

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-1	REV: 1
	TITLE: SCENARIO #1	
	DATE: 03-29-06	PAGE: 1 of 29

Written by: Ken Masker Date: 3/23/06  
 Sr. License Instructor

Technical Review: Dennis Jones Date: 5/18/06  
 Exam Developer

Time validated 100 minutes By: Roy Gillow Date: 5/18/06  
 Shift Manager

Date of exam: \_\_\_\_\_

Examinees

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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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Evaluators

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 \_\_\_\_\_  
 \_\_\_\_\_

Final review \_\_\_\_\_ Date: \_\_\_\_\_  
 License Instructor

Approved for use \_\_\_\_\_ Date: \_\_\_\_\_  
 Director Operations Training  
 or Designee

<u>ATTRIBUTE</u>	<u>#</u>
Total Malfunctions	8
Malf after EOP entry	2
Abnormal Events	4
Major Transients	2
EOP's beyond SCRAM	1
ECA's, FR's	0
Critical Tasks	3
T.S. Exercised Yes/No	Yes

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1. SCENARIO OVERVIEW

- 1.1 The plant is at approximately 2% power in the process of starting up following a trip. The core is Xenon free. The startup procedure O-1.2 is complete up to the point of swapping to condenser steam dump, starting a MFW pump and transitioning from AFW to MFW.
- 1.2 Per the startup procedure, the operators will start a MFW pump and place MFW in service. Once MFW is in service AFW will be secured.
- 1.3 With MFW in service, the RO will begin increasing power in preparation for rolling the main turbine.
- 1.4 Spray Valve Controller PCV-431A fails resulting in 431A going full open. Manual control is available and the operators should take manual control of PCV-431A and close the valve.
- 1.5 The "A" MFW Regulating Valve fails open, manual control is available and the BOP should take manual control and control "A" S/G level manually.
- 1.6 Bus 16 develops a fault and the normal feed breaker opens deenergizing the bus. The operators should respond per AP-ELEC-14/16 to restore equipment and stabilize the plant (Tech Spec 3.8.9).
- 1.7 "B" RCP develops high vibration. Per the AR procedures the operators should manually trip the reactor and go to E-0 and ES-0.1.
- 1.8 Shortly after the Hi Vibration on the "B" RCP the Seal Package fails resulting in a SB LOCA in excess of the charging capacity.
- 1.9 SI fails to auto actuate require manual actuation.
- 1.10 Following SI Reset in E-1 offsite power is lost. The "A" D/G did not auto-start during the SI (and will not now). The operators must take manual action to start the "A" D/G and manually load safeguards equipment.

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## 2. SCENARIO OBJECTIVES

- 2.1 Perform operator actions to establish MFW and secure AFW.
- 2.2 Manipulate Reactivity Control Systems to increase Rx power during a startup.
- 2.3 Respond to a failed spray valve controller. Take manual action to override the failed automatic control.
- 2.4 Respond to a Feed Reg Valve failure and manually control S/G level.
- 2.5 Respond to a loss of a safeguards bus. Take action to restore equipment and stabilize plant parameters.
- 2.6 Respond to a RCP High Vibration condition requiring a manual Rx Trip.
- 2.7 Respond to a SBLOCA using the EOP. Initiate SI to compensate for a failed auto signal.
- 2.8 Restore electrical power to one train of AC emergency equipment and manually start SI equipment needed to respond to the SBLOCA.

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### 3. CRITICAL TASKS (Cts)

CT #1

E-0--D

Task: Manually actuate at least one train of SIS actuated safeguards before:

- Transition to any E-1, 2 or 3 series procedures.
- Completion of ES-0.1 Step 8a

Cues: - Indication SI is required.

- Prz Pressure  $\leq$  1750 psig
- Exceeding SI actuation criteria of ES-0.1 foldout

- No indication or annunciation of SI Actuation

Indication: Manipulation of control to actuate at least one train of SI.

Feedback: Indication that one train of SI is actuated.

CT #2

E-0--C

Task: Energize at least one AC emergency bus prior to placing safeguard switches in pull to lock in ECA-0.0.

Cues: - Indications that all AC emergency buses are deenergized.

- D/G Status
- Bus Voltages
- Normal feed breakers open

- No indication or annunciation of SI Actuation

Indicator: Manipulation of controls to restore power to at least one AC emergency bus.

Feedback: Indications that at least one AC emergency bus is energized.

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### 3. CRITICAL TASKS (Cts)

CT #3

E-O--I

Task: Establish flow from at least two SI pumps prior to proceeding in the procedure following the loss of power.

Cue: Indication SI pumps required

- SI actuated
  - RCS below SI pump and shutoff pressure
- AND
- Less than 2 SI pumps injecting into the core.

Indicator: Manipulation of control to establish flow to core from 2 SI pumps.

Feedback: Indication that two SI pumps are injecting.

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#### 4. INSTRUCTOR ACTIONS

<u>Problem Time</u>	<u>Actions</u>	<u>Notes</u>
4.1	(Note: Setup saved as IC-171) - Initialize Simulator to IC-22 Rx at 18%, Tur at 1800 RPM Decrease power to 2 % Trip Turbine - Place Hold Tag on B FW Pump and Oil pumps  Insert Malfunctions	
	<ul style="list-style-type: none"> <li>MALF SIS02A,B Option 0 Manual available</li> </ul>	SI fails to actuate (Both Trains)
	<ul style="list-style-type: none"> <li>MALF GEN08 Option 1 A D/G 0 sec TD</li> </ul>	"A" D/G Autostart failure
	<ul style="list-style-type: none"> <li>MALF PZR1A 100% (open) 300 sec Ramp Trigger 1</li> </ul>	PCV 431A control failure (Manual available)
	<ul style="list-style-type: none"> <li>MALF FDW7A 100% (open) 300 sec Ramp Trigger 2</li> </ul>	"A" MFRV Auto control fails (open). Manual Control available
	<ul style="list-style-type: none"> <li>MALF EDS4B Trigger 3</li> </ul>	Bus 16 Fault
	<ul style="list-style-type: none"> <li>MALF RCS15B 25 mils 300 sec Ramp Trigger 4</li> </ul>	"B" RCP Shaft Vibration
	<ul style="list-style-type: none"> <li>MALF RCS15D 10 mils 300 sec Ramp 60 sec Time Delay Trigger 4</li> </ul>	"B" RCP Seismic (Casing) Vibration
	<ul style="list-style-type: none"> <li>MALF RCS12B 300 gpm 600 sec Ramp Trigger 5</li> </ul>	"B" RCP #1 Seal Failure
	<ul style="list-style-type: none"> <li>MALF RCS13B 300 gpm 600 sec Ramp Trigger 5</li> </ul>	"B" RCP #2 Seal Failure

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- MALF RCS14B  
 300 gpm  
 0 Ramp  
 Trigger 5
 "B" RCP #3 Seal  
Failure
- MALF EDS6  
 2 (Fast)  
 Trigger 6
 Station Blackout
- OVR-FDW08A  
 OFF
 Turn off green light  
for MFW Pump B Oil  
Pump
- OVR-FDW20A  
 OFF
 Turn off green light  
for MFW Pump B Brkr
- OVR-FDW20C  
 OFF
 Turn off green light  
for MFW Pump B Brkr

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#### 4. INSTRUCTOR ACTIONS

<u>Problem Time</u>	<u>Actions</u>	<u>Notes</u>
Note: Malfunction Times are approximate: Malfunction are initiated at the direction of the Lead Examiner.		
0 min	4.2 MFW Pump Start	Align SW to A MFW pumps requested. SW not modeled
20 min	4.3 Power escalation	Action as requested by crew
30 min	4.4 PCV-431A Failure Insert Trigger 1	
37 min	4.5 "A" MFRV Fails Open Insert Trigger 2	Report ADFAC Alarm as "A" MFRV output card failure when requested to check printer.
50 min	4.6 Bus 16 Fault Insert Trigger 3	Report Bus 16 is faulted after requested to investigate.
62 min	4.7 "B" RCP Hi Vibration Insert Trigger 4	
65 min	4.8 "B" RCP Seal Failure Insert Trigger 5	
80 min	4.9 Station Blackout Insert Trigger 6	

Terminate Scenario as directed by the lead examiner



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## 5. TURNOVER INFORMATION

5.1 The plant is at 2-3% power during a startup following a trip five days ago. The core is Xenon free. RCS boron concentration is 1335 ppm. Procedure O-1.2 is complete up to step 6.4.6(20). Attachment 5 Main Feed Water Pump "A" is complete through step 1.8.2.

### 5.2 Equipment Out of Service

"B" MFW pump is out of service due to a gear box failure.

### 5.3 Work in Progress

"B" MFW pump gear box repair (additional 36 hours to repair).

### 5.4 Planned Work

Plant startup from approximately 2% power.

### 5.5 Significant Events

"B" MFW pump gear box failure resulted in a Rx trip five days ago.

### 5.6 Remarks

Startup plant per O-1.2, hold at 50% power until work is complete on the "B" MFW pump.

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## 6. EVALUATION

Event: 1

Event Title: Main Feedwater Pump Start/Transition to > 5% power

EVENT TASKS:	<u>041-002-01-01</u>	<u>Shift Modes of Steam Dump Operation</u>
	<u>041-002-01-02</u>	<u>Direct Steam Dump Operations</u>
	<u>059-006-01-01</u>	<u>Startup the MFW System</u>
	<u>059-012-01-02</u>	<u>Direct Operations of MFW System</u>
	<u>061-007-01-01</u>	<u>Shutdown AFW System</u>
	<u>061-003-01-02</u>	<u>Direct Operations of AFW and SAFW System</u>

### Expected Response/Behavior

CUES:

Procedure Direction in O-1.2

Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Conduct Shift Briefing for Power Increase and Syncing Generator	_____	_____
BOP/SRO	Place Condenser Steam Dump in Service	_____	_____
	<ul style="list-style-type: none"> <li>• Verify Rx Trip from Turbine Trip Blocked (P-9) Light lit</li> <li>• Verify Air Ejector is in service</li> <li>• Verify Vacuum &gt;27.5 in Hg</li> <li>• Lower HCV-484 to 1005 psi Verify SD valves respond</li> <li>• Setup SG ARV for Auto Operation at 1050 psig</li> </ul>		
BOP	Place Blow down key switches to normal	_____	_____

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Response:		<u>RATING</u>	<u>N/A</u>
BOP/SRO	Start the "A" MFW pump per Attachment MFW Pump A  <ul style="list-style-type: none"> <li>• Place Blowdown key switches to Normal</li> <li>• Start the "A" MFW pump</li> </ul>	_____	_____
BOP	Open MOV-3977	_____	_____
SRO	Dispatch AO to close V-39977A	_____	_____
SRO	Dispatch AO to close valves <ul style="list-style-type: none"> <li>• AOV 4262</li> <li>• AOV 4263</li> <li>• V-4060</li> </ul>	_____	_____
BOP/SRO	Verify operation of MFW Reg and Bypass Valves	_____	_____
BOP/SRO	Place MFW Reg and Bypass Valves in Auto	_____	_____

(Note at this point the RO should begin to increase power to ~5%)



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6. EVALUATION

Event: 2

Event Title: Increase Power to Roll Turbine

EVENT TASKS: 001-023-01-01 Operate the Control Rods at Power

001-001-01-02 Direct Operations of the Rod Control System

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Expected Response/Behavior

CUES:

Main Feedwater is in service  
 Direction from Procedure O-1.2

Response:

RATING      N/A

RO/SRO      Withdraw Control Rod to increase power

- Stop every five steps to verify power indications (Low Power Operations Attachment)

\_\_\_\_\_

\_\_\_\_\_

RO/SRO      Verify RCS Pressure and Temperature are within startup limits prior to exceeding 5% power

\_\_\_\_\_

\_\_\_\_\_

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## 6. EVALUATION

Event: 3

Event Title: PCV-431A fails open

EVENT TASKS: 010-002-04-01 Respond to a Przr Press Control Malf

011-002-04-02 Direct Response to a Przr Press Control Malf

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Expected Response/Behavior

#### CUES:

Low Pressure Alarm  
Przr Press Decreasing

#### Response:

RATING

N/A

NOTE: Upon determining PCV-431A has failed, the operator may take action to place PCV-431A in manual and close valve without procedural guidance per A-503.1

RO Determine Przr Pressure decreasing

\_\_\_\_\_

SRO Enter AP-PRZR.1

\_\_\_\_\_

RO/SRO Check all Channels Przr Pressure equal and tracking

\_\_\_\_\_

RO/SRO Check Rx power stable

\_\_\_\_\_

RO/SRO Check Przr Pressure

\_\_\_\_\_

RO/SRO Check Przr Heaters

\_\_\_\_\_

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		<u>RATING</u>	<u>N/A</u>
Response:			
RO/SRO	Check Spray Valves Determine AOV-431A open Place 431A Controller at 0% demand in manual	_____	_____
RO/SRO	Check 431K Master Pressure Controller	_____	_____
RO/SRO	Check PORV - closed	_____	_____
RO/SRO	Check Safeties - closed	_____	_____
RO/SRO	Check Aux Spray - closed	_____	_____
RO/SRO	Check Pressure trending to 2235 psi (go to step 16)	_____	_____
RO/SRO	Check PRT normal	_____	_____
RO/SRO	Check Przr Pressure Control in Auto (leave 431A in manual)	_____	_____
All	Check Annunciator Status	_____	_____
SRO	Notification of Supervision	_____	_____

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## 6. EVALUATION

Event: 4

Event Title: "A" MFR Valve Fails Open

EVENT TASKS: 059-002-04-01 Respond to an Excessive Feedwater increase

059-002-04-02 Direct Response to an Excessive Feedwater increase

\_\_\_\_\_  
\_\_\_\_\_

### Expected Response/Behavior

#### CUES:

Alarm G-22 ADFACS System Trouble  
 Excessive FW to "A" SG  
 SG "A" Level rapidly increasing

#### Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Recognize "A" MFW Reg Valve Opening (Note per A-503.1 BOP may take manual control of valve)	_____	_____
SRO	Enter AP-FW.1	_____	_____
BOP/SRO	Check MFW > SF • Place MFRV in Manual • Control Level Manually	_____	_____
SRO/BOP	Verify power < 50%	_____	_____
SRO/BOP	Verify one MFW pump running	_____	_____
BOP/SRO	Check MFW Pump Suction Press	_____	_____



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Response:

		<u>RATING</u>	<u>N/A</u>
BOP/SRO	Verify adequate MFW flow	_____	_____
RO/SRO/ BOP	Verify Stable Plant Conditions <ul style="list-style-type: none"> <li>• Tavg</li> <li>• Przr Press</li> <li>• Przr Level</li> <li>• MFW Valves</li> <li>• Rod Insertion Limits</li> </ul>	_____	_____
BOP/SRO	Check MFW System	_____	_____
BOP/SRO	Check Condensate System <ul style="list-style-type: none"> <li>• Bypass Valve</li> <li>• Hotwell Level</li> <li>• Condensate Pumps (2 running)</li> <li>• Trim Valves</li> </ul>	_____	_____
RO/BOP/ SRO	Check Controls in Auto <ul style="list-style-type: none"> <li>• PCV-431K</li> <li>• Spray Valve Controllers</li> <li>• Przr Heaters</li> <li>• Charging</li> </ul> (Note Check EHC, MFW Reg Valves, Rods and Steam Dump but do not realign)	_____	_____
BOP/SRO	Check AFW (Not in service)	_____	_____
RO/SRO/ BOP	Check Annunciator Status	_____	_____
RO/SRO	Check if Przr mixing required	_____	_____
SRO	Notify Higher Supervision	_____	_____

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## 6. EVALUATION

Event: 5

Event Title: Bus 16 Normal Feeder Breaker Trips

EVENT TASKS: 062-034-04-01 Respond to the loss of an individual safeguards Bus  
062-034-04-02 Direct response to a loss of an individual  
safeguard Bus

### Expected Response/Behavior

#### CUES:

Alarm L-5 Safeguard Bus Normal Feed Breaker Trip  
 L-7 Bus 16 Undervoltage  
 Bus 16 Voltage Zero  
 Bus 16 Supplied Loads Trip

#### Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Recognize symptoms Enter AP-ELEC.14/16	_____	_____
RO/SRO	Monitor/Control Tavq	_____	_____
BOP	Verify "B" D/G Running (running but will not tie in due to bus fault)	_____	_____
BOP/SRO	Verify one train of AC Buses energized and check "B" D/G status	_____	_____
RO/SRO	Verify "A" CCW pump has auto started.	_____	_____
RO/SRO	Verify "A" Charging Pump running	_____	_____

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Response:

		<u>RATING</u>	<u>N/A</u>
BOP/SRO	Verify MFW Controlling in Auto (manually control "A" MFRV)	_____	_____
RO/BOP/ SRO	Check Buses Energized/Manually start equipment <ul style="list-style-type: none"> <li>• CCW Pump A</li> <li>• Charging Pump A</li> <li>• Przr Proportional Heaters</li> <li>• CNMT Recirc Fans A and D</li> <li>• Boric Acid Pump A</li> <li>• RMW Pump A</li> <li>• Reactor Compartment Cooler A</li> <li>• Penetration Cooling Fan A</li> <li>• SFP Cooling (local NLO action)</li> <li>• Swap Lighting (local NLO action)</li> <li>• D/G Support System (local NLO action)</li> </ul>	_____	_____
SRO	Direct AO to perform the following <ul style="list-style-type: none"> <li>• Swap Aux Bldg Lighting to MCC C</li> <li>• Provide Alternate Room cooling to DG B</li> <li>• Cross-connect DG A Fuel Oil transfer pump to DG B</li> </ul>	_____	_____
RO/SRO	Check VCT MU System	_____	_____
RO/SRO	Check Charging Aligned to VCT	_____	_____
RO/SRO	Check the CVCS Operation (adjust "A" Charging Pump)	_____	_____
RO/SRO	Check Letdown in Service	_____	_____
RO/SRO	Check Przr Heaters in Service	_____	_____
RO/SRO	Check Rod in Auto (no Action Rod cannot be placed in Auto)	_____	_____

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		<u>RATING</u>	<u>N/A</u>
RO/SRO	Stabilize Plant condition • Tavg • Przr Pressure • Przr Level	_____	_____
BOP/SRO	Check if normal electrical lineup can be restored • Refer to AR-L-5 (cannot restore due to fault)	_____	_____
SRO	Check Tech Spec (3.8.9)	_____	_____



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		<u>RATING</u>	<u>N/A</u>
BOP/RO	Determine SI not required	_____	_____
SRO	Transition to ES-0.1	_____	_____

(NOTE RCP Seal Malfunction will start here.  
Some actions in ES-0.1 Rx Trip response are  
possible.)



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		<u>RATING</u>	<u>N/A</u>
BOP	Check MSIV isolation	_____	_____
BOP	Check MFW Isolation	_____	_____
BOP	Verify AFW pump running A MDAFW TDAFW (Manual Start)	_____	_____
BOP	Verify two SW pumps running • Ensure one pump running on Bus 14	_____	_____
RO	Verify CI and CVI	_____	_____
SRO	Dispatch AO to verify MOV-814 (Lost Power)	_____	_____
RO	Verify the A CCW pump running	_____	_____
RO	Verify SI/RHR Flow (SI flow only above RHR shut-off head)	_____	_____
BOP	Check AFW Valve Alignment	_____	_____
BOP	Monitor Heat Sink (Maintain S/G level 7-50%)	_____	_____
RO	Check ECCS Valve Alignment	_____	_____
RO/SRO	Check CCW to Thermal Barriers	_____	_____



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		<u>RATING</u>	<u>N/A</u>
BOP	Check TDAFW Pump (Do not stop)	_____	_____
BOP/SRO	Control Tavg at 547°F (May require throttling AFW to minimum and closing MSIV's)	_____	_____
RO	Check PORV and Sprays closed	_____	_____
RO/SRO	Monitor RCP Trip Criteria	_____	_____
RO	Verify CREATS actuated	_____	_____
BOP/SRO	Check S/G Secondary intact	_____	_____
BOP/SRO	Check S/G Tube intact	_____	_____
RO/SRO	Check RCS Intact/Transition to E-1	_____	_____
RO/SRO	Check RCP Trip Criteria	_____	_____
BOP/SRO	Check that S/Gs are intact	_____	_____
BOP	Control S/G levels	_____	_____
BOP/SRO	Monitor S/G Radiation	_____	_____
RO	Check PORV and Block Valves	_____	_____

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Response:

		<u>RATING</u>	<u>N/A</u>
RO/SRO	Reset SI	_____	_____
RO/SRO	Reset CI	_____	_____
BOP	Start a second SW pump if required.	_____	_____
SRO	Dispatch AO to perform SD-1	_____	_____

(At this point offsite power will be lost)



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-1	REV: 1
	TITLE: SCENARIO #1	
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Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Verify Adequate TDAFW Flow	_____	_____
BOP	Restore "A" D/G • Check Unit/Auto • Start "A" D/G • Check Voltage/Freq • Check Cooling Available (SW pump) • Start the A D/G	_____	_____

CT #2 E-O--C	<u>SAT</u>	<u>UNSAT</u>
Energize at least one train of AC Emergency buses prior to placing safeguard switch to pull to lock in ECA-0.0	_____	_____

SRO	Transition back to E-1.	_____	_____
SRO/RO	Recognize SI equipment must be manually started. Go to Attachment 8.5 Loss of Offsite Power.	_____	_____
RO/SRO	Verify CCW Pump Running	_____	_____
BOP/SRO	Verify one SW Pump Running	_____	_____
BOP/SRO	Verify TDAFW Pump Running	_____	_____
RO/SRO	Start 2 SI Pumps	_____	_____

CT #3 E-O--I	<u>SAT</u>	<u>UNSAT</u>
Establish flow from at least two SI pumps prior to proceeding in E-1 following loss of off-site power.	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-1	REV: 1
	TITLE: SCENARIO #1	
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Response:

RATING

N/A

RO/SRO

Start Equipment

- RHR (not required)
- CNMT Recirc Fans

\_\_\_\_\_

Terminate Scenario as directed by the lead examiner

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
	TITLE: SCENARIO #2	
	DATE: 04-04-06	PAGE: 1 of 24

Written by: Ken Masker  
 Sr. License Instructor

Date: 3/29/06

Technical Review: Dennis Jones

Date: 5/18/06

Time validated 108 minutes By: Roy Gillow  
 Shift Manager

Date: 5/19/06

Date of exam: \_\_\_\_\_

Examinees

Evaluators

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Final review \_\_\_\_\_  
 License Instructor

Date: \_\_\_\_\_

Approved for use \_\_\_\_\_  
 Director Operations Training  
 or Designee

Date: \_\_\_\_\_

ATTRIBUTE	#
Total Malfunctions	7
Malf after EOP entry	1
Abnormal Events	5
Major Transients	1
EOP's beyond SCRAM	2
ECA's, FR's	1
Critical Tasks	5
T.S. Exercised Yes/No	Yes

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
	TITLE: SCENARIO #2	
	DATE: 03/29/06	PAGE: 2 of 24

1. SCENARIO OVERVIEW

- 1.1 The plant is at 70% power MOL conditions holding power for Chemistry after returning "B" MFW Pump to Service following maintenance.  $C_B$  - 900 ppm 11,000 ppm in the BAST. The "B" MDAFW pump is OOS for motor work; out for 6 hours, expected back in ~ 6-8 hours (A-52.4 submitted 72 hour clock). The "B" SW pump is out for motor replacement.
- 1.2 The "C" Condensate Pump trips. The standby pump fails to start requiring a manual start.
- 1.3 Maintenance reports the "B" MFW has developed a severe oil leak and must be shut down immediately. Power must be rapidly reduced to less than 50% using AP-TURB.5 to allow stopping the MFW Pump.
- 1.4 Following the power reduction RCS High Activity occurs due to a minor fuel failure. The crew should enter AP-RCS.3 and place a 60 gpm Orifice in service.
- 1.5 A small letdown line leak occurs (ramp up to 30 gpm) after the letdown orifice swap causing high activity in the plant vent. The operators should remove Normal Letdown from service and place excess letdown in service.
- 1.6 A small steam line leak occurs on the tap for PT-479 causing PT-479 to fail low. The steam leak is unisolable (upstream of the Root Isolation Valve and makes the area inaccessible). The operator should defeat PT-479 per ER-INST.1 and notify higher supervision.
- 1.7 A SGTR occurs in the "B" SG. The operator should respond per E-0 and E-3. Following the cooldown in E-3 ruptured S/G pressure cannot be maintained due to the steam leak and ECA-3.1 should be entered.
- 1.8 The "A" MDAFW Pump fails to Auto Start and TDAFW pump trips when it attempts to start. The operators should manually start the "A" MDAFW Pump and establish flow to the "A" S/G to maintain a secondary heat sink.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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## 2. SCENARIO OBJECTIVES

- 2.1 Respond to a Condensate Pump trip by manually starting the standby pump.
- 2.2 Perform a plant power reduction per AP-TURB.5, Rapid Load Reduction
- 2.3 Respond to an increase in RCS activity by increasing cleanup flow per AP-RCS.3, High RCS Activity
- 2.4 Respond to a letdown leak by securing letdown and placing excess letdown in service.
- 2.5 Respond to a failure of PT-479 and defeat the channel in accordance with ER-INST.1.
- 2.6 Respond to a SGTR with a secondary leak per E-0, E-3 and ECA-3.1
- 2.7 Respond to a Loss of AFW by manually starting the "A" MDAFW Pump and establishing AFW flow to the "A" S/G.



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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### 3. CRITICAL TASKS (Cts)

CT #1

AP-CVCS.1-A

Task: Isolate RCS leakage path from CVCS System prior to exiting AP-CVCS.1, CVCS Leak

Cues: Aux. Building and Plant Vent Rad monitor alarms

- R-13 Plant Vent Particulate
- R-14 Plant Vent Gas
- Area Monitors in the Aux. Building

Indications of CVCS Leakage  
 Abnormal, Pressure, Temperature, Flows  
 RCS Water balance indicate unknown leakage  
 Aux. Building sump indications

Indicator: Closed valve indication on isolation valves in the leak path.

Feedback: Isolation Valve indicator closed  
 RCS water balance indicate leakage has stopped  
 Aux. Building indication return to normal

- Radiation
- Sumps

CT #2

E-0--F

Task: Establish 200 gpm AFW flow to the S/Gs before transition out of E-0 occurs.

Cues: - Indications of SI Actuated  
 - Indication that AFW Flowrate is less than minimum required  
 - Indication "A" MDAFW Pump is not running  
 - Indication of TDAFW Pump Tripped

Indicator: Manipulation of controls to establish flow to "A" S/G.

- MDAFW Pump "A" Control Switch

Feedback: Indication that at least minimum required flow is established to "A" S/G

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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### 3. CRITICAL TASKS (Cts)

CT #3

E-3--A

Task: Isolate feedwater flow and steam flow from the ruptured S/G before a transition to ECA-3.1 occurs.

Cues:  
 - Indications of a rupture in one S/G  
 - Rx Trip  
 - SI

Indicator: Manipulation of controls to isolate the ruptured S/G.

- MSIV
- ARV
- Blowdown and Sample Valves
- TDAFW
- AFW
- MFW
- Local Isolation

Feedback: Stable or Increasing Pressure on Ruptured S/G. No MFW or AFW flow to Ruptured S/G.

CT #4

E-3--B

Task: Establish/maintain RCS Temperature so transition out of E-3 does not occur because the RCS temperature is

- Too high to obtain 20°F subcooling required by E-3.

OR

- An Orange or Red Path occurs on the Integrity CSFST.

Cues:

Indication that

- One S/G ruptured
- Rx Trip
- SI
- Rupture S/G > 300 psig

Indicator: Manipulation of control as required to establish and maintain RCS temperature.

- Steam Dump
- ARVs

Feedback:  
 - Steam Flow  
 - RCS Temperature decreasing  
 - RCS Temperature less than target temperature

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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### 3. CRITICAL TASKS (Cts)

CT #5

ECA-3.1-B

Task: Cooldown the RCS to Cold Shutdown Conditions.

Cues: SI Required

AND

Indication of a Faulted/Ruptured S/G

Indicator: Manipulations of controls as required to initiate RCS cooldown

- Steam Dump or ARVs
- AFW to maintain intact S/G level

Feedback: RCS Temperature Decreasing  
Intact S/G Pressure Decreasing

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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#### 4. INSTRUCTOR ACTIONS

<u>Problem Time</u>	<u>Actions</u>	<u>Notes</u>
	4.1 Initialize the Simulator to IC-27 (setup saved as IC-172) <ul style="list-style-type: none"> <li>• Pull stop the "B" MDAFW Pump. Place Block Tag on Pump Switch (do not hold 4000A/B or 4007)</li> <li>• Pull stop the "B" SW Pump. Place Block Tag on Pump Switch</li> </ul> Insert Malfunctions <ul style="list-style-type: none"> <li>- MALF CND04C, Trigger 1</li> <li>- OVRD CND-08F</li> <li>- MALF RCS16, 10 <math>\mu</math>ci/ml, 0 sec ramp Trigger 2</li> <li>- MALF CVC2, 30 gpm, 0 ramp Trigger 3</li> <li>- MALF SGN3D 0 psig 0 Ramp Trigger 4</li> <li>- MALF STM2B, 5000 lbm/hr, 0 Ramp Trigger4</li> <li>- MALF SGN04B, 300 gpm, 0 ramp Trigger 5</li> <li>- LOA FDW 30, Pump Trip Trigger 30</li> <li>- Set Trigger 30 T:N41B.LE.5.0</li> <li>- MALF RPS07K</li> </ul>	C CND Pump trips B CND Auto Start failure RCS High Activity CVCS Leak PT-479 Failure Small steam leak SGTR B S/G TDAFW Pump Trip Trigger on N41<5% "A" MDAFW Pump Auto Start Failure
2 min.	4.2 COND-OVR-FDW21A/B OFF Condensate Pump Trip Trigger 1	B MDAFW Pump oil Pump Lights
10 min	4.3 Plant Shutdown	Call as Maintenance Supervisor to report a severe oil leak on "B" MFW Pump. Pump should be shut down immediately

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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#### 4. INSTRUCTOR ACTIONS

<u>Problem Time</u>		<u>Actions</u>	<u>Notes</u>
As soon as power decrease started	4.4	RCS High Activity Trigger 2	When RP called report back on survey area dose per AB Area Monitors
3 min after swapping orifices	4.5	CVCS Leak Trigger 3	Crew should declare a Local Rad. Emergency. AO access with RP only
35 min	4.6	PT-479 Failure/Steam Leak Trigger 4	When called to check (or after 5 min.) report Intermediate Bldg. Steam Header area full of STM. Cannot get to isolation valves.
45 Min	4.7	SGTR B Steam Generator Trigger 5	If RP called for sample request applicable sample. Valve CV signal reset.
When Rx is Tripped	4.8	Ramp Steam leak up to 20K lbm/hr Malf STM2B 20000lbm/hr, 120sec ramp Terminate Scenario per direction of the Lead Examiner	

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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## 5. TURNOVER INFORMATION

5.1 The plant is at 70% power holding for Chemistry following return to service of "B" MFW Pump from maintenance on the oil system. RCS Boron Concentration is 900 ppm. BAST Boron Concentration is 11,000 ppm. The A and C Service Water pumps are selected for Auto start. Control Rods are in Manual due to a problem with the Rod Speed Controller.

### 5.2 Equipment Out of Service

"B" MDAFW pump is OOS for motor work.  
 "B" SW pump is out for motor replacement.  
 Auto Rod Control is OOS due Rod Speed Controller Failure

### 5.3 Work in Progress

"B" MDAFW Pump Motor Work  
 "B" SW Pump Motor Replacement  
 Rod Control System Trouble Shooting

### 5.4 Planned Work

Nothing additional.

### 5.5 Significant Events

"B" SW Pump Motor was removed from service due to overheating of the winding.

### 5.6 Remarks

Continue power increase to 100% when Chemistry in spec. Perform AFW PT for the "B" MDAFW pump when work is complete (6-8 hours).

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## 6. EVALUATION

Event: 1

Event Title: Condensate Pump Trips

EVENT TASKS: 056-001-04-01 Respond to a loss of a Condensate Pump.  
056-001-04-02 Direct Response to a loss of a Condensate Pump

### Expected Response/Behavior

#### CUES:

C Condensate Pump Trip  
 MFW Pump NPSH Alarm  
 MFW Pump Low Suction Press Alarm

#### Response:

		<u>RATING</u>	<u>N/A</u>
	Note the operator may also enter AP-FW.1 for actions		
SRO	Enter AR-H-1	_____	_____
BOP	Check Condensate Pressure open	_____	_____
BOP/SRO	Determine that the C Condensate Pump has tripped.	_____	_____
BOP/SRO	Start the Standby Condensate Pump	_____	_____
BOP	Check HDT pump and CND BST pump	_____	_____
BOP	Check Trim Valve and Reject Valves.	_____	_____
BOP	Stabilize Secondary Side Close Condensate Bypass Valve	_____	_____

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## 6. EVALUATION

Event: 2

Event Title: Plant Shutdown to 50% power to remove "B" MFW from service

EVENT TASKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Expected Response/Behavior

#### CUES:

Notification by Maintenance Supervisor of severe Oil Leak on "B" MFW Pump requiring pump Shutdown as soon as possible

#### Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Enter AP-TURB.5, Rapid Shutdown	_____	_____
RO/SRO	Verify Rod in Auto. Initiate Boration	_____	_____
BOP/SRO	Initiate Load Reduction	_____	_____
RO	Monitor Tavg	_____	_____
BOP	Verify IA available to CNMT	_____	_____
RO	Monitor Przr Press/Level	_____	_____
BOP	Monitor S/G Levels	_____	_____



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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Monitor Steam Dump Status	_____	_____
RO	Add Boric Acid	_____	_____

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## 6. EVALUATION

Event: 3

Event Title: High RCS Activity

EVENT TASKS:	<u>002-005-04-01</u>	<u>Respond to High Rx Coolant Activity</u>
	<u>002-005-04-02</u>	<u>Direct Response to High Rx Coolant Activity</u>
	<u>344-012-04-03</u>	<u>Apply Tech Specs for Abnormal Events</u>
	_____	_____

### Expected Response/Behavior

#### CUES:

R-9 on Alarm  
 Elevated Area Monitors in Aux. Building and CNMT

#### Response:

		<u>RATING</u>	<u>N/A</u>
RO/SRO	Recognize High Activity Go to AP-RCS.3	_____	_____
SRO	Direct RP to sample	_____	_____
RO/SRO	Place 60 gpm Letdown Orifice in service per S-3.2P • PCV-135 in Manual • TCV-130 in Manual • Close 40 gpm Orifice • Open 60 gpm Orifice	_____	_____
SRO	Check Tech Spec Section for RCS Activity	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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## 6. EVALUATION

Event: 4

Event Title: Letdown Line Leak

EVENT TASKS: 004-006-04-01 Respond to a Letdown Line Leak

004-006-04-02 Direct Response to a Letdown Line Leak

### Expected Response/Behavior

#### CUES:

High Radiation Levels in the Auxiliary Building and Plant Vent  
 Aux. Building Sump Alarms  
 Abnormal Press/Temp/Flows in Letdown System

#### Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Recognize symptoms Enter AP-CVCS.1 (May also enter AP-RCS.1 but this is not the optimal recovery procedure)	_____	_____
RO/SRO	Monitor Przr Level (should be stable)	_____	_____
RO/SRO	Check VCT M/U System • Align for M/U • Charging aligned to VCT	_____	_____
RO/SRO	Check for RCS Leakage	_____	_____
RO/SRO	Check for leak in Aux. Building	_____	_____
RO/SRO	Check for Charging Leak	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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Response:

RATING      N/A

RO/SRO      Check Letdown. Determine Abnormal Isolate Letdown.

- Close AOV-427, 200A, B 202
- Close 371
- Close HCV-142 while adjusting charging
- Close AOV-294

\_\_\_\_\_

CT #1 AP-CVCS.1-A

SAT      UNSAT

Isolate leakage path from CVCS prior to exiting AP-CVCS.1, CVCS Leak

\_\_\_\_\_

RO/SRO      Verify leak stopped

\_\_\_\_\_

RO/SRO      Place Excess L/D in service

\_\_\_\_\_

RO/SRO      Establish Auto Control

- Charging
- Przr Heaters

\_\_\_\_\_

All      Check Annunciators

\_\_\_\_\_

SRO      Notify Higher Supervision.

\_\_\_\_\_

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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6. EVALUATION

Event: 5

Event Title: Steam Leak on PT-479 Sensing Line

EVENT TASKS: 012-006-01-01 Place a Rx Protection Channel in the Tripped Condition

\_\_\_\_\_

\_\_\_\_\_

Expected Response/Behavior

CUES:

PT-479 Fails Low  
 ADFAC Trouble Alarm

Response:

		<u>RATING</u>	<u>N/A</u>
	Note: The operator may begin to shutdown the plant		
BOP/SRO	Verify MFW Reg and Bypass Valves Operating Normally (AR-G-22)	_____	_____
SRO	Recognize PT-479 Failed Low Enter ER-INST.1 (AR-G-22) Review Precautions	_____	_____
SRO	Dispatch AO to Investigate Steam Noise	_____	_____

<p>CONSTELLATION ENERGY</p> <p>R. E. GINNA NUCLEAR POWER PLANT</p> <p>EXAMINATION SCENARIO</p>	NO.: 06-1-2	REV: 1
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BOP/SRO          Refer to Attachment for PT-479

BOP          Defeat Switches for PT-479 Defeat  
479 Loop B-2  
• LoLo Press SI  
• Lo Press  
  
475 Loop B-2  
• High Trip  
• HiHi Trip

BOP          Perform Computer Defeat

SRO          Check Tech Specs  
3.3.2-1 func 1e  
3.3.2-1 func 4d and 4e  
3.3.3-1 func 24 and 25

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## 6. EVALUATION

Event: 6/7

Event Title: SGTR "B" S/G (Ruptured Faulted S/G)

EVENT TASKS: 035-010-05-01 Respond to a SGTR with a Faulted S/G

035-010-05-02 Direct Response to a SGTR with a Faulted S/G

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Expected Response/Behavior

#### CUES:

Przr Level decreasing

R-15 Alarm

R-32 Alarm

#### Response:

RATING

N/A

NOTE: The SGTR is fairly small, operators may perform some Action in AP-RCS.1, RCS Leak prior to Tripping an SI occurring.

SRO/RO Trip/verify Rx Trip  
 • Manual Trip Required due to failure of Auto Trip

\_\_\_\_\_

\_\_\_\_\_

RO/BOP Verify Immediate Actions  
 • Rx trip  
 • Turbine trip  
 • Buses energized  
 • SI activated

\_\_\_\_\_

\_\_\_\_\_

RO Verify SI, RHR and CNMT Recirc Fans Running

\_\_\_\_\_

\_\_\_\_\_

RO Verify CNMT Spray not Required

\_\_\_\_\_

\_\_\_\_\_

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Check if MSIV should be closed	_____	_____
BOP	Verify MFW Isolation	_____	_____
BOP	Verify MDAFW Pumps and TDAFW Pump running determine none is running	_____	_____
SRO/BOP	Start "A" MDAFW Pump and establish flow to the "A" S/G		

CT #2 E-0--F	<u>SAT</u>	<u>UNSAT</u>
Establish 200 gpm AFW flow to the S/G's before transition Out of E-0 occurs.	_____	_____

RO	Verify CI and CVI	_____	_____
RO	Check CCW Status	_____	_____
RO	Verify SI/RHR Flow (only SI flow)	_____	_____
BOP	Verify AFW Alignment	_____	_____



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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Response

		<u>Rating</u>	NA
BOP	Monitor Heat Sink • Check S/G level <50%	_____	_____
RO	Check if TDAFW pump can be stopped	_____	_____
RO	Check SI and RHR alignment	_____	_____
BOP	Check Tav <sub>g</sub> trending to 547°F (Action will need to be taken to control AFW and close the MSIV to control Tav <sub>g</sub> )	_____	_____
RO	Check PORVs and Sprays	_____	_____
RO/SRO	Determine if RCP Trip Criteria is met	_____	_____
BOP	Verify CREATS Isolation	_____	_____
BOP	Check S/G Secondary intact	_____	_____
BOP/SRO	Check S/G Tube intact Determine SGTR occurred Transition to E-3	_____	_____
SRO/RO	Check RCP Trip criteria	_____	_____
BOP/SRO	Identify "B" S/G as ruptured	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
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BOP/SRO      Isolate Ruptured S/G

- ARV 1050 psi in Auto
- TDAFW Stm Valve closed
- Blowdown Valve closed
- MSIV closed
- Attachment 16.0 (AO Dispatched)

\_\_\_\_\_

BOP/SRO      Check Rupture S/G Level  
 Isolate AFW to Rupture S/G

- MOV 4008 closed
- B MDAFW Pump Pull Stop
- AOV 4298 closed (TDAFW to "B" S/G)
- MOV 4000A, B closed

\_\_\_\_\_

CT #3 E-3--A

SAT

UNSAT

Isolate feed flow into and steam flow from the ruptured  
 S/G before a transition to ECA-3.1 occurs.

\_\_\_\_\_

BOP/SRO      Establish Temperature Control on the "A" ARV  
 (or Condenser Steam dump if the "A" MSIV is  
 still open.

\_\_\_\_\_

RO/SRO      Reset SI

\_\_\_\_\_

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-2	REV: 1
	TITLE: SCENARIO #2	
	DATE: 03/29/06	PAGE: 22 of 24

BOP/SRO      Initiate RCS Cooldown

- Determine Cooldown Temperature
- Check Rupture MSIV closed
- Dump Steam via "A" ARV (or condenser steam dump if available)
- Stop Cooldown and Control
- Tavq when less than required temp.

CT #4 E-3--B

SAT

UNSAT

Establish/maintain a RCP Temp. So that transition from E-3 does not occur because RCS Temp. Is either of the following conditions:

- Too high to obtain 20°F subcooling (E-3 step 20)
- Below the Red or Orange Path Criteria of the Integrity CSFST

BOP            Monitor Intact S/G levels

RO            Check PORV and Block Valves open

RO/SRO       Reset CI

BOP            Verify all Buses supplied by off-site power

BOP            Verify adequate SW flow

SRO/RO       Establish IA to CNMT

- 13/15 Normal Feed closed
- 2 SW pumps running
- Turbine Building SW isolation valves open
- Verify adequate air compressor

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- "C" Instrument
- Or
- Service Air
- Or
- Both A and B Instruments
- Reset XY Relay for AOV-5392
- Verify AOV-5392 open

RO	Stop RHR pumps	_____	_____
RO	Establish Charging Flow <ul style="list-style-type: none"> <li>• Align Charging to RWST</li> <li>• Start charging and align to get 75 gpm charging flow</li> </ul>	_____	_____
BOP/SRO	Check if Cooldown should be stopped (should already be stopped)	_____	_____
BOP/SRO	Check Rupture S/G pressure stable or increasing (Note: Pressure will be decreasing when it decreases to < 250 psig above the intact - transition to ECA-3.1)	_____	_____
RO/BOP/SRO	Verify ECA-3.1 Action (already completed in E-3) <ul style="list-style-type: none"> <li>• Reset SI/CI (step 1,2)</li> <li>• SW adequate (step 3)</li> <li>• IA restored to CNMT (step 4)</li> <li>• AC Buses (step 5)</li> </ul>	_____	_____
RO/SRO	Deenergize Przr Heater	_____	_____
RO	Check CNMT Spray stopped	_____	_____
BOP/SRO	Check Ruptured S/G level	_____	_____
RO	Check RHR pumps stopped	_____	_____
SRO/RO/BOP	Evaluate plant status <ul style="list-style-type: none"> <li>• Aux. Building Rad.</li> </ul>	_____	_____

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- Samples
- Shroud and Reactor Compartment Coolers

RO	Verify 75 gpm charging established	_____	_____
BOP/SRO	Check Secondary Sides of S/G intact (B decreasing but already isolated)	_____	_____
BOP	Control "A" (Intact) S/G levels	_____	_____
BOP/SRO	Initiate Cooldown to Cold Shutdown • Dump steam from the "A" ARV	_____	_____

CT #5 ECA-3.1	<u>SAT</u>	<u>UNSAT</u>
(Initiate) Cooldown the RCS to CSD	_____	_____

Terminate the scenario when a satisfactory cooldown rate is established.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
	TITLE: Scenario #3	
	DATE: 4/19/06	PAGE: 1 of 25

Written by: Ken Masker  
Sr. License Instructor

Date: 3/30/06

Technical Review: Dennis Jones  
Sr. License Instructor

Date: 5/18/06

Time validated 86 minutes By: Roy Gillow  
Shift Manager

Date: 5/18/06

Date of exam: \_\_\_\_\_

Examinees

Evaluators

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Final review \_\_\_\_\_  
License Instructor

Date: \_\_\_\_\_

Approved for use \_\_\_\_\_  
Director Operations Training  
or Designee

Date: \_\_\_\_\_

<u>ATTRIBUTE</u>	<u>#</u>
Total Malfunctions	7
Malf after EOP entry	1
Abnormal Events	5
Major Transients	1
EOP's beyond SCRAM	1
ECA's, FR's	1
Critical Tasks	3
T.S. Exercised Yes/No	Yes

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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1. SCENARIO OVERVIEW

- 1.1 The plant is at 100% power MOL conditions RCS C<sub>B</sub> - 845 ppm, BAST C<sub>B</sub> - 11,000 ppm. Xenon is at equilibrium. The "A" SI Pump is out of service for motor work. "B" Charging Pump is out of service for belt replacement, "B" SW Pump is out of service for motor work.
- 1.2 A Loop "B" Thot fails high. The Tavgr- average Tavgr rod stops fail to function. The operators should manually control rods and defeat the channel per ER-INST.1.
- 1.3 A 20 gpm CCW leak develops in the Seal Water Heat Exchanger. The operators respond using AP-CCW.2, Loss of CCW during Power Operation, to control CCW Surge Tank level and bypass the Seal Water Heat Exchanger.
- 1.4 Both Generator Bus Duct Cooling Fans trip. This requires a load decrease to approximately 70% power in 10 minutes (AR-J-4) using procedure AP-TURB.5.
- 1.5 During the load decrease a rod lift coil for a D Bank rod fails (blown fuse) causing a misaligned rod. The operator will respond per AP-RCC.1, RCC/RPI Manlfuction. (Tech Spec 3.1.4)
- 1.6 The "D" Service Water Pump trips. The operators should respond by attempting to start the "C" SW Pump per AP-SW.2, Loss of Service Water. (Tech Spec 3.7.8. One SW Train inoperable)
- 1.7 The "C" Service Water Pump trips immediately when started resulting in only one SW Pump in service. The operators should respond by placing DG "B" in Pull Stop and isolate non-essential loads.
- 1.8 An inadvertent SI occurs. When MOV 852B opens (RHR to Rx Vessel) CV-853B fails causing an inter-system LOCA (to RHR). The RHR common header fails from over pressure resulting in a LOCA outside Containment. The operators should respond per E-0, ECA-1.2 and E-1.
- 1.9 The "B" SI Pump fails to Auto start on the SI resulting in inadequate SI for the LOCA. The operator should resond per E-0 and manully start the "B" SI Pump.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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## 2. SCENARIO OBJECTIVES

- 2.1 Respond to a Thot RTD failure by controlling rods in manual and defeating the effected channel.
- 2.2 Respond to a CCW Seal Water Heat Exchanger leak per AP-CCW.2
- 2.3 Perform a rapid load reduction per AP-TURB.5 in response to a loss of Bus Duct Cooling.
- 2.4 Respond to a misaligned RCC during the power reduction using AP-RCC.2 (Apply Tech Spec 3.1.4)
- 2.5 Respond to a SW Pump trip per AP-SW.2 (Apply Tech Spec 3.7.8)
- 2.6 Respond to an inadvertant SI causing a LOCA outside Containment using E-0, ECA-1.2 and E-1.



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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### 3. CRITICAL TASKS (Cts)

#### CT #1

E-0--I

Task: Establish flow from at least two SI Pumps before transition out of E-0

Cues: Indications that SI is required

- SI Actuation
- RCS Pressure less than SI shutoff head

AND

Indication that less than 2 SI Pumps are injecting into the RCS

- Control Switch Position indicate that breakers for 2 SIPs are NOT closed

Indicator: Manipulation of control required to establish flow from at least 2 SIPs

Feedback: Indication at least 2 SI Pumps are injecting

- SI Pump Flowrate

#### CT #2

E-1--C

Task: Trip all RCPs within 5 minutes of reaching Trip Criteria

Cues: Indications of a Small Break LOCA

AND

Indications of SI

AND

Indications of only one train of SI available

AND

RCP Trip Criteria met

Indicator: Manipulation of controls required to trip both RCPs

Feedback: Both RCPs stopped

- RCP Breaker position lights
- RCS Flow decreasing

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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3. CRITICAL TASKS (Cts)

CT #3

ECA-1.2--A

Task: Isolate the LOCA outside Containment before transitioning out of ECA-1.2

Cues: Indication SI is actuated and required

AND

Indication of abnormally high radiation levels in the Auxiliary Building

Indicator: Manipulation of control to close the isolation valve upstream of the break (MOV 852B)

Feedback: Indication of increasing RCS pressure



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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35 min            4.4      Bus Duct Cooler Failures  
    Trigger 3

When requested report  
 "A Fan Belt broken  
 and "B" Fan tripped.

During power decrease  
 D Bank Rod will stick  
 When requested report  
 no visible damage or  
 alarms at the rod  
 drive cabinets

Verify trigger 30  
 actuates at 85%

48 min            4.5      "D" SW Pump Trip  
    Trigger 4

If called to observe  
 start of "C" SW Pump  
 report no abnormal  
 indication locally  
 except breaker  
 tripped immediately  
 on closure

When requested to  
 check "D" SW Pump  
 after trip report  
 smell of burnt  
 insulation.

56 min            4.6      LOCA Outside CNMT  
    Trigger 5

Note Aux Building  
 Radiation levels will  
 be high

SI Pump Discharge  
 Breakers

MOV-878B - LOA EDS037  
 MOV-878D - LOA EDS038

Terminate Scenario per direction of the  
 Lead Examiner.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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## 5. TURNOVER INFORMATION

5.1 The plant is at 100% power. Xenon is at equilibrium. RCS Boron Concentration is 845 ppm. BAST Boron Concentration is 11,000 ppm. The A and C Service Water pumps are selected for Auto start.

### 5.2 Equipment Out of Service

"A" SI pump is OOS for motor work.  
 "B" SW pump is out for motor replacement.  
 Generator Hydrogen Control is in Manual  
 "B" Charging Pump

### 5.3 Work in Progress

"A" SI pump  
 "B" SW Pump Motor Replacement  
 "B" Charging Pump belt Replacement  
 (See A52.4's)

### 5.4 Planned Work

Nothing additional.

### 5.5 Significant Events

"A" SI Pump had high vibration during testing that was traced to the inboard motor bearing

"B" SW Pump Motor was removed from service due to overheating of the winding.

"B" Charging pump belt failed.

### 5.6 Remarks

Continue 100% operation.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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## 6. EVALUATION

Event: 1

Event Title: Loop "B" That fails High

EVENT TASKS: 001-023-01-01 Operate Control Rods in manual at power  
012-006-01-01 Place a Reactor Protection Channel in a tripped condition

### Expected Response/Behavior

#### CUES:

Rods Stepping IN  
 Temp. Channels T403/407 failing HIGH  
 Tavg - Tavg Alarm

#### Response:

RATING      N/A

NOTE: May enter AP-RCC.1 to place rods in manual. This scenario is written for entering into AP-RCC.1

BOP/SRO	Check Rod operability	_____	_____
	<ul style="list-style-type: none"> <li>• Turbine Load Stable</li> <li>• Place Rods in Manual</li> <li>• Verify Rod Motion Stops</li> </ul>		
RO/SRO	Restore Tavg to Tref	_____	_____
RO/SRO	Check Tavg Channels	_____	_____
	<ul style="list-style-type: none"> <li>• Determine T403 Failed</li> <li>• Refer to ER-INST.1</li> </ul>		
RO/BOP/SRO	Defeat T403/407 per ER-INST.1		
RO	Operate Rods in Manual	_____	_____
BOP	Check Steam Dump not operating	_____	_____
RO	Place Charging in Manual/Manually control PRZR Level	_____	_____
RO	Check RIL Alarms	_____	_____

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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Determine Hot Leg Streaming not occurring	_____	_____
BOP	Defeat the Channel per Attachment Tavg 403 / Delta T 407	_____	_____
BOP	Verify Rods in Manual/ Charging in Manual	_____	_____
BOP	RIL Rack- Place T/405F to Loop B Unit 1	_____	_____
BOP	Steam Dump Rack- Place T/401B to Loop B Unit 1	_____	_____
BOP	B-1 Protection Rack- Place the following switches to TRIP  403 Loop B-1 <ul style="list-style-type: none"> <li>• High Tavg</li> <li>• Low Tavg</li> </ul> 407 Loop B-1 <ul style="list-style-type: none"> <li>• Over Temp Trip</li> <li>• Over Power Trip</li> </ul>	_____	_____
BOP	Verify Bistable Lights	_____	_____
BOP	Delete 403/407 group from PPCS Scanning	_____	_____







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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
RO	Check Letdown	_____	_____
RO/SRO	Check CCW Valve alignment <ul style="list-style-type: none"> <li>• Attachment 1.0 (MCB)</li> <li>• Attachment 1.1 (NLO)</li> </ul>	_____	_____
SRO	Dispatch NLO to check Seal Water HX  (NLO reports flow is 20 gpm lower than normal)	_____	_____
SRO	Direct NLO to bypass and isolate the Seal Water HX	_____	_____
SRO	Notify RP to sample the RCS for Chromates	_____	_____
RO	Terminate Makeup to CCW Surge Tank when level ~50%	_____	_____
RO	Check for leakage in CNMT and Auxiliary Building (Step 8, 9)	_____	_____
SRO	Verify leak identified and isolated	_____	_____
RO	Verify Normal LTDN in service	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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## 6. EVALUATION

Event: 3/4

Event Title: Isophase Bus Duct Cooling Failure / Stuck Rod

EVENT TASKS: 001-019-04-01      Restore Misaligned Control Rod  
004-013-01-01      Perform a Boration of the RCS  
045-027-04-01      Respond to a Rapid Load Reduction  
045-027-04-02      Direct Response to a Rapid Load Reduction

### Expected Response/Behavior

CUES:  
 Alarm AR-J-4

Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Check SW System	_____	_____
SRO	Dispatch an AO to investigate	_____	_____
	Note: AO will report no fans running		
SRO	Direct Load Reduction to ~70% power. Enter AP-TURB.5	_____	_____
RO/BOP/SRO	Initiate Load Reduction		
	<ul style="list-style-type: none"> <li>Verify Rods in Auto (RO)</li> </ul>	_____	_____
	<ul style="list-style-type: none"> <li>EHC Rate Selected and Load Reduction initiated. (BOP)</li> </ul>	_____	_____
	NOTE: This step is applicable only if the normal boration method is not available	_____	_____
SRO	Determine Boration Technique	_____	_____
	<ul style="list-style-type: none"> <li>Dispatch AO to open V-356</li> </ul>		
	OR		
	<ul style="list-style-type: none"> <li>Borate from the RWST (Open 112B, Close 112C)</li> </ul>		

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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
RO	Monitor Tavg 545°F - 566°F	_____	_____
BOP	Verify IA available to CNMT	_____	_____
RO	Monitor PRZR Pressure	_____	_____
BOP	Monitor S/G Level Control	_____	_____
RO	Monitor PRZR Level Control	_____	_____
BOP	Monitor Steam Dump	_____	_____
NOTE: At 85% power the Stuck Rod Malfunction will Auto Actuate			
RO	Determine Rod C-7 misaligned	_____	_____
SRO	Enter AP-RCC.2	_____	_____
SRO/RO	Place Rods in Manual (will need to finish Load Reduction on Boric Acid or RWST to control reactivity)	_____	_____
RO	Check for Dropped Rod	_____	_____
RO	Check Tavg - Place EHC in Manual	_____	_____
BOP	Check Steam Dump	_____	_____
BOP	Check Generator Load > 15 MW	_____	_____
RO/BOP/SRO	Stabilize Plant conditions	_____	_____
	<ul style="list-style-type: none"> <li>● Tavg</li> <li>● PRZR Press.</li> <li>● PRZR Level</li> <li>● MFW</li> </ul>		

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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
RO/SRO	Check Rod Alignment	_____	_____
SRO	Refer to Tech spec 3.1.4	_____	_____
RO/SRO	Check QPTR within limits	_____	_____
RO	Verify MRPI system operable	_____	_____
RO/SRO	Check Rod Operability	_____	_____



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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Start the Service Air Compressor	_____	_____
		_____	_____
BOP	Stop the C Inst Air Compressor	_____	_____
SRO	Dispatch AOs to monitor SW cooled equipment	_____	_____
SRO	Notify Supervision	_____	_____
BOP	Check SW System	_____	_____

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# 6. EVALUATION

Event: 6/7

Event Title: LOCA Outside Containment

EVENT TASKS: 002-025-05-01 Respond to a LOCA Outside Containment

002-025-05-02 Direct Response to a LOCA Outside Containment

## Expected Response/Behavior

### CUES:

SI Actuated  
 RX Trip  
 PRZR Level/Press Decreasing  
 Auxiliary Building Radiation Alarms

### Response:

		<u>RATING</u>	<u>N/A</u>
SRO	Recognize Rx Trip/ SI Enter E-0	_____	_____
RO/BOP	E-0 Immediate Actions <ul style="list-style-type: none"> <li>• Verify Rx Trip</li> <li>• Verify Turbine Trip</li> <li>• Verify Busses Energized</li> <li>• Check SI Actuated (Manually Actuate SI)</li> </ul>	_____	_____
RO/SRO	Recognize "B" SI Pump fail to auto start	_____	_____
RO	Manually Start "B" SI Pump	_____	_____

CT #1 E-0--I

SAT

UNSAT

Establish flow from at least 2 SI pumps before  
 transition out of E-0

RO

Verify CNMT Recirc Fans Running

\_\_\_\_\_



CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
RO	Verify CNMT Spray not required	_____	_____
BOP	Check if MSIVs should be closed	_____	_____
BOP	Verify MFW Isolation	_____	_____
BOP	Verify MDAFW Pumps running	_____	_____
BOP	Verify SW Pumps running	_____	_____
RO	Verify CI and CVI	_____	_____
RO	Check CCW Status	_____	_____
RO	Verify SI/RHR Flow (Only SI Flow)	_____	_____
BOP	Verify AFW Alignment	_____	_____
BOP	Monitor Heat Sink <ul style="list-style-type: none"> <li>• Check S/G Level &lt;50%               <ul style="list-style-type: none"> <li>- Secure AFW to S/G with &gt;50% level</li> <li>- Control SG levels between 17-50%</li> </ul> </li> </ul>	_____	_____
RO	Check SI and RHR Alignment	_____	_____
RO	Check CCW to Thermal Barriers	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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6. EVALUATION (continued)

Response:

		<u>RATING</u>	<u>N/A</u>
BOP	Check if TDAFW Pump can be stopped	_____	_____
	<ul style="list-style-type: none"> <li>Stop the TDAFW Pump</li> </ul>		
BOP	Check Tavg trending to 547°F	_____	_____
RO	Check PORVs and Spray Valves	_____	_____
RO/SRO	Determine RCP Trip Criteria is met	_____	_____
	<ul style="list-style-type: none"> <li>Trip RCP's when met</li> </ul>		

CT #2 E-1--C	<u>SAT</u>	<u>UNSAT</u>
Trip RCPs within 5 minutes of reaching Trip Criteria	_____	_____

BOP	Verify CREAT Isolation	_____	_____
BOP	Check S/G Secondary intact	_____	_____
BOP/SRO	Check S/G Tubes intact	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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RO/SRO	Check RCS intact (No LOCA inside CTMT)	_____	_____
RO/BOP/SRO	Check SI Termination Criteria	_____	_____
SRO	Notify STA to monitor CSFST	_____	_____
BOP	Control S/G Levels	_____	_____
RO	Reset SI/CI	_____	_____
BOP/SRO	Check SW Flow • Dispatch AO to perform SD-1	_____	_____
BOP/SRO	Establish IA to CNMT	_____	_____
BOP/SRO	Check S/G Rad Levels	_____	_____

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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6. EVALUATION (continued)

Response:

RATING      N/A

RO/SRO      Check Aux Building Rad Levels

\_\_\_\_\_

- Determine Rad levels are abnormal and Transistion to ECA-1.2

NOTE: The operators, based on abnormal RHR System indications may perform an anticipatory action per A-503.1 and go to the steps for isolating RHR (Step 3)

RO      Verify normal RHR Alignment

\_\_\_\_\_

- 700/701 Closed
- 720/721 Closed

RO      Verify CVCS Alignment

\_\_\_\_\_

- 310/296/392A Closed
- 313/371 Closed

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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SRO/RO	Check for backflow into ECCS System		
	• SI Reset	_____	_____
	• Close 852A	_____	_____
	• Check for RCS pressure increase (none)	_____	_____
	• Open 852A	_____	_____
	• Close 852B	_____	_____
	• Verify RCS Pressure increasing	_____	_____

CT #3 ECA-1.2--A	<u>SAT</u>	<u>UNSAT</u>
Isolate the LOCA Outside Containmant before transistioning out of ECA-1.2	_____	_____

RO/SRO	Check if Leak is isolated		
	• Go to E-1	_____	_____

NOTE: At some point SI Termination Criteria will be met. When it is, the operator should transistion to ES-1.1, SI Termination.

NOTE: Action Step 1-9 have already been completed in E-0. Step 10 begins new actions.

CONSTELLATION ENERGY R. E. GINNA NUCLEAR POWER PLANT EXAMINATION SCENARIO	NO.: 06-1-3	REV: 0
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RO/BOP/SRO      Verify action already completed (Steps 1-9)

- RCP Trip Criteria
- S/Gs intact
- Control S/G levels
- Monitor Secondary Rad levels
- PORVs
- Reset SI/CI
- SW Flow
- IA to CNMT restored

BOP/SRO      Verify Normal Power to Busses 14/16

RO      Establish Charging Flow

- Check RCP Seal Cooling
- Align Charging Suction to RWST
- Start Charging to restore PRZR level

RO/BOP/SRO      Check SI Termination Criteria

- Transition to ES-1.1