals

13. RESET Rad Monitor Screen to Status Grid.

14. OVERRIDE the annunciators that will be lit longterm in the CR, (as listed in the "Lit CRP Annunciators" section of the MP3 daily Status Report hanging near instructor booth door).

15. IF placing equipment OOS, THEN perform the necessary switch manipulations and hang appropriate tags, as required, listed under "Equipment OOS."

16. LOCK the Simulator Room front door.

17. **HANG** a Caution Tag on 3RCS*MV8000A stating, "Caution Tag 3RCS*MV8000A Closed and de-energized IAW Tech Spec 3.4.4, action b"

18. **HANG** DRPI Console picture/diagram (A+B switch position) on Main Board Door directly behind MB4.

19. **IF Necessary**, insert correct page 18 & 19 of 39 of E-3 (E-3, step 17)

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard

PLACE THE FOLLOWING EQUIPMENT OOS: STANDARD 2K2NRC EXAM EQUIPMENT

Initial Malfunctions

I/O	(RC)	3RCS*PCV455A	A PORV	OPEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	GREEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	RED - FALSE
I/O	(RC)	3RCS*PCV456	B PORV	OPEN - FALSE
I/O	(RC)	3RCS*MV8000	A PORV Block Valve	GREEN - FALSE
I/O	(RC)	3RCS*MV8000	A PORV Block Valve	RED - FALSE

MALF		SG01C	Steam Generator "C" Tube Rupture	50%	30 second ramp	BT1
MALF		ED01	Loss of Offsite Power			BT1
I/O	(IA)	3IAS*MOV72	IAS CTMT Isolation	OPEN - FALSE		BT1
MALF		MS12C	MSIV "C" Stuck Open			
MALF		SW01D	Service Water Pump D Trips			BT1
MALF		SW02B	Service Water Pump B Fails to Auto Start			

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard

Event Malfunctions

MALF	RD10-59	Control Rod Position Failure Data A - Rod D12			**RSCU 1**
MALF	SG03C	Steam Generator "C" Tube Leak	100% (46 gpm)	60 second ramp	**RSCU 2**
MALF	RD02I (eye)	Rod Bank CB-D Continuous Rod Insertion			**RSCU 3**

Lead Examiner: **Refer to the "Briefing Script for the Operational Exam" and brief the crew.**

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
T+1		**EVENT 1:** Reduce CTMT Pressure **OP3313E** CTMT Vacuum, Rev. 8			
			US	Do not reduce containment pressure below 13.75 psia if a CTMT entry is anticipated	OP3313E Step 4.2.1 CAUTION
			US	One CTMT vacuum pump is operated periodically to maintain 3LMS*PI24A and 3LMS*PI24B containment pressure 13.7 to 13.9 psia, (MB2)	OP3313E Step 4.2.1 NOTE
			RO	IF using 3CVS-P1A, containment vacuum pump A, PERFORM the following:	OP3313E Step 4.2.1
			RO	OPEN 3CVS*CTV20A, "CTMT VAC PP" (MB1)	OP3313E Step 4.2.1.a
			RO	OPEN 3CVS*CTV21A, "CTMT VAC PP" (MB1)	OP3313E Step 4.2.1.b
			RO	START 3CVS*P1A, "CTMT VAC PP'S" "1A" (MB2)	OP3313E Step 4.2.1.c
T= normal evolution commenced	**MALF** RD10-59	**EVENT 2:** Control Rod Position Failure Data A - Rod D12	RO		
	RSCU #1	**AOP 3552** Rev. 3 MALFUNCTION OF THE ROD DRIVE SYSTEM	CREW	**Stabilize Plant Conditions**	AOP 3552 Step 1

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Place control rod bank SEL switch in MAN	AOP 3552 Step 1.a
			RO	Verify - NO RODS MOVING	AOP 3552 Step 1.b
			CREW	Stop any power increase or decrease evolutions in progress.	AOP 3552 Step 1.c
			US	Verify Tavg - Tref deviation - LESS THAN OR EQUAL TO 1.5°F	AOP 3552 Step 1.d
			US	Verify TURB LOAD REJECTION ARM C-7 (MB4D 6-6) annunciator - NOT LIT	AOP 3552 Step 1.e
				Borate or Dilute as necessary to maintain Tavg within 1.5°F of Tref	AOP 3552 Step 1.f
			US	**Check No Rod Dropped**	AOP 3552 Step 2
			US	Verify RPI URGENT FAILURE (MB4C 4-10) annunciator - NOT LIT	AOP 3552 Step 2.a
			RO	Check rod bottom lights - NONE LIT	AOP 3552 Step 2.b
			US	**Check No Rod Position Indication Malfunctions**	AOP 3552 Step 3
				Verify DRPI power available	AOP 3552 Step 3.a
				• Any DRPI display light lit	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Verify status of following annunciators:	AOP 3552 Step 3.b
		NOTE: Annunciator IS LIT		• RPI NON URGENT FAILURE (MB4C 3-10) annunciator - NOT LIT • RPI URGENT FAILURE (MB4C 4-10) annunciator - NOT LIT	
		NOTE: US will most likely transition to the Attachment at this step	US	Determine rod position indication malfunction using Attachment C.	AOP 3552 Step 3, RNO
				Verify status of DRPI display alarms:	AOP 3552 Step 3.c
		NOTE: DATA **A** IS Flashing		• URGENT ALARM - NOT FLASHING • DATA A FAILURE - NOT FLASHING • DATA B FAILURE - NOT FLASHING • Rod GW - NONE FLASHING • CENTRAL CONTROL FAILURE lights - NONE LIT	
			US	Determine rod position indication malfunction using Attachment C.	AOP 3552 Step 3, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		AOP 3552, ATTACHMENT C		**Check DRPI Power Supply**	AOP 3552 Att C Step 1
			RO	Verify DRPI display lights - NONE LIT	AOP 3552 Att C Step 1.a
			US	Proceed to Step 2.	AOP 3552 Att C Step 1.a, RNO
			RO	A DRPI URGENT ALARM indicates one of the following: • Error in both data A AND data B from detector/encoder cards. • Codes from data A and data B differ by GREATER THAN 1 bit • The binary sum of data A and data B data exceeds 38.	AOP 3552 Attachment C Step 2, Note
			RO	**Check For DRPI Urgent Alarm**	AOP 3552 Att C Step 2
				Verify DRPI display URGENT ALARM lights - FLASHING	AOP 3552 Att C Step 2.a
			US	Proceed to NOTE prior to Step 3	AOP 3552 AttC Step 2.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	• Loss of Data A will result in DRPI half-accuracy of +10 and -4 steps for affected rods.	AOP 3552 Att C Step 3, Note
			US	• Loss of Data B will result in DRPI half-accuracy of +4 and -10 steps for affected rods.	AOP 3552 Att C Step 3, Note
			US	**Check For DRPI Non-Urgent Alarm**	AOP 3552 Att C Step 3
			RO	Verify RPI NON URGENT FAILURE (MB4C 3-10) annunciator - LIT	AOP 3552 Att C Step 3.a
			RO	Verify DRPI Display DATA A FAILURE OR DATA B FAILURE lights - FLASHING	AOP 3552 Att C Step 3.b
		NOTE: If asked or if board operator is sent to DRPI cabinet, "ACCURACY MODE switch is in A+B"	RO	Verify ACCURACY MODE selector switch (back of DRPI cabinet) - A + B POSITION	AOP 3552 Att C Step 3.c
			RO	Identify affected rod(s) as follows: • General Warning (GW) light flashing	AOP 3552 Att C Step 3.d
			RO	Verify affected rod(s) indicates within ± 12 steps of associated group Step counter demand height	AOP 3552 Att C Step 3.e

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		NOTE: When requested acknowledge direction and after 1 minute REPORT that the ACCURACY MODE switch is in B ONLY position	RO	Perform the applicable action: • IF DRPI display DATA A FAILURE lights flashing, THEN 1) Place ACCURACY MODE selector switch (back of DRPI cabinet) in B ONLY position. 2) Proceed to Step 3.g	AOP 3552 Att C Step 3.e, RNO
			RO	Verify affected rod(s) indicated within ± 12 steps of associated group Step counter demand height	AOP 3552 Att C Step 3.g
		NOTE: Proceed to Event 3		Notify I & C	AOP 3552 Att C Step 3.h
			US	A Central Control Card failure does not impair system operation since the three cards are redundant, handling both data A and data B.	AOP 3552 Att C Step 4, Note
			US	**Check For Central Control Card Failure**	AOP 3552 Att C Step 4
			RO	Verify DRPI display any CENTRAL CONTROL FAILURE 1 2 3 light - LIT	AOP 3552 Att C Step 4.a
			US	Proceed to NOTE prior to Step 5.	AOP 3552 Att C Step 4.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	In "half accuracy" operation, the affected rod position will be indicated by every other LED as the rod is raised or lowered.	AOP 3552 Att C Step 5, Note
			US	**Perform Follow-up actions**	AOP 3552 Att C Step 5
T= complete step 3 of AOP 3552, Att. C	**MALF** SG03C 100%	**EVENT 3:** Steam Generator "C" Tube Leak **NOTE**: Crew can enter AOP 3573, AOP 3555 (pg. 14), or AOP 3576 (pg. 15) based on MALF indications.			
		AOP 3573, Radiation Monitor Alarm Response, Rev. 12	US	If alarms are actuated on both area and process monitors, the applicable steps in this procedure for each alarm may be performed concurrently.	AOP 3573, Step 1, **NOTE**
			RO	**Check Initiating Monitor - AN AREA MONITOR**	AOP 3573, Step 1
			US	Proceed to step 3.	AOP 3573, Step 1 RNO
			US	**Identify Affected Process Using Attachment A**	AOP 3573, Step 3
			RO	Check initiating process monitor - IN ALARM	AOP 3573, Step 3.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Verify automatic actuations stated in Attachment A - OCCURRED	AOP 3573, Step 3.b

Monitor	Sample Stream/Possible	Automatic/ Subsequent Actions
ARC21-1	Condenser air ejector discharge to radioactive gaseous waste. **Possible indication of primary to secondary leakage.**	Monitor radiation monitors MSS75 - MSS79 and SSR08 for possible 1° to 2° leak. Take appropriate action using AOP 3555, Reactor Coolant Leak.

AOP 3555, Reactor Coolant System Leak, Rev. 14		RO	**Check PZR Level - DECREASING**	AOP 3555 Step 1
			Proceed to NOTE prior to step 7	AOP 3555 Step 1 RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			CREW	**Steps 7 through 17 may be performed in any order.**	AOP 3555 Step 7, NOTE
			US	**Determine Leak Rate Using One Or More Of the Following:** • Computer program 3J3 • Inventory balance • VCT level trend	AOP 3555 Step 7
			US	**Check If SG Tubes Are Intact**	AOP 3555 Step 8
			US	Verify trend history and alarm status of radiation monitors: • Main steamline - NORMAL • Condenser air ejector - NORMAL • SG blowdown - NORMAL	AOP 3555 Step 8.a
			RO	Go to AOP 3576, Steam Generator Tube Leak.	AOP 3555 Step 8 RNO
		AOP 3576: Steam Generator Tube Leak, Rev. 001	US	Foldout Page must be open.	3576 Step 1 NOTE
			RO	**Verify PZR Level**	3576 Step 1
				Check PZR Level - DECREASING	3576 Step 1.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Proceed to step 2.	3576 Step 1.a RNO
			US	**Notify Chemistry**	3576 Step 2
			US	Request Chemistry perform SP 3861, "Primary to Secondary Leak Rate Determination," to: 1. Determine the presence of primary to secondary leakage. 2. Determine the leak rate. 3. Identify the leaking SG.	3576 Step 2.a
		Note: There are 2/5 conditions which satisfies the step action. Crew should proceed	US	SG tube leakage can be interpreted as "verified" when any two of the bulleted substeps of step 3 are satisfied.	3576 Step 3 NOTE
			US/RO	**Verify Primary To Secondary Leakage**	3576 Step 3
		Note: This condition exists		• Check trend history and alarm status of condenser air ejector radiation monitor - NOT NORMAL • Check trend history and alarm status of steam generator blowdown radiation monitor - NOT NORMAL	3576 Step 3

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		Note: This condition exists		• Check trend history and alarm status of main steam line radiation monitors - NOT NORMAL • Check Chemistry grab sample - INDICATESPRESENCE OF PRIMARY TO SECONDARY LEAKAGE • Check trend history and alarm status of N16 monitors - NOT NORMAL	
			RO	**Perfom Monitoring of N16 Monitor Trends**	3576 Step 4
				Initiate monitoring of N16 monitor trends	3576 Step 4.a
			RO	**Verify SG Blowdown Status**	3576 Step 4
				Check if blowdown should be isolated	3576 Step 5.a
				Condenser air ejector radiation monitor - IN ALERT OR ALARM OR Steam generator blowdown radiation monitor - IN ALARM OR	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Chemistry grab sample indicates primary to secondary leakage - GREATER THAN OR EQUAL TO 75 gpd OR N16 monitor in ALERT or HIGH	
			RO	Check SG blowdown isolation valves - CLOSED • 3BDG-CTV22A • 3BDG-CTV22B • 3BDG-CTV22C • 3BDG-CTV22D	3576 Step 5.b
			RO	CLOSE valves.	3576 Step 5.b RNO
			US	Proceed to step 6.	3576 Step 5.c
			US	**Limit Effects Of Secondary Contamination**	3576 Step 5
			BOP	Check auxiliary steam - SUPPLIED FROM MAIN STEAM	3576 Step 6.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
	REMOTE MSR01	**NOTE:** When directed as PEO, use REMOTE MSR01 To start Aux Boiler.	US/PEO	Using OP 3331A, "Auxiliary Boiler, Steam and Condensate" Perform the following: 1. Startup of auxiliary boiler A (B) 2. Shift auxiliary steam from main steam to auxiliary boiler system.	3576 Step 6.b
			US/PEO	Locally Close the condenser level control valve outlet isolation (3CNS-V12)	3576 Step 6.c
			US	Request HP determine if personnel should be evacuated from affected areas • Turbine Bldg (north end) • Secondary sample sink • CPE • MS Valve Bldg	3576 Step 6.d
				Evacuate personnel from affected areas	3576 Step 6.e
		NOTE: Not desired to implement C OP 200.11. **INFORM** US that STA will perform and notify US of any required actions.	US	Refer to C OP 200.11, "Operation of a Cross Contaminated System," and Perform any required actions	3576 Step 6.f
			US	**Check If Unit Shutdown Should Be Initiated**	3576 Step 7

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check any of the following:	3576 Step 7.a
		Note: This condition exists	RO	• Condenser air ejector radiation monitor - IN ALERT OR ALARM OR • Chemistry grab sample indicates primary to secondary leakage in any SG - GREATER THAN OR EQUAL TO 75 gpd OR • Condenser air ejector radiation monitor correlation to leak rate (gpd) indicates primary to secondary leakage - GREATER THAN OR EQUAL TO 75 gpd OR • N16 monitor in ALARM	
			US	Evaluate event using MP-26-EPI-FAP06-003, Unit 3 Emergency Action Levels (Barrier Failure)	3576 Step 7.b
			US	Check plant status - MODE 1 OR 2	3576 Step 7.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	Proceed to step 9.	3576 Step 7.d
			US	• The shutdown times provided are EPRI recommendations and should not be achieved at the cost of plant stability or intentional reactor trip. • If a unit shutdown is initiated based on a condenser air ejector or N16 monitor ALERT or ALARM condition and subsequent Chemistry calculations indicate actual leakage does not meet or exceed a shutdown criterion, then the shutdown may be suspended. • The *rate of increase* limit does not apply to leak rate spikes followed by decreasing leak rates. • Plant shutdown may be accomplished using AOP 3575, "Rapid Downpower," or appropriate General Operating Procedures as determined necessary.	3576 Step 9 NOTE

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		[Tech Specs] **NOTE TO EVALUATOR**: IF Tech Specs are not reviewed at this point, follow-up with US at end of scenario (procedure does not specifically direct Tech Spec review). **LCO 3.4.6.2.b & c, action b**	US	**Perform Unit Shutdown**	3576 Step 9
				Verify a leakage *rate of increase* limit met:	3576 Step 9.a
		NOTE: The leak is about 40 gpm. This should be obvious to the crew and they should answer yes at this step and continue to step 9.b..**IF** they pause at this step **REPORT** as Chemistry that initial indications are that the leak is **> 20 gpm.**		• Check leakage increased in any SG by - GREATER THAN OR EQUAL TO 15 gpd IN A 30 min PERIOD OR • Check condenser air ejector radiation monitor RATE OF CHANGE ALARM - IN ALARM FOR 30 min OR	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Check N16 S/G Leak Detection Status (PPC) HIGH RATE (75 GPD & 15 GPD RISE IN 30 MIN) - IN ALARM	
				Proceed to step 9.d	3576 Step 9.b
			RO	Check power level - GREATER THAN 50%	3576 Step 9.d
			US	Initiate power reduction to be LESS THAN 50% within 1 hour *(downpower rate of 3%/min or 5%/min recommended)*	3576 Step 9.e
			CREW	Return to step 9.d	3576 Step 9.f
T= power reduction decision	**MALF** RD02I	**EVENT 4:** Rod Bank CB-D Continuous Rod Insertion			
		AOP 3552 MALFUNCTION OF THE ROD DRIVE SYSTEM, Rev. 3	CREW	**Stabilize Plant Conditions**	AOP 3552 Step 1
			RO	Place control rod bank SEL switch in MAN	AOP 3552 Step 1.a
			RO	Verify - NO RODS MOVING	AOP 3552 Step 1.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			CREW	TRIP the reactor and Go to E-0, Reactor Trip or Safety Injection.	AOP 3552 Step 1.b RNO
	MALF SG01C 50% ED01	**EVENT 5:** SGTR with Loss of Offsite Power			
		E-0, Reactor Trip or Safety Injection, Rev. 21	Crew	Go to E-0, Reactor Trip or Safety Injection.	
				• Foldout page must be open	E-0, Step 1, NOTE
				• ADVERSE CTMT defined as GREATER THAN 180°F or GREATER THAN 10^5 R/hr in containment.	
				• The reactor can be interpreted as "tripped" when any two of three bulleted substeps of Step 1.* are satisfied.	
			RO	**Verify Reactor Trip**	E-0, Step 1
				• Check reactor trip and bypass breakers - OPEN	
				• Check rod bottom lights - LIT	
				• Check neutron flux - DECREASING	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	**Verify Turbine Trip**	E-0, Step 2
				Check all turbine stop valves - CLOSED	E-0, Step 2.a
			BOP	**Verify Power to AC Emergency Busses**	E-0, Step 3
			BOP	Check busses 34C and 34D - BOTH ENERGIZED	E-0, Step 3.a
			US	**Check If SI Is Actuated**	E-0, Step 4
			RO	Verify SAFETY INJECTION ACTUATION annunciator - (MB4D 1-6 or MB2B 5-9) - LIT	EOP 35 E-0, Step 4.a
			US	Check if SI is required	E-0, Step 4, RNO
				• CTMT pressure GREATER THAN 18 psia OR • RCS pressure LESS THAN 1890 psia OR • PZR level LESS THAN 16% OR • RCS subcooling LESS THAN 32°F OR	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• SG pressure LESS THAN 660 psig IF SI is required, THEN initiate SI and Proceed to step 5	
	MALF SW01B SW02D	**EVENT 6:** Service Water Pumps Fail to Auto Start	RO	**Verify Service Water Pumps - AT LEAST ONE PER TRAIN RUNNING**	E-0, Step 5
		[Critical Task] Manually start the B Train Service Water Pump before transitioning from E-0.	RO	START pumps	E-0, Step 5 RNO
		NOTE: If the B SWP does not start on the first time REPORT as PEO or Maintenance, if requested, and recommend a second attempt.	RO	**Verify Two RPCCW Pumps - ONE PER TRAIN RUNNING**	E-0, Step 6
			RO	**Verify ECCS Pumps Running** • Check SI pumps - RUNNING • Check RHR pumps - RUNNING • Check two charging pumps - RUNNING	E-0, Step 7

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		NOTE: Crew may identify ruptured S/G early and take critical task action in advance of procedural direction. **[Critical Task]** Identify ruptured S/G and Isolate AFW before narrow range level reaches 29%.	BOP	**Verify AFW Pumps Running**	E-0, Step 8
				Check MD pumps - RUNNING	E-0, Step 8.a
				Check turbine - driven pump - RUNNING, IF NECESSARY	E-0, Step 8.b
			BOP	**Verify FW Isolation** • Check SG feed regulating valves - CLOSED • Check SG feed regulating bypass valves - CLOSED • Check FW isolation trip valves - CLOSED • Check MD FW pump - STOPPED • Check TD FW pumps - TRIPPED • Check SG blowdown isolation valves - CLOSED	E-0, Step 9

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Check SG blowdown sample isolation valves - CLOSED • Check SG chemical feed isolation valves - CLOSED	
			BOP	**Check If Main Steam Lines Should Be Isolated**	E-0, Step 10
				Check Ctmt pressure GREATER THAN 18 psia	E-0, Step 10.a
				OR	
				Any SG pressure LESS THAN 660 psig	
				Proceed to Step 11	E-0, Step 10.a, RNO
			RO	**Check if CDA Required**	E-0, Step 11
				Check Ctmt pressure is GREATER THAN 23 psia	E-0, Step 11.a
				OR	
				Ctmt spray is initiated	
			US	Proceed to Step 12.	E-0, Step11,a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	**Verify CAR Fans Operating In Emergency Mode**	E-0, Step 12
			BOP	Check CAR fan status: • CAR fans A and B - RUNNING • CAR fan C - STOPPED	E-0, Step 12.a
			BOP	START/STOP CAR fans as necessary.	E-0, Step 12.a, RNO
			RO	Verify RPCCW Ctmt supply and return header isolations - OPEN	E-0, Step 12.b
			RO	Verify Train A and B RPCCW supply and return to chill water valves - OPEN	E-0, Step 12.c
			RO	**Verify CIA**	E-0, Step 13
			RO	Check ESF Group 2 status columns 2 through 10 - LIT	E-0, Step 13.a
			RO	**Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights - OFF • Verify ESF Group 2 lights - LIT	E-0, Step 14

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO/BOP	Align component(s) as necessary for minimum safety function.	E-0, Step 14, RNO
			RO	**Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature GREATER THAN 180°F OR • Ctmt radiation GREATER THAN 10^5 $R/_{hr}$	E-0, Step 15
			CREW	DO NOT use ADVERSE CTMT parameters.	E-0, Step 15, RNO
			RO	**Verify ECCS Flow**	E-0, Step 16
				Check charging pumps - FLOW INDICATED	E-0, Step 16.a
			RO	Check RCS pressure - GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)	E-0, Step 16.b
			US	Proceed to Step 16.d	E-0, Step 16.b, RNO
				Proceed to step 17.	E-0, Step 16.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check SI pumps - FLOW INDICATED	E-0, Step 16.d
				START pumps and Align valves.	E-0, Step 16.d RNO
				Check RCS pressure - LESS THAN 300 psia (500 psia ADVERSE CTMT)	E-0, Step 16.e
				Check RHR pumps - FLOW INDICATED.	E-0, Step 16.f
			BOP	**Verify Adequate Heat Sink**	E-0, Step 17
				Check NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT)	E-0, Step 17.a
			US	Proceed to Step 17.d.	E-0, Step 17.a, RNO
			BOP	Control feed flow to maintain NR level - BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)	E-0, Step 17.b
			US	Proceed to Step 18.	E-0, Step 17.c
			BOP	Verify Total AFW Flow - GREATER THAN 530 gpm	E-0, Step 17.d
			BOP	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 18

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Verify ECCS Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 19
			US	**Check Plant Status**	E-0, Step 20
BOOTH INST	NOTE	When asked, REPORT that "all SLCRS doors indicate closed."		Verify SLCRS doors - CLOSED	E-0, Step 20.a
			RO	Check CONTROL BUILDING ISOLATION annunciator (MB4D 3-6) - LIT	E-0, Step 20.b
			RO	Check if CBI is required	E-0, Step 20.b, RNO
			RO	• Ctmt pressure GREATER THAN 18 psia OR	
			RO	• Control Building radiation monitor in alarm OR • SI manually actuated	
			RO	IF CBI required, THEN initiate CBI.	
			US	IF CBI is NOT required, THEN proceed to Step 21.	
			RO	Verify ESF Group 2 CBI lights - LIT	E-0, Step 20.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Align HVAC components as necessary for minimum safety function.	E-0, Step 20.c, RNO
			BOP	Verify control building purge supply fan and purge exhaust fan - NOT RUNNING	E-0, Step 20.d
			BOP	Control building air bank isolation valves - OPEN (after 60 seconds)	E-0, Step 20.e
			BOP	STOP kitchen exhaust fan	E-0, Step 20.f
BOOTH INST	NOTE	When called, WAIT 3 - 5 min, Then REPORT "All Control Building pressure boundary doors are Closed and Dogged."	PEO	Close and Dog (as applicable) Control Building pressure boundary doors.	E-0, Step 20.g
			RO	**Check RCS Temperature**	E-0, Step 21
				Verify RCS cold leg WR temperature - BETWEEN 550°F and 560°F	E-0, Step 21.a
			US	Perform the applicable action:	E-0, Step 21.a, RNO
				• IF temperature is GREATER THAN 550°F AND 560°F, THEN	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				1) Dump steam to the condenser, if available OR Dump steam to atmosphere.	
			US	2) Proceed to Step 22.	
				• IF the temperature is LESS THAN 550°, THEN proceed to Step 21c.	
			US	Proceed to Step 22	E-0, Step 21.b
			BOP	Maintain total feed flow BETWEEN 530 and 600 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG	E-0, Step 21.c
			BOP	CLOSE SG atmospheric dump and dump bypass valves	E-0, Step 21.d
			BOP	Check the following valves - CLOSED	E-0, Step 21.e
				• 5s	
				• MSIV bypass valves	
			US	Perform the following:	E-0, Step 21.e, RNO
			BOP	Place both condenser steam dump interlock selector switches to OFF.	E-0, Step 21.e.1, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	IF unexpected cooldown continues, THEN CLOSE the MSIVs and MSIV bypass valves.	E-0, Step 21.e.2, RNO
			RO	**Check PZR Valves**	E-0, Step 22
				Verify PORVs - CLOSED	E-0, Step 22.a
			RO	Verify normal PZR spray valves - CLOSED	E-0, Step 22.b
			RO	Verify PZR safety valves - CLOSED	E-0, Step 22.c
			RO	Check PORV block valves - OPEN	E-0, Step 22.d
			CREW	To prevent damage to the RCP seal(s), seal injection flow should be maintained to all RCPs.	E-0, Step 23, CAUTION
			RO	**Check If RCPs Should Be Stopped**	E-0, Step 23
				Verify RCPs - ANY RUNNING	E-0, Step 23.a
				Proceed to step 24.	E-0, Step 23.a, RNO.

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Verify RCS pressure - LESS THAN 1500 psia (1800 psia ADVERSE CTMT)	E-0, Step 23.b
			US	Proceed to Step 24	E-0, Step 23.b, RNO.
			RO	Verify charging or SI pumps - AT LEAST ONE RUNNING	E-0, Step 23.c
			US	Proceed to Step 24	E-0, Step 23.c, RNO
			RO	STOP all RCPs	E-0, Step 23.d
			BOP/RO	**Check If SG Secondary Boundaries Are Intact**	E-0, Step 24
				Check pressure in all SGs	E-0, Step 24.a
				• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED	
			BOP	**Check If SG Tubes Are Intact**	E-0, Step 25

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Sample all SGs for activity	E-0, Step 25.a
				1. RESET SG blowdown sample isolation	
				2. OPEN SG blowdown sample isolation valve(s)	
				3. Request Chemistry obtain activity samples using HP coverage	
			BOP	Check steam generator levels - NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER	E-0, Step 25.b
			US	Initiate monitoring of CSF Status Trees and Go to E-3, Steam Generator Tube Rupture.	E-0, Step 25.b, RNO
				Verify trend history and alarm status of radiation monitors	E-0, Step 25.c
				• Main steam line - NORMAL	
				• Condenser air ejector - NORMAL	
				• SG blowdown - NORMAL	
				Initiate monitoring of CSF Status Trees and Go to E-3, Steam Generator Tube Rupture	E-0, Step 25.c RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Verify trend history and alarm status of radiation monitors	
	MALF SG01C	**E-3:** Steam Generator Tube Rupture, Rev. 17	US	**To prevent damage to the RCP seal(s), seal injection flow should be maintained to all RCPs.**	E-3 Step 1 CAUTION
			US	• **Foldout page must be open** • **The RCP trip criteria is only applicable until a controlled cooldown is initiated in step 6.**	E-3, Step 1, NOTE
			RO	**Check If RCPs Should Be Stopped**	E-3, Step 1
				Check RCPs - ANY RUNNING	E-3, Step 1.a
				Proceed to step 2.	E-3, Step 1.a, RNO
				Verify RCS pressure - LESS THAN 1500 psia (1800 psia ADVERSE CTMT)	E-3, Step 1.b
				Proceed to step 2.	E-3, Step 1.b, RNO
				Verify charging or safety injection pumps - AT LEAST ONE RUNNING	E-3, Step 1.c
				STOP all RCPs	E-3, Step 1.d

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
		[Critical Task] Identify ruptured S/G and Isolate AFW before narrow range level reaches 29%.	BOP	**Identify Ruptured SGs** • Unexpected increase in any SG level OR • High radiation from any SG steam line as indicated by the trend history or alarm status OR • High radiation from any SG sample	E-3, Step 2
			US	• **If the TD AFW pump is the only available source for feed flow, steam supply to the TD AFW pump must be maintained from at least one SG.** • **At least one SG must be maintained available for RCS cooldown.**	E-3, Step 3, CAUTION
			BOP	**Isolate Flow From Each Ruptured SG**	E-3, Step 3
				Verify each ruptured SG atmospheric dump valve controller - IN AUTO AT 1125 psig	E-3, Step 3.a
			RO	Check each ruptured SG atmospheric dump valve - CLOSED	E-3, Step 3.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check each ruptured SG atmospheric dump bypass valve - CLOSED.	E-3, Step 3.c
				CLOSE each ruptured SG steam supply isolation valve to TD AFW pump. • 3MSS*MOV17A • 3MSS*MOV17B • 3MSS*MOV17D	E-3, Step 3.d
				Verify each ruptured SG blowdown isolation valve - CLOSED	E-3, Step 3.e
				CLOSE valves.	E-3, Step 3.e, RNO
				Verify each ruptured SG blowdown sample isolation valve - CLOSED	E-3, Step 3.f
				CLOSE valves	E-3, Step 3.f, RNO
				Verify each ruptured SG chemical feed isolation valve - CLOSED	E-3, Step 3.g
				CLOSE valves	E-3, Step 3.g, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Using table, CLOSE the main steam line drains upstream of MSIVs and TD AFW pump for the ruptured SG(s)	E-3, Step 3.h

SG A	SG B	SG C	SG D
3DTM*AOV29A	3DTM*AOV29B	3DTM*AOV29C	3DTM*AOV29D
3DTM*AOV61A	3DTM*AOV61B	3DTM*AOV61C	3DTM*AOV61D
3DTM*AOV63A	3DTM*AOV63B		3DTM*AOV63D
3DTM*AOV64A	3DTM*AOV64B		3DTM*AOV64D

	EVENT 7: MSIV on Ruptured S/G Fails to Close		BOP	CLOSE each ruptured SG MSIV and MSIV bypass valve.	E-3, Step 3.i
	[Critical Task] Isolate steam flow from ruptured S/G before a transition to ECA-3.1 occurs at step 3 of E-3 (MSIV failed).			Perform the following: 1. CLOSE all remaining SG MSIVs and MSIV bypass valves. 2. Close all valves listed on Attachment A. 3. Use the intact SG atmospheric dump valves to dump steam, for RCS temperature control or cooldown. IF any ruptured SG can NOT be isolated from at least one intact SG, THEN Go to ECA-3.1, SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired.	E-3, Step 3.i RNO
	NOTE: Perform this step when directed as PEO and Report when the crew reaches Step 5 Caution. (This is a Time Compression technique to support procedure flow).				

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	**If any ruptured SG is faulted, feed flow to that SG should remain isolated during subsequent recovery actions unless the SG is needed for RCS cooldown.**	E-3, Step 4, CAUTION
			BOP	**Check Ruptured SG Level**	E-3, step 4
				Verify one of the following is satisfied: • Ruptured SG WR level - GREATER THAN 67% (95% ADVERSE CTMT) OR • Ruptured SG NR level - GREATER THAN 8% (42% ADVERSE CTMT)	E-3, Step 4.a
				Isolate feed flow to ruptured SGs.	E-3, Step 4.b
		NOTE: When the Crew reaches this step report as the PEO that the step is complete (This is a Time Compression technique to support procedure flow).		Steps 3.d and 3.i for isolating the ruptured SG must be completed prior to continuing to step 5.	E-3, Step 5, CAUTION
			BOP	**Check Ruptured SGs Pressure - GREATER THAN 530 psig**	E-3, step 5

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	If RCPs are NOT running, the following steps may cause a false entry into the INTEGRITY Status Tree for the affected loop. Disregard the affected loop Tc indication until after performance of step 27.	E-3, Step 6 CAUTION
			US	• To allow steam dump operation to continue during a controlled cooldown, ensure the Low-Low Tavg interlock is bypassed at 553°F. • Ensure Low Steam Line Pressure SI is blocked when pressurizer pressure is LESS THAN 2000 psia. • After the Low Steam Line Pressure SI signal is blocked, MSI will occur if the high steam pressure rate setpoint is exceeded.	E-3, Step 6 NOTE
			US/RO/ PEO	**Initiate RCS Cooldown**	E-3, Step 6
				Check RCPs -ANY RUNNING	E-3, Step 6.a
				Proceed to step 6.c.	E-3, Step 6.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Locally, Place the eight RCP overcurrent trip switches (43PP and 43PB) in the COLD position using CO key Locker Key #7	E-3, Step 6.b
				Determine required core exit temperature without interpolating (use lower pressure)	E-3, Step 6.c

Lowest Ruptured SG Pressure (psig)	Core Exit Temperature (°F)	
	NORMAL	ADVERSE
1285	537	513
1185	526	502
1085	515	489
985	502	475
885	488	459
785	474	443
685	457	423
585	449	426
530	435	410

				Dump steam to condenser from intact SGs at maximum rate	E-3, Step 6.d

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				1. Verify the following: • Intact SG MSIVs - OPEN • Annunciator "CONDENSER AVAIL FOR STM DUMP C-9" (MB4D 5-6) - LIT 2. Adjust steam pressure controller to obtain zero output in MANUAL 3. Transfer condenser steam dumps to Steam Pressure Mode 4. Place both condenser steam dump interlock selectors - ON 5. Adjust steam pressure controller to dump steam to condenser	
				Dump steam to atmosphere from intact SGs at maximum rate using SG atmospheric dump valves.	E-3, Step 6.d RNO
				Verify core exit TCs - LESS THAN REQUIRED TEMPERATURE	E-3, Step 6.e

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Proceed to NOTE prior to step 7 and, WHEN Core exit TCs less than required temperature, THEN Perform steps 6.f and 6.g	E-3, Step 6.e RNO
				Stop RCS cooldown	E-3, Step 6.f
				Maintain core exit TCs - LESS THAN REQUIRED TEMPERATURE	E-3, Step 6.g
				To aid in identifying previously undetected steam generator tube failures, the wide range SG level indication should be used if the narrow range level is off scale.	E-3, Step 7, NOTE
			BOP	**Check Intact SG Levels**	E-3, step 7
				Verify NR level - GREATER THAN 8% (42% ADVERSE CTMT)	E-3, Step 7.a
				Maintain total feed flow GREATER THAN 530 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG.	E-3, Step 7.a, RNO
				Control feed flow to maintain NR level between 8% and 50% (42% and 50% ADVERSE CTMT)	E-3, Step 7.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	If any PZR PORV opens because of high PZR pressure, step 8.a should be repeated when pressure decreases to LESS THAN 2350 psia.	E-3, Step 8, CAUTION
			RO	**Check PZR PORVs And Block Valves**	E-3, Step 8
				Verify PORVs - CLOSED	E-3, Step 8.a
				Verify PORV block valves - AT LEAST ONE OPEN	E-3, Step 8.b
				• If offsite power is lost after SI reset, manual action to restart safeguards equipment may be required. • DO NOT reset CDA if recirculation spray pumps are required and have not automatically started.	E-3, Step 9 CAUTION
			RO	**RESET ESF Actuation Signals If Required** • SI • CDA • CIA • CIB • LOP	E-3, Step 9

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Establish Instrument Air to Ctmt**	E-3, Step 10
				Check instrument air compressors - AT LEAST ONE RUNNING	E-3, Step 10.a
				START one instrument air compressor	E-3, Step 10.a, RNO
		NOTE: RO will be unable to complete this step		OPEN instrument air Ctmt isolation valves	E-3, Step 10.b
			US/PEO	**RESTORE MCC 32-3T**	E-3, Step 11
				Check Emergency Bus 34C ENERGIZED	E-3, Step 11a
				Proceed to the caution prior to step 12 and, WHEN Power restored to emergency bus 34C THEN perform step 11b	E-3, Step 11a RNO
T+ 5 minutes of request	EDR18 EDR44	Resets 32-3T and clears inverter 6 alarms		Using GA-1, Energize MCC32-3T	E-3, Step 11.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	**To provide adequate ECCS flow, RCS pressure should be monitored to ensure that the RHR pumps are manually restarted if pressure decreases to LESS THAN 300 psia (500 psia ADVERSE CTMT).**	E-3, Step 12, CAUTION
			RO	**Check If RHR Pumps Should Be Stopped**	E-3, Step 12
				Verify RCS pressure - GREATER THAN 300 psia (500 psia ADVERSE CTMT)	E-3, Step 12.a
				Proceed to CAUTION prior to step 13.	E-3, Step 12.a, RNO
				STOP RHR pumps and Place in AUTO	E-3, Step 12.b
			US	**Check If Cooldown Should Be Stopped**	E-3, Step 13
				Check Cooldown - IN PROGRESS	E-3, Step 13.a
				Proceed to step 13.d	E-3, Step 13.a, RNO
				Maintain core exit TCs - LESS THAN REQUIRED TEMPERATURE	E-3, Step 13.d

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	**Check Ruptured SGs Pressure - STABLE OR INCREASING**	E-3, Step 14
			US/RO	**Check RCS Subcooling Based on Core Exit TCs - GREATER THAN 52°F (135°F ADVERSE CTMT)**	E-3, Step 15
			RO	**Depressurize RCS To Minimize Break Flow and Refill PZR**	E-3, Step 16
				Verify normal PZR spray - AVAILABLE	E-3, Step 16.a
				Proceed to CAUTION prior to step 17.	E-3, Step 16.a RNO
			US	• The PRT may rupture if a PZR PORV is used to depressurize the RCS resulting in abnormal containment conditions. • Cycling of the PZR PORVs should be minimized.	E-3, Step 17, CAUTION
			US	If RCPs are NOT running, the upper head region may void during RCS depressurization resulting in a rapidly increasing PZR level.	E-3, Step 17, NOTE

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
	I/O 3RCS* PCV456 OPEN - FALSE	**EVENT 8:** Inability to De-pressurize RCS	RO	**Depressurize RCS Using PZR PORV to Minimize Break Flow And Refill PZR**	E-3, Step 17
				Check PZR PORVs - AT LEAST ONE AVAILABLE	E-3, Step 17.a
				Proceed to step 17.e.	E-3, Step 17.a, RNO
				Establish auxiliary spray:	E-3, Step 17.e
				1. Verify at least one SI pump - RUNNING	E-3, Step 17.e.1
				2. Verify at least one charging pump - RUNNING	E-3, Step 17.e.2
				3. CLOSE charging header loop isolation valves (3CHS*AV8146 and 3CHS*AV8147)	E-3, Step 17.e.3
				4. Fully OPEN charging line flow control valve	E-3, Step 17.e.4
				5. OPEN charging header isolation valves (3CHS*MV8106 and 3CHS*MV8105)	E-3, Step 17.e.5

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				6. Unlock and OPEN auxiliary spray valve (3RCS*AV8145)	E-3, Step 17.e.6
				7. CLOSE both charging pump cold leg injection valves	E-3, Step 17.e.7
				8. Verify Auxiliary Spray - ESTABLISHED • Charging header flow • PZR Pressure - DECREASING	E-3, Step 17.e.8
				Perform the following: a) OPEN both charging pump cold leg injection valves. b) CLOSE auxiliary spray valve. c) CLOSE charging header isolation valves. d) Go to ECA - 3.3, SGTR Without Pressurizer Pressure Control.	E-3, Step 17.e.8 RNO
		ECA-3.3: SGTR WITHOUT PRESSURE CONTROL, Rev. 12	US	Foldout page must be open.	EOP 35 ECA-3.3 Step 1, Note

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Check Ruptured SG(s) Level**	EOP 35 ECA-3.3 Step 1
				Check Ruptured SGs Narrow Range Level - LESS THAN 80% (54% ADVERSE CTMT)	EOP 35 ECA-3.3 Step 1.a
			US	RCPs should be operated in the following order of priority to ensure optimum PZR spray flow: First: RCP 2 Second: RCP 1 and one other RCP	EOP 35 ECA-3.3 Step 2, Note
			RO	**Try To Establish Normal PZR Spray**	EOP 35 ECA-3.3 Step 2
				Check RCP status - AT LEAST ONE RUNNING IN EITHER LOOP 1 OR LOOP 2	EOP 35 ECA-3.3 Step 2.a
				Using GA-6, START the preferred RCP(s) IF the preferred RCP(s) can NOT be started, THEN Proceed to step 3.	EOP 35 ECA-3.3 Step 2.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Try To Restore PZR PORV**	EOP 35 ECA-3.3 Step 3
				Establish conditions for opening a PZR PORV:	EOP 35 ECA-3.3 Step 3.a
				Check PZR PORV power available	EOP 35 ECA-3.3 Step 3.a.1
				Check PZR PORV block valve open	EOP 35 ECA-3.3 Step 3.a.2
				Check PZR PORV - AT LEAST ONE AVAILABLE	EOP 35 ECA-3.3 Step 3.a.3
				Proceed to step 4.	EOP 35 ECA-3.3 Step 3.a, RNO
			RO	**Try To Establish Auxiliary Spray**	EOP 35 ECA-3.3 Step 4
				Verify SI pumps - BOTH RUNNING	EOP 35 ECA-3.3 Step 4.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Verify charging pumps - AT LEAST ONE RUNNING	EOP 35 ECA-3.3 Step 4.b
		NOTE: These steps were attempted in E-3. It is expected that the crew will not attempt them again without a change in conditions.		Establish auxiliary spray:	EOP 35 ECA-3.3 Step 4.c
				Proceed to step 5.	EOP 35 ECA-3.3 Step 4.c, RNO
				CLOSE charging header loop isolation valves (3CHS*AV8146 and 3CHS*AV8147)	EOP 35 ECA-3.3 Step 4.c1
				CLOSE charging line flow control valve	EOP 35 ECA-3.3 Step 4.c.2
				OPEN charging header isolation valves (3CHS*MV8106 and 3CHS*MV8105)	EOP 35 ECA-3.3 Step 4.c.3
				Unlock and OPEN auxiliary spray valve (3RCS*AV8145)	EOP 35 ECA-3.3 Step 4.c.4

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Slowly Open charging line flow control valve to establish auxiliary spray flow	EOP 35 ECA-3.3 Step 4.c.5
				CLOSE both charging pump cold leg injection valves	EOP 35 ECA-3.3 Step 4.c 6
				Go to E-3, Steam Generator Tube Rupture, step 17.b	EOP 35 ECA-3.3 Step 4.d
			BOP	**Check Intact SG Levels**	EOP 35 ECA-3.3 Step 5
				Verify NR level - GREATER THAN 8% (42% ADVERSE CTMT)	EOP 35 ECA-3.3 Step 5.a
				Maintain total feed flow GREATER THAN 530 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG.	EOP 35 ECA-3.3 Step 5.a, RNO
				Control feed flow to maintain NR level - BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)	EOP 35 ECA-3.3 Step 5.b
				IF NR level in any intact SG continues to increase in an uncontrolled manner, THEN Go to E-3, Steam Generator Tube Rupture.	EOP 35 ECA-3.3 Step 5.b, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Check PZR Level - GREATER THAN 16% (50% ADVERSE CTMT)**	EOP 35 ECA-3.3 Step 6
			US/RO	**Check If ECCS Flow Can Be Terminated**	EOP 35 ECA-3.3 Step 7
				Verify RCS subcooling based on core exit TCs - GREATER THAN 32°F (115°F ADVERSE CTMT)	EOP 35 ECA-3.3 Step 7.a
				Verify secondary heat sink	EOP 35 ECA-3.3 Step 7.b
				• Total feed flow to SGs - GREATER THAN 530 gpm AVAILABLE OR • NR level in at least one intact SG - GREATER THAN 8% (42% ADVERSE CTMT)	
				Check RVLMS plenum level - GREATER THAN OR EQUAL TO 19%	EOP 35 ECA-3.3 Step 7.c
				Check ruptured SGs NR level - INCREASING IN AN UNCONTROLLED MANNER	EOP 35 ECA-3.3 Step 7.d

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				OR OFF-SCALE HIGH	
			RO	**Stop ECCS Pumps** • STOP SI pumps and Place in AUTO • STOP all but one charging pump and Place in AUTO	EOP 35 ECA-3.3 Step 8

TERMINATE UPON COMPLETION OF STEP 8 OF ECA-3.3, Verify ECCS Flow Not Required.

SECTION 4

ID Number: 2K2 NRC-002 Revision: 0

EVALUATION GUIDE

I. SUMMARY

The following Critical Tasks are covered in this exam:

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS FOR SELECTION
Isolate steam flow from ruptured S/G before a transition to ECA-3.1 occurs at step 3 of E-3 (MSIV failed).	E-3—A	038 EA1.32 4.6/4.7	Failure to isolate the ruptured SG causes a loss of differential pressure between the ruptured SG and the intact SGs and the crew must transition to a contingency procedure that "...necessitates the crew taking compensating action which complicates the event mitigation strategy...."
Identify ruptured S/G and Isolate AFW before narrow range level reaches 29%.	E-3—C(1)	038 EA1.01 4.5/4.4	Failure to stop reactor coolant leakage into a ruptured SG by depressurizing the RCS needlessly complicates mitigation of the event and constitutes a "significant reduction of safety margin beyond that irreparably introduced by the scenario."

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS FOR SELECTION
Manually start the B Train Service Water Pump before transitioning from E-0.	ECA-0.0- -F		Failure to manually start the SW pump under the postulated plant conditions means that the EDG is running without SW cooling leading to a high-temperature condition that can result in EDG failure due to damage caused by engine overheating. Under the postulated plant conditions, the running EDG is the only operable EDG. Thus, failure to perform the critical task constitutes "mis-operation or incorrect crew performance that leads to degraded emergency power capacity."

Note: [*] Used to designate critical tasks. Should also be incorporated into column 3 or 4 of Instructor Guide.

SECTION 4

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

EVALUATION GUIDE

SECTION 5

SCENARIO INITIAL CONDITIONS

ID Number: 2K2 NRC-002 Revision: 0

Reactor Power:	100%
Operating History:	450 days on line
RCS Boron:	50 ppm
Core Burnup:	18,600 MWD/MTU
Condensate Demins:	7 demins in service
Evolutions in Progress:	NONE, A Train Protected, Intake Condition: GREEN
Major Equipment OOS:	"A" PORV is inoperable due to an electrical short in the control circuitry. It has been out of service for 8 hours. Electrical maintenance estimates that the valve will be returned to service within 24 hours. The following Tech Specs are applicable: Tech Spec 3.4.4, action b 3TRM 7.4.1 action a.1 and a.3 for both the A PORV and the block valve 3RCS*MV8000A

Crew Instructions:

The crew is initially directed to reduce CTMT pressure to 13.80 psia by starting CTMT vacuum pump 3CVS-P1A using OP 3313E, Containment Vacuum, section 4.2.

Plant/Simulator Differences:

- Real Time and Simulator Rad Monitor historical data not valid prior to the beginning of this exercise.
- Auto-log terminals need to be refreshed after entry is made.
- If not using the speed dial option on the phone system, the operator must dial either #3333 or #3334 to reach the person/department they desire.
- The following PPC programs do not function on the simulator:
    - Samarium Follow
    - Xenon Follow
    - Sequence of Events

SECTION 6

VALIDATION CHECKLIST

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

Remote functions:

All remote functions contained in the guide are certified.

Malfunctions:

All malfunctions contained in the guide are certified.

Initial Conditions:

The initial condition(s) contained in the guide are certified or have been developed from certified IC's in accordance with NSEM-4.02.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

Test Run:

The scenario contained in the guide has been test run and validated (validation sheet completed, next page)on the simulator. Simulator response is reasonable and as expected.

Examination Scenario Review

The dynamic examination review checklist is complete. (This is not required unless the exam will be used as an Annual Exam, then NUREG 1021 requirements apply.)

JMartin
Technical Reviewer

6/10/02
Date

SECTION 7

REFERENCE AND TASK TRACKING

Title: SGTR WITHOUT PZR PRESSURE CONTROL

ID Number: 2K2 NRC-002 Revision: 0

I. References:

OP3313E	Containment Vacuum
AOP 3552	Malfunction of the Rod Control System
AOP*3555	Reactor Coolant System Leak
AOP*3576	Steam Generator Tube Leak
EOP*E-0	Reactor Trip or Safety Injection
EOP*E-3	Steam Generator Tube Rupture
EOP*ECA-3.3	SGTR Without Pressure Control
EOP*ERG_EXE	Westinghouse Owners Group Executive Document
EOP* Step _DOC	MP3 step deviation Document
EOP*ERG_HP	Westinghouse Owners Group Background Document
FAP06*01	Event Assessment, Classification and Reportability
NUREG*1021 rev 8	Examiners Standards

MILLSTONE NUCLEAR POWER STATION

LOIT NRC SIMULATOR EXAM GUIDE APPROVAL SHEET

Exam Title: STEAM LINE BREAK AND FR-H.1

Revision: 0

ID Number: 2K2 NRC-003

Submitted by:	Steve Jackson Developer	2/13/02 Date
Validated by:	Martin Technical Reviewer	6/17/02 Date
Approved by:	Operation Manager (Optional)	Date
Approved by:	Training Supervisor	6/19/02 Date

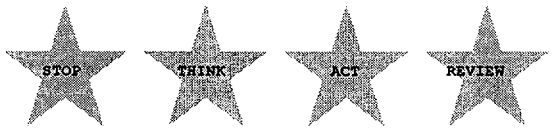
STOP THINK ACT REVIEW

SECTION 2

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER



SECTION 3

EXAM OVERVIEW

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Exam Brief:

1. The plant is at 100% power, EOL, steady state operations with all control systems in automatic. The "A" PORV is out of service due to an electrical short in the control circuitry. After turnover CONVEX will direct the crew to begin an "Emergency Load Reduction" decreasing unit electrical output by 300 MwE. The crew will use AOP 3575, Rapid Downpower to accomplish this down power. The emergency boration valve, 3CHS*MV8104, will fail to open and the RO will have to use the RNO steps to achieve boration flow.

   Once the downpower is commenced, it will become evident that the Impulse Pressure Instrument, PT-505,is failed "as-is" (100% power value). Abnormal Rod motion will be one evidence of this failure. The crew should respond using AOP 3571, Instrument Failure Response, to defeat the failed channel input and address Tech Specs. The US may or may not choose to halt the downpower while dealing with this malfunction

   After discovery and mitigation of the PT-505 failure the B CCP pump will spuriously trip and will not restart. The crew will use AOP 3561, Loss of RPCCW, to verify alignment and start the C CCP pump on the B Train.

   After CCP flow is restored, the GEN Core Monitor Level Hi, MB7C, 4-5, will alarm. Annunciator response procedures will direct the crew to Trip the reactor and Go To E-0.

   At the time of the reactor trip a Main Steamline break will occur on the "B" S/G upstream of the MSIV and inside CTMT. When the Safety Injection actuation occurs, the B MDAFW Pump will fail to start but will start manually and the Turbine Driven AFW pump will not start. The A MDAFW pump will start but it's discharge valve is inadvertently shut. A PEO, if dispatched, will be able to find and open this valve. With initially only the B MDAFW pump running and Adverse CTMT, the crew will transition to FR-H.1, Loss of Heat Sink until it is determined that AFW flow is adequate. When the procedure calls for the RCPs to be tripped, the C RCP will not trip from MB4.

   The steam break is large enough that a Containment Depressurization Actuation (CDA) will eventually be required but will not automatically occur. The crew should recognize this and should manually initiate CDA **[Critical Task]**.

   The crew should carry out the actions of E-0 through step 17, transition to FR-H.1 and establish feedwater flow to at least one S/G **[Critical Task]**, and eventually transition to E-2, Faulted Steam Generator Isolation. When CTMT Pressure is greater than 23 psia the crew should transition to FR-Z.1, Response to CTMT High Pressure, after FR-H.1 is addressed.

   The scenario will end when the crew has completed E-2 and made the decision to transition to E-1, Loss of Reactor or Secondary Coolant.

2. The SM should classify this event as a **General Interest Event - Echo** due Safety Injection in the Vessel but may achieve an **Alert - C-1** if AFW is not restored within 15 minutes.

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 60 minutes

Initial Dynamic Simulator Scenario

NUREG-1021, Appendix D, Attachment 1

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

I. Summary:

Facility: Millstone 3 PWR:_____ Scenario No: 2K2NRC-003 Op-Test No: 2K2

Examiners:_____ Operators:_____

Initial Conditions: IC-21; 100% power, end of life

Event No:	Malf. No.	Event Type *	Event Description
1	N/A	R(ALL)	AOP 3575, Rapid Downpower
2	I/O 3CHS* MV8104	C(RO)	Emergency Boration Valve Fails to Open
3	RX16A	I(RO / BOP)	Pimp (PT-505) Instrument failed as-is
4	CC01B	C(RO)	B CCP Pump Trips
5	ANN I/O MB7C, 4-5	C(BOP)	Generator Core Monitor Level Hi
6	MS01B	M(ALL)	Trip and Steam Break
7	FW21A FW20B FW19	C(BOP)	AFW Pumps Fail to Provide Adequate Flow
8	RP06A RP06B	C(RO)	CDA Fails to Automatically Actuate
9	3RCS* P1C	C(RO)	RCP Fails to Trip

*(N) ormal (R) eactivity (I) nstrument (C) omponent (M) ajor

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Exam Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Assessor: Steve Jackson

QUALITATIVE ATTRIBUTES

___Y__1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__2. The scenario consists mostly of related events.

___Y__3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point (if applicable)

___Y__4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__5. The events are valid with regard to physics and thermodynamics.

___Y__6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

_N/A__7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__8. The simulator modeling is not altered.

___Y__9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__10. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__11. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__12. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__13. Level of difficulty is appropriate to support licensing decisions for each crew position.

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total: 8

Main Generator Overheating, PT-505 failed "as-is", 3CHS*MV8104 Fails to Open, "B" CCP Pump Trips, Main Steam Break, AFW Malfunctions (AFW Pump B Fail to auto start, AFW Pump A discharge valve shut, Terry Turbine Trip), CDA Auto Actuation Failure, RCP Fails to Trip from MB4

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total: 2

CDA Auto Actuation Failure, RCP Fails to Trip from MB4

03. Abnormal Events (AE)-2 to 4 required — Total: 4

Rapid Downpower, , Main Generator Overheating, Instrument Failure Response (PT-505), AFW Malfunctions

04. Major Transients (MT)-1 to 2 required — Total: 2

Main Steam Break, Loss of Auxiliary Feed

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total: 1

E-0

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total: 2

FR-H.1, FR-Z.1

07. Critical Task (CT) - 2 to 3 required — Total: 2

FR-H.1--E: Establish 530 gpm AFW flow to the SGs before bleed and feed is required.

E-0—E: Manually actuate CDA or start at least one Quench Spray Pump before transition out of E-0 to FR-H.1.

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total: 60 min

09. EOP run time: — Total: 30 min

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

NOTES: Reactivity Manipulation: Downpower directed by Main Gen. ARP

SECTION 4

EVALUATION GUIDE

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

All Control Room Conduct, Operations and Communications shall be in accordance with MP-14-MMM.

"Review the Simulator Operating Limits(design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

SIMULATOR PROBLEMS DURING EXAMS

It is the responsibility of the Instructors in the simulator to insure that exam interruptions have a minimum negative impact on the Crew and the examinations we provide.

Be aware that at all times the Operators should treat the simulator as if it were the plant and you too should treat it as much like the plant as possible when they are in the simulator.

As soon as the Instructors are aware of a simulator problem that will adversely affect the exam in progress (computer fault, etc.) the Instructor should:

1. Place the simulator in FREEZE if possible.

2. Announce to the Crew that there is a simulator problem.

3. Request that the Crew leave the simulator control room. (The Crew should leave the simulator for problems which involve major switch alignments).

4. Deal with the problem (reboot, call STSB, etc.)

5. After the Instructors believe the simulator is restored to service, the Crew should be told how the exam will continue. If it is possible and felt to be acceptable to the evaluators, the examination can begin where it left off with an update on plant parameters and each Crew member is prepared to restart. If the examination will not begin where it left off, the crew should be told how and where the exam will begin again.

6. Once the Crew has been told how and where the exam will begin, have the crew conduct a brief so that the Instructor and evaluators can insure that the crew has all the necessary information to continue with the scenario.

7. Once all Crew members, Instructors and evaluators are satisfied that they have the necessary information to continue the scenario, place the simulator in RUN and announce to the Crew that you have continued the evaluation session.

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

Simulator Setup Instructions:

1. HANG Exam Placards on the simulator doors.
2. START the Sun Workstation.
   a. IF the Sun Workstation is running THEN go to SIM ACTIVE.
3. PLACE Recorder Power to ON.
4. VERIFY that the current approved training load is loaded.
5. REMOVE the step counter OVERRIDE and allow the counters to step out during the IC reset.
6. RESET to **IC 91: TEMP IC 2K2NRC-LOUT-003 (based on IC 21)**
7. ADJUST the various pot settings to the valued specified by the chart in the simulator booth or Notepad for the selected IC.
8. PLACE Simulator to RUN.
9. ADJUST MWt using Turbine Load Set to 3411, (+)0, (-)3 IF using 100% power IC.
10. RESET the Plant Calorimetric at the Instructor Station PPC by Pressing "SHIFT LEFT" and "F6" simultaneously.
11. ENSURE Simulator fidelity items cleared.
    a. CHECK the STEP COUNTERS at correct position for plant conditions.
    b. PLACE __7__ tiles under the DEMINS IN SERVICE lamacord label on MB6.
    c. PLACE the Main Turbine on the LOAD LIMITER and ENSURE Standby Load Set MATCHED if conditions require.
    d. PLACE the Westronic (5) and Gammametrics (2) recorders in active/run by depressing up or down arrow for each.
    e. CLEAR **DCS** alarms on MB7 and BOP console.

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f. VERIFY annunciator, "COMPUTER FAILURE" (MB4C, 1-11), is NOT LIT.

g. ENSURE NSSS Picture 1, MODES 1, 2, 3, 4; Burnup and Cb match lesson plan AND Cb sample date < 3 days old.

1) See laminated directions on clipboard in Sim booth.

12. RESET Computer Terminals to At Power displays if 100% power IC.

a. MB2, (AY6), CVCS Data Trend, 1 minute update, CHS-F132 (40-120), CHS-L112 (40-80), CHS-F121 (40-80), RCS-L461 (40-80)

b. MB4, (AY1), At Power Data Trend, 15 second update, CVQRPI, (3391-3428), CVQRPHRUN (3409-3413), CVQRP (3409-3413), RCL-T412*, (585-588)

c. MB4, (AY4), NSSS Picture 1, MODES 1, 2, 3, 4

d. BOP Console (AY5A), BOP Picture 26, Circ Water

e. STA Console, (AY3), NSSS Picture 15, RCP Seals

13. RESET Rad Monitor Screen to Status Grid.

14. OVERRIDE the annunciators that will be lit longterm in the CR, (as listed in the "Lit CRP Annunciators" section of the MP3 daily Status Report hanging near instructor booth door).

15. IF placing equipment OOS, THEN perform the necessary switch manipulations and hang appropriate tags, as required, listed under "Equipment OOS."

16. LOCK the Simulator Room front door.

17. **HANG** a Caution Tag on 3RCS*MV8000A stating, "Caution Tag 3RCS*MV8000A Closed and de-energized IAW Tech Spec 3.4.4, action b"

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

PLACE THE FOLLOWING EQUIPMENT OOS: STANDARD 2K2NRC EXAM EQUIPMENT

Initial Malfunctions

I/O	(RC)	3RCS*PCV455A	A PORV	OPEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	GREEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	RED - FALSE
I/O	(RC)	3RCS*MV8000	A PORV Block Valve	GREEN - FALSE
I/O	(RC)	3RCS*MV8000	A PORV Block Valve	RED - FALSE
I/O	(CV)	3CHS*MV8104	Emergency Boration Valve	OPEN - FALSE
I/O	(RC)	3RCS* P1C	RCP "C"	STOP - FALSE

MALF	FW21A	AFW Pump P1A Discharge Valve, V4, Closed				
MALF	FW20B	AFW Pump P1B Fails to Auto Start				
MALF	FW19	AFW Pump P2, Terry Turbine, Trips				BT1
MALF	RP06A	CDA Fails to Auto Actuate Train A				
MALF	RP06B	CDA Fails to Auto Actuate Train B				
MALF	RX16A	Turbine First Stage Pressure PT-505 Failure		78.7%	"as-is" failure	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

Event Malfunctions

MALF	CC01B	B CCP Pump Trips	ACTIVE		RSCU 2
ANN I/O	MB7C, D5	Generator Core Monitor Level High	ON		RSCU 3
ANN I/O	MB7C, A3	H2 & Stator Cooling Sys Trouble	ON		RSCU 3
MALF	MS01B	Main Steam Line "B" Rupture Inside Containment	100%	30 second ramp	RSCU 4

Lead Examiner: **Refer to the "Briefing Script for the Operational Exam" and brief the crew.**

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T = turnover + 1 minute		**EVENT 1:** CONVEX ordered downpower NOTE: Call as CONVEX and order Millstone Unit 3 to perform an "Emergency Load Reduction" of 300 MwE in the next 15 minutes due to Grid Instabilities.			
		AOP 3575, Rapid Downpower, Rev. 7 **Action** if crew chooses to increase power reduction rate due to perceived degrading conditions. **[Reactivity Manipulation]**		• A CONVEX requested emergency generation reduction should be completed within 15 minutes of notification. • If a unit shutdown is required, the target power level should be between 20% and 25% reactor power. • If at any time ROD CONTROL BANKS LIMIT LO - LO (MB4C 4 - 9) annunciator is received, DO NOT go to AOP 3566, Immediate Boration. Immediately perform step 9.	AOP 3575 Step 1 NOTE
			CREW	**Determine Power Reduction Rate (%/min).**	AOP 3575 Step 1

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Check desired power reduction rate - LESS THAN OR EQUAL TO 5%/min.	AOP 3575 Step 1.a
			US	Check power reduction CONVEX REQUESTED	AOP 3575 Step 1.b
			CREW	Perform load reduction at 5%/min and Proceed to step 2	AOP 3575 Step 1.c
			US	**Check Rod Control In AUTO.**	AOP 3575 Step 2
			CREW	**Align EHC Panel**	AOP 3575 Step 3
			US	Check turbine OPERATING MODE - MANUAL	AOP 3575 Step 3.a
			US	Check LOAD LIMIT LIMITING light - LIT	AOP 3575 Step 3.b
			BOP	Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light - NOT LIT	AOP 3575 Step 3.c
			BOP	Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction	AOP 3575 Step 3.d
				Select DECREASE LOADING RATE to ON	AOP 3575 Step 3.e

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	Select LOAD RATE LIMIT % MIN to required power reduction rate (% min)	AOP 3575 Step 3.f
				If at any time the power reduction rate or target power level must be changed, Return to step 1.	AOP 3575 Step 4 NOTE
			US/RO	**Verify Power Reduction Rate**	AOP 3575 Step 4
			RO	Check power reduction rate 5% MIN	AOP 3575 Step 4.a
				Check power reduction - REQUIRED TO STABILIZE PLANT	AOP 3575 Step 4.b
				Proceed to Step 5	AOP 3575 Step 4.b RNO
				Initiate Rapid Boration	AOP 3575 Step 5
				Verify RCS makeup system in - AUTO	AOP 3575 Step 5.a
				START one boric acid transfer pump	AOP 3575 Step 5.b

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T = initial MALF	**I/O** **3CHS* MV8104, OPEN - FALSE**	**EVENT 2:** Emergency Boration Valve Fails to Open		OPEN emergency boration valve (3CHS*MV8104).	AOP 3575 Step 5.c
			RO	Verify direct boric acid flow (3CHS-FI 183A) - INDICATED.	AOP 3575 Step 5.d
				Perform the following to initiate gravity boration:	AOP 3575 Step 5.d RNO
				1. Place the charging line flow control valve in MAN.	
				2. OPEN at least one gravity feed boration valve.	
				3. CLOSE at least one VCT outlet isolation valve.	
				4. Limit net charging flow to the RCS to LESS THAN 75 gpm (charging + seal injection - RCP seal return).	
				5. Adjust charging line flow control valve as required.	
				6. Proceed to step 5.f.	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Record time boration started Time_____	AOP 3575 Step 5.f
				Energize all PZR heaters	AOP 3575 Step 5.g
				Determine required boric acid addition by multiplying total power change (△%) by 15(gal/%) = _____ gal.	AOP 3575 Step 5.h
				Determine required time to borate by dividing required gallons of boric acid by the direct boric acid flowrate *(net charging flow rate if using gravity boration)* _____min	AOP 3575 Step 5.i
				Check turbine load decrease - IN PROGRESS OR COMPLETED	AOP 3575 Step 5.j
				Proceed to NOTE prior to Step 7	AOP 3575 Step 5.j RNO
			RO	If a unit shutdown is being performed, the final Mwe load should be approximately 230 Mwe.	AOP 3575 Step 7 NOTE

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US/BOP	**Initiate Load Reduction.**	AOP 3575 Step 7
			BOP	Check turbine OPERATING MODE - MANUAL	AOP 3575 Step 7.a
			BOP	Check rapid or gravity boration - IN PROGRESS	AOP 3575 Step 7.b
			BOP	Proceed to step 7.d.	AOP 3575 Step 7.b RNO
			BOP	Check LOAD RATE LIMIT % MIN set at - 3% OR 5%.LIMITING light - LIT.	AOP 3575 Step 7.c
			BOP	Utilizing DECREASE LOAD pushbutton, Adjust LOAD SET to desired final Mwe (target power level)	AOP 3575 Step 7.d
			BOP	Check power reduction - CONVEX REQUESTED.	AOP 3575 Step 7.e
			US	Inform CONVEX of load reduction rate (Mwe/min) and final Mwe level.	AOP 3575 Step 7.e RNO
			BOP	Maintain initial MVAR loading during power reduction, unless directed otherwise.	AOP 3575 Step 7.f

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US/RO	Check boration - IN PROGRESS	AOP 3575 Step 7.g
			BOP	The following step places one TD FW pump in manual while allowing the other TD FW pump to automatically unload during the downpower.	AOP 3575 Step 8 NOTE
			US/BOP	**Align One Feedwater Pump For Automatic Unloading**	AOP 3575 Step 8
T = When discovered		**EVENT 3:** Pimp Failure "As-Is" **AOP 3571**, Instrument Failure Response	US	Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback.	AOP 3571 Step 1 CAUTION
	MALF RX16A 78.7%	**NOTE**: If the PT-505 "as-is" has not been discovered by the normal downpower due to the slow rate, MODIFY the malfunction to make it more identifiable.		If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.	AOP 3571 Step 1 NOTE
			CREW	**Determine the initiating parameter and place the affected controller in MANUAL.**	AOP 3571 Step 1
			CREW	**Stabilize the plant parameters.**	AOP 3571 Step 2

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.	AOP 3571 Step 3 NOTE
			US	**Perform corrective actions using appropriate attachment.**	AOP 3571 Step 3
				Instrument Failure	**Attachment**
				Turbine Impulse Pressure Channel Failure	G
		AOP 3571 Attachment G Rev. 7	US	**Turbine Impulse Pressure Channel Failure**	
				The following annunciators are symptoms of a PT-505 or 506 failure:	
				HI T ERROR TAVE - TREF - MB4C 2-8	
				AMSAC NOT ARMED - MB4C 1-6	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				TREF/AUCT TAVE DEVIAITON - MB4C 6-5 LO POWER AUTO ROD INTERLOCK C-5 - MB4D 6-4 TURB LOAD REJECTION ARM C-7 - MB4D 6-6 LO T ERROR TAVE - TREF - MB4D 4-1 TURBINE IMPULSE PRES > P - 13 - MB4G 1, 2-2	
			BOP	**Defeat the failed channel by selecting the alternate channel on first stage steam pressure channel selector switch (3MSS-PS505Z).**	AOP 3571 Attachment G Step 1
			BOP	**If C-7 is actuated, select RESET on the steam dump mode selector.**	AOP 3571 Attachment G Step 2
			BOP	**Set steam generator pressure controller (3MSS-PK507) to 1092 psig.**	AOP 3571 Attachment G Step 3
			BOP	**Place one condenser interlock selector switch to OFF.**	AOP 3571 Attachment G Step 4

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	**Place the steam dump mode selector in the STEAM PRESSURE mode.**	AOP 3571 Attachment G Step 5
			BOP	**Place both condenser interlock selector switches to ON.**	AOP 3571 Attachment G Step 6
			RO	**Restore T_{AVE} - T_{REF} error to within 1°F and Place rod control in AUTO.**	AOP 3571 Attachment G Step 7
	ANN I/O MB4C, F8		US	**Using OP 3350, "ATWS Mitigation System Actuation Circuitry," Place AMSAC in Bypass.**	AOP 3571 Attachment G Step 8
			US	**Refer To 3TRM-7.2, Additional Requirement, AMSAC.**	AOP 3571 Attachment G Step 9
			CREW	**When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the Shift Manager.**	AOP 3571 Attachment G Step 10
			US	If the interlock (permissive annunciator window) is in the required state for the existing plant conditions, no further actions are required (e.g., tripping of bistables).	AOP 3571 Attachment G Step 11, NOTE

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	**Within one hour, Perform the following:**	AOP 3571 Attachment G Step 11
				Determine (by observation of the associated permissive annunciator windows) if the interlock is in the required state for the existing plant conditions. • RX OR TURBINE NOT AT POWER P-7 (MB4D 5-3) • TURBINE NOT AT POWER P-13 (MB4D 6-3).	AOP 3571 Attachment G Step 11a
		[Tech Specs] 3.3.1, Functional Unit 17.b, Action 8 TRM 7.2, Action 1		Refer to Technical Specification 3.3.1, Action 8.	AOP 3571 Attachment G Step 11b
			US	**Request I&C Department perform corrective maintenance on failed instrument.** • Check SG blowdown isolation valves - CLOSED • Check SG blowdown sample isolation valves - CLOSED	AOP 3571 Attachment G Step 12

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• Check SG chemical feed isolation valves - CLOSED	
T+ AOP 3575 Reactivity Manipulation Complete	**MALF** CC01B	**EVENT 4:** B RPCCW Pump Trips		The Foldout Page must be open.	AOP 3561 Step 1, NOTE
			RO	**Verify RPCCW System Alignment.**	AOP 3561 Step 1
			RO	Check RPCCW pumps - AT LEAST ONE RUNNING	AOP 3561 Step 1.a
			RO	Check RPCCW pumps - ONLY ONE RUNNING.	AOP 3561 Step 1.b
			RO	Check the standby RPCCW pump - ALIGNED TO THE AFFECTED TRAIN	AOP 3561 Step 1.c
			US	Proceed to Attachment A.	AOP 3561 Step 1.c, RNO
			RO	START the standby RPCCW pump	AOP 3561 Step 1.d
			RO	Verify RPCCW heat exchanger SW inlet isolation valves (3SWP*MOV50A or 3SWP*MOV50B) to the affected Train - OPEN	AOP 3561 Step 1.e
			RO	Check the CDS chiller on affected train -	AOP 3561

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				AUTO STARTED	Step 1.g
			RO	Check RPCCW containment supply and return header isolation valves - OPEN	AOP 3561 Step 1.h
			RO	Check RPCCW containment header cross-connect valves - CLOSED	AOP 3561 Step 1.I
				3CCP*AOV179A	
				3CCP*AOV179B	
				3CCP*AOV180A	
				3CCP*AOV180B	
				CLOSE valves	AOP 3561 Step 1.I, RNO
			RO	**Check Service Water to RPCCW Heat Exchangers**	AOP 3561 Step 2
				Verify RPCCW heat exchanger SW inlet isolation valves (3SWP*MOV50A and 3SWP*MOV50B) - OPEN.	AOP 3561 Step 2.a

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T+ AOP 3561 STEP 1 actions addressed	**ANN I/O** MB7C, 4-5, ON MB7C, 1-3, ON	**EVENT 5:** Generator Core Monitor Level Hi			
	RSCU #3	OP 3353 MB Annunciators, Rev. 6 MB7C, 4-5		**Setpoint**: Less than 50%	
		NOTE: If the PEO is dispatched to the H2 and Stator Cooling System panel, **DELETE** MB7C, 1-3 and report a "Core Monitor" alarm on the Hydrogen Control Panel (TB 14') When "simulating" operating the core monitor re-enter MB7C, 1-3 & 4-5 (if previously cleared)	US	Send operator to core monitor unit to confirm alarm	OP 3353.MB7C, 4-5, Step 1
		NOTE: Report as the PEO that "*When the 'filter' pushbutton was depressed, the monitor trace returned to normal.*"	BOP	MONITOR main generator temperatures	OP 3353.MB7C, 4-5, Step 2

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	IF monitor trace returns above alarm setpoint while "FILTER" button is pressed PERFORM the following: 1. NOTIFY ISO New England that the reactor will be tripped 2. TRIP reactor 3. Go To E-0, "Reactor Trip or Safety Injection"	OP 3353.MB7C, 4-5, Step 1
T = Manual decision to trip based on ARP direction	**MALF** MS01B **RSCU #4**	**EVENT 6:** Trip and Steam Break	RO	TRIP the reactor	
		E-0, Reactor Trip or Safety Injection, Rev. 21	Crew	Go to E-0, Reactor Trip or Safety Injection. • Foldout page must be open • ADVERSE CTMT defined as GREATER THAN 180°F or GREATER THAN 10^5 R/hr in containment.	E-0, Step 1, NOTE

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• The reactor can be interpreted as "tripped" when any two of three bulleted substeps of Step 1.* are satisfied.	
			RO	**Verify Reactor Trip**	E-0, Step 1
				• Check reactor trip and bypass breakers - OPEN	
				• Check rod bottom lights - LIT	
				• Check neutron flux - DECREASING	
			BOP	**Verify Turbine Trip**	E-0, Step 2
				Check all turbine stop valves - CLOSED	E-0, Step 2.a
			BOP	**Verify Power to AC Emergency Busses**	E-0, Step 3
			BOP	Check busses 34C and 34D - AT LEAST ONE ENERGIZED	E-0, Step 3.a
			BOP	Check busses 34C and 34D - BOTH ENERGIZED	E-0, Step 3.b
			US	**Check If SI Is Actuated**	E-0, Step 4

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	Verify Safety Injection Actuation annunciator - (MB4D 1-6 or MB2B 5-9) - LIT	EOP 35 E-0, Step 4.a
			US	Check if SI is required	E-0, Step 4, RNO
				• CTMT pressure GREATER THAN 18 psia OR • RCS pressure LESS THAN 1890 psia OR • PZR level LESS THAN 16% OR • RCS subcooling LESS THAN 32°F OR • SG pressure LESS THAN 660 psig	
				By observation of ESF Group 2 Status Panel lights, Verify both trains of SI - ACTUATED	E-0, Step 4.b
			RO	**Verify Service Water Pumps - AT LEAST ONE PER TRAIN RUNNING**	E-0, Step 5

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Verify Two RPCCW Pumps - ONE PER TRAIN RUNNING**	E-0, Step 6
			RO	**Verify ECCS Pumps Running** • Check SI pumps - RUNNING • Check RHR pumps - RUNNING • Check two charging pumps - RUNNING	E-0, Step 7
		EVENT 7: AFW Pumps Fail to Start **NOTE**: Terry Turbine has tripped, the B AFW Pump has failed to automatically start, and the discharge valve on the A AFW Pump is closed.	BOP	**Verify AFW Pumps Running** Check MD pumps - RUNNING	E-0, Step 8 E-0, Step 8.a
T = When requested as PEO	**DELETE** MALF FW21A	**[Critical Task]** **NOTE:** If dispatched as PEO, discover valve V4 on the A pump closed 5 minutes after dispatch. Call back and after receiving permission from US to open the valve AND crew has reached FR-H.1 step 3.h, remove the malfunction, FW21A. This will most likely be performed when in FR-H.1		START pump(s)	E-0, Step 8.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		NOTE: B AFW Pump has failed to automatically start.		Check turbine - driven pump - RUNNING, IF NECESSARY	E-0, Step 8.b
				OPEN steam supply valves.	E-0, Step 8.b, RNO
			BOP	**Verify FW Isolation** • Check SG feed regulating valves - CLOSED • Check SG feed regulating bypass valves - CLOSED • Check FW isolation trip valves - CLOSED • Check MD FW pump - STOPPED • Check TD FW pumps - TRIPPED • Check SG blowdown isolation valves - CLOSED • Check SG blowdown sample isolation valves - CLOSED • Check SG chemical feed isolation valves - CLOSED	E-0, Step 9
		NOTE: MSI should have occurred by this point.	BOP	**Check If Main Steam Lines Should Be Isolated**	E-0, Step 10

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Check Ctmt pressure GREATER THAN 18 psia OR Any SG pressure LESS THAN 660 psig	E-0, Step 10.a
				Proceed to Step 11	E-0, Step 10.a, RNO
		EVENT 8: Manually Actuate CDA **[Critical Task]** Manually actuate CDA or start at least one Quench Spray Train before transition out of E-0, or at other appropriate procedural cues in the EOP network	RO	**Check if CDA Required**	E-0, Step 11
				Check Ctmt pressure is GREATER THAN 23 psia OR Ctmt spray is initiated	E-0, Step 11.a
			RO	Verify quench spray initiated	E-0, Step 11.b
			RO	• Check quench spray pumps - RUNNING	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• Check quench spray pump discharge valves (3QSS*MOV34A and 3QSS*MOV34B) - OPEN	
			RO	Initiate CDA.	E-0, Step 11.b RNO
			RO	IF CDA will NOT actuate,	
				THEN	
			RO	1. START quench spray pumps.	
			RO	2. OPEN quench spray pump discharge valves.	
				Check RPCCW pumps - STOPPED	E-0, Step 11.c
			RO	STOP RPCCW pumps.	E-0, Step 11.c, RNO
			BOP	Check CAR fans - STOPPED	E-0, Step 11.d
			BOP	STOP CAR fans	E-0, Step 11.d RNO
			BOP	Check CRDM fans - STOPPED	E-0, Step 11.e

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	STOP CRDM fans	E-0, Step 11.e, RNO
T = Initial Malfunction	**I/O:** 3RCS* P1C STOP - FALSE	**EVENT 9:** RCP Fails to Trip	RO	STOP all RCPs	E-0, Step 11.f
	MALF RC09C when dispatched as PEO	**NOTE**: 3RCS* P1C will have to be tripped locally.			
			BOP	STOP all main circulating water pumps	E-0, Step 11.g
			US	Verify ESF Group 4 lights - LIT	E-0, Step 11.h
				Align component(s) as necessary for minimum safety function.	E-0, Step 11.h RNO
				Proceed to step 13.	E-0, Step 11.i
			RO	**Verify CIA**	E-0, Step 13

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	Check ESF Group 2 status columns 2 through 10 - LIT	E-0, Step 13.a
			RO	**Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights - OFF • Verify ESF Group 2 lights - LIT	E-0, Step 14
			RO	**Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature GREATER THAN 180°F OR • Ctmt radiation GREATER THAN 10^5 R/hr	E-0, Step 15
			CREW	DO NOT use ADVERSE CTMT parameters.	E-0, Step 15, RNO
			RO	**Verify ECCS Flow**	E-0, Step 16
				Check charging pumps - FLOW INDICATED	E-0, Step 16.a
			RO	Check RCS pressure - GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)	E-0, Step 16.b

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Proceed to Step 16.d	E-0, Step 16.b, RNO
			RO	Check SI pumps - FLOW INDICATED	E-0, Step 16.d
			RO	Check RCS pressure - LESS THAN 300 psia (500 psia ADVERSE CTMT)	E-0, Step 16.e
				Proceed to step 17.	E-0, Step 16.e RNO
			BOP	**Verify Adequate Heat Sink**	E-0, Step 17
				Check NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT)	E-0, Step 17.a
			US	Proceed to Step 17.d.	E-0, Step 17.a, RNO
			BOP	Control feed flow to maintain NR level - BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)	E-0, Step 17.b
			US	Proceed to Step 18.	E-0, Step 17.c

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	Verify Total AFW Flow - GREATER THAN 530 gpm	E-0, Step 17.d
				START pumps and Align valves as necessary	E-0, Step 17.d RNO
				IF AFW flow GREATER THAN 530 gpm can NOT be established THEN	
				Initiate monitoring of CSF Status Trees and	
				Go To FR-H.1, Response to Loss of Secondary Heat Sink	
		FR-H.1, Response to Loss of Secondary Heat Sink, Rev. 13	US	If total feed flow is LESS THAN 530 gpm due to operator action, DO NOT PERFORM THIS PROCEDURE.	FR-H.1 Step 1 CAUTION
				Feed flow must not be reestablished to any faulted SG if a non-faulted SG is available.	
			BOP	**Check IF Secondary Heat Sink is Required.**	FR-H.1 Step 1
				Verify RCS pressure - GREATER THAN ANY NON-FAULTED SG PRESSURE.	FR-H.1 Step 1.a
				Verify RCS hot leg W temperature - GREATER THAN 350^{O}f.	FR-H.1 Step 1.b

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Check Charging Pump Status - AT LEAST ONE RUNNING.**	FR-H.1 Step 2
			US	Steps 10. Through 14. (bleed and feed) of this procedure must be immediately initiated if either of the following occur: W level in any 3 SGs is LESS THAN 29% (59% ADVERSE CTMT) OR PZR pressure is GREATER THAN OR EQUAL TO 2350 psia due to loss of secondary heat sink indicated by core exit TCs increasing. If offsite power is lost after SI reset, manual action to restart safeguards equipment may be required. If the recirculation spray pumps are required and have not started, DO NOT reset CDA.	FR-H.1 Step 3 CAUTION
			US	**Try to Establish AFW Flow to at Least One SG.**	FR-H.1 Step 3
			RO	Check SG blowdown isolation	FR-H.1 Step 3.a
			RO	• Verify SG blowdown isolation valves - CLOSED	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	• Verify SG blowdown sample isolation valves - CLOSED	
				Verify AFW valve alignment - PROPER EMERGENCY ALIGNMENT.	FR-H.1 Step 3.b
	DELETE **FW21A**	**[Critical Task]** **NOTE:** If dispatched as PEO, discover valve V4 on the A pump closed 5 minutes after dispatch. Call back and after receiving permission from US to open the valve remove the malfunction, FW21A but NOT before step 3.h.	US/PEO	Perform the following: 1. Align valves as necessary to restore flow. 2. Perform the applicable action: • IF flow is restored, THEN Proceed to Step 3.f.	FR-H.1 Step 3.b RNO
			BOP	Verify DWST suction valves (3FWA*AOV61A and 3FWA*AOV61B) - OPEN.	FR-H.1 Step 3.c
			BOP	Verify DWST level - LESS THAN 80,000 gal	FR-H.1 Step 3.d
			US	Proceed to step 3.f and, IF DWST level decreases to LESS THAN 80,000 gal, THEN Perform step 3.e.	FR-H.1 Step 3.d RNO
			BOP	Check MD pumps - RUNNING.	FR-H.1 Step 3.f

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP/US	START pumps. IF the pump(s) do NOT start, THEN Restore power to the pumps (MB or locally).	FR-H.1 Step 3.f RNO
			BOP	Check turbine - driven pump - RUNNING.	FR-H.1 Step 3.g
				OPEN steam supply valve(s). IF the pump does NOT start, THEN OPEN steam supply isolation valves: 3MSS*MOV17A 3MSS*MOV17B 3MSS*MOV17D	FR-H.1 Step 3.g RNO
	DELETE **FW21A**	**[Critical Task]** **NOTE:** If dispatched as PEO, discover valve V4 on the A pump closed 5 minutes after dispatch. Call back and after receiving permission from US to open the valve remove the malfunction, FW21A	US	Locally restore AFW flow using Attachment A, *if required.*	FR-H.1 Step 3.h
				Check total flow to SGs - GREATER THAN 530 gpm.	FR-H.1 Step 3.i

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	Perform the applicable action: • IF no AFW flow is indicated, THEN Proceed to Step 4. • IF any AFW flow indicated, THEN Proceed to step 3.k.	FR-H.1 Step 3.i RNO
				Verify NR level in at least one SG is GREATER THAN 8% (42% ADVERSE CTMT).	FR-H.1 Step 3.k
			US	Proceed to step 3.m.	FR-H.1 Step 3.k RNO
			US	Go to procedure and step in effect.	FR-H.1 Step 3.l
			BOP/RO	Verify a secondary heat sink established • WR level in at least one SG - INCREASING • Core exit TCs - STABLE OR DECREASING	FR-H.1 Step 3.m
			BOP	Maintain flow to restore NR level to GREATER THAN 8% (42% ADVERSE CTMT)	FR-H.1 Step 3.n
			US	Go to procedure and step in effect.	FR-H.1 Step 3.o

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 18
			RO	**Verify ECCS Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 19
			US	**Check Plant Status**	E-0, Step 20
		NOTE : When asked, REPORT that "all SLCRS doors indicate closed."		Verify SLCRS doors - CLOSED	E-0, Step 20.a
			RO	Check CONTROL BUILDING ISOLATION annunciator (MB4D 3-6) - LIT	E-0, Step 20.b
			RO	Check if CBI is required	E-0, Step 20.b, RNO
			RO	• Ctmt pressure GREATER THAN 18 psia OR	
			RO	• Control Building radiation monitor in alarm OR • SI manually actuated	
			RO	IF CBI required, THEN initiate CBI.	

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	IF CBI is NOT required, THEN proceed to Step 21.	
			RO	Verify ESF Group 2 CBI lights - LIT	E-0, Step 20.c
			RO	Align HVAC components as necessary for minimum safety function.	E-0, Step 20.c, RNO
			BOP	Verify control building purge supply fan and purge exhaust fan - NOT RUNNING	E-0, Step 20.d

			BOP	Perform the following:
				• Stop purge supply fan.
				• Stop purge exhaust fan.
				• Locally Close instrument air isolations
				  • 3IAS-V725 (CB 47' IRR stairwell)
				  • 3IAS-V726 (CB 47' IRR stairwell)
				  • 3IAS-V644 (CB 66' west wall)
					E-0, Step 20.d, RNO

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• Locally Close instrument air isolation valve for 3HVC-AOD134	
			BOP	Control building air bank isolation valves - OPEN (after 60 seconds)	E-0, Step 20.e
			BOP	OPEN valves	E-0, Step 20.e, RNO
			BOP	IF at least one air bank isolation valve can NOT be opened, THEN Locally throttle Open at least one pair of air bank isolation bypass valves to maintain 0.125 inches water at Control Building ΔP indicator on VP1. • 3HVC*V758 and 3HVC*V759	
			BOP	STOP kitchen exhaust fan	E-0, Step 20.f
BOOTH INST	NOTE	When called, WAIT 3 - 5 min, Then REPORT "All Control Building pressure boundary doors are Closed and Dogged."	PEO	Close and Dog (as applicable) Control Building pressure boundary doors.	E-0, Step 20.g

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	**Check RCS Temperature**	E-0, Step 21
				Verify RCS cold leg WR temperature - BETWEEN 550°F and 560°F	E-0, Step 21.a
			US	Perform the applicable action:	E-0, Step 21.a, RNO
				• IF temperature is GREATER THAN 550°F AND 560°F, THEN 1) Dump steam to the condenser, if available OR Dump steam to atmosphere.	
			US	2) Proceed to Step 22.	
				• IF the temperature is LESS THAN 550°, THEN proceed to Step 21c.	
			US	Proceed to Step 22	E-0, Step 21.b
			BOP	Maintain total feed flow BETWEEN 530 and 600 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG	E-0, Step 21.c
			BOP	CLOSE SG atmospheric dump and dump bypass valves	E-0, Step 21.d

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	Check the following valves - CLOSED • MSIVs • MSIV bypass valves	E-0, Step 21.e
			US	Perform the following:	E-0, Step 21.e, RNO
			BOP	Place both condenser steam dump interlock selector switches to OFF.	E-0, Step 21.e.1, RNO
			BOP	IF unexpected cooldown continues, THEN CLOSE the MSIVs and MSIV bypass valves.	E-0, Step 21.e.2, RNO
			RO	**Check PZR Valves**	E-0, Step 22
				Verify PORVs - CLOSED	E-0, Step 22.a
			RO	Verify normal PZR spray valves - CLOSED	E-0, Step 22.b
			RO	Verify PZR safety valves - CLOSED	E-0, Step 22.c
				Check PORV block valves - OPEN	E-0, Step 22.d

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			CREW	To prevent damage to the RCP seal(s), seal injection flow should be maintained to all RCPs.	E-0, Step 23, CAUTION
			RO	**Check If RCPs Should Be Stopped**	E-0, Step 23
			RO	Verify RCPs - ANY RUNNING	E-0, Step 23.a
			US	Proceed to Step 24	E-0, Step 23.a, RNO.
			BOP/RO	**Check If SG Secondary Boundaries Are Intact**	E-0, Step 24
				Check pressure in all SGs	E-0, Step 24.a
				• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED	
		Ensure crew request activity samples with HP coverage	BOP	Initiate monitoring of CSF Status Trees and Go to E-2, Faulted Steam Generator Isolation	E-0, Step 24.a RNO

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		TERMINATE UPON TRANSITION TO E-2, Faulted S/G Isolation			
		FR-Z.1, Response to CTMT High Pressure, Rev. 10	US/RO	**Verify CIA (ESF Group 2 Status columns 2 Through 10)**	FR-Z.1, Step 1
		[Critical Task] **NOTE**: CDA has not automatically actuated. IF the crew has not determined this prior to entering FR-Z.1, these RNOs should prompt them to actuate CDA.	RO	Initiate CIA OR reposition valves for minimum safety function.	FR-Z.1, Step 1 RNO
			US	**Verify CIB**	FR-Z.1, Step 2
			RO	Check RPCCW Ctmt supply and return header isolation valves - CLOSED	FR-Z.1, Step 2.a
			RO	CLOSE valves.	FR-Z.1, Step 2.a, RNO
			RO	Check RPCCW pumps - STOPPED	FR-Z.1, Step 2.b
			RO	STOP pumps.	FR-Z.1, Step 2.b, RNO

Lesson Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	STOP all RCPs	FR-Z.1, Step 2.c
				If ECA-1.1, Loss of Emergency Coolant Recirculation, is in progress, Ctmt spray should be operated as directed in ECA-1.1 rather than steps 3, 4, and 7	FR-Z.1, Step 3 CAUTION
			US	**Verify Quench Spray System Operation**	FR-Z.1, Step 3
			RO	Check RWST level - GREATER THAN 100,000 gal (annunciator RWST EMPTY QSS PP OFF on MB2A 5-2 not lit)	FR-Z.1, Step 3.a
			RO	Verify quench spray pumps - RUNNING	FR-Z.1, Step 3.b
		[Critical Task]	RO	START pumps.	FR-Z.1, Step3.b, RNO
			RO	Verify quench spray pump discharge valves (3QSS*MOV34A and 3QSS*MOV34B) - OPEN	FR-Z.1, Step 3.c
		[Critical Task]	RO	OPEN valves.	FR-Z.1, Step 3.c, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Check quench spray system - FLOW EXISTS IN AT LEAST ONE TRAIN	FR-Z.1, Step 3.d
			US	Proceed to step 5.	FR-Z.1, Step 3.e
			BOP	**STOP All Main Circulating Water Pumps**	FR-Z.1, Step 5
			BOP	**Check Containment Ventilation** • Verify CAR fans - STOPPED • Verify CRDM fans - STOPPED	FR-Z.1, Step 6
			BOP	STOP fans.	FR-Z.1, Step 6, RNO
			US	**Verify Recirculation Spray System Operation**	FR-Z.1, Step 7
			RO	Check CDA signal - PRESENT AFTER 11 minutes (annunciator CTMT RECIRC PUMP AUTO START SIGNAL on MB2B 1-8 lit)	FR-Z.1, Step 7.a
			US	Proceed to step 8 and, WHEN 11 minutes have elapsed since CDA initiation, THEN Perform steps 7b through 7e.	FR-Z.1, Step 7.a, RNO
			RO	Verify recirculation spray pumps - RUNNING	FR-Z.1, Step 7.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	WHEN Ctmt WR sump level is GREATER THAN 1.5 feed THEN START pumps.	FR-Z.1, Step 7.b, RNO
			RO	Verify recirculation spray pump suction isolation valves - OPEN	FR-Z.1, Step 7.c
			RO	OPEN valves.	FR-Z.1, Step 7.c, RNO
			RO	Verify recirculation spray pump discharge isolation valves - OPEN	FR-Z.1, Step7.d
			RO	OPEN valves.	FR-Z.1, Step 7.d, RNO
			RO	Verify recirculation spray - FLOW EXISTS IN AT LEAST ONE TRAIN	FR-Z.1, Step 7.e
			RO	**Verify ESF Status Panel Group 4 Lights - LIT**	FR-Z.1, Step 8
			CREW	Operate components as necessary for minimum safety function.	FR-Z.1, Step 8, RNO
			US/ BOP	**Verify Main Steam Line Isolation** • Check MSIVs and MSIV bypass valves - CLOSED	FR-Z.1, Step 9

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Check ESF Status Group 3 lights - LIT	
			BOP	Initiate MSI.	FR-Z.1, Step 9, RNO
			BOP/RO	**Verify Main Feedwater Isolation**	FR-Z.1, Step 10
				• Verify MD AND TD FW pumps - TRIPPED	
				• Verify FW isolation trip valves - CLOSED	
				• Verify SG feed regulating valves - CLOSED	
				• Verify SG feed regulating bypass valves - CLOSED	
				• At least one SG must be maintained available for RCS cooldown.	FR-Z.1, Step 11, CAUTION
				• If all SGs are faulted, at least 100 gpm feed flow should be maintained to each SG.	FR-Z.1, Step 11, CAUTION
			US	**Check If Auxiliary Feedwater Flow Should Continue To All SGs**	FR-Z.1, Step 11
			BOP/RO	Check pressure in all SGs	FR-Z.1, Step 11.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED	
			US	**Check Hydrogen Concentration**	FR-Z.1, Step 12
			PEO	Using OP 3313A, "Hydrogen Recombiners and Recombiner Building Ventilation," Start the hydrogen monitoring system	FR-Z.1, Step 12.a
			US	Verify hydrogen concentration - LESS THAN 5%	FR-Z.1, Step 12.b
			US	Proceed to step 13.	FR-Z.1, Step 12.b, RNO
			US	**Notify ADTS of Hydrogen Concentration Inside Containment**	FR-Z.1, Step 13
			US	**Periodically Monitor Hydrogen Concentration (every 8 hours)**	FR-Z.1, Step 14
			US	**Go to Procedure and Step In Effect**	FR-Z.1, Step 15

TERMINATE UPON TRANSITION TO E-2, Faulted S/G Isolation.

SECTION 4

ID Number: 2K2 NRC-003 Revision: 0

EVALUATION GUIDE

I. SUMMARY

The following Critical Tasks are covered in this exam:

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS FOR SELECTION
Manually actuate CDA or start at least one Quench Spray Pump before transition out of E-0 to FR-H.1.	E-0—E	026.A2.03 4.1/4.4	Failure to manually actuate CDA or start at least one Quench Spray Train under the postulated conditions constitutes a "demonstrated inability by the crew to recognize a failure/incorrect auto actuation of an ESF system or component."
Establish 530 gpm AFW flow to the SGs before bleed and feed is required.	FR-H.1—E	061.A3.01 4.2/4.2	Failure to establish the minimum required feedwater flow rate, under the postulated plant conditions, results in "adverse consequence(s) or a significant degradation in the mitigative capability of the plant" and represents a "demonstrated inability by the crew to take an action or combination of actions that would prevent a challenge to plant safety.

Note: [*] Used to designate critical tasks. Should also be incorporated into column 3 or 4 of Instructor Guide.

SECTION 4

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

EVALUATION GUIDE

SECTION 5

SCENARIO INITIAL CONDITIONS

ID Number: 2K2 NRC-003 Revision: 0

Reactor Power:	100%
Operating History:	450 days on line
RCS Boron:	50 ppm
Core Burnup:	18,600 MWD/MTU
Condensate Demins:	7 demins in service
Evolutions in Progress:	NONE, A Train Protected, Intake Condition: GREEN
Major Equipment OOS:	"A" PORV is inoperable due to an electrical short in the control circuitry. It has been out of service for 8 hours. Electrical maintenance estimates that the valve will be returned to service within 24 hours. The following Tech Specs are applicable: Tech Spec 3.4.4, action b 3TRM 7.4.1 action a.1 and a.3 for both the A PORV and the block valve 3RCS*MV8000A

Crew Instructions:

Maintain present plant conditions

Plant/Simulator Differences:

- Real Time and Simulator Rad Monitor historical data not valid prior to the beginning of this exercise.
- Auto-log terminals need to be refreshed after entry is made.
- If not using the speed dial option on the phone system, the operator must dial either #3333 or #3334 to reach the person/department they desire.
- The following PPC programs do not function on the simulator:
    - Samarium Follow
    - Xenon Follow
    - Sequence of Events

SECTION 6

VALIDATION CHECKLIST

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

Remote functions:

All remote functions contained in the guide are certified.

Malfunctions:

All malfunctions contained in the guide are certified.

Initial Conditions:

The initial condition(s) contained in the guide are certified or have been developed from certified IC's in accordance with NSEM-4.02.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

Test Run:

The scenario contained in the guide has been test run and validated (validation sheet completed, next page)on the simulator. Simulator response is reasonable and as expected.

Examination Scenario Review

The dynamic examination review checklist is complete. (This is not required unless the exam will be used as an Annual Exam, then NUREG 1021 requirements apply.)

JMartin
Technical Reviewer

6/10/02
Date

SECTION 7

REFERENCE AND TASK TRACKING

Title: STEAM LINE BREAK AND FR-H.1

ID Number: 2K2 NRC-003 Revision: 0

I. References:

ARP MB7C, 3-7	Exciter Field Ground
ARP MB7C, 4-5	Gen Core Monitor Level Hi
AOP*3561	Loss of RPCCW
AOP*3575	Rapid Downpower
AOP*3571	Instrument Failure Response
EOP*E-0	Reactor Trip or Safety Injection
EOP*FR-H.1	Response to Loss of Secondary Heat Sink
EOP*FR-Z.1	Response to CTMT Overpressure
EOP*ERG_EXE	Westinghouse Owners Group Executive Document
EOP* Step _DOC	MP3 step deviation Document
EOP*ERG_HP	Westinghouse Owners Group Background Document
FAP06*01	Event Assessment, Classification and Reportability
NUREG*1021 rev 8	Examiners Standards

MILLSTONE NUCLEAR POWER STATION

LOIT NRC SIMULATOR EXAM GUIDE APPROVAL SHEET

Exam Title: INTER-SYSTEM LOCA

Revision: 0

ID Number: 2K2NRC-004 (SPARE)

Submitted by:	Steve Jackson Developer	2/12/02 Date
Validated by:	Martin Technical Reviewer	6/17/02 Date
Approved by:	Operation Manager (Optional)	Date
Approved by:	Training Supervisor	6/19/02 Date

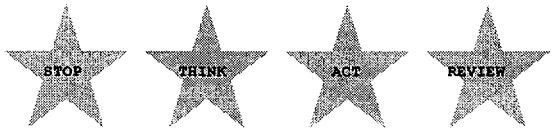
STOP THINK ACT REVIEW

SECTION 2

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER



SECTION 3

EXAM OVERVIEW

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Exam Brief:

1. The plant is at 100% power, EOL steady state operations with all control systems in automatic. The "A" PORV is out of service due to an electrical short in the control circuitry. After turnover the crew will shift running Charging Pumps as directed by the turnover per OP 3304A, Charging and Letdown, Section 4.4.

   After the normal evolution is complete, Power Range Nuclear Instrument (NI) Channel 42 Lower Detector will fail high. Inward rod motion will occur and the appropriate annunciators will alarm. Rod Control should be placed in manual and the crew should respond using AOP 3571, Instrument Failure Response. Once the failed channel has been defeated Tave will be restored by moving the rods if necessary before they are returned to automatic control.

   Once Tech Specs have been address for the failed NI channel, a leak will develop in the 6B Low Pressure Feedwater Heater. Feedwater Heater annunciators will alarm directing the crew to AOP 3567, Operation with one Feedwater Heater String Isolated. The B Heater Drain Pump will trip and the heater string will automatically isolate. The AOP response includes a plant downpower to 95% and verification of isolation of the heater string from the Control Room.

   Once the crew has confirmed isolation of the affected LP heater, a leak (tube failure) of Reactor Plant Component Cooling Water (CCP) into the Upper Oil Reservoir of the "B" RCP will occur. CCP Surge Tank level, though slight, will discernibly decrease and, after a few minutes of leakage, an Oil Reservoir high level alarm will sound. The crew should take action per the ARP and AOP 3554, RCP Trip or Stopping a RCP at Power to attempt to reduce reactor power and take the affected RCP out of service. The crew may judge that they cannot take the plant offline quickly enough to prevent RCP damage and elect to trip the plant.

   At the time of the trip, an Inter-System LOCA will occur. The crew should transition through E-0 to step 27 and then to ECA-1.2, LOCA Outside CTMT. At some point in the EOP network, depending on the speed of the crew, RCP trip criteria may be reached and should be implemented **[Critical Task]**. SI will actuate or be actuated normally except that ESF Building Ventilation (RHR area ACUs) will fail to start. When the SI cold leg injection valve (3SIH*MV8835) is closed, the break will be isolated **[Critical Task]**.

   The scenario will be terminated upon transition to E-1, Loss of Reactor or Secondary Coolant.

2. The SM should classify this event as a **Site Area Emergency - Charlie Two** due to a failure of two barriers (RCS & CTMT).

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 60 minutes

Initial Dynamic Simulator Scenario

NUREG-1021, Appendix D, Attachment 1

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 Revision: 0

I. Summary:

Facility: Millstone 3 PWR:_____ Scenario No: 2K2NRC-004 Op-Test No: 2K2

Examiners:_____ Operators:_____

Initial Conditions: IC-21; 100% power, end of life

Event No:	Malf. No.	Event Type *	Event Description
1	None	N(RO)	Shift running CHS pumps using OP 3204A, Charging and Letdown, Section 4.4
2	NI09B	I(RO) or R(RO)	Power Range NI Channel 42 Lower Detector Fails High
3	FW13N	C(RO/ BOP) R(ALL)	LP Feedwater 6B Heater Leak
4	RC14B	C(RO) R(ALL)	RPCCW Leak into RCP B Upper Oil Reservoir Rapid Downpower per AOP 3575
5	SI06A SI06B	M(ALL)	RCS to SI Inter-System LOCA
6	RP11D	C(ALL)	ESF Bldg Ventilation Fails to Automatically Actuate

*(N) ormal (R) eactivity (I) nstrument (C) omponent (M) ajor

SECTION 8
MILLSTONE UNIT 3
SIMULATOR SCENARIO ATTRIBUTES CHECKLIST
FORM ES-301-4

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Assessor: Steve Jackson

QUALITATIVE ATTRIBUTES

___Y__1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__2. The scenario consists mostly of related events.

___Y__3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point (if applicable)

___Y__4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__5. The events are valid with regard to physics and thermodynamics.

___Y__6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

_N/A__7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__8. The simulator modeling is not altered.

___Y__9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__10. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__11. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__12. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__13. Level of difficulty is appropriate to support licensing decisions for each crew position.

SECTION 8
MILLSTONE UNIT 3
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Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total: 5

Power Range NI Fails High, Leak in LP Feedwater Heater, RCP Hi Motor Temp (CCP Leak to Oil Reservoir), Inter-System LOCA,, ESF Auto Actuation Failure (ESF Bldg Ventilation)

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total: 2

ESF Auto Actuation Failure (ESF Bldg Ventilation), Inter-System LOCA

03. Abnormal Events (AE)-2 to 4 required — Total: 4

Power Range NI Fails High, Operation with One Feedwater String Isolated, RCP Hi Motor Temp (CCP Leak to Oil Reservoir), ESF Auto Actuation Failure (ESF Bldg Ventilation)

04. Major Transients (MT)-1 to 2 required — Total: 2

Rapid Downpower/Plant Trip, Inter-system LOCA

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total: 1

E-O

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total: 1

ECA-1.2, LOCA Outside CTMT

07. Critical Task (CT) - 2 to 3 required — Total: 2

ECA-1.2 -- A	Isolate the LOCA outside containment before transition out of ECA-2.1
E.1-C	Trip all RCPs before Orange Path

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total: 60 min

09. EOP run time: — Total: 30 min

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

NOTES: **Reactivity Manipulation**: Power Range High Failure/RCP High Temp

SECTION 4

EVALUATION GUIDE

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

All Control Room Conduct, Operations and Communications shall be in accordance with MP-14-MMM.

"Review the Simulator Operating Limits(design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

SIMULATOR PROBLEMS DURING EXAMS

It is the responsibility of the Instructors in the simulator to insure that exam interruptions have a minimum negative impact on the Crew and the examinations we provide.

Be aware that at all times the Operators should treat the simulator as if it were the plant and you too should treat it as much like the plant as possible when they are in the simulator.

As soon as the Instructors are aware of a simulator problem that will adversely affect the exam in progress (computer fault, etc.) the Instructor should:

1. Place the simulator in FREEZE if possible.

2. Announce to the Crew that there is a simulator problem.

3. Request that the Crew leave the simulator control room. (The Crew should leave the simulator for problems which involve major switch alignments).

4. Deal with the problem (reboot, call STSB, etc.)

5. After the Instructors believe the simulator is restored to service, the Crew should be told how the exam will continue. If it is possible and felt to be acceptable to the evaluators, the examination can begin where it left off with an update on plant parameters and each Crew member is prepared to restart. If the examination will not begin where it left off, the crew should be told how and where the exam will begin again.

6. Once the Crew has been told how and where the exam will begin, have the crew conduct a brief so that the Instructor and evaluators can insure that the crew has all the necessary information to continue with the scenario.

7. Once all Crew members, Instructors and evaluators are satisfied that they have the necessary information to continue the scenario, place the simulator in RUN and announce to the Crew that you have continued the evaluation session.

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

Simulator Setup Instructions:

1. HANG Exam Placards on the simulator doors.
2. START the Sun Workstation.
   a. IF the Sun Workstation is running THEN go to SIM ACTIVE.
3. PLACE Recorder Power to ON.
4. VERIFY that the current approved training load is loaded.
5. REMOVE the step counter OVERRIDE and allow the counters to step out during the IC reset.
6. RESET to **IC-92: TEMP IC 2K2NRC-LOUT-004 (based on IC-21)**
7. ADJUST the various pot settings to the valued specified by the chart in the simulator booth or Notepad for the selected IC.
8. PLACE Simulator to RUN.
9. ADJUST MWt using Turbine Load Set to 3411, (+)0, (-)3 IF using 100% power IC.
10. RESET the Plant Calorimetric at the Instructor Station PPC by Pressing "SHIFT LEFT" and "F6" simultaneously.
11. ENSURE Simulator fidelity items cleared.
    a. CHECK the STEP COUNTERS at correct position for plant conditions.
    b. PLACE __7__ tiles under the DEMINS IN SERVICE lamacord label on MB6.
    c. PLACE the Main Turbine on the LOAD LIMITER and ENSURE Standby Load Set MATCHED if conditions require.
    d. PLACE the Westronic (5) and Gammametrics (2) recorders in active/run by depressing up or down arrow for each.
    e. CLEAR **DCS** alarms on MB7 and BOP console.

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

f. VERIFY annunciator, "COMPUTER FAILURE" (MB4C, 1-11), is NOT LIT.

g. ENSURE NSSS Picture 1, MODES 1, 2, 3, 4; Burnup and Cb match lesson plan AND Cb sample date < 3 days old.

1) See laminated directions on clipboard in Sim booth.

12. RESET Computer Terminals to At Power displays if 100% power IC.

a. MB2, (AY6), CVCS Data Trend, 1 minute update, CHS-F132 (40-120), CHS-L112 (40-80), CHS-F121 (40-80), RCS-L461 (40-80)

b. MB4, (AY1), At Power Data Trend, 15 second update, CVQRPI, (3391-3428), CVQRPHRUN (3409-3413), CVQRP (3409-3413), RCL-T412*, (585-588)

c. MB4, (AY4), NSSS Picture 1, MODES 1, 2, 3, 4

d. BOP Console (AY5A), BOP Picture 26, Circ Water

e. STA Console, (AY3), NSSS Picture 15, RCP Seals

13. RESET Rad Monitor Screen to Status Grid.

14. OVERRIDE the annunciators that will be lit longterm in the CR, (as listed in the "Lit CRP Annunciators" section of the MP3 daily Status Report hanging near instructor booth door).

15. IF placing equipment OOS, THEN perform the necessary switch manipulations and hang appropriate tags, as required, listed under "Equipment OOS."

16. LOCK the Simulator Room front door.

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard

° **PLACE THE FOLLOWING EQUIPMENT OOS: STANDARD 2K2 NRC EXAM EQUIPMENT**

Initial Malfunctions

I/O	(RC)	3RCS*PCV455A	A PORV	OPEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	GREEN - FALSE
I/O	(RC)	3RCS*PCV455A	A PORV	RED - FALSE
I/O	(RC)	3RCS*MV8000A	A PORV Block Valve	GREEN - FALSE
I/O	(RC)	3RCS*MV8000A	A PORV Block Valve	RED - FALSE

MALF	SI06A	RCS to Inter-System LOCA	100%	BT1
MALF	SI06B	RCS to Inter-System LOCA (isolable)	100%	BT1

MALF	RP11D	Failure of Automatic Actuation of ESF Bldg. Ventilation	

Event Malfunctions

MALF	NI09B	Power Range NI Channel 42 Lower Detector Fails High	100%	15 second ramp	RSCU #1
MALF	FW13N	Low Pressure Feedwater Heater E6 Leak	100%	15 second ramp	RSCU #2
MALF	RC14B	RCP B Upper Oil Reservoir Cooling Water Leak	100%	No ramp	RSCU #3

Lead Examiner: **Refer to the "Briefing Script for the Operational Exam" and brief the crew.**

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T = 0		**EVENT 1**: Shifting Charging Pumps		**Starting/Shifting Charging Pumps**	OP 3304A, Step 4.4
		OP 3304A, Charging and Letdown, Rev. 28-01		**This Section Contains EOP Related Material**	
		[Normal Evolution]	US	A computer display, showing all data relevant to the operation of the pump being started, should be used.	OP 3304A, Step 4.4.1 NOTE
			US	IF the associated alternate minimum flow relief valves (3CHS*RV8510A or 3CHS*RV8510B) lift, REQUEST IST to perform required testing and inspections. (♣ Ref. 6.4.6)	OP 3304A, Step 4.4.1
			US/ RO/ PEO	IF starting or shifting to 3CHS*P3A, charging pump A, PERFORM the following: a) Refer To OP 3330D, "Charging Pump Cooling," and VERIFY charging pump cooling water is in operation for 3CHS*P3A, charging pump A.	OP 3304A, Step 4.4.4

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		NOTE: Throughout this procedure, when asked for local indications, all indications are normal as per procedure.	PEO	b) For 3CHS*P3A, charging pump A, CHECK lube oil reservoir level is between 1/3 and 2/3 full using 3CHS*LG1A, A lube oil reservoir site glass on pump (local).	
			PEO	c) PLACE 3CHS*P6A, charging pump A auxiliary lube oil pump in "AUTO," (local).	
				d) To align charging pump minimum flow recirculation valves for 3CHS*P3A, charging pump A, OPEN the following (MB3):	
			RO	• 3CHS*MV8111A, "RECIRC DIS"	
			RO	• 3CHS*MV8110, "RECIRC HDR ISOL"	
			RO	e) VERIFY a flow path from one of the following sources to the charging pumps:	
				• VCT	
				• RWST	
				• Boric acid tanks	
			RO	f) START 3CHS*P3A, "CHG PP A," (MB3).	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	g) VERIFY minimum recirculation flow of 60 gpm as indicated on 3CHS-F75 (computer) or SHUTDOWN pump.	
			US/ RO	h) IF any of the following conditions occur during the operation of the pump, SHUTDOWN the charging pump: • Pump operation changes from smooth to rough • Oil temperature leaving the thrust bearing exceeds 155°F (local) • Discharge pressure drops suddenly as indicated on 3CHS*PI 117 (local) • Auxiliary lube oil pressure drops less than 15 psi (local) • Pump running current exceeds 88 amps (MB3)	
			US/ PEO	i) CHECK the following parameters (locally):	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				1) WHEN oil discharge pressure is greater than 8 psig as indicated on 3CHS*PI 1023A, VERIFY appropriate auxiliary lube oil pump automatically stops.	
				2) CHECK 3CHS-TI 1021A, auxiliary lube oil bearing outlet temperatures, are less than 155°F (local).	
				3) CHECK 3CHS-PI 1023A, auxiliary lube oil filter outlet pressure, between 15 psig and 18 psig.	
				4) CHECK differential pressure between 3CHS-PI 1024A, auxiliary lube oil filter (3CHS*FLT11A) inlet, and 3CHS-PI 1023A, auxiliary lube oil filter (3CHS*FLT11A) outlet, pressure indicators between 3 psid and 10 psid.	
			RO	k) CHECK the following annunciators, not lit: • MB3A 2-7, "CHARG PP A MOTOR TEMP HI" • MB3A 3-7, "CHARG PP A LUBE OIL PRESSURE LO"	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• MB3A 5-9, "CHARG PP AUTO TRIP/OVERCURRENT"	
				• MB3B 3-1, "CHARG PP A OIL COOLER FLOW LO"	
				• MB3B 4-1, "CHARG PP A OIL COOLER TEMP HI"	
			BOP	l) VERIFY the following charging pump cubicle dampers positioned as required (VP1):	
				The ventilation supply lines to the charging pump cubicles are isolated in winter mode; no supply flow will occur when the inlet MODs are open.	OP 3304A, Step 4.4.4.l NOTE
				• 3HVR*MOD50A, ventilation supply, opened	
				• 3HVR*MOD49A, ventilation exhaust, opened	
			RO	m) IF the charging pump was started for the purpose of shifting charging pumps, PERFORM the following:	
			RO	2) STOP the desired charging pump.	
			RO	3) PLACE the applicable control switch to "AUTO."	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			RO	4) Refer To SP 3601F.3," RCS Leakage-Controlled Leakage to RCP Seals," and PERFORM leakage determination.	
			BOP	n) WHEN the applicable pump is stopped, VERIFY the following applicable charging pump cubicle dampers positioned as required (VP1):	
			US	The ventilation supply lines to the charging pump cubicles are isolated, therefore no supply flow will occur when the inlet MODs are open.	OP 3304A, Step 4.4.4.n NOTE
			BOP	1) IF charging pump 3CHS*P3B was stopped, VERIFY the following closed: • 3HVR*MOD50B, ventilation supply • 3HVR*MOD49B, ventilation exhaust	
			US/ PEO	o) For the charging pump stopped, VERIFY the appropriate auxiliary lube oil pump automatically started:	

CHS PUMP	LUBE OIL PUMP	INDICATOR
3CHS*P3B	3CHS*P6B	3CHS*PI 1023B

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T=CHS pump shift complete	**MALF** NI09B 100% 15sec ramp **RSCU #1**	**EVENT 2:** PR NI 42 UPPER DETECTOR FAILS HIGH			
		AOP 3571, Instrument Failure Response, Rev.7	US	Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a runback.	AOP 3571 Step 1 CAUTION
		[Reactivity Manipulation - potential] **or**	US	If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.	AOP 3571 Step 1 NOTE
		[Instrument Malfunction - potential]	RO	**Determine the initiating parameter and place the affected controller in MANUAL.**	AOP 3571 Step 1
			CREW	**Stabilize the plant parameters.**	AOP 3571 Step 2

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.	AOP 3571 Step 3 NOTE
			US	**Perform corrective actions using appropriate attachment.**	AOP 3571 Step 3
				Instrument Failure	**Attachment**
				Power Range Nuclear Instrument Channel Failure	D
		AOP 3571 Rev. 7 Attachment D	US	**Power Range Nuclear Instrument Channel Failure**	
				The following annunciators are symptoms of a PZR pressure instrument failure:	
				PRESSURIZER PRESSURE HI	MB4A 3-4
				PRESSURIZER PORV CHANNEL PRESSURE HI	MB4A 4-3

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				PRESSURIZER PRESSURE DEVIATION	MB4A 4-4
				PRESSURIZER PRESSURE LO	MB4A 5-4
				PZR RELIEF VALVE DIS TEMP HI	MB4A 3-5
				PRESSURIZER SI CHANNEL PRESSURE LO	MB4A 5-3
				PZR REL TK TEMP HI	MB4A 2-2
				PZR REL TK LEVEL HI-HI/HI/LO	MB4A 2-3
				PZR REL TK PRESSURE HI	MB4A 2-4
				PZR PRES LO	MB4F 1,2,3,4-3
				PZR PRES HI	MB4F 1,2,3,4-4
				LOOP 1,2,3,4 OVR TEMP ΔT	MB4F 1,2,3,4-5
				LOOP 1,2,3,4 OVR TEMP ΔT	MB4F 1,2,3,4-7
				PZR PORV PRES HI	MB4F 1,2,3,4-13
				PZR PRES LO	MB2D 1,2,3,4-5

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				PZR PRES HI	MB2D 1,2,3-6
				Failure of two or more channels of PR instrumentation may prevent P-10 from resetting when power is reduced below 10%. If P-10 fails to reset, the following automatic reactor trip signals are lost: 1. SR HIGH FLUX TRIP (10^5 CPS) 2. IR HIGH FLUX TRIP (25%) 3. PR HIGH FLUX LOW STPT TRIP (25%) • The reactor operator must remain alert to any power increases which would necessitate a manual reactor trip. • The Gamma Metrics Nuclear Instrumentation System shall be used during the reactor shutdown in lieu of the source range channels.	AOP 3571 Attachment D Step 1 CAUTION
			RO	**Defeat the failed channel input.**	AOP 3571 Attachment D Step 1

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				At the detector current comparator drawer, Turn the following switches to the failed channel: Rod Stop Bypass Upper Section Lower Section Power Mismatch Bypass.	AOP 3571 Attachment D Step 1a
				At the comparator and rate drawer, Turn the following switch to the failed channel: Comparator Channel Defeat.	AOP 3571 Attachment D Step 1b
			RO	**Restore T_{AVE} - T_{REF} error to within 1°F and Place rod control in automatic.**	AOP 3571 Attachment D Step 2
			CREW	**When conditions have stabilized, observe MB board annunciators and parameters and immediately report any unexpected or unexplained conditions to the Shift Manager.**	AOP 3571 Attachment D Step 3
			US	**Determine which Reactor Protection System bistable (s) requires tripping:**	AOP 3571 Attachment D Step 4
				Place a check mark in the box above the appropriate channel that requires tripping on the last page of this Attachment.	AOP 3571 Attachment D Step 4a

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		[Tech Specs] LCO 3.3.1 (FU2) SURV 4.2.4.2 NOTE: 4.2.1.1.1.b. not required if the crew removes the affected channel from the AFD computer per AOP 3571, Att. D, steps 6 & 7		Refer to Technical Specification 3.3.1 and 4.2.4.2 and 4.2.1.1.1.b.	AOP 3571 Attachment D Step 4b
				Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.	AOP 3571 Attachment D Step 4c
				Remove the appropriate control power fuses for the affected channel.	AOP 3571 Attachment D Step 4d
	REMOTES See column 3	NOTE: When requested act as I&C Technician and trip bistables. REMOTES RXR107 Door Open RXR02 OTDT 421C RXR06 OTDT 421D RXR107 Door Closed		Request the I&C Department trip the appropriate bistables using Attachment D and Attachment S.	AOP 3571 Attachment D Step 4e

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				Verify the appropriate bistable status lights are lit.	AOP 3571 Attachment D Step 4f
		NOTE: If at any time during the performance of this procedure, if asked, as Reactor Engineering or Unit Management, advice that **NI power** should be used to determine reactor power.	US	**Within one hour, Determine by observation of the associated permissive annunciator window (s) that the following interlocks are in their required state for the existing plant condition (Tech, Spec. 3.3.1, Action 8):** • Rx or turbine not at power P-7 (MB4D 5-3) • Three loop permissive P-8 (MB4D 3-3) • NIS power range P-9 permissive (MB4D 6-1) • Reactor at power P-10 (MB4D 4-3).	AOP 3571 Attachment D Step 5
			US / CREW	**Perform the following to remove the affected power range input to the AFD computer (Program 3R5):**	AOP 3571 Attachment D Step 6
				On the plant process computer, Select the NSSS menu, page 2.	AOP 3571 Attachment D Step 6a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				At the NSSS menu, Select "Tilting Factors" (F9).	AOP 3571 Attachment D Step 6b
				Press the key (F5 through F8) that corresponds to the channel to be removed.	AOP 3571 Attachment D Step 6c
			US	**Within one hour, if step 6 has not been performed, Refer to T/S Surveillance Requirement 4.2.1.1.1.b.**	AOP 3571 Attachment D Step 7
			US	**Request I&C Department perform corrective maintenance on failed instrument.**	AOP 3571 Attachment D Step 8
T=NI failure complete and reactivity manipulation complete.	**MALF** FW13N **RSCU #2**	**EVENT #3:** LP Feedwater Heater 6B Leak			
		AOP 3567, Operation With One Feedwater Heater String Isolated, Rev 4	CREW	When removing a feedwater heater from service during turbine operation, closely monitor turbine vibration, differential expansion, nuclear power, and feedwater heater temperatures and pressures.	AOP3567 Step 1 CAUTION
		[Reactivity Manipulation]	CREW	**Decrease Reactor Power To EQUAL TO OR LESS THAN 95%**	AOP3567 Step 1

Lesson Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		NOTE: The leak is in LP Feedwater Heater E6B (6th Point, B Train)	CREW	**Identify Faulted Feedwater Heater String** • Check feedwater heater levels - HIGH (with proper LCV operation)	AOP3567 Step 2
		NOTE: If PEO dispatched, report abnormal noise and vibration		• Check feedwater heater - NOISE AND VIBRATION • Check feedwater heater performance - DEGRADED	
			BOP	**OPEN Feedwater Heater Bypass Valve For The Affected Feedwater Heaters**	AOP3567 Step 3
		NOTE: This valve will be open		For the low pressure heaters (3CNM-MOV88)	
		NOTE: This valve will be closed		For the 1st point heaters (3FWS-MOV17)	
			BOP	**Check 1st Point Feedwater Heater Bypass Valve (3FWS-MOV17) - OPEN**	AOP3567 Step 4
			US	Proceed to step 7.	AOP3567 Step 4 RNO
			BOP	**Check LP Feedwater Heater Bypass Valve (3CNM-MOV88) - OPEN**	AOP3567 Step 7

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			US	**Isolate Steam Supply and Drains For LP Feedwater Heaters**	AOP3567 Step 8
			BOP	Check affected low pressure feedwater heater string extraction steam supply valves - CLOSED	AOP3567 Step 8.a

For String A	For String B	For String C
3ESS-MOV29A (E2A)	3ESS-MOV29B (E2B)	3ESS-MOV29C (E2C)
3ESS-MOV38A (E3A)	3ESS-MOV38B (E3B)	3ESS-MOV38C (E3C)
3ESS-MOV47A (E4A)	3ESS-MOV47B (E4B)	3ESS-MOV47C (E4C)

			BOP	CLOSE valves.	AOP3567 Step 8.a RNO
			BOP	Check affected low pressure feedwater heater string extraction steam drain valves - OPEN	AOP3567 Step 8.b

For String A	For String B	For String C
3DTM-AOV46A (E2A)	3DTM-AOV46B (E2B)	3DTM-AOV46C (E2C)
3DTM-AOV47A (E3A)	3DTM-AOV47B (E3B)	3DTM-AOV47C (E3C)

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		3DTM-AOV49A (E4A) / 3DTM-AOV49B (E4B) / 3DTM-AOV49C (E4C)			
			BOP	OPEN valves.	AOP3567 Step 8.b RNO
				IF the low pressure feedwater heater string extraction steam drain valves will NOT open, THEN Open affected low pressure feedwater heater string extraction steam drain bypass valves using Attachment C.	
			BOP	**Verify Affected SG Blowdown Flash Tank Vent - CLOSED**	AOP3567 Step 9
				For heater E4A 3BDG-MOV21A For heater E4B 3BDG-MOV21B For heater E4C 3BDG-MOV21C	
			BOP	CLOSE valves.	AOP3567 Step 9 RNO

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			BOP	If a heater drain tank pump is stopped with the Main Feed System in operation, closely monitor the main feed pump suction pressure, discharge pressure, and flow rate for abnormalities.	AOP3567 Step 10 NOTE
		NOTE: See attached ARP MB6A, 5-7, to direct PEO actions on Heater Drain Pump trip.	BOP	**Verify Affected 4th Point Heater Drain Pump - TRIPPED**	AOP3567 Step 10
			BOP	STOP pump.	AOP3567 Step 10 RNO
			CREW	**Complete Isolation Of Feedwater Heater String**	AOP3567 Step 11
			BOP	Check affected heater outlet isolation valve - CLOSED For string A 3CNM-MOV70A	AOP3567 Step 11.a
			BOP	CLOSE valves.	AOP3567 Step 11.a RNO
			BOP	Check affected heater inlet isolation valve - CLOSED	AOP3567 Step 11.b

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				For string A 3CNM-MOV49A	
			BOP	CLOSE valves.	AOP3567 Step 11.b RNO
		NOTE: Objective of the procedure met. Consult with Lead Examiner and proceed ahead to **Event 4.**	CREW	**Perform Local Isolation of Affected LP Feedwater**	AOP3567 Step 12
			US	Dispatch an operator to Perform the local actions to isolate the affected feedwater heater string using Attachment B	AOP3567 Step 12.a
			US	WHEN the local actions specified in Attachment B are complete, THEN Proceed to step 13	AOP3567 Step 12.b
				Following the performance of the proceeding steps, the affected feedwater heater string is sufficiently isolated for continued power operation.	AOP3567 Step 13 NOTE
			CREW	**Verify MB Annunciators And Parameters - AS EXPECTED**	AOP3567 Step 13
				Immediately notify the Shift Manager of any unexplained or unexpected conditions.	AOP3567 Step 13 RNO

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			CREW	**Perform Follow-up Actions:**	AOP3567 Step 14
			CREW	If desired, increase reactor power to 100%	AOP3567 Step 14.a
			US	Repair affected feedwater heater string	AOP3567 Step 14.b
			CREW	Restore the affected 1st point feedwater heater to service by performing the following:	AOP3567 Step 14.c
				Using OP 3321, "Main Feedwater," Place the tube side of the affected HP feedwater heater in service	AOP3567 Step 14.c 1)
				Using OP 3320, "Feedwater Heater Drains and Vents," Place the shell side of the affected HP feedwater heater in service	AOP3567 Step 14.c 2)
			US	Notify Plant Engineering (ISI Group) that the LP feedwater heater bypass line or the HP feedwater heater bypass line (MP3 Erosion/Corrosion Program low usage lines) has been placed in service	AOP3567 Step 14.d

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
T= AOP 3567 substantially complete AND Examiner's Cue.	**MALF** RC14B 100% **RSCU #3**	**EVENT 4**: RPCCW Leak into RCP B Upper Oil Reservoir			
		NOTE: The reservoir high level alarm will sound after the malfunction has been in about 4 minutes.	RO	Check RCS-L477A, RCP C upper oil reservoir level computer point, to confirm alarm.	OP 3353.MB4B Step 1
			CREW	MONITOR the following RCP C computer points: • RCS-T481A, RCP C upper thrust bearing temperature • RCS-T481B, RCP C upper thrust bearing temperature • RCS-T485A, RCP C upper thrust bearing temperature	OP 3353.MB4B Step 2
			RO	IF at any time RCP C thrust bearing or radial bearing temperature computer point is greater than 195° F PERFORM the following: • TRIP reactor • STOP RCP C	OP 3353.MB4B Step 3

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
				• Go To E-0	
			US	CHECK 3CCP-LI20B, RPCCW surge tank level, for indication of RPCCW leakage.	OP 3353.MB4B Step 4
			US	The following steps requires containment entry.	OP 3353.MB3B ALARA Step 5
			CREW	IF directed by the SM/US CHECK for RPCCW to RCP C lube oil leak.	OP 3353.MB3B Step 5
			US	Refer to Tech Specs and DETERMINE LCOs	OP 3353.MB3B Step 6
		AOP 3554, Stopping an RCP at Power, Rev. 6	RO	**Check RCP Status - ALL PUMPS RUNNING.**	AOP 3554 Step 1
			RO	**Check Reactor Power.**	AOP 3554 Step 2
				Verify THREE LOOP PERMISSIVE P-8 annunciator (MB4D 3-3) - LIT.	AOP 3554 Step 2.a
		NOTE: The rate at which temperature is increasing should inspire the crew to use the Rapid Downpower		Go to one of the following to reduce power: • AOP 3575, "Rapid Downpower • OP 3204, "At Power Operation"	AOP 3554 Step 2.a RNO

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
		AOP 3575, Rapid Downpower, Rev.7		• A CONVEX requested emergency generation reduction should be completed within 15 minutes of notification.	AOP 3575 Step 1 NOTE
		[Reactivity Manipulation]		• If a unit shutdown is required, the target power level should be between 20% and 25% reactor power. • If at any time ROD CONTROL BANKS LIMIT LO - LO (MB4C 4 - 9) annunciator is received, DO NOT go to AOP 3566, Immediate Boration. Immediately perform step 9.	
			CREW	**Determine Power Reduction Rate (%/min).**	AOP 3575 Step 1
			US	Check desired power reduction rate - LESS THAN OR EQUAL TO 5%/min.	AOP 3575 Step 1.a
			US	Check power reduction CONVEX REQUESTED	AOP 3575 Step 1.b
			US	Proceed to Step 1.d.	AOP 3575 Step 1.b RNO

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			CREW	Determine power reduction rate using Table.	AOP 3575 Step 1.d

		Total Power Change (△%)							
		10%	20%	30%	40%	50%	60%	70%	
Time to Reduce Power (min)	15	1	3	3	3	5	5	5	
	30	0.5	1	1	3	3	3	3	
	45	0.5	0.5	1	1	3	3	3	
	60		0.5	0.5	1	1	1	3	
	75		0.5	0.5	1	1	1	1	
	90		0.5	0.5	0.5	1	1	1	
	105		0.5	0.5	0.5	0.5	1	1	
	120			0.5	0.5	0.5	0.5	1	
	135			0.5	0.5	0.5	0.5	1	
	150			0.5	0.5	0.5	0.5	0.5	
	160			0.5	0.5	0.5	0.5	0.5	

			US	**Check Rod Control In AUTO.**	AOP 3575 Step 2

Exam Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 (SPARE) Revision: 0

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Action	Standard
			CREW	**Align EHC Panel**	AOP 3575 Step 3
			US	Check turbine OPERATING MODE - MANUAL	AOP 3575 Step 3.a
			US	Check LOAD LIMIT LIMITING light - LIT	AOP 3575 Step 3.b
			BOP	Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light - NOT LIT	AOP 3575 Step 3.c
			BOP	Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction	AOP 3575 Step 3.d
				Select DECREASE LOADING RATE to ON	AOP 3575 Step 3.e
			BOP	Select LOAD RATE LIMIT % MIN to required power reduction rate (% min)	AOP 3575 Step 3.f
				If at any time the power reduction rate or target power level must be changed, Return to step 1.	AOP 3575 Step 4 NOTE
			US/RO	**Verify Power Reduction Rate**	AOP 3575 Step 4
			RO	Check power reduction rate 5% MIN	AOP 3575 Step 4.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	Check power reduction - REQUIRED TO STABILIZE PLANT	AOP 3575 Step 4.b
				Proceed to step 5.	AOP 3575 Step 4.b RNO
			RO	**Initiate Rapid Boration**	AOP 3575 Step 5
				Verify RCS makeup system in - AUTO	AOP 3575 Step 5.a
				START one boric acid transfer pump.	AOP 3575 Step 5.b
				OPEN emergency boration valve (3CHS*MV8104).	AOP 3575 Step 5.c
			RO	Verify direct boric acid flow (3CHS-FI 183A) - INDICATED.	AOP 3575 Step 5.d
				OPEN charging line flow control valve, to match boric acid flow (3CHS-FI 183A)	AOP 3575 Step 5.e
			RO	Record time boration started Time _____	AOP 3575 Step 5.f
				Energize all PZR heaters.	AOP 3575 Step 5.g

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Determine required boric acid addition by multiplying total power change (△%) by 15 (gal/%) = _____ gal.	AOP 3575 Step 5.h
				Determine required time to borate by dividing required gallons of boric acid by the direct boric acid flowrate (*net charging flow rate if using gravity boration)* _____ min.	AOP 3575 Step 5.i
			US	Check turbine load decrease - IN PROGRESS OR COMPLETED.	AOP 3575 Step 5.j
			US	Proceed to NOTE prior to Step 8.	AOP 3575 Step 5.k
			BOP	The following step places one TD FW pump in manual while allowing the other TD FW pump to automatically unload during the downpower.	AOP 3575 Step 8 NOTE
		NOTE: The degrading oil reservoir condition will eventually either impell the Crew to manually trip the Reactor OR the RCP will seize and the Reactor will trip on RCP Low Speed. It is not expected that the crew will get much further than Step 8 of AOP 3575 before one of these conditions occurs.	US/BOP	**Align One Feedwater Pump For Automatic Unloading**	AOP 3575 Step 8

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	Verify removing a feedwater pump from service during the downpower - DESIRED	AOP 3575 Step 8.a
T= Downpower underway and reactivity manipulation complete if done here plus Examiner's Cue	**MALF** RC14B ongoing	**EVENT 4**: RPCCW Leak into RCP C Upper Oil Reservoir - Ongoing			
		EVENT 5: Inter-System LOCA			
		NOTE: US should go to "Master Silence" before ordering reactor trip .	RO	TRIP the reactor	
		E-0, Reactor Trip or Safety Injection, Rev. 21	Crew	Go to E-0, Reactor Trip or Safety Injection.	
				• Foldout page must be open	E-0, Step 1, NOTE
				• ADVERSE CTMT defined as GREATER THAN 180°F or GREATER THAN 10^{5} R/$_{hr}$ in containment.	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• The reactor can be interpreted as "tripped" when any two of three bulleted substeps of Step 1.* are satisfied.	
T= 3 mins of event classifiable	**Floor instructor**	**Prompt the SM to contact the back room for the Shift Tech.**	RO	**Verify Reactor Trip**	E-0, Step 1
				• Check reactor trip and bypass breakers - OPEN • Check rod bottom lights - LIT • Check neutron flux - DECREASING	
				Verify Turbine Trip	E-0, Step 2
				Check all turbine stop valves - CLOSED	E-0, Step 2.a
			BOP	**Verify Power to AC Emergency Busses**	E-0, Step 3
			BOP	Check busses 34C and 34D - BOTH ENERGIZED	E-0, Step 3.a
			US	**Check If SI Is Actuated**	E-0, Step 4
			RO	Verify SAFETY INJECTION ACTUATION annunciator - (MB4D 1-6 or MB2B 5-9) - LIT	EOP 35 E-0, Step 4.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	Check if SI is required • CTMT pressure GREATER THAN 18 psia OR • PZR pressure LESS THAN 1890 psia OR • PZR level LESS THAN 16% OR • RCS subcooling LESS THAN 32°F OR • SG pressure LESS THAN 660 psig IF SI is required, THEN Initiate SI and Proceed to step 5.	E-0, Step 4.a, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				IF SI is NOT required, THEN Initiate monitoring of CSF Status Trees and Go to ES-0.1, Reactor Trip Response.	
				By observation of ESF Group 2 Status Panel lights, Verify both trains of SI - ACTUATED	E-0, Step 4.b
				Manually Initiate SI.	E-0, Step 4.b, RNO
			RO	**Verify Service Water Pumps - AT LEAST ONE PER TRAIN RUNNING**	E-0, Step 5
			RO	**Verify Two RPCCW Pumps - ONE PER TRAIN RUNNING**	E-0, Step 6
			RO	**Verify ECCS Pumps Running** • Check SI pumps - RUNNING • Check RHR pumps - RUNNING • Check two charging pumps - RUNNING	E-0, Step 7
			BOP	**Verify AFW Pumps Running**	E-0, Step 8

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check MD pumps - RUNNING	E-0, Step 8.a
				Check turbine - driven pump - RUNNING, IF NECESSARY	E-0, Step 8.b
			BOP	**Verify FW Isolation**	E-0, Step 9
				• Check SG feed regulating valves - CLOSED	
				• Check SG feed regulating bypass valves - CLOSED	
				• Check FW isolation trip valves - CLOSED	
				• Check TD FW pump - TRIPPED	
				• Check MD FW pumps - STOPPED	
				• Check SG blowdown isolation valves - CLOSED	
				• Check SG blowdown sample isolation valves - CLOSED	
				• Check SG chemical feed isolation valves - CLOSED	
			BOP	**Check If Main Steam Lines Should Be Isolated**	E-0, Step 10

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check Ctmt pressure GREATER THAN 18 psia OR Any SG pressure LESS THAN 660 psig	E-0, Step 10.a
				Verify MSIVs and MSIV bypass valves - CLOSED	E-0, Step 10.b
				Check ESF Group 3 lights - LIT.	E-0, Step 10.c
			RO	**Check if CDA Required**	E-0, Step 11
				Check Ctmt pressure is GREATER THAN 23 psia OR Ctmt spray - INITIATED	E-0, Step 11.a
			US	Proceed to Step 12.	E-0, Step11,a, RNO
			BOP	**Verify CAR Fans Operating In Emergency Mode**	E-0, Step 12
			BOP	Check CAR fan status: • CAR fans A and B - RUNNING	E-0, Step 12.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• CAR fan C - STOPPED	
			BOP	START/STOP CAR fans as necessary.	E-0, Step 12.a, RNO
			RO	Verify RPCCW Ctmt supply and return header isolations - OPEN	E-0, Step 12.b
			RO	Verify Train A and B RPCCW supply and return to chill water valves - OPEN	E-0, Step 12.c
			RO	**Verify CIA**	E-0, Step 13
			RO	Check ESF Group 2 status columns 2 through 10 - LIT	E-0, Step 13.a
			RO	Initiate CIA. IF ESF Group 2, columns 2 through 10 are **NOT** lit, **THEN** Using Attachment A Reposition valves as necessary for minimum safety function	E-0, Step 13.a, RNO
			RO	**Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights - OFF • Verify ESF Group 2 lights - LIT	E-0, Step 14

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
T= Initial MALF	**MALF** RP11D	**EVENT 6**: ESF Building Ventilation Fails to Auto Actuate		Align components for minimum safety function.	E-0, Step 14 RNO
			RO	**Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature GREATER THAN 180°F OR • Ctmt radiation GREATER THAN 10^5 R/hr	E-0, Step 15
			CREW	DO NOT use ADVERSE CTMT parameters.	E-0, Step 15, RNO
			RO	**Verify ECCS Flow**	E-0, Step 16
				Check charging pumps - FLOW INDICATED	E-0, Step 16.a
			RO	START pumps and Align valves.	E-0, Step 16.a, RNO
			RO	Check RCS pressure - GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)	E-0, Step 16.b

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	Proceed to Step 16.d	E-0, Step 16.b, RNO
		CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.		Proceed to step 17.	E-0, Step 16.c
				Check SI pumps - FLOW INDICATED	E-0, Step 16.d
				START pumps and Align valves.	E-0, Step 16.d RNO
				Check RCS pressure - LESS THAN 300 psia (500 psia ADVERSE CTMT)	E-0, Step 16.e
				Proceed to step 17.	E-0, Step 16.e RNO
				Check RHR pumps - FLOW INDICATED.	E-0, Step 16.f
				START pumps and Align valves.	E-0, Step 16.f RNO
			BOP	**Verify Adequate Heat Sink**	E-0, Step 17
				Check NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT)	E-0, Step 17.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	Proceed to Step 17.d.	E-0, Step 17.a, RNO
			BOP	Control feed flow to maintain NR level - BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)	E-0, Step 17.b
			US	Proceed to Step 18.	E-0, Step 17.c
			BOP	Verify Total AFW Flow - GREATER THAN 530 gpm	E-0, Step 17.d
			BOP	START pumps and Align valves as necessary.	E-0, Step 17.d, RNO
			US	IF AFW Flow GREATER THAN 530 gpm can NOT be established, THEN Initiate monitoring of CSF Status Trees and Go to FR-H.1, Response to Loss of Secondary Heat Sink.	
			BOP	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 18
				Align valves	E-0, Step 18, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			RO	**Verify ECCS Valve Alignment - PROPER EMERGENCY ALIGNMENT**	E-0, Step 19
				Align valves	E-0, Step 19, RNO
			US	**Check Plant Status**	E-0, Step 20
		NOTE: When asked, REPORT that "all SLCRS doors indicate closed."		Verify SLCRS doors - CLOSED	E-0, Step 20.a
			US	Request Security Close all SLCRS doors.	E-0, Step 20.a, RNO
			RO	Check CONTROL BUILDING ISOLATION annunciator (MB4D 3-6) - LIT	E-0, Step 20.b
			RO	Check if CBI is required	E-0, Step 20.b, RNO
			RO	• Ctmt pressure GREATER THAN 18 psia OR	
			RO	• Control Building radiation monitor in alarm OR	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• SI manually actuated	
			RO	IF CBI required, THEN Initiate CBI.	
			US	IF CBI is NOT required, THEN Proceed to Step 21.	
			RO	Verify ESF Group 2 CBI lights - LIT	E-0, Step 20.c
			RO	Align HVAC components as necessary for minimum safety function.	E-0, Step 20.c, RNO
			BOP	Verify control building purge supply fan and purge exhaust fan - NOT RUNNING	E-0, Step 20.d
			BOP	Perform the following: • Stop purge supply fan. • Stop purge exhaust fan. • Locally Close instrument air isolations	E-0, Step 20.d, RNO

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• 3IAS-V725 (CB 47' IRR stairwell) • 3IAS-V726 (CB 47' IRR stairwell) • 3IAS-V644 (CB 66' west wall) • Locally Close instrument air isolation valve for 3HVC-AOD134	
			BOP	Control building air bank isolation valves - OPEN (after 60 seconds)	E-0, Step 20.e
			BOP	OPEN valves	E-0, Step 20.e, RNO
			BOP	IF at least one air bank isolation valve can NOT be opened, THEN Locally throttle Open at least one pair of air bank isolation bypass valves to maintain 0.125 inches water at Control Building ΔP indicator on VP1. • 3HVC*V750 and 3HVC*V751 • 3HVC*V758 and 3HVC*V759	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			BOP	STOP kitchen exhaust fan	E-0, Step 20.f
		NOTE: When called, WAIT 3 - 5 min, Then REPORT "All Control Building pressure boundary doors are Closed and Dogged."	PEO	Close and Dog (as applicable) Control Building pressure boundary doors.	E-0, Step 20.g
			RO	**Check RCS Temperature**	E-0, Step 21
				Verify RCS cold leg WR temperature - BETWEEN 550°F and 560°F	E-0, Step 21.a
			US	Proceed to Step 22	E-0, Step 21.b
			RO	**Check PZR Valves**	E-0, Step 22
				Verify PORVs - CLOSED	E-0, Step 22.a
			RO	IF PZR pressure LESS THAN 2350 psia, THEN CLOSE PORVs.	E-0, Step 22.a, RNO
			RO	Verify normal PZR spray valves - CLOSED	E-0, Step 22.b
			RO	Verify PZR safety valves - CLOSED	E-0, Step 22.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			CREW	To prevent damage to the RCP seal(s), seal injection flow should be maintained to all RCPs.	E-0, Step 23, CAUTION
		[Critical Task]	RO	**Check If RCPs Should Be Stopped**	E-0, Step 23
		NOTE: Depending on the pace of the crew through the EOP network this step may be performed here or later as a continuous action.			
				Verify RCPs - ANY RUNNING	E-0, Step 23.a
			BOP/RO	**Check If SG Secondary Boundaries Are Intact**	E-0, Step 24
				Check pressure in all SGs	E-0, Step 24.a
				• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED	
		Ensure crew request activity samples with HP coverage	BOP	**Check If SG Tubes Are Intact**	E-0, Step 25
			RO	Sample all SGs for activity	E-0, Step 25.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				1. RESET SG blowdown sample isolation 2. OPEN SG blowdown sample isolation valve(s) 3. Request Chemistry obtain activity samples using HP coverage	
			BOP	Check steam generator levels - NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER	E-0, Step 25.b
			US	Initiate monitoring of CSF Status Trees and Go to E-3, Steam Generator Tube Rupture.	E-0, Step 25.b, RNO
				Verify trend history and alarm status of radiation monitors • Main steam line - NORMAL • Condenser air ejector - NORMAL • SG blowdown - NORMAL	E-0, Step 25.c
				Initiate monitoring of CSF Status Trees and Go to E-3, Steam Generator Tube Rupture	E-0, Step 25.c RNO
			RO	**Check If RCS Is Intact**	E-0, Step 26

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				• Verify Ctmt radiation using 3CMS*RE22 (pre-trip) - NORMAL • Verify Ctmt radiation using radiation monitoring group histogram (CTMT) - NORMAL • Verify Ctmt pressure - NORMAL • Verify Ctmt recirculation sump level - NORMAL	
			RO	**Check for RCS Leakage Outside CTMT**	E-0, Step 27
				Check Auxiliary Building and ESF Building radiation (radiation monitoring group histograms) Verify Auxiliary Building (AUX) - NORMAL Verify ESF Building (ESF) - NORMAL Verify SLCRS Building (SLCRS) - NORMAL	E-0, Step 27.a

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Check for Auxiliary Building or ESF Building flooding	E-0, Step 27.b
				1) Verify SUMP LEVEL HI lights (MB1) - NOT LIT • ESF PIPE TNL • ECCS PIPE CUB • ESF RHR CUB • ESF RSS CUB	
				2) Verify Annunciator SAFEGUARDS AREA FLOODING (MB1C 2-8) - NOT LIT	
				IF the cause is a loss of RCS inventory outside containment, THEN Initiate monitoring of CSF Status Tress and Go to ECA-1.2, LOCA Outside Containment	E-0, Step 27.b RNO
		ECA-1.2, LOCA Outside CTMT, Rev. 7	**US**	**Determine Procedure Entry Point And Perform The Applicable Action**	ECA 1.2, Step 1
			US	• IF the LOCA is in the Auxiliary Building, THEN Proceed to Step 2.	
			US	• IF the LOCA is in the ESF Building, THEN Proceed to CAUTION prior to Step 3.	

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	Consult with the ADTS prior to dispatching personnel to locally operate RHR System valves.	ECA 1.2, Step 3 CAUTION
			US/RO	**Verify Proper Valve Alignment In ESF Building**	ECA 1.2, Step 3
				CLOSE valves.	ECA 1.2, Step 3 RNO
				IF the valves can NOT be closed, THEN Locally Close valves for minimum safety function.	
				Verify RHR suction isolation valves - CLOSED.	ECA 1.2, Step 3.a
				3RHS*MV8701A	
				3RHS*MV8701B	
				3RHS*MV8701C	
				3RHS*MV8702A	
				3RHS*MV8702B	
				3RHS*MV8702C	
				Verify RHR hot leg injection valve (3SIL*MV8840) - CLOSED.	ECA 1.2, Step 3.b
				Verify SI pump hot leg injection valves (3SIH*MV8802A and 3SIH*MV8802B) - CLOSED.	ECA 1.2, Step 3.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
			US	**Try To Identify And Isolate Break**	ECA 1.2, Step 4
				Turn the power lockout switch to ON for the following valves (MB2R): • RHR pump A cold leg injection valve (3SIL*MV8809A). • RHR pump B cold leg injection valve (3SIL*MV8809B). • SI cold leg injection valve (3SIH*MV8835).	ECA 1.2, Step 4.a
				CLOSE one of the following: • RHR pump A cold leg injection valve (3SIL*MV8809A) • RHR pump B cold leg injection valve (3SIL*MV8809B) • SI cold leg injection valve (3SIH*MV8835)	ECA 1.2, Step 4.b
T= Begins to close 3SIH* MV8835	**MALF** SI06A	**[Critical Task]**			
				Check RCS pressure - INCREASING	ECA 1.2, Step 4.c

Time	IDA/Malf	Instructor Information/Activity	Task Assign	Expected Actions	Standard
				Perform the following:	ECA 1.2, Step 4.c RNO
				1. OPEN valve closed in step 4.b 2. IF all lines have been checked, THEN Proceed to step 4.d 3. Return to step 4.b	
				Turn the power lockout switch to OFF for the following valves (MB2R): • RHR pump A (3SIL*MV8809A) • RHR pump B (3SIL*MV88809B) • SI injection (3SIH*MV8835)	ECA 1.2, Step 4.d
				Check If Break Is Isolated	ECA 1.2, Step 5
				Check RCS pressure - INCREASING.	ECA 1.2, Step 5.a
				Go to E-1, Loss of Reactor or Secondary Coolant.	ECA 1.2, Step 5.b

TERMINATE UPON TRANSITION TO E-1, Loss of Reactor or Secondary Coolant.

ID Number: 2K2NRC-004 Revision: 0

EVALUATION GUIDE

I. SUMMARY

The following Critical Tasks are covered in this exam:

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS FOR SELECTION
Trip all RCPs so that an Orange Path on Core Cooling based on core exit thermocouples (718°F) does not occur when forced circulation in the RCS stops (Small Break LOCA).	E-1 -- C	002.K5.14 3.8/4.2	Failure to trip the RCPs under the postulated plant conditions leads to core uncovery and to fuel cladding temperatures in excess of 2200°F, which is the limit specified in the ECCS acceptance criteria. Thus, failure to perform the task represents "mis-operation or incorrect crew performance which leads to degradation of...{the fuel cladding} ...barrier to fission product release" and to "violation of the facility license condition."
Isolate the LOCA outside containment before transition out of ECA-1.2	ECA-1.2 -- A	E04.EA1.3 3.8/4.0	Failure to isolate a LOCA outside containment (that can be isolated) degrades containment integrity beyond the level of degradation irreparably introduced by the postulated conditions. It also constitutes "mis-operation or incorrect crew performance which leads to degradation of a barrier to fission product release" and eventually "to degraded ECCS...capacity."

Note: [*] Used to designate critical tasks. Should also be incorporated into column 3 or 4 of Instructor Guide.

SECTION 4

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 Revision: 0

EVALUATION GUIDE

SECTION 5

SCENARIO INITIAL CONDITIONS

ID Number: 2K2NRC-004 Revision: 0

Reactor Power:	100%
Operating History:	450 day on line
RCS Boron:	50 ppm
Core Burnup:	18,600 MWD/MTU
Condensate Demins:	7 demins in service
Evolutions in Progress:	NONE, A Train Protected, Intake Condition: GREEN
Major Equipment OOS:	"A" PORV is inoperable due to an electrical short in the control circuitry. It has been out of service for 8 hours. Electrical maintenance estimates that the valve will be returned to service within 24 hours. The following Tech Specs are applicable: Tech Spec 3.4.4, action b 3TRM 7.4.1 action a.1 and a.3 for both the A PORV and the block valve 3RCS*MV8000A

Crew Instructions:

Shift running Charging Pumps to the "A" CHS pump running per OP 3304A, Charging and Letdown, Section 4.4.

Plant/Simulator Differences:

- Real Time and Simulator Rad Monitor historical data not valid prior to the beginning of this exercise.
- Auto-log terminals need to be refreshed after entry is made.
- If not using the speed dial option on the phone system, the operator must dial either #3333 or #3334 to reach the person/department they desire.
- The following PPC programs do not function on the simulator:
  - Samarium Follow
  - Xenon Follow
  - Sequence of Events

SECTION 6

VALIDATION CHECKLIST

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 Revision: 0

Remote functions:

All remote functions contained in the guide are certified.

Malfunctions:

All malfunctions contained in the guide are certified.

Initial Conditions:

The initial condition(s) contained in the guide are certified or have been developed from certified IC's in accordance with NSEM-4.02.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

Test Run:

The scenario contained in the guide has been test run and validated (validation sheet completed, next page)on the simulator. Simulator response is reasonable and as expected.

Examination Scenario Review

The dynamic examination review checklist is complete. (This is not required unless the exam will be used as an Annual Exam, then NUREG 1021 requirements apply.)

JR Martin
Technical Reviewer

6/10/02
Date

SECTION 7

REFERENCE AND TASK TRACKING

Title: INTER-SYSTEM LOCA

ID Number: 2K2NRC-004 Revision: 0

I. References:

AOP*3571	Instrument Failure Response
AOP*3567	Operation with One Feedwater Heater String Isolated
AOP*3575	Rapid Downpower
AOP*3554	RCP Trip or Stopping an RCP at Power
EOP*E-0	Reactor Trip or Safety Injection
EOP*ECA-1.2	LOCA Outside CTMT
EOP*ERG_EXE	Westinghouse Owners Group Executive Document
EOP* Step _DOC	MP3 step deviation Document
EOP*ERG_HP	Westinghouse Owners Group Background Document
EPIP*EPIP 4400	Event Assessment, Classification and Reportability
NUREG*1021 rev 8	Examiners Standards