CRYSTAL RIVER EXAM 50-302/2000-301
SEPTEMBER 25 - 29, 2000

COVER SHEET
FINAL SUBMITTAL DOCUMENTS

- FINAL SCENARIO OUTLINE -ES-D-1

- FINAL OPERATOR ACTIONS - ES-D-2

- FINAL SCENARIOS

- ES-301-1 - ADMIN TOPICS OUTLINE

- ES-301-2-CONTROL ROOM SYSTEMS & FACILITY WALK-THROUGH TEST OUTLINE

- FINAL JPMS FOR EACH WALK-THROUGH TEST

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FINAL SUBMITTAL

- FINAL SCENARIO OUTLINE -ES-D-1

- FINAL OPERATOR ACTIONS - ES-D-2

- FINAL SCENARIOS

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 2-1,2 Rev. 2 Op-Test No.: 1

Examiner: George Hopper Operators: Barnes (SRO)
SURR RO
SURR BOP

Objectives:

- The BOP will be evaluated on his ability to take actions to recover CFT pressure.
- The SRO will be evaluated on his ability to apply ITS to the CFT low pressure condition.
- The OAC and SRO will be evaluated on their ability to diagnose a Th instrument failure and take corrective actions.
- The operating crew will be evaluated on their ability to diagnose a failed CDP magnetic coupling and to reduce power level to the capacity of one CDP.
- The OAC and SRO will be evaluated on their ability to diagnose a failure of the ULD and reduce power using manual ICS control.
- The operating crew will be evaluated on their ability to diagnose loss of condenser vacuum and to take actions to remove the turbine from service.
- The crew will be evaluated on their ability to perform AP-660, Turbine Trip.
- The OAC and SRO will be evaluate on their ability to perform EOP-02, Vital System Status Verification, immediate actions.
- The operating crew will be evaluated on their ability to diagnose an OTSG tube leak and to take actions to keep pressurizer level as required.
- The OAC will be evaluated on his ability to diagnose the loss of all feedwater to the OTSGs and take appropriate actions to correct this condition.

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover: A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's air compressor. They will notify the control room when maintenance is complete. DHP-1A and EFP-3 are OOS for pump packing/seal adjustment. WTP-6B is OOS for motor/pump alignment. ARP-1B is OOS for routine motor maintenance. The intake screen wash system is OOS due to mechanical damage from an intake crane accident. OTSG "B" has a 3 GPD primary to secondary leak. RM-G27 is OOS for repair. "B" CFT has reduced pressure from a valve alignment error. The alignment has been corrected and pressure in the CFT is stable but out of the specified range. Recover CFT pressure to within normal CFT pressure limits. CFT pressure unevaluated for TS.

Event No.	Malf. No.	Event Type*	Event Description
1	1	N(BOP) N(SRO)	A valid "B" core flood tank low pressure condition exists. The SRO evaluates ITS 3.5.1 condition B and directs the BOP to restore pressure. The BOP restores the core flood tank pressure. (AR-305, OP-401) The SRO exits ITS 3.5.1, if entered when CFT pressure is recovered.
2	2	I(OAC) I(SRO)	Selected "A" Thot , RC-4A-TE1, fails high (**MALF**). The OAC diagnoses the failure and stabilizes the plant then transfers to a good channel. (AR-503, OP-501)
3	3	C(BOP) C(SRO) R(OAC)	CDP-1A magnetic coupling fails (**MALF**). The crew reduces power to a level within the capability of one CDP (approximately 60%). (AR-602, OP-603, AP-510)
4	4	C(All) R(OAC)	The crew notices a loss of condenser vacuum (**MALF**). (OP-607) The crew reduces power to < 45% to trip the turbine (degrading vacuum). (AP-510)
5	5	I(OAC) I(SRO)	The ULD fails to respond to operator input (ULD failure) (**MALF**). The OAC reduces power using manual ICS control. (AP-510)
6	6	C(OAC) C(SRO	Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**) and performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)
7	7	C(OAC) C(SRO)	Emergency feedwater EFP-2 will trip after starting (**MALF**). OAC will start EFP-1 (**CT**). (EOP-02, EOP-14 Enclosure 7)
8	8	M(All)	Following the turbine shutdown the "A" OTSG develops a 350 gpm tube leak (**MALF**) while the condenser continues to lose vacuum. The crew will diagnose the existence of an OTSG tube leak without the aid of normal radiation monitoring(**CT**). (EOP-06)**

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

** PRA significant accident

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 1-1,2 Rev. 2 Op-Test No.: 1

Examiners: George Hopper
Jonathan Bartley
Glen Salyers

Operators: MURRAY BOP
KUHLMAN RO
MOFFATT SRO

Objectives:

- The OAC and SRO will be evaluated on their ability to diagnose a power range nuclear instrumentation channel failure and take corrective actions.
- The BOP and the SRO will be evaluated on their ability to place an RPS channel in bypass and verify Technical Specification adherence.
- The OAC will be evaluated on his ability to diagnose the loss of automatic pressurizer level control and take manual actions to control the level.
- The operating crew will be evaluated on their ability to diagnose a high reactor coolant pump thrust bearing temperature and remove the pump from service.
- The operating crew will be evaluated on their ability to diagnose a failure of feedwater to re-ratio following removal of the reactor coolant pump from service and compensate for this failure.
- The operating crew will be evaluated on their ability to run the plant back following a dropped rod.
- The operating crew will be evaluated on their ability to diagnose a small break LOCA in the Reactor Building.
- The BOP will be evaluated on his ability to respond to an engineered safeguards actuation.
- The operating crew will be evaluated on their ability to respond to a reactor trip and a loss of subcooling margin.
- The OAC will be evaluated on his ability to respond to an emergency feedwater instrument failure and emergency feedwater pump trip.

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover: A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's compressor. They will notify the control room when maintenance is complete. DHP-1A and EFP-1 are OOS for pump packing/seal adjustment. WTP-6B is OOS for motor/pump alignment. ARP-1B is OOS for routine motor maintenance. The intake screen wash system is OOS due to mechanical damage from an intake crane accident. OTSG "B" has a 3 GPD primary to secondary leak. RM-G27 is OOS for repair.

Event No.	Malf. No.	Event Type*	Event Description
1	1	I(OAC) I(SRO)	NI-7 power range detector fails high (fails to 102%) (**MALF**). The crew will diagnose the failure and stabilize the plant then transfer to a good channel. (OP-501)
2	2	N(BOP) N(SRO)	The SRO enters TS action 3.3.1 and has BOP place the "C" RPS channel in bypass. (OP-501, OP-507)
3	3	I(OAC)	MUV-31 (Pressurizer level control valve) controller set point fails high (**MALF**). The OAC will diagnose the failure and control pressurizer level in manual.
4	4	C(All) N(All) R(OAC)	An annunciator indicates a high thrust bearing temperature for RCP-1C (**MALF**). A power reduction is required followed by removal of the RCP from service. (AR-501, OP-302)
5	5	I(OAC) I(SRO)	When the RCP is shutdown feedwater does not re-ratio (**MALF**). The crew will manually re-ratio feedwater.
6	6	C(All) R(OAC)	Control rod 7-4 drops into the core (**MALF**). The crew will manually run-back the plant. (AP-545)
7	7	C(All)	A small RCS leak develops on letdown line in the reactor building (**MALF**)**. The crew will perform the actions of AP-520. (AP-520)
8	8	M(All)	Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (**CT**). (EOP-02, EOP-03)
9	9	C(BOP)	When the ES actuation occurs, DCP-1B does not start. The BOP will start the pump (**MALF**) (**CT**). (EOP-03)
10	10	I(OAC) C(OAC)	Following EFIC actuation, SP-21-LT fails high (SP-21-LI, EFIC operating instrument) (**MALF**) and EFP-2 trips (**MALF**). The "B" OTSG level will decrease if EFV-57 is not reopened.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
** PRA significant accident

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 2-1,2 Rev. 2 Op-Test No.: 1

Examiner: George Hopper
Glen Salyers
Jonathan Bartley

Operators: MURRAY SRO
MOFFAT RO
KUHLMAN BOP

Objectives:

- The BOP will be evaluated on his ability to take actions to recover CFT pressure.
- The SRO will be evaluated on his ability to apply ITS to the CFT low pressure condition.
- The OAC and SRO will be evaluated on their ability to diagnose a Th instrument failure and take corrective actions.
- The operating crew will be evaluated on their ability to diagnose a failed CDP magnetic coupling and to reduce power level to the capacity of one CDP.
- The OAC and SRO will be evaluated on their ability to diagnose a failure of the ULD and reduce power using manual ICS control.
- The operating crew will be evaluated on their ability to diagnose loss of condenser vacuum and to take actions to remove the turbine from service.
- The crew will be evaluated on their ability to perform AP-660, Turbine Trip.
- The OAC and SRO will be evaluate on their ability to perform EOP-02, Vital System Status Verification, immediate actions.
- The operating crew will be evaluated on their ability to diagnose an OTSG tube leak and to take actions to keep pressurizer level as required.
- The OAC will be evaluated on his ability to diagnose the loss of all feedwater to the OTSGs and take appropriate actions to correct this condition.

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover: A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's air compressor. They will notify the control room when maintenance is complete. DHP-1A and EFP-3 are OOS for pump packing/seal adjustment. WTP-6B is OOS for motor/pump alignment. ARP-1B is OOS for routine motor maintenance. The intake screen wash system is OOS due to mechanical damage from an intake crane accident. OTSG "B" has a 3 GPD primary to secondary leak. RM-G27 is OOS for repair. "B" CFT has reduced pressure from a valve alignment error. The alignment has been corrected and pressure in the CFT is stable but out of the specified range. Recover CFT pressure to within normal CFT pressure limits. CFT pressure unevaluated for TS.

Event No.	Malf. No.	Event Type*	Event Description
1	1	N(BOP) N(SRO)	A valid "B" core flood tank low pressure condition exists. The SRO evaluates ITS 3.5.1 condition B and directs the BOP to restore pressure. The BOP restores the core flood tank pressure. (AR-305, OP-401) The SRO exits ITS 3.5.1, if entered when CFT pressure is recovered.
2	2	I(OAC) I(SRO)	Selected "A" Thot , RC-4A-TE1, fails high (**MALF**). The OAC diagnoses the failure and stabilizes the plant then transfers to a good channel. (AR-503, OP-501)
3	3	C(BOP) C(SRO) R(OAC)	CDP-1A magnetic coupling fails (**MALF**). The crew reduces power to a level within the capability of one CDP (approximately 60%). (AR-602, OP-603, AP-510)
4	4	C(All) R(OAC)	The crew notices a loss of condenser vacuum (**MALF**). (OP-607) The crew reduces power to < 45% to trip the turbine (degrading vacuum). (AP-510)
5	5	I(OAC) I(SRO)	The ULD fails to respond to operator input (ULD failure) (**MALF**). The OAC reduces power using manual ICS control. (AP-510)
6	6	C(OAC) C(SRO	Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**) and performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)
7	7	C(OAC) C(SRO)	Emergency feedwater EFP-2 will trip after starting (**MALF**). OAC will start EFP-1 (**CT**). (EOP-02, EOP-14 Enclosure 7)
8	8	M(All)	Following the turbine shutdown the "A" OTSG develops a 350 gpm tube leak (**MALF**) while the condenser continues to lose vacuum. The crew will diagnose the existence of an OTSG tube leak without the aid of normal radiation monitoring(**CT**). (EOP-06)**

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

** PRA significant accident

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 1-1,2 Rev. 2 Op-Test No.: 1
Examiners: ~~George Hopper~~ G. Sayers Operators: Morris
J. Bartley Sweeny

Objectives:

- The OAC and SRO will be evaluated on their ability to diagnose a power range nuclear instrumentation channel failure and take corrective actions.
- The BOP and the SRO will be evaluated on their ability to place an RPS channel in bypass and verify Technical Specification adherence.
- The OAC will be evaluated on his ability to diagnose the loss of automatic pressurizer level control and take manual actions to control the level.
- The operating crew will be evaluated on their ability to diagnose a high reactor coolant pump thrust bearing temperature and remove the pump from service.
- The operating crew will be evaluated on their ability to diagnose a failure of feedwater to re-ratio following removal of the reactor coolant pump from service and compensate for this failure.
- The operating crew will be evaluated on their ability to run the plant back following a dropped rod.
- The operating crew will be evaluated on their ability to diagnose a small break LOCA in the Reactor Building.
- The BOP will be evaluated on his ability to respond to an engineered safeguards actuation.
- The operating crew will be evaluated on their ability to respond to a reactor trip and a loss of subcooling margin.
- The OAC will be evaluated on his ability to respond to an emergency feedwater instrument failure and emergency feedwater pump trip.

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover: A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's compressor. They will notify the control room when maintenance is complete. DHP-1A and EFP-1 are OOS for pump packing/seal adjustment. WTP-6B is OOS for motor/pump alignment. ARP-1B is OOS for routine motor maintenance. The intake screen wash system is OOS due to mechanical damage from an intake crane accident. OTSG "B" has a 3 GPD primary to secondary leak. RM-G27 is OOS for repair.

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1	1	I(OAC) I(SRO)	NI-7 power range detector fails high (fails to 102%) (**MALF**). The crew will diagnose the failure and stabilize the plant then transfer to a good channel. (OP-501)
2	2	N(BOP) N(SRO)	The SRO enters TS action 3.3.1 and has BOP place the "C" RPS channel in bypass. (OP-501, OP-507)
3	3	I(OAC)	MUV-31 (Pressurizer level control valve) controller set point fails high (**MALF**). The OAC will diagnose the failure and control pressurizer level in manual.
4	4	C(All) N(All) R(OAC)	An annunciator indicates a high thrust bearing temperature for RCP-1C (**MALF**). A power reduction is required followed by removal of the RCP from service. (AR-501, OP-302)
5	5	I(OAC) I(SRO)	When the RCP is shutdown feedwater does not re-ratio (**MALF**). The crew will manually re-ratio feedwater.
6	6	C(All) R(OAC)	Control rod 7-4 drops into the core (**MALF**). The crew will manually run-back the plant. (AP-545)
7	7	C(All)	A small RCS leak develops on letdown line in the reactor building (**MALF**)**. The crew will perform the actions of AP-520. (AP-520)
8	8	M(All)	Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (**CT**). (EOP-02, EOP-03)
9	9	C(BOP)	When the ES actuation occurs, DCP-1B does not start. The BOP will start the pump (**MALF**) (**CT**). (EOP-03)
10	10	I(OAC) C(OAC)	Following EFIC actuation, SP-21-LT fails high (SP-21-LI, EFIC operating instrument) (**MALF**) and EFP-2 trips (**MALF**). The "B" OTSG level will decrease if EFV-57 is not reopened.

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** PRA significant accident

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 2-1,2 Rev. 2 Op-Test No.: 1

Examiner: J. Bartley ~~George Hopper~~ G. Salyers

Operators: Sweeny Morris

Objectives:

- The BOP will be evaluated on his ability to take actions to recover CFT pressure.
- The SRO will be evaluated on his ability to apply ITS to the CFT low pressure condition.
- The OAC and SRO will be evaluated on their ability to diagnose a Th instrument failure and take corrective actions.
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- The operating crew will be evaluated on their ability to diagnose loss of condenser vacuum and to take actions to remove the turbine from service.
- The crew will be evaluated on their ability to perform AP-660, Turbine Trip.
- The OAC and SRO will be evaluate on their ability to perform EOP-02, Vital System Status Verification, immediate actions.
- The operating crew will be evaluated on their ability to diagnose an OTSG tube leak and to take actions to keep pressurizer level as required.
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2	2	I(OAC) I(SRO)	Selected "A" Thot , RC-4A-TE1, fails high (**MALF**). The OAC diagnoses the failure and stabilizes the plant then transfers to a good channel. (AR-503, OP-501)
3	3	C(BOP) C(SRO) R(OAC)	CDP-1A magnetic coupling fails (**MALF**). The crew reduces power to a level within the capability of one CDP (approximately 60%). (AR-602, OP-603, AP-510)
4	4	C(All) R(OAC)	The crew notices a loss of condenser vacuum (**MALF**). (OP-607) The crew reduces power to < 45% to trip the turbine (degrading vacuum). (AP-510)
5	5	I(OAC) I(SRO)	The ULD fails to respond to operator input (ULD failure) (**MALF**). The OAC reduces power using manual ICS control. (AP-510)
6	6	C(OAC) C(SRO	Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**) and performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)
7	7	C(OAC) C(SRO)	Emergency feedwater EFP-2 will trip after starting (**MALF**). OAC will start EFP-1 (**CT**). (EOP-02, EOP-14 Enclosure 7)
8	8	M(All)	Following the turbine shutdown the "A" OTSG develops a 350 gpm tube leak (**MALF**) while the condenser continues to lose vacuum. The crew will diagnose the existence of an OTSG tube leak without the aid of normal radiation monitoring(**CT**). (EOP-06)**

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

** PRA significant accident

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 2-1,2 Rev. 2 Op-Test No.: 1

Examiner: George Hopper Operators: _____

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- The BOP will be evaluated on his ability to take actions to recover CFT pressure.
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2	2	I(OAC) I(SRO)	Selected "A" Thot , RC-4A-TE1, fails high (**MALF**). The OAC diagnoses the failure and stabilizes the plant then transfers to a good channel. (AR-503, OP-501)
3	3	C(BOP) C(SRO) R(OAC)	CDP-1A magnetic coupling fails (**MALF**). The crew reduces power to a level within the capability of one CDP (approximately 60%). (AR-602, OP-603, AP-510)
4	4	C(All) R(OAC)	The crew notices a loss of condenser vacuum (**MALF**). (OP-607) The crew reduces power to < 45% to trip the turbine (degrading vacuum). (AP-510)
5	5	I(OAC) I(SRO)	The ULD fails to respond to operator input (ULD failure) (**MALF**). The OAC reduces power using manual ICS control. (AP-510)
6	6	C(OAC) C(SRO	Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**) and performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)
7	7	C(OAC) C(SRO)	Emergency feedwater EFP-2 will trip after starting (**MALF**). OAC will start EFP-1 (**CT**). (EOP-02, EOP-14 Enclosure 7)
8	8	M(All)	Following the turbine shutdown the "A" OTSG develops a 350 gpm tube leak (**MALF**) while the condenser continues to lose vacuum. The crew will diagnose the existence of an OTSG tube leak without the aid of normal radiation monitoring(**CT**). (EOP-06)**

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

** PRA significant accident

Narrative Summary:

Core flood tank low pressure annunciator, E-08-05, is in alarm (AR-305). CFT-1B pressure is low. The SRO will evaluate ITS 3.5.1 condition B and direct the BOP to recover CFT pressure. The BOP corrects the valid low pressure in the "B" core flood tank (OP-401). The SRO exits ITS 3.5.1, if entered when CFT pressure is recovered.

As the BOP is attending to the low CFT pressure the OAC and SRO diagnose a selected Th high failure. The OAC stabilizes the plant and transfers to a good channel (OP-501).

Annunciator alarm N-2-2 (AR-602) alerts the crew that the "A" condensate pump magnetic coupling is failing. Control room indication verifies the CDP problem and power is rapidly reduced to a level that is within the capability of one CDP (60%). The BOP removes CDP-1A from service (OP-603, AP-510).

Condenser vacuum begins to degrade due to a leak in the "A" main feedwater pump exhaust trunk (OP-607). Power is reduced to < 45% to trip the Turbine but not the Reactor.

While the crew is reducing power to trip the Turbine, the ULD fails to respond to operator input. The OAC will finish the power reduction using manual ICS control (AP-510).

When the OAC begins the immediate actions of AP-660, Turbine Trip, he discovers that the Turbine trip pushbutton does not function. The OAC performs the remedial actions, which include closing the MSIVs and tripping the Reactor. (AP-660, EOP-02) Since the normal heat sink for the reactor is no longer available, the reactor is tripped to protect the fuel.

After the Reactor trip the "A" OTSG develops a 350 gpm tube leak. Diagnosing the leaking steam generator post trip with out the "A" side steam line radiation monitor is important to the mitigation strategy for the casualty. This knowledge will help limit the spread of contamination and possible radioactive releases to the environment as two of the three fission product barriers have failed.

The condenser will eventually lose all vacuum and this will be verified by a call from the turbine building operator. (EOP-06)

Soon after emergency feedwater is actuated EFP-2 will trip causing a loss of all main and emergency feedwater. The OAC will start EFP-1. (EOP-14 Enclosure 7) If EFP-1 is not started the symptom of inadequate heat transfer will develop.

The exercise is terminated when both reactor and turbine are tripped, subcooling margin is minimized and a plant cooldown is started (EOP-06).

Procedures used during this scenario: (Annunciator Response, AR, not listed)

AP-510	EOP-02	OP-401
AP-660	EOP-06	OP-501
	EOP-13	OP-603
	EOP-14	OP-607

Target Quantitative Attributes – Scenario 2	Actual Attributes
1. Total Malfunctions (5-8)	7
2. Malfunctions after EOP entry (1-2)	1
3. Abnormal Events (2-4)	2
4. Major Transients (1-2)	1
5. EOPs entered requiring substantive actions (1-2)	1
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical Task (2-3)	3

Examination Setup/Execution
Scenario 2

Scenario Setup

1. [ ] Initialize the simulator to IC# 21(GF) and UNFREEZE the simulator
2. [ ] In the "NRCEXAM " directory of LESSON PLAN, start lesson plan #2
3. [ ] Trigger Lesson Plan Steps #1 and #2
4. Place the following Red Tags on the main control panel:
   a. [ ] DHP-1A, Red Tag
   b. [ ] EFP-3, Red Tag, Pull-to-Lock
   c. [ ] WTP-6B, Red Tag, Pull-to-Lock
   d. [ ] ARP-1B, Red Tag, Pull-to-Lock
   e. [ ] RM-G27, Red Tag
5. Perform the following setup actions:
   a. [ ] Ensure PPC group 59 on the right overhead CRT and group 108 on left overhead CRT
   b. [ ] Ensure SPDS left screen selected to normal and right screen to imbalance
   c. [ ] Ensure Batch Controller reset
   d. [ ] Ensure steam line monitor reset
   e. [ ] Ensure PPC/ANN alarms acknowledged
   f. [ ] Ensure status board indicates P → S 3 GPD (B)
   g. [ ] Reduce CFT-1B pressure to 570 – 575 psig (CFV-15 and CFV-29).
   h. [ ] Set MUT level to 80 inches and clear high pressure alarm by venting.
6. Ensure clean copies of the following "consumable" procedures are available.
   a. [ ] AP-510
   b. [ ] AP-660
   c. [ ] EOP-02
   d. [ ] EOP-06
   e. [ ] EOP-14
   f. [ ] OP-401
   g. [ ] OP-501
   h. [ ] OP-603
   i. [} OP-607
7. Advance all MCB recorders and delete alarm summary on computer station.
8. FREEZE the simulator and notify the lead examiner that simulator is ready to begin.

Scenario Execute

1. When notified by the lead examiner UNFREEZE the simulator
2. When notified by the lead examiner TRIGGER LESSON PLAN step #5 (Thot failure)
3. When notified by the lead examiner TRIGGER LESSON PLAN step #6 (Condensate pump mag coupling)
4. When notified by the lead examiner TRIGGER LESSON PLAN step #7 (Vacuum leak).
5. When crew starts power decrease for vacuum leak TRIGGER LESSON PLAN step #11 (ULD fails)
6. When crew reaches < 45% and prior to tripping the turbine, TRIGGER LESSON PLAN step #8 (Turbine trip p/b does not work)
7. When the reactor is tripped TRIGGER LESSON PLAN step #9 (OTSG leak)
8. When step 3.3 in EOP-02 is reached TRIGGER LESSON PLAN step #10 (EFP-2 trip)
9. When the Turbine Trip bypass alarm actuates TRIGGER LESSON PLAN step #12 (increased vacuum leak)

Booth Operator actions (Not included, standard call Chemistry, call HPs, etc.)

1. Play role of SPO and PPO for nitrogen addition.
2. When control room asks about local vacuum readings, respond what vacuum is and say it is decreasing (1 minute)
3. When reactor power is < 45%, increase the size of the vacuum leak to quickly establish condenser vacuum > 5.5" absolute.
4. Call to SPO to complete Enclosure 1 of EOP-14, enter "enc1".
   (Do NOT perform this enclosure until the crew has determined that NO Main Feedwater flow exists).
5. When HP is called, respond that "A" MS lines read 15-20 mR. (5 minutes).
6. Call to PPO to complete Enclosure 2 of EOP-14, enter "enc2", if required.
7. If called as SPO to trip the main turbine locally, wait 2 minutes and report the trip lever will not move to the trip position.;

TURNOVER SHEET

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover:

A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's air compressor. They will notify the control room when maintenance is complete.

DHP-1A and EFP-3 are OOS for pump packing/seal adjustment.

WTP-6B is OOS for motor/pump alignment.

ARP-1B is OOS for routine motor maintenance.

The intake screen wash system is OOS due to mechanical damage from an intake crane accident.

OTSG "B" has a 3 GPD primary to secondary leak.

RM-G27 is OOS for repair.

CFT-1B sample line valve misalignment has caused reduced pressure in the "B" CFT. The valve alignment has been corrected and the pressure decrease has stopped. No further actions have been taken.

ITS Action Items:

3.5.2, Condition "A" for DHP-1A.
3.7.5, Condition "B" for EFP-3.

Activities to be Performed this Shift:

Evaluate "B" CFT low pressure and recover to normal operating parameters.

Op-Test No.: 1 Scenario No.: 2 Event No.: 1 Rev.: 2

Event Description: A valid "B" core flood tank low pressure condition exists. The SRO enters ITS 3.5.1 and directs the BOP to restore pressure. The BOP restores the core flood tank pressure. (AR-305, OP-401)

Time	Position	Applicant's Actions or Behavior
	SRO	Evaluates entry into ITS 3.5.1, condition B, for "B" CFT pressure. Directs BOP to add nitrogen to CFT-1B using OP-401 Exits ITS 3.5.1 when CFT pressure has been restored, if entered.
	BOP	Raises pressure of CFT-1B using OP-401 section 4.4 - Directs SPO to align for nitrogen addition - Cycles CFV-27 to raise CFT-1B pressure - Directs SPO to secure nitrogen addition

Op-Test No.: 1 Scenario No.: 2 Event No.: 2 Rev.: 2

Event Description: Selected "A" Thot , RC-4A-TE1, fails high (**MALF**). The OAC diagnoses the failure and stabilizes the plant then transfers to a good channel. (AR-503, OP-501)

Time	Position	Applicant's Actions or Behavior
	OAC SRO	Diagnoses RC-4A-TE1 failure - SASS mismatch alarm (K-3-2 alarms) - Reactor power decreasing - Difference between RC-4A-TI and RC-4B-TI - Digital Tave indication increasing
	SRO	Directs OAC to stabilize plant by taking required ICS stations to manual/hand
	OAC	Stabilizes the plant (no order required) - Selects Reactor diamond to manual (in Track, K-6-2 alarms, with first ICS station in hand/manual) - Selects Reactor Bailey to hand - Selects both Feedwater Loops to hand - Adjusts stations for stable plant operation
	SRO	Directs BOP to verify alternate signal valid and OAC to transfer RC Th "A" loop feed to ICS per OP-501
	BOP	BOP verifies alternate signal valid - Uses computer to verify "B" signal valid
	OAC	Executes actions to select alternate RC Th "A" loop signal to ICS using OP-501 section 4.7 - Determine proper operating channel - Selects RC Th "A" loop to TT4
	SRO	Directs OAC to return ICS stations to automatic and return to full power
	OAC	Returns ICS to automatic (no order required) - Selects both Feedwater Loops to automatic - Selects Reactor Bailey to automatic - Selects Reactor diamond to automatic (K-6-2 clears) Starts power increase - Raises ULD demand

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Rev.: 2

Event Description: CDP-1A magnetic coupling fails (**MALF**). The crew reduces power to a level within the capability of one CDP (approximately 60%). (AR-602, OP-603, AP-510)

Time	Position	Applicant's Actions or Behavior
	OAC BOP	Diagnoses CDP-1A magnetic coupling failure - Magnetic coupling alarm (N-2-2) - Condensate flow lowering - Deaerator level lowering
	SRO	Enters AP-510, Rapid Power Reduction, and directs OAC to - Adjust ICS load rate to desired setpoint - Adjust Unit Load Master Demand to 10 (required power level approximately 60%) - Maintain imbalance Directs BOP to support power reduction - Notify plant personnel - Notify chemistry of 15% power changes - Notify SPO to ensure proper operation of ASV-27
	OAC	Performs AP-510 - Adjusts ICS load rate to desired setpoint - Adjusts Unit Load Master Demand to 10 (required power level approximately 60% - Maintains imbalance
	BOP	Performs AP-510 - Notify plant personnel - Notify chemistry of 15% power changes - Notify SPO to ensure proper operation of ASV-27
	SRO	At 60% power directs OAC to stop power reduction. Directs BOP to shutdown CDP-1A
	OAC	Stops power reduction - Selects Steam Generator master to hand (track) - Selects Steam Generator master to auto (track clear)
	BOP	Stops CDP-1A - Rotates control handle to the stop position - Verifies red light on, green light off

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Rev.: 2

Event Description: The crew notices a loss of condenser vacuum (**MALF**). (OP-607) The crew reduces power to < 45% to trip the turbine (degrading vacuum). (AP-510)

Time	Position	Applicant's Actions or Behavior
	OAC BOP	Diagnoses condenser vacuum lowering - Condenser vacuum indications - Turbine setter increasing - Reactor power increasing - Direct SPO to check for cause of decreasing vacuum
	SRO	Enter OP-607 section 4.5 - Reviews condenser vacuum limits with operators - Re-enters AP-510 for power reduction to < 45% (below turbine anticipatory trip)
	SRO	Enters AP-510, Rapid Power Reduction, and directs OAC to - Adjust ICS load rate to desired setpoint - Adjust Unit Load Master Demand to 10 (required power level approximately < 45% - below turbine anticipatory trip setpoint) - Maintain imbalance Directs BOP to: - Notify plant personnel - Notify chemistry of 15% power changes - Notify SPO to ensure proper operation of ASV-27 - Ensure FW block valves stay closed
	OAC	Performs AP-510 - Adjusts ICS load rate to desired setpoint - Adjusts Unit Load Master Demand to 10 (required power level approximately < 45% - below turbine anticipatory trip setpoint)
	BOP	Performs AP-510 - Notifies plant personnel of AP-510 entry - Notifies chemistry of power change - Notifies SPO to ensure proper operation of ASV-27 - Ensures FW block valves stay closed • Selects FWV-29 and FWV-30 to closed • Selects FWV-29 and FWV-30 toggle to manual

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Rev.: 2

Event Description: The ULD fails to respond to operator input (ULD failure) (**MALF**). The OAC reduces power using manual ICS control. (AP-510)

Time	Position	Applicant's Actions or Behavior
	OAC	Diagnoses ULD failure to respond - ULD edgewise indicator stops lowering in response to toggle operation - Power reduction stops
	SRO	Directs OAC to reduce power with ICS station(s) in hand.
	OAC	Continues power reduction with selected ICS station(s) in hand - Selects hand on one or more of the following: • SG/Rx Master • Diamond and Reactor Baily • Turbine Control • Main FW Loop Demands - Lowers ICS demand

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 Rev.: 2

Event Description: Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**), performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)

Time	Position	Applicant's Actions or Behavior
	SRO	At < 45% enters AP-660, Turbine Trip, and directs the OAC (BOP) to trip the turbine
	OAC	Performs AP-660 - Depresses turbine trip push button Discovers turbine trip push button does not function. TVs and GVs do not close; performs remedial actions - Closes MSV-411, MSV-412, MSV-413, MSV-414 - Depresses reactor trip push button Performs immediate action of EOP-02, Vital System Status Verification - Depresses reactor trip push button - Verifies CRD groups 1 through 7 are fully inserted. - Verifies NIs indicate reactor is shutdown - Depresses turbine trip push button - Verifies TVs and GVs are closed
	SRO	Enters EOP-2 and directs OAC to - Repeat immediate actions - Scan for symptoms - Verify all control rods are fully inserted - Verify MFW flow exists Directs BOP to - Scan for symptoms - Notify SPO to complete enclosure 1 of EOP-14
	OAC	Performs EOP-2 - Repeats immediate actions - Scans for symptoms - Verifies all control rods are fully inserted (all in-limit lights are on) - Discovers MFW is not operating (MSIV's closed) and EFW is not operating

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 Rev.: 2

Event Description: Once the crew is < 45% the OAC discovers the turbine trip pushbutton does not function (**MALF**), performs the remedial actions for AP-660 and enters EOP-02 (**CT**). (AP-660, EOP-02)

Time	Position	Applicant's Actions or Behavior
	BOP	Performs EOP-2 - Scans for symptoms - Notifies SPO to complete enclosure 1 of EOP-14
	SRO	Directs OAC (BOP) to perform enclosure 7 of EOP-14 when OAC reports MFW and EFW are not operating. - SEE EVENT #7
	SRO	Continues in EOP-2 (until OTSG tube leak is diagnosed) directs OAC to - Verify MFW flow is not excessive - Ensure OTSG trending toward low level limits - Adjust MUV-31 to 100 inches - Verify pressurizer level is ≥ 50 inches Directs BOP to maintain pressurizer level - Close MUV-49 - Open MUV-24 - Ensure MUV-73 and MUV-58 open - If pressurizer does not recover start second MUP, required cooling pumps, and open additional HPI valves
	OAC	Performs EOP-2 - Verifies MFW flow is not excessive - Ensures OTSG trending toward low level limits Adjusts MUV-31 to 100 inches - Verifies pressurizer level is ≥ 50 inches
	BOP	Performs EOP-2 - Closes MUV-49 - Open MUV-24 - Ensure MUV-73 and MUV-58 open - Continues to fill pressurizer and (may) • Starts second MUP • Starts required cooling pumps • Opens additional HPI valves (MUV-23, MUV-25 and MUV-26)

Op-Test No.: 1 Scenario No.: 2 Event No.: 7 Rev.: 2

Event Description: Emergency feedwater pump, EFP-2, will trip during EOP-2 follow-up actions (**MALF**). OAC will start EFP-1 (**CT**). (EOP-02, EOP-14 Enclosure 7)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs OAC (BOP) to perform enclosure 7 of EOP-14 to recover a source of emergency feedwater to the OTSG
	OAC (BOP)	Performs enclosure 7 of EOP-14 - Verifies EFP-3 is not running - Verifies EFP-2 is not running - Verifies EDG-1A is not supplying the ES "A" 4160V bus - Verifies EFP-1 is available - Ensures EFP-1 is running • Depresses manual permissive push buttons on EFIC channels "A" and "B" • Ensures EFV-58 and EFV-57 are closed • Ensures EFV-14 and EFV-33 are open • Ensures EFP-3 is in pull-to-lock • Starts EFP-1 - Establish EFW flow to OTSG • Throttles open EFW-58 and EFV-57 (rule 3 EOP-13)

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Rev.: 2

Event Description: Following the reactor trip, "A" OTSG develops a 350 gpm tube leak (**MALF**) while the condenser continues to lose vacuum. The crew will diagnose a SGTR without the aid of normal radiation monitoring equipment (**CT**). (AP-520, EOP-06)

Time	Position	Applicant's Actions or Behavior
	OAC BOP	Diagnose "A" OTSG tube leak - Decreasing pressurizer level - Decreasing makeup tank (MUT) level - Rising "A" OTSG level with little or no EFW flow - Differential EFW flow to the OTSGs - "A" side MSSVs opening while "B" side reseats
	SRO	Transitions to EOP-6, Steam Generator Tube Rupture, and directs OAC to - Close MSV-55 - Verify MSSVs closed - Verify at least 1 RCP is running. - Select all pressurizer heaters to off Directs BOP to - Continue actions to recover pressurizer level - Notify plant personnel - Complete enclosure 10 of EOP-14
	OAC	Performs EOP-6 - Closes MSV-55 - Verifies MSSVs not closed. May attempt to reseat. • Open ADV-25 to lower pressure - Verify at least 1 RCP is running. - Select all pressurizer heaters to off
	BOP	Performs EOP-6 - Continues actions to recover pressurizer level - Notify plant personnel - Complete enclosure 10 of EOP-14 • Ensures MUV-31 setpoint is 100 inches • Verifies one SWP running • Ensures one SW Raw Water pump is running • Ensures breakers 1661 and 1662 are open • Separates CR-3 from the grid by opening the field breaker and selecting the voltage regulator to off

Facility: Crystal Unit #3 PWR: B & W Scenario No.: 1-1,2 Rev. 2 Op-Test No.: 1
Examiners: George Hopper Operators: _____
_____
_____

Objectives:

- The OAC and SRO will be evaluated on their ability to diagnose a power range nuclear instrumentation channel failure and take corrective actions.
- The BOP and the SRO will be evaluated on their ability to place an RPS channel in bypass and verify Technical Specification adherence.
- The OAC will be evaluated on his ability to diagnose the loss of automatic pressurizer level control and take manual actions to control the level.
- The operating crew will be evaluated on their ability to diagnose a high reactor coolant pump thrust bearing temperature and remove the pump from service.
- The operating crew will be evaluated on their ability to diagnose a failure of feedwater to re-ratio following removal of the reactor coolant pump from service and compensate for this failure.
- The operating crew will be evaluated on their ability to run the plant back following a dropped rod.
- The operating crew will be evaluated on their ability to diagnose a small break LOCA in the Reactor Building.
- The BOP will be evaluated on his ability to respond to an engineered safeguards actuation.
- The operating crew will be evaluated on their ability to respond to a reactor trip and a loss of subcooling margin.
- The OAC will be evaluated on his ability to respond to an emergency feedwater instrument failure and emergency feedwater pump trip.

Initial Conditions: The plant is at 100% full power with full ICS auto control.

Turnover: A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's compressor. They will notify the control room when maintenance is complete. DHP-1A and EFP-1 are OOS for pump packing/seal adjustment. WTP-6B is OOS for motor/pump alignment. ARP-1B is OOS for routine motor maintenance. The intake screen wash system is OOS due to mechanical damage from an intake crane accident. OTSG "B" has a 3 GPD primary to secondary leak. RM-G27 is OOS for repair.

Event No.	Malf. No.	Event Type*	Event Description
1	1	I(OAC) I(SRO)	NI-7 power range detector fails high (fails to 102%) (**MALF**). The crew will diagnose the failure and stabilize the plant then transfer to a good channel. (OP-501)
2	2	N(BOP) N(SRO)	The SRO enters TS action 3.3.1 and has BOP place the "C" RPS channel in bypass. (OP-501, OP-507)
3	3	I(OAC)	MUV-31 (Pressurizer level control valve) controller set point fails high (**MALF**). The OAC will diagnose the failure and control pressurizer level in manual.
4	4	C(All) N(All) R(OAC)	An annunciator indicates a high thrust bearing temperature for RCP-1C (**MALF**). A power reduction is required followed by removal of the RCP from service. (AR-501, OP-302)
5	5	I(OAC) I(SRO)	When the RCP is shutdown feedwater does not re-ratio (**MALF**). The crew will manually re-ratio feedwater.
6	6	C(All) R(OAC)	Control rod 7-4 drops into the core (**MALF**). The crew will manually run-back the plant. (AP-545)
7	7	C(All)	A small RCS leak develops on letdown line in the reactor building (**MALF**)**. The crew will perform the actions of AP-520. (AP-520)
8	8	M(All)	Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (**CT**). (EOP-02, EOP-03)
9	9	C(BOP)	When the ES actuation occurs, DCP-1B does not start. The BOP will start the pump (**MALF**) (**CT**). (EOP-03)
10	10	I(OAC) C(OAC)	Following EFIC actuation, SP-21-LT fails high (SP-21-LI, EFIC operating instrument) (**MALF**) and EFP-2 trips (**MALF**). The "B" OTSG level will decrease if EFV-57 is not reopened.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
** PRA significant accident

Narrative Summary:

NI-7 power range detector gradually fails to 102% preventing a SASS initiated swap of the NI signal feeding the ICS. The OAC will stop the transient caused by the NI failure.

Once the transient is stopped the crew will select an accurate NI signal (OP-501) to the ICS and bypass the "C" RPS channel (OP-507). (Technical specification opportunity for the SRO – TS 3.3.1)

Once all ICS stations are back in automatic the pressurizer level control valve, MUV-31, controller set point fails high. The OAC using diagnostic skills (pressurizer level and MU flow increasing and MUT level decreasing) will discover the failure and select MUV-31's controller to manual.

An annunciator indicates a high thrust bearing temperature, I-02-04 (AR-501). Using the thrust bearing temperature monitor the BOP will determine that RCP-1C has the high temperature. The operators will reduce power and remove RCP-1C service (OP-302).

When the RCP is shutdown, feedwater does not re-ratio and the OAC will have to re-ratio feedwater manually.

When feedwater flow has been properly aligned control rod 7-4 drops into the core. The OAC will have to reduce power to 45% (based on 3 RCPs operating) with ICS in manual (AP-545).

Once the runback is complete a small RCS leak develops on the letdown line in the reactor building. The crew will enter AP-520, and perform actions for a reactor coolant leak (AP-520).

The leak will become bigger (≈ 1000 gpm) causing a reactor trip, a loss of subcooling margin and a reactor building isolation and cooling actuation. The BOP will control the ES actuation while the OAC meets the immediate actions of EOP-02 and EOP-03 (BOP may take the EOP-03 immediate actions) (EOP-2, EOP-3, Rule 1, Rule 2).

When subcooling margin is lost (EOP-3) the reactor coolant pumps must be stopped to ensure compliance with SBLOCA analysis ensuring continued core coverage and cooling.

Following the ES actuation, the BOP will discover that DCP-1B did not start. The BOP will start DCP-1B (EOP-03). If DCP-1B is not started there is no cooling water for required ECCS equipment.

Following EFIC actuation EFP-2 trips and SP-21-LT (the level transmitter that feeds SP-21-LI, EFW operating range level) fails high. EFV-57, emergency feedwater control valve, closes due to the instrument failure. This isolates all EFW to the "B" OTSG. The OAC will take manual control of EFV-57 to re-establish flow to the "B" OTSG and maintain level.

When EOP-08 actions are in progress with OTSG heat transfer, and stable RCS inventory control the scenario can be terminated.

Procedures used during this scenario: (Annunciator Response, ARs, not listed)

AP-510	EOP-02	OP-302
AP-520	EOP-03	OP-501
AP-545	EOP-08	OP-507
	EOP-13	
	EOP-14	

Target Quantitative Attributes – Scenario 1	Actual Attributes
1. Total Malfunctions (5-8)	9
2. Malfunctions after EOP entry (1-2)	2
3. Abnormal Events (2-4)	2
4. Major Transients (1-2)	1
5. EOPs entered requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical Task (2-3)	3

Examination Setup/Execution
Scenario 1

Scenario Setup

1. [ ] Initialize the simulator to IC# 21(GF) and UNFREEZE the simulator
2. [ ] In the "NRCEXAM" directory of LESSON PLAN, execute and start lesson plan #1
3. [ ] Trigger Lesson Plan Steps #1 and #2
4. Place the following Red Tags on the main control panel:
   a. [ ] DHP-1A, Red Tag
   b. [ ] EFP-1, Red Tag, Pull-to-Lock
   c. [ ] WTP-6B, Red Tag, Pull-to-Lock
   d. [ ] ARP-1B, Red Tag, Pull-to-Lock
   e. [ ] RM-G27, Red Tag
5. Perform the following setup actions:
   a. [ ] Ensure PPC group 59 on the right overhead CRT and group 108 on left overhead CRT
   b. [ ] Ensure SPDS left screen selected to normal and right screen to imbalance
   c. [ ] Ensure Batch Controller reset
   d. [ ] Ensure steam line monitor reset
   e. [ ] Ensure PPC/ANN alarms acknowledged
   f. [ ] Ensure status board indicates P → S 3 GPD (B)
   g. [ ] Set MUT level to 80 inches and clear high pressure alarm by venting.
6. Ensure clean copies of the following "consumable" procedures are available.
   a. [ ] AP-510
   b. [ ] AP-520
   c. [ ] AP-545
   d. [ ] EOP-02
   e. [ ] EOP-03
   f. [ ] EOP-08
   g. [ ] OP-302
   h. [ ] OP-501
   i. [ ] OP-507
7. Advance all MCB recorders and delete alarm summary on computer station.
8. FREEZE the simulator and notify the lead examiner that simulator is ready to begin.

Scenario Execute

1. When notified by the lead examiner UNFREEZE the simulator
2. When notified by the lead examiner TRIGGER LESSON PLAN step #3 (NI-7 failure)
3. When the crew begins to return the ICS to automatic TRIGGER LESSON PLAN step #5 (RCP-1C thrust bearing).
4. Once ICS is back in full automatic TRIGGER LESSON PLAN step #4 (MUV-31 failure).
5. Prior to shutting down RCP-1C TRIGGER LESSON PLAN step #6 (Feedwater does not re-ratio)
6. When notified by the lead examiner TRIGGER LESSON PLAN step #7 (Rod 7-4 drops)
7. When notified by the lead examiner TRIGGER LESSON PLAN step #8 (Small leak)
8. When notified by the lead examiner TRIGGER LESSON PLAN step #10 (Large leak)
9. Shortly after EFIC actuation TRIGGER LESSON PLAN step #9 (EFIC operating range fail high) and step #11 (EFP-2) trip

Booth Operator actions (Not included, standard call Chemistry, call HPs, etc.)

1. First call to engineering about RCP-1C, have the Operators check temperatures and trend.
2. Second call to engineering about RCP-1C, recommend removing RCP-1C from service.
3. Call to SPO to complete Enclosure 1 of EOP-14, enter "enc1", if required. **Delay input of "enc1" for at least 3 minutes post trip to prevent continued MFWP operation on auxiliary steam.**
4. Call to PPO to complete Enclosure 2 of EOP-14, enter "enc2", if required.
5. If call about presence of people in the RB, respond that there are no people in the RB.

TURNOVER SHEET

Initial Conditions: The plant is at 100% full power with the ICS in automatic control.

Turnover:

A line crew is in the CR-3 switchyard performing routine maintenance on output breaker 1661's compressor. They will notify the control room when maintenance is complete.

DHP-1A and EFP-1 are OOS for pump packing/seal adjustment.

WTP-6B is OOS for motor/pump alignment.

ARP-1B is OOS for routine motor maintenance.

The intake screen wash system is OOS due to mechanical damage from an intake crane accident.

OTSG "B" has a 3 GPD primary to secondary leak.

RM-G27 is OOS for repair.

ITS Action Items:

3.5.2, Condition "A" for DHP-1A.

Activities to be Performed this Shift:

None planned.

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Rev.: 2

Event Description: NI-7 power range detector fails high (fails to 102%) (**MALF**). The crew will diagnose the failure, stabilize the plant and transfer to a good channel. The crew then places "C" RPS channel in bypass. (OP-501, OP-507)

Time	Position	Applicant's Actions or Behavior
	OAC SRO	Diagnoses NI-7 failure - SASS mismatch alarm (K-3-2 alarms) - Reactor power, Feedwater flow and Turbine load all decreasing - NI-7 indication
	SRO	Directs OAC to stabilize plant by taking required ICS stations to manual/hand
	OAC	Stabilizes the plant (no order required) - Take Reactor diamond to manual (in Track, K-6-2 alarms, with first ICS station in hand/manual) - Take Reactor Bailey to hand - Take both Feedwater Loops to hand - Adjusts stations for stable plant operation
	SRO	Directs BOP to transfer NI feed to ICS per OP-501
	BOP	Executes actions to select alternate NI signal to ICS using OP-501 section 4.7 - Determine proper operating channel - Selects NI signal to NI-5/NI-6
	SRO	Following transfer of the NI feed to ICS, directs OAC to return ICS stations to automatic and return to full power
	OAC	Returns ICS to automatic (no order required) - Take both Feedwater Loops to automatic - Take Reactor Bailey to automatic - Take Reactor diamond to automatic (K-6-2 clears) Starts power increase - Increases ULD demand by raising toggle

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Rev.: 2

Event Description: The SRO enters TS action 3.3.1 and has BOP place the "C" RPS channel in bypass. (OP-501, OP-507)

Time	Position	Applicant's Actions or Behavior
	SRO	Declares NI-7 inoperable and enters TS 3.3.1, condition "A". Directs BOP to Bypass RPS channel "C" using OP-507, Operation of the ES, RPS, and ATWAS Systems (may leave in tripped condition)
	BOP	Executes actions to place RPS channel "C" in bypass using OP-507 section 4.16 - Verify no EFIC channel is in bypass - Obtain bypass key - Reposition channel bypass switch (J-7-3 alarms)

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 Rev.: 2

Event Description: MUV-31 (Pressurizer level control valve) controller set point fails high (**MALF**). The OAC will diagnose the failure and control pressurizer level in manual.

Time	Position	Applicant's Actions or Behavior
	OAC	Diagnoses MUV-31 failure - Pressurizer level increasing above setpoint - MUV-31 demand increasing - MU flow increasing - Pressurizer high level alarm (I-07-01) Selects MUV-31 to hand - Verifies white indicating light on and red indicating light off - Verifies MUV-31 responding in hand - Establishes proper Pressurizer level - Adjusts MU flow to maintain Pressurizer at setpoint (≈ 220 in.) Notifies SRO of failure and response

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Rev.: 2

Event Description: An annunciator indicates a high thrust bearing temperature for RCP-1C (**MALF**). A power reduction is required followed by removal of the RCP from service. (AR-501, OP-302)

Time	Position	Applicant's Actions or Behavior
	SRO	Following thrust bearing alarm (I-2-4 alarm) directs OAC and BOP to follow AR guidance and determine affected RCP
	BOP	Determines RCP-1C upper thrust bearing face is the cause of alarm - Indication at thrust bearing temperature monitor, RC-133-TI Trends RCP-1C parameters - Displays group 80 using the plant computer - Monitors RC-19C-PR1, RCP-1C seal recorder - Monitors RC-133-TI
	OAC	Starts lift oil pumps - Starts RCP-2C - Starts RCP-3C
	SRO	Enters OP-302, Reactor Coolant Pump, section 4.10, Abnormal RCP Thrust Bearing Temperatures - Contacts engineering - Directs OAC to reduce power to ≤ 72% (using OP-204 power operations or AP-510, Rapid Power Reduction, depending on urgency) • Adjust ICS load rate to desired setpoint • Adjust Unit Load Master Demand to 10 (AP-510) or desired MW electric power (OP-204) • Maintain imbalance (AP-510) • At < 75% set IC-2-MS (ICS high load limit) to 64.5% (OP-204) - Directs BOP to reduce power to ≤ 72% (using OP-204 power operations or AP-510, Rapid Power Reduction, depending on urgency) • Notify plant personnel • Notify chemistry of 15% power changes • Maintain MUT level ≥ 55 inches (AP-510) • Notify SPO to ensure proper operation of ASV-27

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Rev.: 2

Event Description: An annunciator indicates a high thrust bearing temperature for RCP-1C (**MALF**). A power reduction is required followed by removal of the RCP from service. (AR-501, OP-302)

Time	Position	Applicant's Actions or Behavior
	OAC	Reduces power to ≤ 72% (using OP-204 power operations or - AP-510, Rapid Power Reduction, depending on urgency) - Adjust ICS load rate to desired setpoint - Adjust Unit Load Master Demand to 10 (AP-510) or desired MW electric power (OP-204) - Maintain imbalance (AP-510) - At < 75% set IC-2-MS to 64.5% (OP-204)
	BOP	Reduces power to ≤ 72% (using OP-204 power operations or AP-510, Rapid Power Reduction, depending on urgency) - Notify plant personnel - Notify chemistry of 15% power changes - Maintain MUT level ≥ 55 inches (AP-510) - Notify SPO to ensure proper operation of ASV-27
	SRO	When power is ≤ 72%, will perform a prejob meeting (mini-brief) and directs OAC to stop RCP-1C
	OAC	Stops RCP-1C - Rotates control handle to the stop position - Verifies green indicating light on, red indicating light off, and amps are reduced to zero. - Selects narrow range Tc to the operating RCP.

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Rev.: 2

Event Description: When RCP-1C is shutdown, feedwater does not re-ratio (**MALF**). The crew will manually re-ratio feedwater.

Time	Position	Applicant's Actions or Behavior
	OAC	Diagnoses feedwater does not re-ratio - "A" and "B" feedwater flows approximately equal - ΔTc shows "A" Tc hotter - RCS ΔTc high alarm (K-06-01)
	SRO	Directs OAC to re-ratio feedwater for 3 RCP operation
	OAC	Re-ratios feedwater - Take both Feedwater Loops, Diamond, and Reactor Bailey to hand - Reduces "B" Feedwater Loop to approximately one-third of the current total FW flow requirement. - Increases "A" Feedwater Loop to approximately two-thirds of the current total FW flow requirement - Minimizes ΔTc - Monitor RCS temperature and pressure. NOTE: Pressurizer level control is in manual

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 Rev.: 2

Event Description: Control rod 7-4 drops into the core (**MALF**). The crew will manually run-back the plant. (AP-545)

Time	Position	Applicant's Actions or Behavior
	OAC	Diagnoses dropped rod (7-4) - Asymmetric rod runback alarm (K-4-2 alarms) - PI indication - CRD panel green rod in-limit light on - CRD panel asymmetric rod amber light on
	SRO	Enters AP-545 and directs the OAC to - Ensure plant runback is in progress - Ensure feedwater is re-ratioed - Ensure maximum power $\leq$ 45% - Ensure narrow range Tc selected to TT3 Directs the BOP to - Notify plant personnel - Ensure RCS pressure is stable
	OAC	Performs AP-545 - Ensure plant back is in progress (runback in manual) - Ensure feedwater is properly ratioed (maintaining proper ratio with MFW Loop Demands in hand) - Ensure maximum power $\leq$ 45% - Ensure narrow range Tc selected to TT3
	BOP	Performs AP-545 - Notifies plant personnel - Ensure RCS pressure is stable

Op-Test No.: 1 Scenario No.: 1 Event No.: 7 Rev.: 2

Event Description: A small RCS leak develops on letdown line in the reactor building (**MALF**). The crew will perform the actions of AP-520. (AP-520)

Time	Position	Applicant's Actions or Behavior
	SRO OAC BOP	Diagnose RCS leak (≈ 65 gpm) - MUT level lowering - Pressurizer level lowering - Reactor Building Sump level rising - Radiation Monitor trends (H-02-02, H-02-01) - RB fan condensate alarms (B-02-05, E-02-05) - RB sump pump alarms(C-02-13)
	SRO	Enters AP-520 and directs the BOP to - Notify personnel - Determine if leak is OTSG leakage - Maintain MUT level - Determine leak rate Directs OAC to - Maintain pressurizer level
	OAC	Maintains pressurizer level - Adjust level using MUV-31 - Minimizes letdown flow
	BOP	Performs AP-520 - Notifies personnel - Determine if leak is OTSG leakage • RM-A12 • RM-G26 through RM-G28 - Maintain pressurizer level • Controls MUV-31 • May close MUV-49 and MUV-567 - Maintain MUT level - Determine leak rate • Makeup flow • Seal injection flow • Letdown flow • Pressurizer level

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Rev.: 2

Event Description: Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (**CT**). (EOP-02, EOP-03)

Time	Position	Applicant's Actions or Behavior
	OAC BOP	Diagnose increase in leakage - MUT level rate of change - Pressurizer level rate of change - Reactor Building Sump level rate of change - Radiation Monitor trends
	OAC	Ensure reactor trip occurs Perform immediate action of EOP-2, Vital System Status Verification - Depresses reactor trip push button - Verifies CRD groups 1 through 7 are fully inserted. - Verifies NIs indicate reactor is shutdown - Depresses turbine trip push button - Verifies TVs and GVs are closed
	SRO	May direct a manual reactor trip due to RCS leakage in excess of normal make-up capability (AI-505) Enters EOP-2 directs OAC to - Repeat immediate actions - Scan for symptoms - Verify all control rods are fully inserted (may not perform if transitioned to EOP-3) - Verify all MFW is operating (may not perform if transitioned to EOP-3) Directs BOP to - Scan for symptoms - Notify SPO to complete enclosure 1 of EOP-14

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Rev.: 2

Event Description: Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped **(CT)**. (EOP-02, EOP-03)

Time	Position	Applicant's Actions or Behavior
	OAC	Performs EOP-2 - Repeats immediate actions - Scans for symptoms - Verifies all control rods are fully inserted (may not perform if transitioned to EOP-3) (all in-limit lights are on) - Verify all MFW is operating (may not perform if transitioned to EOP-3) • Main Feedwater Pumps are operating • Main Feedwater flow present
	BOP	Performs EOP-2 - Scans for symptoms - Notifies SPO to complete enclosure 1 of EOP-14
	SRO OAC BOP	Diagnose loss of subcooling margin - SPDS screen flashing alarm - SPDS audible alarm
	BOP	Performs immediate actions of EOP-3, Inadequate Subcooling Margin and Rule 1, EOP-13 - Trips running RCPs (may be performed by OAC) - Manually actuates ES • Depresses HPI MAN ACT push buttons on "A" and "B" trains • Depresses RB ISO MAN ACT push buttons on "A" and "B" trains • Depresses ISCM push buttons for EFIC channels "A" and "B" - Ensures Tincore is selected on SPDS.

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Rev.: 2

Event Description: Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (**CT**). (EOP-02, EOP-03)

Time	Position	Applicant's Actions or Behavior
	SRO	SRO enters EOP-3 and directs OAC to - Verify RCPs tripped - Verify EFW is operating and flow is controlled Directs BOP to - Notify personnel - Notify PPO to perform enclosure 2 of EOP-14 - Verify proper HPI discharge flow path exists - Ensure at least 1 HPI train is properly aligned - Ensure at least 1 letdown isolation valve is closed - Ensure DHV-3 is closed - Ensure ES equipment properly aligned
	OAC	Performs EOP-3 - Verifies RCPs tripped - Verifies EFW is operating and flow is controlled • Ensures level in OTSGs is at or trending toward ISCM level (Rule 3)

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Rev.: 2

Event Description: Leak size increases to 1000 gpm causing a reactor trip and ES actuation. Leak size causes loss of subcooling margin. The RCPs are tripped (CT). (EOP-02, EOP-03)

Time	Position	Applicant's Actions or Behavior
	BOP	Performs EOP-3 - Notify personnel - Notify PPO to perform enclosure 2 of EOP-14 - Verify proper HPI discharge flow path exists • Verifies MUV-23 and MUV-24 are open OR MUV-25 and MUV-26 are open • Verifies MUV-586 and MUV-587 are open - Ensure at least 1 HPI train is properly aligned • Ensures MUV-73 and MUV-58 are open • Ensures MUP-1B and MUP-1C are running • Ensures MUV-53 and MUV-257 are closed • Ensures MUV-543, MUV-544, MUV-545, MUV-546 are closed • Ensures MUV-596 is closed OR MUV-18 and MUV-27 are closed - Ensures at least 1 letdown isolation valve is closed • Ensures MUV-567 is closed OR MUV-49 is closed - Ensures DHV-3 is closed - Ensures ES equipment properly aligned • Ensures applicable ES actuations • SEE EVENT #9 • Bypasses ES actuation both auto and manual • Controls ES systems as required

Op-Test No.: 1 Scenario No.: 1 Event No.: 9 Rev.: 2

Event Description: When the ES actuation occurs, DCP-1B does not start. The BOP will start DCP-1B (**MALF**) (**CT**). (EOP-03)

Time	Position	Applicant's Actions or Behavior
	BOP	Ensures applicable ES actuations - Verifies ES status lights green for applicable equipment - Discovers ES status light for DCP-1B amber - Verifies DCP-1B not operating • No motor amps • Green indicating light lit • No DCP-1B discharge pressure • DC cooled components temperatures increasing (MUP-1C) - Manually starts DCP-1B • Rotates control handle to start position • Verifies increased motor amps • Verifies red indicating lamp lit • Verifies DCP-1B discharge pressure • Verifies ES status light green

Op-Test No.: 1 Scenario No.: 1 Event No.: 10 Rev.: 2

Event Description: Following EFIC actuation, SP-21-LT fails high (SP-21-LI, EFIC operating instrument) (**MALF**) and EFP-2 trips (**MALF**). The "B" OTSG level will decrease if EFV-57 is not reopened.

Time	Position	Applicant's Actions or Behavior
	OAC	Diagnoses SP-21-LT failure and EFP-2 trip - SP-21-LI level decreasing - No indication of flow to the "B" OTSG - EFV-57 closed - Annunciator alarm H-07-04, EFP-2 trip Recovers "B" OTSG level - Takes manual control and throttles open EFV-57 - Uses EOP-13, Rule 3 to control EFW

CRYSTAL RIVER 50-302/2000-301
SEPTEMBER 25 - 29, 2000

FINAL SUBMITTAL

- ES-301-1 - ADMIN TOPICS OUTLINE

- ES-301-2-CONTROL ROOM SYSTEMS & FACILITY WALK-THROUGH TEST OUTLINE

- FINAL JPMS FOR EACH WALK-THROUGH TEST

Facility: Crystal River Unit 3
Exam Level: RO/SRO

Date of Examination: 09-25-2000
Operating Test No.: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM - Perform a reactivity balance calculation/001A4.11/3.5/4.1
	Plant Parameter Verification	JPM – Perform a Reactor Coolant Boron Change Calculation/004A4.04/3.2/3.6
A.2	Surveillance Testing	JPM – Perform a Reactor Coolant System Inventory Balance /2.2.12/3.0/3.4
A.3	Radiation Hazards	JPM - Using survey maps determine radiation requirements and stay times/2.3.1/2.6/3.0*
A.4	SRO Emergency action levels and classifications	JPM – Determine Emergency Action Level and Complete the State of Florida Notification Message Form for Nuclear Power Plants/2.4.41/4.1
A.4	RO Emergency Communications	JPM – Notify State Warning Point Tallahassee with the State of Florida Notification Message Form for Nuclear Power Plants (faulted)/2.4.43/2.8

* Modification of last years A.3 JPM (identified as a Needs Improvement Area)

Facility: Crystal River Unit 3
Exam Level: RO/SRO(I)

Date of Examination: 09-25-2000
Operating Test No.: 1

B.1 Control Room Systems

System/JPM Title/KA	Type Code*	Safety Function
a. Control Rod Drive (CRD)/Transfer Single Rod to Auxiliary Power Supply/001A4.03/4.0/3.7	N, D, S	1
b. AC. Electrical/Supply pressurizer heaters from the "B" ES 4160V Bus/062A2.05/2.9/3.3	N, S	6
c. Reactor Coolant (RCS)/Take Actions required for Loss of RCS Pressure/010A1.07/3.7/3.7 (does not result in a Rx trip)	A, D, S	3
d. Building Spray (BS)/Ensure BS actuation/026A3.01/4.3/4.5 (EOP-03)	N, A, D, S	5
e. Makeup and Purification System (MU)/ Re-establish letdown/004A4.05/3.6/3.1**	A, D, S	2
f. Decay Heat Removal (DH)/ Perform ECCS Suction Transfer/005A4.01/3.6/3.4**	D, L, S	4
g. Reactor Protection System (RPS)/Place RPS in Shutdown Bypass/012A4.03/3.6/3.6	S, N	7

B.2 Facility Walk-Through

a. Fire Service (FS)/Recirculation of FSP-1/086A4.01/3.3/3.3	N	8
b. Emergency Feedwater (EFW)/Placing EFP-2 in Standby/068AA1.02/4.3/4.5**	N	4
c. Waste Gas (WG)/Release a Waste Gas Decay Tank to Plant Ventilation/G2.3.11/2.7/3.2	A, N, R	9

*Type Codes: (D)irect, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA, **PRA High System Importance

Facility: Crystal River Unit 3 Exam Level: SRO(U)	Date of Examination: 09-25-2000 Operating Test No.: 1

B.1 Control Room Systems

System/JPM Title/KA	Type Code*	Safety Function
a. AC. Electrical/Supply pressurizer heaters from the "B" ES 4160V Bus/062A2.05/2.9/3.3	N, S	6
b. Makeup and Purification System (MU)/ Re-establish letdown/004A4.05/3.6/3.1**	A, D, S	2
c. Reactor Protection System (RPS)/Place RPS in Shutdown Bypass/012A4.03/3.6/3.6	S, N	7

B.2 Facility Walk-Through

a. Fire Service (FS)/Recirculation of FSP-1/086A4.01/3.3/3.3	N	8
b. Waste Gas (WG)/Release a Waste Gas Decay Tank to Plant Ventilation/G2.3.11/2.7/3.3	A, N, R	9

*Type Codes: (D)irect, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA, **PRA High System Importance

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Transfer a single rod to the Auxiliary Power Supply.

Alternate Path: N/A

JPM #: B1a1 (New)

K/A Rating/Importance: 001A4.03/4.0/3.7 **Task Number/Position:** 0010102010/RO

Task Standard: Transfer a single rod to the Auxiliary Power Supply using OP-502

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. OP-502, Rev 41

Validation Time: 10 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. Normal 100% power operations.
2. IC #21 (grandfather)

SIMULATOR OPERATOR INSTRUCTIONS:

1. Panel over-ride single select switch on CRD panel to "7".

Tools/Equipment/Procedures Needed:

1. OP-502

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
The plant is at 100% power.
Control Rod troubleshooting is underway.

Initiating Cues:

You are requested to transfer Rod 5-4 to the Auxiliary Power Supply. Following transfer of the rod, leave the reactor diamond and reactor demand station in manual for further manipulations.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. **EXAMINER CUE: For purposes of this JPM assume SRO concurs with each rod manipulation.** STANDARD: Candidate obtains a copy of OP-502 COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.16.1) PROCEDURE CAUTION: Tave control may go to Feedwater regulation Place Reactor Diamond in MANUAL 1. _____Depress MANUAL* 2. _____Verify Manual light on, Auto. light is OFF _____/___ Initial/Date STANDARD: Candidate locates the Reactor Diamond control station, depresses MANUAL and verifies that the green MAN light is ON and the white AUTO light is OFF. (Annunciator K-6-2) Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 3: (step 4.16.2) Place Reactor Demand control station in HAND 1. _____Depress HAND* 2. _____Verify Reactor Demand in Mini Track, AUTO and HAND light on _____/___ Initial/Date STANDARD: The candidate will depress the white HAND pushbutton and verify the Reactor Demand control station is in Mini Track by verifying that both red AUTO and white HAND lights are ON. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 4: (step 4.16.3) Select GROUP SELECT Switch to desired group _____ Group 1 _____ Group 5* _____ Group 2 _____ Group 6 _____ Group 3 _____ Group 7 _____ Group 4 _____ Group 8 _____/___ Initial/Date STANDARD: Candidate rotates GROUP SELECT Switch to Group 5. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 5: (step 4.16.4) Select All or desired rod Use SINGLE SELECT Switch _____/___ Initial/Date STANDARD: Candidate rotates SINGLE SELECT Switch to Rod 4. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 6: (step 4.16.5) Select SEQ OR* _____ Verify SEQ OR Light On _____ SEQ light On _____/___ Initial/Date STANDARD: Candidate depresses SEQ/SEQ OR pushbutton and verifies amber SEQ OR light ON and green SEQ light ON. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 7: (step 4.16.6) Select AUXIL* _____ Verify AUXIL Light on, GROUP light off _____ Verify CONTROL ON white light for the group selected in Step 4.16.3 is on _____/___ Initial/Date STANDARD: Candidate depresses GROUP/AUXIL pushbutton and verifies AUXIL white light ON and GROUP green light OFF. The operator will also verify the CONTROL ON white light for group 5 is ON. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 8: (step 4.16.7) Place SPEED SELECTOR switch in JOG* Verify SY white light comes on _____/___ Initial/Date STANDARD: Candidate Rotates RUN/JOG switch to JOG and verifies that the white SY light is ON. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 9: (step 4.16.8) Select CLAMP* _____ Verify CLAMP light on _____ Verify CLAMP REL light off _____/___ Initial/Date STANDARD: Candidate depresses CLAMP/CLAMP RELEASE pushbutton and verifies green CLAMP light ON and amber CLAMP REL light OFF. Candidate initials and dates the step in the procedure. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 10: (step 4.16.9)	**Critical Step***
PROCEDURE CAUTION: If Amber control on lights for more than one group is on, STOP, and notify SSOD. Depress MAN TRANS* _____ Verify TR CF light on _____ Verify Amber CONTROL ON light(s) for only the selected Group or rod come on* _____/___ Initial/Date STANDARD: Candidate depresses MAN TRANS pushbutton and verifies white TR CF light ON. The operator will discover that the amber CONTROL ON light for rod 5-7 is ON. Candidate will notify SRO of the incorrect amber CONTROL ON amber light **EXAMINER CUE: This terminates the JPM.** COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
The plant is at 100% power.
Control Rod troubleshooting is underway.

Initiating Cues:

You are requested to transfer Rod 5-4 to the Auxiliary Power Supply. Following transfer of the rod, leave the reactor diamond and reactor demand station in manual for further manipulations.

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Supply pressurizer heaters from the B ES 4160V Bus.

Alternate Path: N/A

JPM #: B1b1 (new)

K/A Rating/Importance: 062A2.05/2.9/3.3 **Task Number/Position**: 0620402006/RO

Task Standard: Supply pressurizer heaters from the B ES 4160V Bus using AP-770

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. AP-770, Rev 30

Validation Time: 10 min.

Time Critical: No

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Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. The plant is in Mode 3 following a LOOP.
2. Both ES Buses are powered from their respective diesel.
3. The B Emergency Diesel Generator load is $\leq$ 2700 KW.
4. The 480V Reactor Aux Bus 3B must be de-energized.
5. Have RCS pressure slightly higher than the control setpoints of the pressurizer heaters.
6. IC #61 (grandfather)
7. Check SPDS screens
8. Input "enc1"
9. Ensure MUT level is <90" and pressure alarm is not in

SIMULATOR OPERATOR INSTRUCTIONS:

1. Respond from the booth as SPO for Enclosure 4 of AP-770 using LP #6, JPM B1b1.
2. Opening of PZR HTR MCC3B breakers done from schematic (PZR MCC part of step 4.3).
3. SPO portion of step 4.7 done from schematic (PZR MCC).

Tools/Equipment/Procedures Needed:

1. AP-770, signed up to step 3.31

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the BALANCE OF PLANT OPERATOR.
A Loss of Offsite Power (LOOP) is in progress.
The Reactor Operator is re-establishing letdown.

Initiating Cues:

You are requested to power the pressurizer heaters from the B ES 4160V Bus starting with step 3.31 of AP-770.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of AP-770, completed up to step 3.31. COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.1) If 480V REACTOR AUX BUS 3B is energized, then go to Step 4.7 in this enclosure. STANDARD: Candidate verifies that the 480V REACTOR AUX BUS 3B is not energized and continues on in the procedure COMMENTS:	SAT ____ UNSAT ___
STEP 3: (step 4.2) Ensure 480V feeder and Cross-Tie Bkrs are open. _____ Bkr 3399 _____ Bkr 3393 _____ Bkr 3394 _____ Bkr 3306* _____ Bkr 3396 _____ Bkr 3312 _____ Bkr 3392 STANDARD: Candidate will locate each breaker and for Breaker 3306, rotate the control handle to the open position. Candidate may match targets for 3312 and 3392. Candidate may verify green target and will verify green light ON and red light OFF for each breaker. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 4: (step 4.3) Prepare 480V Buses for backfeed. 1. Notify SPO to ensure all breakers on the following are open: * _____ 480V PLANT AUX BUS 3 _____ 480V REACTOR AUX BUS 3B _____ 480V PZR HTR MCC 3B STANDARD: Candidate contacts and instructs the SPO to perform step 4.3 of Enclosure 4 of AP-770. (Alarms P-2-9, P-2-10 and I-8-2) COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 5: (step 4.4) When notified that all Bkrs on the following are open: _____ 480V PLANT AUX BUS 3 _____ 480V REACTOR AUX BUS 3B _____ 480V PZR HTR MCC 3B Then energize 480V PLANT AUX BUS 3 2. _____ Close Bkr 3222* 3. _____ Close Bkr 3312* STANDARD: Candidate locates breaker 3222 and rotates the control handle in the CLOSE direction (Candidate may match targets first). Candidate will verify red target and red light ON and green light OFF. Candidate locates breaker 3312 and rotates the control handle in the CLOSE direction (P-2-7 clears). Candidate will verify red target and red light ON and green light OFF. Candidate verifies the 480V PLANT AUX BUS is reading approximately 480V. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 6: (step 4.5) Energize 480V Reactor AUX BUS 3B. 1. _____ Close Bkr 3392* 2. _____ Close Bkr 3396* STANDARD: Candidate locates breaker 3392 and rotates the control handle in the CLOSE direction. Candidate will verify red target and red light ON and green light OFF. Candidate locates breaker 3396 and rotates the control handle in the CLOSE direction (G-2-2 clears). Candidate will verify red target and red light ON and green light OFF. Candidate verifies the 480V Reactor AUX BUS 3B is reading approximately 480V. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 7: (step 4.6) Energize 480V PZR HTR MCC 3B 4. Notify SPO to close 480V REACTOR AUX BUS 3B-1C BREAKER 3356 FEED TO PZR HTR MCC 3B* STANDARD: Candidate contacts and instructs the SPO to perform step 4.6 of Enclosure 4 of AP-770. (P-3-9 clears) COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 8: (step 4.7) Energize 4 groups of PZR Htrs. 1. _____ Ensure EDG-1B load is ≤ 2700 KW 2. _____ Place all PZR Htr banks in OFF* _____ Bank A _____ Bank B _____ Bank C _____ Bank D _____ Bank E 3. _____ Notify SPO to close the following Bkrs on 480V PZR HTR MCC 3B* _____ 1A PZR HEATER CONTROL TRANSFORMER B-1 _____ 1B PZR HEATER CONTROL TRANSFORMER B-2 4. _____ Notify SPO to close the following Bkrs on 480V PZR HTR MCC 3B* _____ 1D PZR HEATER GROUP 10 _____ 2C PZR HEATER GROUP 11 _____ 3C PZR HEATER GROUP 12 _____ 4C PZR HEATER GROUP 13 STANDARD: Candidate reads EDG-1B digital load meter to ensure load is ≤ 2700 KW. Candidate rotates each pressurizer heater bank control switch to the OFF direction. Candidate contacts and instructs the SPO to perform step 4.7 details 3 and 4 of Enclosure 4 of AP-770. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 9: (step 4.8) If PZR Htrs are desired, then select PZR Htr Bank E to control RCS PRESS. **EXAMINER NOTE: Heaters should not be required at this point because RCS pressure is high (letdown has not been re-established).** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___

STEP 10: (step 4.9) Exit this enclosure. STANDARD: Candidate exits the enclosure. COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the BALANCE OF PLANT OPERATOR.
A Loss of Offsite Power (LOOP) is in progress.
The Reactor Operator is re-establishing letdown.

Initiating Cues:

You are requested to power the pressurizer heaters from the B ES 4160V Bus starting with step 3.31 of AP-770.

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Take actions required for loss of Reactor Coolant (RCS) pressure.

Alternate Path: RCV-14 and RCV-13 will not close.

JPM #: B1c1 (bank #238)

K/A Rating/Importance 010A1.07/3.7/3.7 **Task Number/Position:** 00020402013/RO

Task Standard: Take actions required for loss of Reactor Coolant (RCS) pressure using AP-520.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. AP-520, Rev 3

Validation Time: 10 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. RCV-13 and RCV-14 will not close (failures) (0.2 setting).
2. IC #62 (grandfather).
3. Check SPDS screens.
4. Ensure MUT level is not too high and pressure alarm is cleared.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Booth operator will take the roles for the various operators for notifications.
2. As PPO, if called RCV-13 and RCV-14 cannot be closed from the breakers.

Tools/Equipment/Procedures Needed:

1. AP-520
2. Steam Tables

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.

Initiating Cues:

You are requested to respond to any abnormal conditions.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. **EXAMINER NOTE: Candidate may not notice decreasing RCS pressure until Annunciator J-4-2 (RCS PRESS LOW) alarms. The guidance in J-4-2 sttates: Ensure all Pressurizer Heaters on; Manually close Pressurizer Spray Valve, RCV-14; Close Spray Block Valve, RCV-13; Close PORV Block Valve, RCV-11; Refer to AP-520 for RCS low pressure guidelines. Candidate may perform these actions (RCV-13 will not close) and then enter AP-520.** **EXAMINER CUE: (Once candidate recognizes pressure decrease) Enter AP-520** STANDARD: Candidate obtains a copy of AP-520 COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 3.1) Notify personnel of entry into AP-520 _____ PA announcement _____ STA _____ Plant operators _____ NSM (evaluate plant conditions for potential entry into Emergency Plan) STANDARD: Candidate uses PA system to announce entry into AP-520. Candidate calls by telephone or radios the STA, Plant Operators, and NSM. COMMENTS:	SAT ____ UNSAT ___

STEP 3: (step 3.2) If RB is occupied, then evacuate RB. 1. _____ Depress RB EVACUTION pushbutton. 2. _____ Notify personnel over PA. 3. _____ Repeat PA announcement. **EXAMINER CUE: No one is in the RB** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 4: (step 3.3) Verify OTSG tube leakage has not increased. _____ Notify Chemistry to sample OTSGs. _____ Observe radiation monitors and recorder traces for the following: _____ RM-A12 (Condenser Exh) _____ RM-G26-RI (B1 MS line) _____ RM-G27-RI (A2 MS line) _____ RM-G25-RI (A1 MSV-25) _____ RM-G28-RI (B2 MSV-26) If OTSG tube leak > 1 gpm exists, and DHR is not in operation, then go to EOP-06, Steam Generator Tube Rupture, beginning with step 3.1. STANDARD: Candidate contacts chemistry to sample OTSGs. Operator verifies that there is no increase in OTSG tube leakage by verifying that there are no increasing trends on RM-A12, RM-G26-RI, RM-G27-RI, RM-G25-RI, and RM-G-28-RI. COMMENTS:	SAT ____ UNSAT ___

STEP 5: (step 3.4) If a significant rise in RCS leakage exists, then go to step 3.11 in this procedure. STANDARD: Candidate determines by use of pressurizer, Make-up Tank, sump levels and radiation monitor trending that there is no significant rise in RCS leakage and continues on in AP-520. COMMENTS:	SAT ____ UNSAT ___
STEP 6: (step 3.5) PROCEDURE STATUS: RCS Press lowering. Verify proper operation of PZR heaters. _____ PZR HEATER CONTROL* _____ PZR Htr Banks* _____ RC-203-JI _____ RC-204-JI If PZR Htrs are not operating properly, then notify Maintenance to initiate repair efforts. STANDARD: Operator verifies that red light for each energized heater is ON. Candidate verifies RC-203-JI and RC-204-JI each have a reading and are approximately equal (KW). COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 7: (step 3.6) IF RCS PRESS continues to lower, then isolate possible sources of RCS PRESS reduction. Close the following valves: _____ DHV-91 _____ RCV-53 _____ RCV-11 _____ PORV _____ RCV-13* _____ RCV-14* STANDARD: Candidate verifies DHV-91, RCV-53 and RCV-14 (actually partially open) are closed with green light ON and red light OFF (may hold valves in the closed direction). Candidate rotates control switch for RCV-11 (Alarm I-6-2), PORV (Alarm I-5-2), RCV-13 to CLOSE and verifies green light ON and red light OFF. **EXAMINER NOTE:RCV-13 and RCV-14 will not close (RCV-13 red light remain on; RCV-14 green light remains on). Candidate may call PPO to try and close at breaker; booth operator will call back and say closure is not possible.** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 8: (step 3.7) If RCS PRESS continues to lower, and RCV-13 is not closed, then stop RCP-1B 1. _____ If Rx power is > 75% then concurrently perform AP-510, Rapid Power Reduction, beginning with step 3.1 2. _____ When Rx power is < 75% then stop RCP-1B* STANDARD: Reactor power is at 60%, no power reduction is required. RCV-13 is not closed. Candidate rotates control handle for RCP 1B to the stop position and verifies green light ON and red light OFF. (Candidate may turn on lift oil pumps for RCP-1B) (Alarms P-8-6 and J-3-3; I-5-2 will also alarm if lift oil pump is not started ahead of RCP-1B shutdown.) **EXAMINER CUE: JPM is terminated (when RCP is shutdown).** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.

Initiating Cues:

You are requested to respond to any abnormal conditions.

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Ensure Building Spray (BS) actuation.

Alternate Path: BSP-1A will not start in manual. BSV-4 is set on local.

JPM #: B1d1 (New)

K/A Rating/Importance 026A3.01/4.3/4.5 **Task Number/Position:** 0260502001/RO

Task Standard: Initiate Building Spray for high Reactor Building temperature using EM-225C.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:

1. EM-225C, Rev 1

Validation Time: 5 min.

Time Critical: No

Candidate: _____ **Time Start:** _____
Printed Name **Time Finish:**_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. A LOCA is in progress.
2. Reactor Building pressure is < 30 psig.
3. BSP-1A will not start in manual.
4. The BWST level is > 20 ft.
5. Use EOP-03 for setup conditions.
6. IC #63 (grandfather).
7. Input "enc1" and "enc2".
8. Acknowledge SCM alarm.
9. Check CRTs to ensure RB temperatures (if displayed) are high.
10. Activate LP for B1d1.
11. Set BSV-4 to local.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Booth operator will take the roles for the various operators for notifications

Tools/Equipment/Procedures Needed:

1. EM-225C

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
A LOCA is in progress.
The Shift Supervisor has entered EOP-03.
Reactor Building (RB) temperatures are high.
The Emergency Coordinator (EC) has given concurrence to start Building Spray to reduce RB temperatures.

Initiating Cues:

You are requested to start Building Spray (BSP-1A preferred) per section 4.6 of EM-225C.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of EM-225C. **EXAMINER NOTE: Provide student a copy of EM-225C** COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.6) If a building spray pump is required and EC concurrence has been obtained, then perform the following: STANDARD: Candidate performs the following steps. COMMENTS:	SAT ____ UNSAT ___
STEP 3: (step 4.6.1) Ensure load is available on the emergency diesel generators per EOP-13, Rule 5. STANDARD: N/A, the emergency diesel generators are not running. COMMENTS:	SAT ____ UNSAT ___

STEP 4: (step 4.6.2) Ensure Building Spray flow controls are set at 1500 gpm and REMOTE if pumps are aligned to BWST, or 1200 gpm and LOCAL if aligned to the RB sump. STANDARD: Candidate verifies suction source to Building Spray pumps and ensures the REMOTE/LOCAL lever on BSV-3 and BSV-4 is set to REMOTE and the 1500 gpm. (BSV-4 is set to LOCAL and must be moved to REMOTE). COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 5: (step 4.6.3) Notify the control room to start one building spray pump. **EXAMINER CUE: (If required) the TSC requests you start Building Spray.** STANDARD: Candidate rotates the control handle for BSP-1A to the start position and notes that the pump did not start (shaft shear, low amps, no flow, red light ON and green light OFF). Pump start failure is reported to Shift Supervisor. Candidate repeats the guidance of EM-225C section 4.6 to start BSP-1B (some of the required steps may have been performed in parallel with BSP-1A alignment). **EXAMINER NOTE: Role-play as Shift Supervisor when candidate discovers start problem with BSP-1A. Direct candidate to establish Building Spray with the "B" train. (Once BSP-1B is started the JPM is complete.)** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
A LOCA is in progress.
The Shift Supervisor has entered EOP-03.
Reactor Building (RB) temperatures are high.
The Emergency Coordinator (EC) has given concurrence to start Building Spray to reduce RB temperatures.

Initiating Cues:

You are requested to start Building Spray (BSP-1A preferred) per section 4.6 of EM-225C.

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Re-establish letdown.

Alternate Path: MUV-50 has no power.

JPM #: B1e1 (bank #31)

K/A Rating/Importance: 004A4.05/3.6/3.1 **Task Number/Position:** 0040502004/RO

Task Standard: Re-establish letdown using EOP-14 enclosure 4.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. EOP-14 enclosure 4, Rev 7

Validation Time: 10 min.

Time Critical: No

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Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. RBIC has occurred due to a steam leak in the RB.
2. The steam leak has been isolated.
3. HPI has been bypassed and is being controlled per rule 2
4. Letdown is isolated.
5. MUV-50 looses power when the control switch is rotated.
6. IC #64 (grandfather).
7. Input "enc2".

SIMULATOR OPERATOR INSTRUCTIONS:

1. Booth operator will take the roles for the various operators for notifications.
2. Use LP B1e1 to implement PPO steps.

Tools/Equipment/Procedures Needed:

1. EOP-14 enclosure 4

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
EOP-02 is in progress.
A small steam leak in the RB has caused a reactor trip and an ES actuation (RBIC).
Prior to having the symptom of excessive primary to secondary heat transfer, the leak was isolated.
The ES actuation has been reset and associated components controlled.

Initiating Cues:

You are requested to re-establish letdown with the MUDM-1A ("A" makeup demineralizer) in service in accordance with EOP-14, Enclosure 4.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of EOP-02 and EOP-14 enclosure 4. COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.1) Ensure letdown is isolated. 1. _____ Close MUV-49 2. _____ If MUV-50 has power, then close MUV-50 3. _____ If MUV-50 does not have power, then notify PPO to close MUV-45 BLOCK ORIFICE OUTLET ISO* 4. _____ Close MUV-51* **EXAMINER NOTE: MUV-50 looses control power when the valve attempts to close.** STANDARD: Candidate observes MUV-49 green light ON and red light OFF (ES status light green). Candidate rotates control switch for MUV-50 to close when control power is lost. Candidate calls PPO to perform detail 3 of step 4.1 in enclosure 4 of EOP-14. Candidate rotates knob on MUV-51 controller clockwise to hard stop. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 3: (step 4.2) If RBIC actuation has occurred, then ensure SW valves to letdown coolers to be placed in service have been reset. o _____ If MUHE-1A, or MUHE-1C is to be placed in service then notify PPO to depress the following OPEN pushbuttons: _____ SWV-47 A & C LETDOWN COOLER SUPPLY _____ SWV-50 A & C LETDOWN COOLER SUPPLY o _____ If MUHE-1B is to be placed in service then notify PPO to depress the following OPEN pushbuttons: _____ SWV-48 B LETDOWN COOLER SUPPLY _____ SWV-49 B LETDOWN COOLER SUPPLY STANDARD: Candidate contacts PPO to perform step 4.2 of Enclosure 4 of EOP-14. (The call aligning at least one cooler is critical*) COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 4: (step 4.3) Ensure SW valves are open for letdown coolers to be placed in service. MUHE-1A: __SWV-47, __SWV-50 MUHE-1B: __SWV-48, __SWV-49 MUHE-1C: __SWV-47, __SWV-50 STANDARD: Candidate will rotate the control switch for each of the following valves: SWV-47, SWV-48, SWV-49 and SWV-50. Candidate verifies red light ON and green light OFF. (Aligning at least one cooler is critical*) COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 5: (step 4.4) Ensure MU valves are open for letdown coolers to be placed in service. MUHE-1A: __MUV-38, __MUV-40, __MUV-567 MUHE-1B: __MUV-39, __MUV-41, __MUV-567 MUHE-1C: __MUV-498, __MUV-567 STANDARD: Candidate will rotate the control switch for each of the following valves: MUV-38, MUV-39, and MUV-567. Candidate verifies red light ON and green light OFF. MUV-40 and MUV-41 are already open, candidate will verify red light ON and green light OFF. (Aligning at least one cooler is critical – the same one as the previous step*) COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 6: (step 4.5) If power is available to MU Demin bypass valves, then bypass MU Demins. 1. _____ Ensure MUV-124 is open. 2. _____ Open MUV-200.* 3. _____ Ensure MUV-117 is open.* 4. _____ Close MUV-116.* 5. _____ Ensure MUV-133 is closed. STANDARD: Candidate verifies MUV-124 open by red light ON and green light OFF. Candidate rotates control switch for MUV-200 to open and verifies red light ON and green light OFF. Candidate rotates control switch for MUV-117 to open and verifies red light ON and green light OFF. Candidate rotates control switch for MUV-116 to close and verifies green light ON and red light OFF. Candidate verifies MUV-133 closed by green light ON and red light OFF. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 7: (step 4.6) If MU Demins are not bypassed, then notify PPO to open MUV-126 MU DEMIN BYPASS. STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 8: (step 4.7) Establish a letdown flowpath. 1. _____ If MUV-194 is NOT open, then ensure a prefilter is in service. 2. _____ Ensure 1 of the following exists: _____ Post-filter in service _____ MUV-100 open STANDARD: Candidate verifies MUV-194 red light is ON and green light OFF. Candidate verifies post filter(s) are in service. COMMENTS:	SAT ____ UNSAT ___

STEP 9: (step 4.8) Establish letdown flow. 1. _____ If recovering from high temp, then select MUV-49 HIGH TEMP BYPASS switch to BYPASS. 2. _____ Open MUV-49.* 3. _____ Throttle open MUV-51 to establish desired letdown flow rate.* 4. _____ Open MUV-50. 5. _____ If MUV-45 is closed, then notify PPO to open MUV-45 BLOCK ORIFICE OUTLET ISO.* 6. _____ Throttle MUV-51 to obtain desired letdown flow rate. STANDARD: Candidate rotates control switch for MUV-49 to open and verifies red light ON and green light OFF. Candidate rotates knob on MUV-51 controller clockwise until flow is > 0 gpm but less than 100 gpm. Candidate contacts PPO to perform step 4.8 detail 5 of enclosure 4 of EOP-14. Candidate may rotate knob on MUV-51 controller to adjust letdown flow. **EXAMINER CUE: Establish 40 gpm letdown flow.** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
STEP 10: (step 4.9) When letdown TEMP is < 130°F, then ensure MUV-49 HIGH TEMP BYPASS switch is selected to NORM. STANDARD: Candidate observes the MUV-49 HIGH TEMP BYPASS switch and verifies that it is selected to NORM. COMMENTS:	SAT ____ UNSAT ___

STEP 11: (step 4.10) If MUDM-1A is to be placed in service, and power is available, then align MUDM-1A. 1. _____ Ensure MUV-124 is open. 2. _____ Open MUV-116.* 3. _____ Close MUV-200. 4. _____ Ensure MUV-201 is closed. 5. _____ Close MUV-117. 6. _____ If MUV-126 MU DEMIN BYPASS was opened in step 4.6, then notify PPO to close MUV-126. STANDARD: Candidate verifies MUV-124 open by red light ON and green light OFF. Candidate rotates control switch for MUV-116 to open and verifies red light ON and green light OFF. Candidate verifies MUV-200 closed by green light ON and red light OFF. Candidate rotates control switch for MUV-201 to close and verifies green light ON and red light OFF. Candidate verifies MUV-117 closes by light ON and red light OFF. **EXAMINER CUE: With letdown restored and the "A" Makeup Demineralizer in service, the JPM has ended.** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
EOP-02 is in progress.
A small steam leak in the RB has caused a reactor trip and an ES actuation (RBIC).
Prior to having the symptom of excessive primary to secondary heat transfer, the leak was isolated.
The ES actuation has been reset and associated components controlled.

Initiating Cues:

You are requested to re-establish letdown with the MUDM-1A ("A" makeup demineralizer) in service in accordance with EOP-14, Enclosure 4.

CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE

Task: Perform ECCS Suction Transfer

Alternate Path: N/A

JPM #: B1f1 (bank #173)

K/A Rating/Importance: 009EK3.21/4.2/4.5 **Task Number/Position:** 0050502005/RO

Task Standard: While aligning DHR the BWST decreases below 15 ft, perform ECCS Suction Transfer using EOP-14 Enclosure 19.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. EOP-14 Enclosure 19, Rev. 7

Validation Time: 15 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. BWST level is 20 feet.
2. Acknowledge subcooling margin alarm.
3. Ensure MUT level is >95"
4. Fail alarms K-3-2 and K-3-3.
5. Fail NI-1 and NI-1 SUR low.
6. IC #65 (grandfather)

SIMULATOR OPERATOR INSTRUCTIONS:

1. Booth operator will take the roles for the various operators
2. If the BWST level reaches 5 feet, trip the DHPs.

Tools/Equipment/Procedures Needed:

1. EOP-14, Enclosure 19

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
A LOCA has occurred.
Cooldown is in progress using EOP-08
BWST level is 20 feet.

Initiating Cues:

You are requested to transfer suction for both ECCS trains in accordance with EOP-14, Enclosure 19.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of EOP-08 and EOP-14 enclosure 19. COMMENTS:	SAT ____ UNSAT ___
PROCEDURE CAUTION: DHV-34 AND DHV-35 must be closed prior to BWST level < 7ft. STEP 2: (step 19.1 of EOP-14 enclosure 19) If 1 LPI pump is aligned for DHR, then go to step 19.17 in this enclosure. STANDARD: Candidate continues to step 19.2. COMMENTS:	SAT ____ UNSAT ___

STEP 3: (step 19.2) Ensure at least 1 train of LPI is properly aligned. 1. BWST to DHP valves open: A Train: DHV-34 B Train: DHV-35 2. LPI pumps and required cooling water pumps operating: A Train: DCP-1A, RWP-3A, DHP-1A B Train: DCP-1B, RWP-3B, DHP-1B [Rule 5, EDG Control] 3. DHP isolation valves open: A Train: DHV-210 B Train: DHV-211 4. LPI injection valves open: A Train: DHV-5 B Train: DHV-6 STANDARD: Candidate verifies DHV-34 and DHV-35 are open by red light ON and green light OFF for each valve. Candidate verifies DCP-1A, RWP-3A, DHP-1A, DCP-1B, RWP-3B, and DHP-1B are running by red light ON and green light OFF for each pump. Candidate verifies DHV-210 and DHV-211 are open by red light ON and green light OFF for each valve. Candidate verifies DHV-5 and DHV-6 are open by red light ON and green light OFF for each valve. COMMENTS:	SAT ____ UNSAT ___
STEP 4: (step 19.3) Adjust LPI control valve setpoint for RB sump operation. While observing for proper control, adjust LPI control valve setpoint to 2000 gpm: A Train: DHV-110 B Train: DHV-111 STANDARD: Candidate adjusts thumb wheels of DHV-110 and DHV-111 to 2000 gpm and verifies flow follows. COMMENTS:	**Critical Step** SAT ____ UNSAT ___

STEP 5: (step 19.4) When BWST level is < 15 ft, then adjust BS for RB sump operation. Select 1200 gpm and LOCAL for BSP discharge valves:. A Train: BSV-3 B Train: BSV-4 STANDARD: Candidate selects BSV-3 and BSV-4 control stations to REMOTE/LOCAL switch to LOCAL. COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 6: (step 19.5) Align LPI pump discharge to MUP suction. • If DHP-1A is running, then open DHV-11 • IF DHP-1B is running, the open DHV-12 STANDARD: Candidate rotates control switches for DHV-11 and DHV-12 to open and verifies for each valve red light ON and green light OFF. COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 7: (step 19.6) PROCEDURE CAUTION: Aligning ECCS to RB sump may cause high radiation in AB. Align ECCS pump suction to RB sump. Open RB sump to DHP valves: A Train: DHV-42 B Train: DHV-43 STANDARD: Candidate rotates control switches for DHV-42 and DHV-43 to open and verifies for each valve red light ON and green light OFF. COMMENTS:	**Critical Step** SAT ____ UNSAT ___

STEP 8: (step 19.7) Isolate BWST from LPI. Close BWST to DHP valves: A Train: DHV-34 B Train: DHV-35 STANDARD: Candidate rotates control switches for DHV-34 and DHV-35 to close and verifies for each valve green light ON and red light OFF. COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
A LOCA has occurred.
Cooldown is in progress using EOP-08
BWST level is 20 feet.

Initiating Cues:

You are requested to transfer suction for both the ECCS trains in accordance with EOP-14, Enclosure 19.

CRYSTAL RIVER UNIT 3
IN-PLANT JOB PERFORMANCE MEASURE

Task: Place the RPS in shutdown bypass.

Alternate Path: N/A

JPM #: B1g1 (new)

K/A Rating/Importance 012A4.03/3.6/3.6 **Task Number/Position**: 0120102009/RO

Task Standard: Place the RPS in shutdown bypass using OP-507.

Preferred Evaluation Location:

Simulator __X___ In-Plant _____ Admin _____

Preferred Evaluation Method:

Perform _____ Simulate ___X___

References:
1. OP-507, Rev 19

Validation Time: 15 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. A plant shutdown is in progress.
2. Control Rod Groups 1 through 7 are fully inserted.
3. The Reactor is tripped.
4. Reactor Coolant pressure is 1750 psig.
5. The High Flux Trip has been reset to 5% (0.032).
6. IC #66 (grandfather).
7. If required ensure MUT level is not too high and clear MUT pressure alarm.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Booth operator will take the roles for the various operators

Tools/Equipment/Procedures Needed:

1. OP-507, steps 4.14.1 through 4.14.4 should be already signed.

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
A plant shutdown is in progress.
Control Rod Groups 1 through 7 are fully inserted.
The Reactor is tripped.
Reactor Coolant pressure is approximately 1750 psig.
The High Flux Trip has been reset to 5%.

Initiating Cues:

You are requested to place the RPS in shutdown bypass starting with step 4.14.5 of OP-507.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of OP-507, steps 4.14.1 through 4.14.4 are signed off. COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.14.5) PROCEDURE CAUTION: High Flux Trip must be reset to less than 5% RTP in all four (4) RPS Channels prior to performing this step. **EXAMINER NOTE: If candidate indicates the High Flux Trip is not set at 5% RTP then CUE that for the purposes of this JPM they are set at 5%.** PROCEDURE NOTE: EFIC EFW actuation logic for loss of both MFW pumps is automatically bypassed when the RPS is placed in Shutdown Bypass. Initiate Shutdown Bypass in all (4) RPS Channels. _____ A RPS Channel (J-5-2 alarms) _____ B RPS Channel (J-6-2 alarms) _____ C RPS Channel (J-7-2 alarms) _____ D RPS Channel (J-8-2 alarms) _____/___ Initial/Date STANDARD: Candidate obtains the key and unlocks the RPS cabinet doors. Candidate obtains the shutdown bypass key for each RPS channel. Candidate places each key in shutdown bypass key switch and rotates to the bypass position. Candidate verifies lights (output state and output memory) on each Shutdown Bypass bistable are bright and the Manual Bypass light at the top of each cabinet is bright. Candidate initials and dates step. COMMENTS:	**Critical Step** SAT ____ UNSAT ___

STEP 3: (step 4.14.6) PROCEDURE NOTE: Performance of the previous steps in this section meets the intent of the OP-209 requirement for placing RPS in "SHUTDOWN BYPASS". The NSM must ensure that the CRDs are not capable of being withdrawn until the remaining steps are completed (refer to ITS 3.3.1). **EXAMINER CUE: The Shutdown Bypass functional test has been performed.** Ensure Shutdown Bypass functional test has been performed. Refer to ITS 3.3.1 (SR 3.3.1.4) _____/___ Initial/Date STANDARD: Candidate initials and dates step. COMMENTS:	SAT ____ UNSAT ___
STEP 4: (step 4.14.7) Reset shutdown bypass bistables in all four (4) RPS channels. o_____ Depress both output state and output memory toggles on Shutdown Bypass bistable* o_____ Verify both output state and output memory lights are dim _____ A RPS Channel _____ B RPS Channel _____ C RPS Channel _____ D RPS Channel o_____ Verify the Subsystem Status light on Reactor Trip Module is dim _____/___ Initial/Date STANDARD: For each RPS cabinet the candidate depresses the output state and output memory toggles on the shutdown bypass bistable and verifies that both the output state and output memory lights are dim. Candidate also verifies that the subsystem status light on the Reactor Trip Module is dim. Candidate initials and dates step. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 9: (step 4.14.8) Reset all four (4) RPS channels. o_____ Depress subsystem reset toggle on Reactor Trip module* o_____ Verify Protective Subsystem amber indicating lights, on top of each cabinet, are dim for the respective channel being reset _____ A RPS Channel (J-5-1 clears) _____ B RPS Channel (J-6-1 clears) _____ C RPS Channel (J-7-1 clears) _____ D RPS Channel (J-8-1 clears) _____/ ___ Initial/Date STANDARD: For each RPS cabinet the candidate depresses the subsystem reset toggle on the Reactor Trip module and verifies that the protective subsystem amber indicating lights are dim. When candidate resets the "D" channel the "D" channel amber light on the "C" cabinet remains bright; candidate notifies the SRO of this condition. COMMENTS:	**Critical Step*** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
A plant shutdown is in progress.
Control Rod Groups 1 through 7 are fully inserted.
The Reactor is tripped.
Reactor Coolant pressure is 1750 psig.
The High Flux Trip has been reset to 5%.

Initiating Cues:

You are requested to place the RPS in shutdown bypass starting with step 4.14.5 of OP-507.

CRYSTAL RIVER UNIT 3
IN-PLANT JOB PERFORMANCE MEASURE

Task: Recirculation of FSP-1.

Alternate Path: N/A

JPM #: B2a1 (new)

K/A Rating/Importance: 086A4.01/3.3/3.3 **Task Number/Position**: 0860104001; 190404001/SPO

Task Standard: Recirculation of FSP-1 using AP-330 enclosure 3.

Preferred Evaluation Location:

Simulator _____ In-Plant __X___ Admin _____

Preferred Evaluation Method:

Perform _____ Simulate ___X___

References:
1. AP-330, Rev 13

Validation Time: 7 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

Tools/Equipment/Procedures Needed:

1. AP-330, Enclosure 3

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. **Under no circumstances are you to operate any plant equipment**. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the SECONDARY PLANT OPERATOR.
AP-330, Loss of Nuclear Service Cooling has been entered.

Initiating Cues:

You are requested to perform Enclosure 3, FSP-1 Recirc., of AP-330.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of AP-330 Enclosure 3. **EXAMINER NOTE: When the candidate indicates where they would obtain a copy of AP-330 Enclosure 3, provide them with the enclosure.** COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 3.1) Align FSP-1 to recirc FST-1A. o _____ Obtain key 20 from Control Room. o _____ Close FSV-28 FST-1B INLET ISO* o _____ Open FSV-24 FSP RECIRC LINE TO FST ISO* **EXAMINER NOTE: Key 20 is not required the Fire Pump House is no longer locked, see AI-505.** STANDARD: Candidate will rotate FSV-28 hand wheel in the clockwise direction (observes stem lowering) to hard stop. **EXAMINER CUE: Hand wheel rotates, stem moves, and handwheel comes to a hard stop.** STANDARD: Candidate will rotate FSV-24 hand wheel in the counter-clockwise direction (observes stem rising) to hard stop. **EXAMINER CUE: Handwheel rotates, stem moves, and hand wheel comes to a hard stop.** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 3: (step 3.2) Slowly open FSV-18 FSP-1 RECIRC ISO until FSP-1 starts. STANDARD: Candidate rotates FSV-18 hand wheel in the counter-clockwise direction until examiner informs candidate that FSP-1 has started. **EXAMINER NOTE: FSP-1 should start when FSV-18 is about 1 turn open.** **EXAMINER CUE: FSP-1 is running.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 4: (step 3.3) Adjust FSV-18 FSP-1 RECIRC ISO to obtain 480 to 600 gpm recirc flow as read on FS-12-FIS. STANDARD: Candidate locates FS-12-FIS and examiner will indicate 400 gpm. Candidate rotates FWV-18 in the counter-clockwise direction further. Candidate locates FS-12-FIS and examiner will indicate 560 gpm. **EXAMINER NOTE: Indicate 400 gpm when candidate first checks FS-12-FIS; indicate 560 gpm the next time gage is checked.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 5: (step 3.4) Exit this enclosure. STANDARD: Candidate informs control room (examiner) the Enclosure 3 of AP-330 is complete. **EXAMINER NOTE: Take the part of the Control Room in communication with the SPO.** COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the SECONDARY PLANT OPERATOR.
AP-330, Loss of Nuclear Service Cooling has been entered.

Initiating Cues:

You are requested to perform Enclosure 3, FSP-1 Recirc., of AP-330.

CRYSTAL RIVER UNIT 3
IN-PLANT JOB PERFORMANCE MEASURE

Task: Placing EFP-2 in standby.

Alternate Path: N/A

JPM #: B2b1 (new)

K/A Rating/Importance: 068AA1.02/4.3/4.5 **Task Number/Position**: 1190403001/PPO

Task Standard: Place EFP-2 in standby using AP-990, Enclosure 3.

Preferred Evaluation Location:

Simulator _____ In-Plant __X___ Admin _____

Preferred Evaluation Method:

Perform _____ Simulate ___X___

References:
1. AP-990 enclosure 3, Rev 15

Validation Time: 20 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

Tools/Equipment/Procedures Needed:

1. AP-990, Enclosure 3

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. **Under no circumstances are you to operate any plant equipment**. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the PRIMARY PLANT OPERATOR.
A Shutdown Outside the Control Room is in progress.

Initiating Cues:

You are requested to perform the PPO portions of Enclosure 3 of AP-990 to place EFP-2 in standby.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of AP-990 Enclosure 3. **EXAMINER NOTE: When the candidate indicates where they would obtain a copy of AP-990 Enclosure 3, provide them with the enclosure.** COMMENTS:	SAT ____ UNSAT ___

STEP 2: (step 3.1)	Critical Step
EXAMINER CUE: The Remote Shutdown Room radios you to complete step 3.1 of AP-990 Enclosure 3.	SAT ____
	UNSAT ___
EXAMINER NOTE: PPO has the EFIC cabinet key on the PPO key ring.	
Notify PPO to place EFW bistables for EFIC channels A and B in manual. 1. _____ Momentarily place the MAN/RES toggle switch to the MAN position on EFW module (B-4-12). 2. _____ Verify the following status lights are solid on EFW module B-4-12: _____ Tripped 1 _____ Tripped 2 3. _____ Momentarily place the MAN/RES toggle switch to the man position on EFW module (A-4-12). 4. _____ Verify the following status lights are solid on EFW module A-4-12: _____ Tripped 1 _____ Tripped 2	
STANDARD: Candidate locates EFIC cabinet key (PPO key ring) and unlocks door to the B EFIC cabinet. Candidate locates module B-4-12 and momentarily places toggle in the MAN position and verifies that the red LED status lights are solid. Candidate locates EFIC cabinet key (PPO key ring) and unlocks door to the A EFIC cabinet. Candidate locates module A-4-12 and momentarily places toggle in the MAN position and verifies that the red LED status lights are solid. Candidate notifies the Remote Shutdown Room that step 3.1 of AP-990 Enclosure 3 is complete.	
EXAMINER CUE: (For each module) The status lights are solid (or as you see them).	
EXAMINER NOTE: Take the part of the Remote Shutdown Room in communication with the SPO.	
COMMENTS:	

STEP 3: (step 3.2) When EFW bistables for EFIC channels A and B are in manual, then close ASV-5. STANDARD: N/A, performed in Remote Shutdown Room. COMMENTS:	SAT ____ UNSAT ___
STEP 4: (step 3.3) **EXAMINER CUE: The Remote Shutdown Room radios you to complete step 3.3, detail 2, of AP-990 Enclosure 3, manually close ASV-204.** Ensure ASV-204 is closed. 1. _____ Notify RO to open DPDP 8A-17 ASV-204 MOTOR POWER. 2. _____ Notify PPO to manually close ASV-204 EFP-2 STEAM* SUPPLY ISO If ASV-204 fails to close, then trip EFP-2. STANDARD: Candidate disengages motor (may hold lever entire time – not required) for ASV-204 and rotates hand wheel clockwise until hard stop is reached (candidate may use ASV-204 local light to verify closure). Candidate notifies the Remote Shutdown Room that step 3.3 detail 2 of AP-990 Enclosure 3 is complete. **EXAMINER CUE: Hand wheel rotates and comes to a hard stop.** **EXAMINER NOTE: Take the part of the Remote Shutdown Room in communication with the SPO.** COMMENTS:	**Critical Step*** SAT ____ UNSAT ___

STEP 5: (step 3.4) Exit this procedure. STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the PRIMARY PLANT OPERATOR.
A Shutdown Outside the Control Room is in progress.

Initiating Cues:

You are requested to perform the PPO portions of Enclosure 3 of AP-990 to place EFP-2 in standby.

CRYSTAL RIVER UNIT 3
IN-PLANT JOB PERFORMANCE MEASURE

Task: Release waste gas decay tank to plant ventilation.

Alternate Path: When the release is started WD-19-FQI fails high.

JPM #: B2c1 (new)

K/A Rating/Importance: G2.3.11/2.7/3.2 **Task Number/Position:** 07103004/PPO

Task Standard: Release waste gas decay tank to plant ventilation using OP-412B.

Preferred Evaluation Location:

Simulator _____ In-Plant __X___ Admin _____

Preferred Evaluation Method:

Perform _____ Simulate ___X___

References:
1. OP-412B Rev 16

Validation Time: 15 min.

Time Critical: No

Candidate: _____
Printed Name

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

Tools/Equipment/Procedures Needed:

1. OP-412B completed up to step 4.1.32
2. Waste Gas Release Permit
3. Key to WDV-478
4. Calculator

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. **Under no circumstances are you to operate any plant equipment.** I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the PRIMARY PLANT OPERATOR.
The previous shift has started the process of releasing the C Waste Gas Decay Tank to plant ventilation.

Initiating Cues:

You are requested to continue with the release of the C Waste Gas Decay Tank, starting with step 4.1.32 of OP-412B.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Candidate obtains a copy of OP-412B. **EXAMINER NOTE: When the candidate has completed reading the cue provide them with the GRWRP and a partially completed OP-412B.** COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.1.32) Perform valve alignment for WGDT C discharge. 1. _____ Close the following: _____ WDV-392, WGDT WDT 1C Inlet Isol. _____ WDV-435, WGDT WDT 1C Drain Isol. _____ WDV-395, WGDT WDT 1C Outlet Isol to recycle. 2. _____ Open the following: _____ WDV-439, Waste Gas Discharge CV _____ WDV-438, WGDT WDT 1C Outlet Release _____ WDV-477, Outlet Isolation to RM-11A STANDARD: Candidate verifies green light ON and red light OFF for WDV-392.. Candidate verifies green light ON and red light OFF for WDV-395. Candidate rotates control switch for WDV-439 open and verifies red light ON and green light OFF. Candidate rotates control switch for WDV-438 open and verifies red light ON and green light OFF. Candidate rotates hand wheel for WDV-477 counter-clockwise until hard stop. **EXAMINER CUE: WDV-435 was closed earlier by an operator in the valve alley. WDV-392 and WDV-395 green lights are ON and red lights are OFF. WDV-439 and WDV-438 red lights are ON and green lights are OFF. WDV-477 hand wheel rotates and comes to a hard stop.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___

STEP 3: (step 4.1.33) Complete valve alignment for WGDT Release. 1. _____ Close WDV-566, Nitrogen Gas Sampler Purge 2. _____ Close WDV-549, Nitrogen Gas Sampler Purge Isol 3. _____ Open WDV-565, Nitrogen Gas Sampler Purge STANDARD: Candidate rotates manual valve operator of WDV-566 in clockwise direction until hard stop. Candidate rotates hand wheel of WDV-549 in clockwise direction until hard stop. Candidate rotates manual valve operator of WDV-565 in counter-clockwise direction until hard stop. **EXAMINER CUE: WDV-566 hand wheel rotates and comes to a hard stop. WDV-549 hand wheel rotates and comes to a hard stop. WDV-565 hand wheel rotates and comes to a hard stop.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 4: (step 4.1.34) If RM-A11 is inoperable, then complete enclosure 2, Independent Verification of Discharge Valves Lineup. 1. _____ Perform independent verification of discharge lineup. 2. _____ Annotate completion of two independent verifications of the discharge lineup on the GRWRP. **EXAMINER CUE: RM-A11 is operable.** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___

STEP 5: (step 4.1.35) Notify Security of Waste Gas Release. _____ Verify roof patrols have been secured. **EXAMINER CUE: This has been completed by the Control Room.** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 6: (step 4.1.36) Ensure Channel Check on WD-19-FQI is completed. o WD-19-FQI Channel Check Complete 1. _____ Step 4.1.15 has been completed SAT OR _____ PT-168B, Section 4.1 has been completed SAT 2. _____ Annotate completion of WD-19-FR Channel Check on the GRWRP OR o _____ WD-19-FQI is inoperable and to step 4.1.39 STANDARD: Candidate observes step 4.1.15 has been checked and checks the first part of detail 1. Candidate signs and dates GRWRP in appropriate section. COMMENTS:	SAT ____ UNSAT ___

STEP 7: (step 4.1.37) PROCEDURE CAUTION: Do not pressurize GM tube in RM-A11 above 8 psig. Start WGDT release to ventilation filter units. o _____ Unlock and throttle WDV-478 adjusting flow to the most conservative of the following: o _____ Flow less than 10 scfm on WD-19-FQI. OR o _____ Flow less than limits established on GRWRP. STANDARD: Candidate unlocks WDV-478 and rotates hand wheel counter-clockwise to a throttled position. **EXAMINER CUE: WDV-478 is in a throttled position** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 8: (step 4.1.38) Determine if WD-19-FQI is operating properly. o _____ If flow rate appears accurate, then go to step 4.1.40 OR o _____ If no flow rate is indicated or appears inaccurate, then close WDV-478 and notify the NSS/NSM. **EXAMINER CUE: WD-19-FQI reads 999.99.** STANDARD: Candidate rotates WDV-478 hand wheel clockwise until hard stop reached. Candidate notifies NSS/NSM of inaccuracy of WD-19-FQI. **EXAMINER CUE: WDV-478 is closed. The JPM is complete.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the PRIMARY PLANT OPERATOR.
The previous shift has started the process of releasing the C Waste Gas Decay Tank to plant ventilation.

Initiating Cues:

You are requested to continue with the release of the C Waste Gas Decay Tank, starting with step 4.1.32 of OP-412B.

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Perform a Reactivity Balance Calculation.

Alternate Path: N/A

JPM #: A1a (modified bank #253)

K/A Rating/Importance: 001A4.11/3.5/4.1 **Task Number/Position:** 1150202004/RO

Task Standard: Perform a reactivity balance calculation at < 15% power using SP-421.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. SP-421, Rev 50

Validation Time: 30 min.

Time Critical: No

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. IC# 30
2. Let the simulator run 2 minutes and then freeze.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Ensure control rod index is 273% WD and group 8 is at 30% WD.

Tools/Equipment/Procedures Needed:

1. SP-421
2. Calculator
3. OP-103C

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
Steady state power conditions (± 1%) have been maintained for the last 30 minutes.
Core Burnup is 300 EFPD.
Boron Concentration is 1305 ppm.
Per the Saxon, Samarium is –0.73 %Δk/k
Per the Saxon, Xenon is –1.40 %Δk/k and is increasing.

Initiating Cues:

Using data from the simulator you are requested to perform a reactivity balance (SP-421) and make any required notifications. (Submitting a Saxon printout is not required.)

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. **EXAMINER NOTE: Provide candidate with a clean copy of SP-421 and OP-103C. Calculators will also be provided if the candidate does not have one.** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 2: Candidate should complete SP-421 including Enclosure 2A. STANDARD: Candidate completes SP-421. Candidate returns materials to you. **EXAMINER NOTE: See attached key for answers; each reactivity listed on Enclosure 2A should be < 1% Δk/k and > 0.3% Δk/k. The candidate should notify you that the Reactor Engineer needs to be notified** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
Steady state power conditions (± 1%) have been maintained for the last 30 minutes.
Core Burnup is 300 EFPD.
Boron Concentration is 1305 ppm.
Per the Saxon, Samarium is –0.73 %Δk/k
Per the Saxon, Xenon is –1.40 %Δk/k and is increasing.

Initiating Cues:

Using data from the simulator you are requested to perform a reactivity balance (SP-421) and make any required notifications. (Submitting a Saxon printout is not required.)

REACTIVITY BALANCE DURING POWER OPERATION (< 15% FP)

REFERENCE CONDITIONS: 532°F, 0% FP, No Xenon, CRG 1-8 at 100% wd, HFP Samarium.

1. Excess Fuel Reactivity
   a. Core Burnup = 300 EFPD
   b. Excess Fuel Reactivity from Curve 1 of OP-103C, Reactivity Worth Curves. + 11.81 % Δ k/
2. Boron Reactivity
   a. Boron Concentration 1152 ppmB
   b. Using core burnup from Step 1(a), find the HZP inverse boron worth from Curve 4 of OP-103C, Reactivity worth Curves 140.22 ppm/ % Δ k/k
   c. Divide Step 2(a) by the inverse boron worth in Step 2(b). 2(a)/2(b) = 1152 ppmB / 140.22 ppm/ % Δ k/k = - 8.22 % Δ k/
3. Xenon Reactivity
   a. Obtain Xenon reactivity from Saxon. (Submit printout.)
   b. IF Saxon is unavailable, THEN contact Reactor Engineering for a value. - 1.40 % Δ k/
4. RCS Temperature and Power Reactivity Deficit
   a. Average RC Temperature 554 °F
   b. Obtain temperature and power reactivity deficit from Curve 6 of OP-103C, Reactivity Worth Curves. - 0.41 % Δ k/
5. Control Rod Reactivity
   a. Reactivity worth of inserted regulating rods as read from Curve 8 or 8A of OP-103C, Reactivity Worth Curves: - 1.25 % Δ k/

      Rod Index 173 % WD

   b. Worth of inserted Group 8 rods at 32 % withdrawn from Curve 9 of OP-103C, Reactivity Worth Curves. - 0.19 % Δ k/
6. Samarium Reactivity
   a. Obtain Samarium reactivity from Saxon. (Submit printout.)
   b. IF Saxon is unavailable, THEN contact Reactor Engineering for a value. - 0.73 % Δ k/
7. Net Reactivity
   a. Net reactivity is the sum of Steps 1 thru 6. - 0.39 % Δ k/
   b. Inform the Shift Supervisor of the results.

Acceptability

1. IF the absolute value of Step 7a is greater than 1.0% Δ k/k, THEN IMMEDIATELY go to Step 5.2.2.
2. IF the absolute value of Step 7a is greater than 0.3% Δ k/k, THEN go to Step 5.2.3.

Calculated By Signed Key Date/Time Date/Time

Checked By _____ Date/Time _____

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Perform a reactor coolant boron change calculation.

Alternate Path: N/A

JPM #: A1b (modified bank #264)

K/A Rating/Importance: 004A4.04/3.2/3.6 **Task Number/Position:** 0040102002/RO

Task Standard: Perform a reactor coolant boron change calculation using OP-304.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. OP-304, Rev 16

Validation Time: 30 min.

Time Critical: No

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. N/A

SIMULATOR OPERATOR INSTRUCTIONS:

1. N/A

Tools/Equipment/Procedures Needed:

1. OP-304
2. Calculator

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
Current plant conditions are:

Reactor Coolant (RCS) Pressure	2155 psig
RCS Boron Concentration	3 ppm
RCS Temperature	579°F
Pressurizer level	220 inches
Make-up Tank level	75 inches

Initiating Cues:

You are requested to determine the volume of the two feed sources used to change the boron concentration of the reactor coolant in preparation for shutdown and cooldown. The two feed sources are the "B" BAST (12,789 ppm) and Demineralized Water (assume feed source temperature of 150°F) with the final plant conditions:

RCS Pressure	45 psig
RCS Boron Concentration	2900 ppm
RCS Temperature	140°F
Pressurizer level	75 inches
Make-up Tank level	70 inches

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. **EXAMINER NOTE: Provide candidate with a clean copy of OP-304. Calculators will also be provided if the candidate does not have one.** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 2: Candidate should complete OP-304 Enclosures 9 and 10. STANDARD: Candidate completes OP-304 Enclosure 9 and 10. **EXAMINER NOTE: See attached key for answers; each volume should be within ± 20 gallons.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
Current plant conditions are:

Reactor Coolant (RCS) Pressure	2155 psig
RCS Boron Concentration	3 ppm
RCS Temperature	579°F
Pressurizer level	220 inches
Make-up Tank level	75 inches

Initiating Cues:

You are requested to determine the volume of the two feed sources used to change the boron concentration of the reactor coolant in preparation for shutdown and cooldown. The two feed sources are the "B" BAST (12,789 ppm) and Demineralized Water (assume feed source temperature of 150°F) with the final plant conditions:

RCS Pressure	45 psig
RCS Boron Concentration	2900 ppm
RCS Temperature	140°F
Pressurizer level	75 inches
Make-up Tank level	70 inches

BORATION DURING COOLDOWN

1. Record initial plant data.

RCS Temp	RCS Pressure	PZR Level	MUT Level
579 °F	2155 psig	220 in	75 in

2. Record final plant data.

RCS Temp	RCS Pressure	PZR Level	MUT Level
140 °F	45 psig	75 in	70 in

3. Record boron data.

$C1_{RCS}$ Initial RCS boron conc	$C2_{RCS}$ Final RCS boron conc
3 ppm	2900 Ppm

4. Determine $M1_{RCS}$ (Initial mass of RCS)

Use Enclosure 3
Use Initial RCS temp, PZR level, and MUT level

$M1_{RCS}$: 552004 lbm

5. Determine $M2_{RCS}$ (Final mass of RCS)

Use Enclosure 3
Use Final RCS temp, PZR level, and MUT level

$M2_{RCS}$: 725374 lbm

6. Determine ΔM_{RCS} (Mass change of RCS)

$$\Delta M_{RCS} = M2_{RCS} - M1_{RCS}$$

$$\Delta M_{RCS} = (725374 \text{ lbm}) - (552004 \text{ lbm})$$

ΔM_{RCS}: 173370 lbm

7. Determine M_{FEED} (Mass of feed solution)

$$M_{FEED} = \Delta M_{RCS}$$

M_{FEED}: 173370 lbm

Continue calculation on next page

BORON DURING COOLDOWN (cont'd)

8. Determine υ_{FEED} (Specific volume of feed source).	
Use Enclosure 1 Use temperature of feed source	υ_{FEED} 0.01634 $\frac{ft^3}{lbm}$
9. Determine ΔV_{RCS} (RCS volume change due to contraction during cooldown)	
$\Delta V_{RCS} = M_{FEED}\,\upsilon_{FEED}$ $\Delta V_{RCS} = (173370\ lbm)\ (0.01634\ \frac{ft^3}{lbm})\ (7.48\ \frac{gal}{ft^3})$	ΔV_{RCS} 21190 gal
10. Determine V_{FEED} (Feed volume)	
$V_{FEED} = \Delta V_{RCS}$	V_{FEED} 21190 gal
11. Determine C_{FEED} (Boron concentration of Feed solution)	
$C_{FEED} = \frac{M2_{RCS}\ C2_{RCS} - M1_{RCS}\ C1_{RCS}}{M_{FEED}}$ $C_{FEED} = \frac{(725374\ lbm)(2900\ ppm) - (552004\ lbm)(3\ ppm)}{(173370\ lbm)}$	C_{FEED} 12124 ppm

COMPLETE AND ATTACH ENCLOSURE 10 FOR RATIO OF FEED SOURCES TO BE USED.

PERFORMED BY Signature DATE Date

VERIFIED BY _____ DATE _____

DETERMINING RATIO OF TWO FEED SOURCES

Use this enclosure when two addition sources will be used to add a known volume and boron concentration to any location. The higher concentration should be added first.

1. Record addition data. (Enter values from Enclosure 9, if applicable.)

V_{FEED} FEED VOLUME	C_{FEED} BORON CONCENTRATION OF FEED
21190 gal	12124 ppm

2. Record feed source data.

Source of higher boron concentration	C_{FEED1} Higher boron concentration	Source of lower boron concentration	C_{FEED2} Lower boron concentration
"B" BAST	12789 ppm	DW	0 ppm

3. Determine V_{FEED1} (Volume of higher boron source)

$$V_{FEED1} = \frac{(V_{FEED})(C_{FEED} - C_{FEED2})}{(C_{FEED1} - C_{FEED2})}$$

$$V_{FEED1} = \frac{(21190\ gal)(12124\ ppm - 0\ ppm)}{(12789\ ppm - 0\ ppm)}$$

V_{FEED1}: 20088 gal

4. Determine V_{FEED2} (Volume of lower boron source to be added)

$$V_{FEED2} = V_{FEED} - V_{FEED1}$$

$$V_{FEED2} = (21190\ gal) - (20088\ gal)$$

V_{FEED2}: 1102 gal

PERFORMED BY Signature DATE Date

VERIFIED BY _____ DATE _____

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Perform a reactor coolant system inventory balance.

Alternate Path: N/A

JPM #: A2 (modified bank #284)

K/A Rating/Importance: G2.2.12/3.0/3.4 **Task Number/Position:** 0020202004/RO

Task Standard: Perform a reactor coolant system inventory balance using SP-317.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. SP-317, Rev 50

Validation Time: 30 min.

Time Critical: No

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. IC#21 unfreeze for 5-10 seconds and then freeze.

SIMULATOR OPERATOR INSTRUCTIONS:

1. N/A

Tools/Equipment/Procedures Needed:

1. SP-317
2. Calculator

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
You collect the following plant data at 1830 for performance of SP-317:

Reactor Coolant (RCS) pressure	2150 psig (RC-003A-PIR1, loop A ribbon).
RCS Tave	579°F (RC-12-TAI).
Pressurizer level	225 inches (RC-001-LIR1 ribbon).
Make-up tank level	98 inches (MU-014-LIR1 ribbon).
Reactor Coolant Drain Tank (RCDT) level	94 inches (WD-23-LI1).
RCV-150 is closed.	
All dumpster readings have been reset to 0.	

Initiating Cues:

Assume it is 0230 of the next day, you are requested to complete SP-317 with simulator data and the following:

No water additions or removals were made.
All standpipe flush water flow-rates are 0.05 gpm
MUV-27 has a packing leak of 38 drops per minute.
Chemistry Department reports Primary-to-Secondary leakage 0.02 gpm.

START TIME: _____

STEP 1: Obtain a copy of appropriate procedure. **EXAMINER NOTE: Provide candidate with a clean copy of SP-317. Calculators will also be provided if the candidate does not have one.** STANDARD: N/A COMMENTS:	SAT ____ UNSAT ___
STEP 2: Candidate should complete SP-317. STANDARD: Candidate completes SP-317. **EXAMINER NOTE: A key will be generated the day of the exam (due to simulator variations on re-initialization) the enclosure should have leak rates of ± 0.1 gpm.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
You collect the following plant data at 1830 for performance of SP-317:

Reactor Coolant (RCS) pressure	2150 psig (RC-003A-PIR1, loop A ribbon).
RCS Tave	579°F (RC-12-TAI).
Pressurizer level	225 inches (RC-001-LIR1 ribbon).
Make-up tank level	98 inches (MU-014-LIR1 ribbon).
Reactor Coolant Drain Tank (RCDT) level	94 inches (WD-23-LI1).
RCV-150 is closed.	
All dumpster readings have been reset to 0.	

Initiating Cues:

Assume it is 0230 of the next day, you are requested to complete SP-317 with simulator data and the following:

No water additions or removals were made.
All standpipe flush water flow-rates are 0.05 gpm
MUV-27 has a packing leak of 38 drops per minute.
Chemistry Department reports Primary-to-Secondary leakage 0.02 gpm.

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Using survey maps determine radiation requirements and stay times.

Alternate Path: N/A

JPM #: **A3** (modified bank #235)

K/A Rating/Importance: G2.3.1/2.6/3.0 **Task Number/Position:** 1190103003/PPO

Task Standard: Using survey maps determine radiation requirements and stay times.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. HPP-300, Rev 7

Validation Time: 15 min.

Time Critical: No

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. N/A

SIMULATOR OPERATOR INSTRUCTIONS:

1. N/A

Tools/Equipment/Procedures Needed:

1. Survey Map
2. Calculator
3. HPP-300

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the REACTOR OPERATOR.
The plant is at full power.

Initiating Cues:

Using the supplied survey map determine the maximum stay time (including transit time) without exceeding the annual administrative limit or the Health Physics Dose goal for each of the following workers:

Worker 1 has an accumulated annual dose of 3820 mR – WB; his accumulated weekly dose is 170 mR.
Worker 2 has an accumulated annual dose of 3980 mR – WB; his accumulated weekly dose is 40 mR.

These 2 workers will be repairing a drain valve on the WDP-1A's ("A" Waste Gas Compressor) seal water tank. The transit time to the job is 1 minute. Area dose rates for transit are 2 mR/hr.

No extensions have been granted.

START TIME: _____

STEP 1:	**Critical Step**
EXAMINER NOTE: Provide candidate with survey of the Waste Gas Compressor Area and HPP-300. Calculators will also be provided if the candidate does not have one. Candidate uses survey map to determine stay times. STANDARD: Candidate determines the stay time for worker 1 is 6 hours; for worker 2 the stay time is 4 hours. COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.
The plant is at full power.

Initiating Cues:

Using the supplied survey map determine the maximum stay time (including transit time) without exceeding the annual administrative limit or the Health Physics Dose goal for each of the following workers:

Worker 1 has an accumulated annual dose of 3820 mR – WB; his accumulated weekly dose is 170 mR.
Worker 2 has an accumulated annual dose of 3980 mR – WB; his accumulated weekly dose is 40 mR.

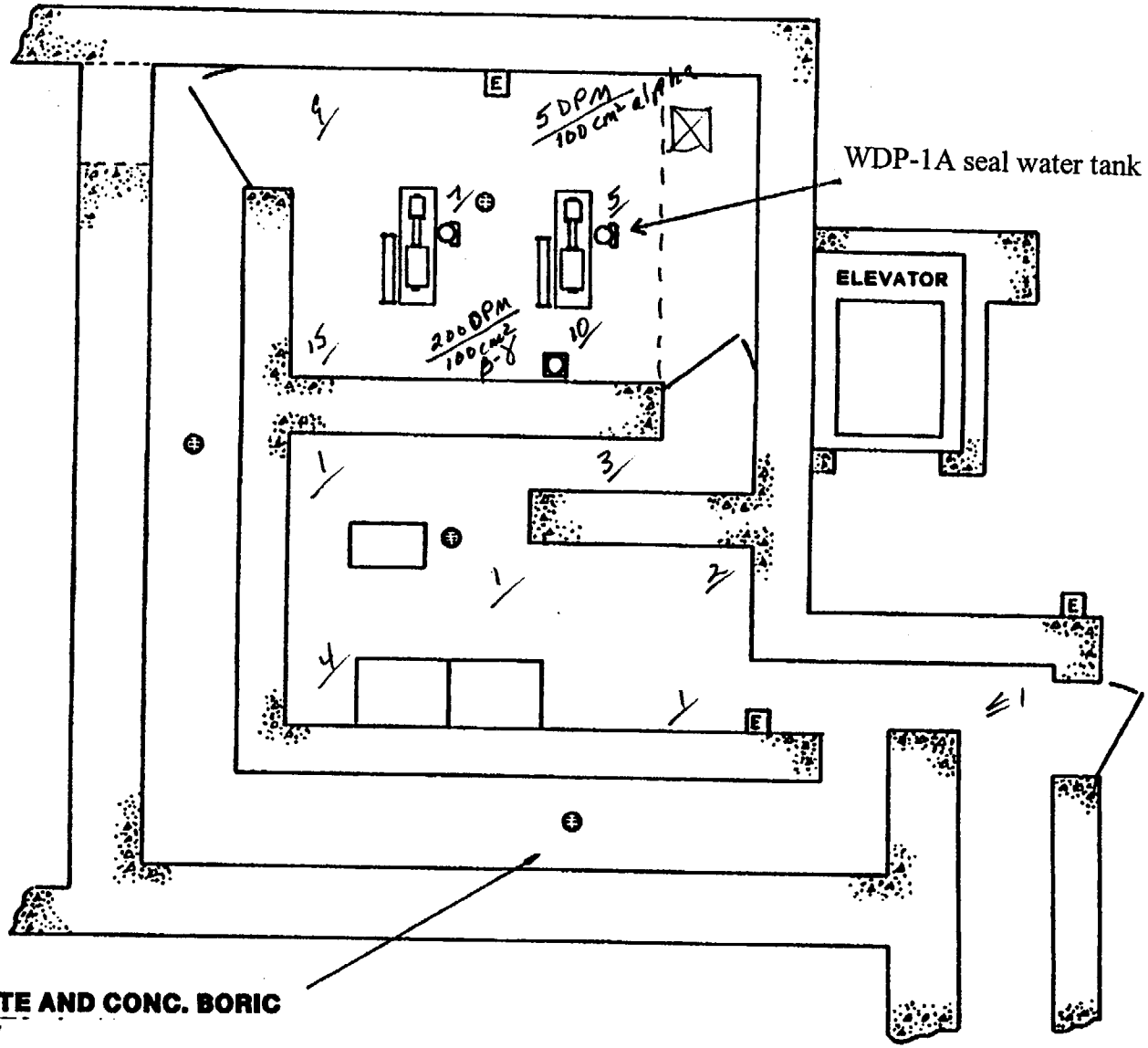
These 2 workers will be repairing a drain valve on the WDP-1A's ("A" Waste Gas Compressor) seal water tank. The transit time to the job is 1 minute. Area dose rates for transit are 2 mR/hr.

No extensions have been granted.

Florida Power CORPORATION

95' EL. AUXILIARY BUILDING
SAMPLE AREA "D"
WASTE GAS COMPRESSORS
AND VALVE ALLEY.

SURVEY NO._____



RA = RADIATION AREA
HRA = HIGH RADIATION AREA
CA = CONTAMINATED AREA
RMA = RAD MATERIAL AREA
- - - - = BOUNDARY
☒ = STEP OFF PAD
O/H = IN OVERHEAD
H/W = HEAD LEVEL / WAIST LEVEL DOSE RATE

95' EL. CONC. WASTE AND CONC. BORIC ACID VALVE ALLEY

DOSE RATES IN MREM/HR
UNLESS OTHERWISE NOTED
NO BETA RADIATION DETECTED
UNLESS OTHERWISE NOTED
*DENOTES CONTACT READING

NOTE:
SCALE ⅛" = 1'-0"
● = FLOOR DRAIN
E = ELECTRICAL OUTLET

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Determine emergency action level and complete the State of Florida Notification Message Form for Nuclear Power Plants.

Alternate Path: N/A

JPM #: A4S (new)

K/A Rating/Importance: G2.4.41/2.3/4.1 **Task Number/Position:** 1150101002/SRO

Task Standard: Determine emergency action level and complete the State of Florida Notification Message Form for Nuclear Power Plants using EM-202.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:
1. EM-202, Rev. 64

Validation Time: 15 min.

Time Critical: Yes

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. N/A

SIMULATOR OPERATOR INSTRUCTIONS:

1. N/A

Tools/Equipment/Procedures Needed:

1. EM-202

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the NUCLEAR SHIFT MANAGER.

Initiating Cues:

Determine the emergency action level and complete the State of Florida Notification Message Form for Nuclear Power Plants.

START TIME: _____

STEP 1:	Critical Step
EXAMINER NOTE: This classification is to be made following scenario 2 on Tuesday, September 26, 2000. If the crew has two (2) SRO candidates then each candidate should perform this task. Candidate determines classification and completes Enclosure 2 of EM-202. STANDARD: Candidate determines the classification is a Site Area Emergency. Candidate completes Enclosure 2, see key. COMMENTS:	SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the NUCLEAR SHIFT MANAGER.

Initiating Cues:

Determine the emergency action level and complete the State of Florida Notification Message Form for Nuclear Power Plants.

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

1. THIS IS CRYSTAL RIVER UNIT 3. A. ☒ THIS IS A DRILL B. ☐ THIS IS AN ACTUAL EVENT. I HAVE A MESSAGE.
ENSURE: ☒ STATE ☒ CITRUS ☒ LEVY ☒ RAD. CONTROL-ORLANDO (M-F ONLY) ARE ON LINE.

2. A. Time/Date contact made _____ B. Reported by: (Name/Title) _____
C. Message Number ___1___ D. Reported from: ☒ Control Room ☐ TSC ☐ EOF

3. SITE A. ☒ CRYSTAL RIVER UNIT 3 B. ☐ ST LUCIE UNIT 1 D. ☐ TURKEY POINT UNIT 3
C. ☐ ST LUCIE UNIT 2 E. ☐ TURKEY POINT UNIT 4

4. ACCIDENT CLASSIFICATION A. ☐ NOTIFICATION OF UNUSUAL EVENT C. ☒ SITE AREA EMERGENCY
B. ☐ ALERT D. ☐ GENERAL EMERGENCY

5. CURRENT EMERGENCY DECLARATION: TIME: TIME DATE DATE

6. REASON FOR EMERGENCY DECLARATION:
SCENARIO #2: ① OTSG LEAK REQUIRING ONE OR MORE INJECTION VALVES OR CAUSING ES ACTUATION ON LOW RCS PRESSURE
② OTSG > 10 GPM TUBE LEAK AND AN UNISOLABLE STEAM LEAK OUTSIDE AB FROM AFFECTED OTSG.

7. ADDITIONAL INFORMATION OR UPDATE:
(BROKEN EQUIPMENT)

8. INJURIES REQUIRING OFFSITE SUPPORT: A. ☐No ☐Yes ☐Unk B. Contaminated: ☐No ☐Yes ☐Unk

9. WEATHER DATA: A. Wind direction from _____ degrees. (CURRENT MET DATA)
B. Downwind Sectors affected (minimum of 3): ___, ___, ___ (SECTORS TO MATCH MET DATA)

10. RELEASE STATUS: A. ☐ No Release (Go to Item 12) C. ☐ A Release occurred, but stopped
B. ☒ A Release is occurring

11. OFFSITE RELEASE SIGNIFICANCE CATEGORY (at the Site Boundary)
A. ☐ Information not available at this time.
B. ☐ Release within normal operating limits (Tech Specs/ODCM)
C. ☐ Non-Significant Fraction of PAG Range (release is > normal limits and <PAG levels)
D. ☐ PAG Range (Protective Actions required)

12. UTILITY RECOMMENDED PROTECTIVE ACTIONS
A. ☒ NONE B. ☐ SHELTER ZONES/AREAS: _____
EVACUATE ZONES/AREAS: _____
OR C. ☐

MILES	NO ACTION	EVACUATE SECTORS	SHELTER SECTORS
0 – 2			
2 – 5			
5 – 10			

13. HAS EVENT BEEN TERMINATED?: A. ☒ NO B. ☐ YES: Time _____ Date _____

14. SUPPLEMENTAL FORM IS ATTACHED?: A. ☒ NO B. ☐ YES:

15. MESSAGE RECEIVED BY: Name _____ Time _____ Date _____
THIS IS CRYSTAL RIVER UNIT 3. ☒ THIS IS A DRILL ☐ THIS IS AN ACTUAL EMERGENCY. END OF MESSAGE.
EC/EOF DIRECTOR INITIALS: INITIALS

SUPPLEMENTAL DATA SHEET

The following supplemental data is to be completed by the TSC or EOF for an Alert or higher emergency declaration.

Supplement to Message Number _____

PLANT CONDITIONS INFORMATION

RITICAL SAFETY FUNCTIONS:

EACTOR SHUTDOWN? ☐ YES ☐ NO

B. CORE ADEQUATELY COOLED? ☐ YES ☐ NO

C. ADEQUATE EMERGENCY POWER AVAILABLE (DIESELS OR OFFSITE SOURCE) ☐ YES ☐ NO

FISSION PRODUCT BARRIER STATUS: (Check one condition for each barrier)

BARRIER	✓	INTACT	✓	CHALLENGED	✓	LOST	✓	REGAINED
FUEL CLADDING		No indication of clad damage		Clad is intact but losing subcooling, water level, etc.		Clad has failed, indicated by high temps., high containment rad, etc		Cooling restored, no further degradation expected
PRI. REACTOR COOLANT SYSTEM		Leakage is within normal charging or makeup pump capacity		Leakage is within safety injection capacity		Leakage exceeds safety injection capacity		Leakage reduced to within injection capacity (system repaired)
CONTAINMENT		No evidence of containment leakage or tube rupture release is only through condenser		No leakage but containment pressure is at or above safety system actuation points		Evidence of containment leakage (known release path or rad surveys)		Repair efforts have isolated leak or containment pressure has reduced to stop leakage

COMPLETED BY: _____ TIME: _____ DATE: _____

RADIOLOGICAL DOSE ASSESSMENT DATA

RELEASE STATUS: A. ☐ No Release (no further data required) C. ☐ A Release occurred, but stopped

B. ☐ A Release is occurring

2. RELEASE RATE:

A. ☐ NOBLE GASES: _____ Curies per second ☐ Measured ☐ Default

B. ☐ IODINES: _____ Curies per second ☐ Measured ☐ Default

3. TYPE OF RELEASE:

A. ☐ AIRBORNE Time/Date Started: _____ Time /Date Stopped: _____

B. ☐ LIQUID Time/Date Started: _____ Time/Date Stopped: _____

4. PROJECTED OFFSITE DOSE RATE:

DISTANCE	THYROID DOSE RATE (CDE)	TOTAL DOSE RATE (TEDE)
1 Mile (Site Boundary)	A. _____ mrem/hr	B. _____ mrem/hr
2 Miles	C. _____ mrem/hr	D. _____ mrem/hr
5 Miles	E. _____ mrem/hr	F. _____ mrem/hr
10 Miles	G. _____ mrem/hr	H. _____ mrem/hr

. WEATHER DATA (used for the above data):

. Wind Direction from _____ degrees.

. Wind Speed _____ MPH (2.24 X meters/sec.)

. Stability Class _____ (Sigma Theta or Wind Range; See page 3 of 5)

...TED BY: _____ TIME: _____ DATE: _____

STATE OF FLORIDA NOTIFICATION PROTOCOL
[NOCS 96024]

WITHIN 15 MINUTES of declaration of emergency classification, NOTIFY STATE WARNING POINT TALLAHASSEE. (This also notifies Citrus and Levy counties and the Department of Health, Bureau of Radiation Control (DHBRC)-Orlando. If information is not available, do not delay notification to State Warning Point Tallahassee.

Use one of the following communications networks listed by priority:

- STATE Hot Ringdown (SHRD) - Station 120 or 121
- Commercial Telephone System - 1-850-413-9911 or 1-800-320-0519 or 1-850-413-9900
- Florida Emergency Satellite Communication System - (ESATCOM)
- Local Government Radio (LGR) via Citrus County
- Portable Satellite Phone (Located in TSC cabinet)

If the Commercial Telephone is used for notification, a separate notification to Citrus (746-2555) and Levy County (1-352-486-5212 or 1-352-486-5111 after hours) is required.

When making the initial notification of an emergency condition to SWPT, report the current emergency classification declared at the time the notification is made. If prior to initial notification or since the previous notification conditions were met (even briefly) for a higher classification, explain in Incident Description or Update.

INITIAL NOTIFICATION

Once communications are established with the SWPT Duty Officer and the station roll call is complete, READ the message in its entirety and REPEAT information and answer questions as requested. FAX the State Form by using Group 1 from the Fax machine.

SECTORS AFFECTED

DEGREES	SECTORS	DEGREES	SECTORS	DEGREES	SECTORS
349-11 (349-371)	H J K	102-123 (462-483)	N P Q	214-236	B C D
12-33 (372-393)	J K L	124-146 (484-506)	P Q R	237-258	C D E
34-56 (394-416)	K L M	147-168 (507-528)	Q R A	259-281	D E F
57-78 (417-438)	L M N	169-191 (529-540)	R A B	282-303	E F G
79-101 (439-461)	M N P	192-213	A B C	304-326	F G H
				327-348	G H J

STABILITY CLASS

SIGMA THETA (deg)	WIND RANGE (deg)	STABILITY CLASS
≥ 22.5	≥ 135	A (most dispersed plume)
<22.5 to 17.5	134 to 105	B
<17.5 to 12.5	104 to 75	C
<12.5 to 7.5	74 to 45	D
< 7.5 to 3.8	44 to 23	E
<3.8 to 2.1	22 to 12	F
<2.1	<12	G

UPDATE NOTIFICATION

Update SWPT every sixty minutes after initial notification and upgrades of emergency classification.

The use of the FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM is required for:

- Initial notification that an emergency condition exists (Item 4)
- Any change in emergency classification (Item 4)
- Any change in Protective Action Recommendations (Item 12)
- Termination of an emergency classification (Item 13)

Updated information not meeting the above criteria does not require the use of the Form.

The sixty minute update notification is still required with a statement there is no change from last update, unless the SWPT agrees to less frequent updates.

GUIDANCE FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

1. Select appropriate box based on a drill or actual event. Ensure offsite agencies are on-line. If not, separate notifications to Citrus and Levy County are required.

   A. Enter the time contact is made with the State Warning Point or Risk County. This time must be within 15 minutes of the "Current Emergency Declaration" time or within 60 minutes of the previous notification if used for an update (Item 5).

   B. Enter name and title of person making the notification.

   C. Enter message number (beginning with #1 and following through sequentially in all facilities).

   D. Enter location from which the notification is made.

3. Check Crystal River Unit 3.

4. Check the classification corresponding to current plant conditions. If, prior to the initial notification or since the previous notification, conditions were met (even briefly) for a higher classification, ensure that classification and condition is noted in Item 7, "Additional Information or Update."

5. Enter the emergency declaration time and date for the current accident classification.

6. Enter wording to indicate the Emergency Action Level or Fission Product Barrier loss or potential loss used to declare the event. This information should remain the same throughout update messages unless there is a classification change.

7. Enter additional significant events here, including if conditions briefly existed for a higher emergency classification but no longer exist, or conditions that would have independently warranted declaration of an equal or lower classification (e. g. a fire within the Protected Area during a SITE AREA or GENERAL EMERGENCY).

8. Item "A"; Check "YES" only if there are injuries that require off-site support (EMS, hospital). Check "Unk" if the extent of the injuries is unknown at this time or if it is not yet known if offsite treatment is necessary. Check "Unk" in item "B" if the nature of the injuries has prevented thorough monitoring onsite or if there is any doubt whether contamination is present.

   Enter the wind direction in degrees in Item "A" and the three downwind sectors in Item "B." The downwind sectors confirm wind direction because of potential confusion with degrees "from" versus degrees "to."

10. Check Item "A" if there are no indications of a release, then go to Item 12. Check Item "B" if a release is occurring, even though it may be less than normal operating limits. Check Item "C" if a release has occurred but stopped. Specific dose information will be supplied on the supplemental data sheet after the TSC is declared operational at an ALERT or higher. RELEASE: any increase in count rate on an effluent monitor that is a direct result of an event that has initiated an emergency declaration, or radioactivity escaping unmonitored from the plant, but detected by environmental monitoring.

11. Check Item "A" if Release Significance Category (See page 5 of 5) information is not available at the time of notification and follow up as soon as possible with information. Check Item "B" if the current release is or the previous release was within normal operating limits (ITS/ODCM). Releases monitored by RM-A1 or RM-A2 are within normal operating limits if the low-range gas channel is below its high alarm setpoint. Check Item "C" if the current release is or the previous release was greater than normal operating limits, but less than EPA PAG values. This involves any radiological release that may occur when there is no fuel damage. No PARs are required at this level. Check Item "D" if there is any indication of fuel damage (cladding failure or melt) and there is any indication of a release (effluent monitors, surveys, etc.). PARs would be automatically required. This terminology should be easily understood by decision-makers at all levels within the utility and at the State and local levels.

12. Check Item "A" if no Protective Actions are necessary. Check Item "B" if PARs are necessary and enter Zone designation. (Item "C" is used by other Florida nuclear sites.)

13. Enter the time the event has been terminated or when the transition from the "Emergency Phase" to the "Recovery Phase" has taken place.

14. Check "no" unless a Supplemental Form has been completed for this particular message. If a Supplemental Form is attached, the Form is to be read as part of the emergency notification from the TSC or EOF and faxed.

15. Enter the name of the SWPT Duty Officer or the individual that receives the notification. Enter time and date call is completed or when Form is provided to Deputy State Coordinating Officer at the EOF.

Supplemental Page - Complete at the TSC or EOF at an Alert Classification or higher and provide to State & locals with Page 1.

RELEASE SIGNIFICANCE CATEGORIES

CORE CONDITION	RELEASE STATUS	RELEASE SIG. CATEGORY
No Core Damage	No release	NR
	Release in progress	<NOL, NS
Clad Failure	No release	NR
	Release in progress	PAG
Core Melt	No release	NR
	Release in progress	EHE (PAG* State Form)

NR: NO RELEASE
This category indicates no release is occurring. This category is appropriate regardless of core status, if there are no indications of a release (e.g., unexplained containment pressure decrease, unexplained abnormal radiation levels in Auxiliary Building or Intermediate Building, on the berm, or in the field). Do not assume Design Basis Leakage is occurring if it has not been detected. If a release occurred but has now stopped, maintain the appropriate category below until EPZ doses have dissipated.

<NOL: RELEASE WITHIN NORMAL OPERATING LIMITS (ITS/ODCM)
This category indicates releases that are monitored by RM-A1 or RM-A2, occurring when the fuel is undamaged. These releases are within normal operating limits if the low-range gas channel is below its high alarm setpoint. Do not make this selection for releases not monitored by RM-A1 or RM-A2 unless they have been evaluated per the ODCM.

NS: NON-SIGNIFICANT (FRACTION OF PROTECTIVE ACTION GUIDELINE VALUES)
This category indicates releases that are occurring when the fuel is undamaged. It includes releases exceeding RM-A1 or RM-A2 high alarm setpoint and releases not monitored by RM-A1 or RM-A2 (e.g., releases due to LOCA, Waste Gas System failures, and steam generator tube ruptures). These releases will not produce site boundary doses that approach the EPA Protective Action Guideline values of 1 REM TEDE and/or 5 REM thyroid. No Protective Action Recommendations are necessary.

PAG: AT OR NEAR PROTECTIVE ACTION GUIDELINE VALUES
This category indicates releases that are occurring after at least some fuel cladding failure has taken place. It includes damage to irradiated fuel stored in the fuel pools. Site Boundary doses greater than the EPA Protective Action Guideline of 1 REM TEDE and/or 5 REM thyroid are possible. The category is appropriate with fuel cladding failure even if only minor offsite doses are detected. Evacuation of at least 5 miles, 360° (Zone 1) should be recommended. Shelter or evacuation beyond 5 miles should be determined based on plant status and dose projections.

EHE: EARLY HEALTH EFFECTS (not on State Notification Form, see NOTE below)
This category indicates releases that are occurring after severe core damage has taken place and where containment has failed early in the event. Doses of 25 REM TEDE and/or 2500 RADS thyroid could cause early health effects and these doses are easily possible within three miles from the plant. Evacuation of the Energy Complex should be performed and evacuation of the 10-mile EPZ (Zones 1,2,3) should be recommended (never sheltering) even if evacuees are exposed to the plume.

* NOTE: This category is not listed on the State Notification Form because the State implements protective actions at the PAG range above. However, it will be posted on status boards in the TSC and EOF.

CRYSTAL RIVER UNIT 3
ADMINISTRATIVE JOB PERFORMANCE MEASURE

Task: Notify State Warning Point Tallahassee with the State of Florida Notification Message Form for Nuclear Power Plants.

Alternate Path: State Hot Ringdown phone does not work.

JPM #: A4R (new)

K/A Rating/Importance: G2.4.43/2.8/3.5 **Task Number/Position:** 1150402005/RO

Task Standard: Notify State Warning Point Tallahassee with the State of Florida Notification Message Form for Nuclear Power Plants using EM-202.

Preferred Evaluation Location:

Simulator _____ In-Plant _____ Admin ___X__

Preferred Evaluation Method:

Perform __X___ Simulate _____

References:

1. EM-202, Rev. 64

Validation Time: 15 min.

Time Critical: Yes

==========

Candidate: _____
Printed Name

Time Start: _____
Time Finish:_____

Performance Rating: SAT _____ UNSAT _____ **Performance Time:** _____

Examiner: _____ _____/_____
Printed Name Signature Date

Comment:

_____

_____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. None.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Role-play as State Warning Point Tallahassee.

Tools/Equipment/Procedures Needed:

1. EM-202

READ TO THE OPERATOR

Directions to the Student:

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet to the examiner.

Initial Conditions:

You are the Reactor Operator.

Initiating Cues:

Given the following information by the Emergency Coordinator, you are requested to complete the Florida Nuclear Plant Emergency Notification Form and notify the state of Florida.

An Alert was just declared based on catastrophic turbine mechanical failure.
No release is in progress.
Three (3) employees were injured but are not contaminated.
All three injured employees are being transported to Seven Rivers Hospital.
No protective action is required at this time.
The event has not been terminated.

START TIME: _____

STEP 1: Candidate completes the Florida Nuclear Plant Emergency Notification Form and establishes communications with the State of Florida. **EXAMINER NOTE: Critical information on the form includes items 4, 12 and 13. Candidate may ask you to initial the bottom of the form as Emergency Coordinator.** STANDARD: Candidate completes the Florida Nuclear Plant Emergency Notification Form (see key). Candidate attempts to use the State Hot Ringdown*. Candidate uses the Commercial Telephone System. **EXAMINER CUE: *The State Hot Ringdown phone is NOT operational.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
STEP 2: Candidate conveys information found on Enclosure 2 of EM-202. STANDARD: Candidate will read the form to State Warning Point Tallahassee by the number and letter, filling in details as listed or as required. **EXAMINER NOTE: Critical information to be conveyed are items 4, 12 and 13.** COMMENTS:	**Critical Step** SAT ____ UNSAT ___
END OF TASK	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the Reactor Operator.

Initiating Cues:

Given the following information by the Emergency Coordinator, you are requested to complete the Florida Nuclear Plant Emergency Notification Form and notify the state of Florida.

An Alert was just declared based on a catastrophic turbine mechanical failure.
No release is in progress.
Three (3) employees were injured but are not contaminated.
All three injured employees are being transported to Seven Rivers Hospital.
No protective action is required at this time.
The event has not been terminated.

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

1. THIS IS CRYSTAL RIVER UNIT 3. A. ☒ THIS IS A DRILL. B. ☐ THIS IS AN ACTUAL EVENT. I HAVE A MESSAGE.
ENSURE: ☒ STATE ☒ CITRUS ☒ LEVY ☒ RAD. CONTROL-ORLANDO (M-F ONLY) ARE ON LINE.

A. Time/Date contact made Time/Date B. Reported by: (Name/Title) Name / Title

Message Number 1 D. Reported from: ☒ Control Room ☐ TSC ☐ EOF

3. SITE A. ☒ CRYSTAL RIVER UNIT 3 B. ☐ ST LUCIE UNIT 1 D. ☐ TURKEY POINT UNIT 3 C. ☐ ST LUCIE UNIT 2 E. ☐ TURKEY POINT UNIT 4

4. ACCIDENT CLASSIFICATION A. ☐ NOTIFICATION OF UNUSUAL EVENT B. ☒ ALERT C. ☐ SITE AREA EMERGENCY D. ☐ GENERAL EMERGENCY

5. CURRENT EMERGENCY DECLARATION: TIME Cue given Time DATE Date

6. REASON FOR EMERGENCY DECLARATION:
Catastrophic turbine mechanical failure

7. ADDITIONAL INFORMATION OR UPDATE:

8. INJURIES REQUIRING OFFSITE SUPPORT: A. ☐ No ☒ Yes ☐ Unk B. Contaminated: ☐ No ☐ Yes ☐ Unk

9. WEATHER DATA: A. Wind direction from _____ degrees.
B. Downwind Sectors affected (minimum of 3): ____, ____, ____

RELEASE STATUS: A. ☒ No Release (Go to Item 12) B. ☐ A Release is occurring C. ☐ A Release occurred, but stopped

11. OFFSITE RELEASE SIGNIFICANCE CATEGORY (at the Site Boundary)
A. ☐ Information not available at this time.
B. ☐ Release within normal operating limits (Tech Specs/ODCM)
C. ☐ Non-Significant (Fraction of PAG Range, release is > normal limits and <PAG levels)
D. ☐ PAG Range (Protective Actions required)

12. UTILITY RECOMMENDED PROTECTIVE ACTIONS
A. ☒ NONE B. ☐ SHELTER ZONES/AREAS: _____
EVACUATE ZONES/AREAS: _____
OR C. ☐

MILES	NO ACTION	EVACUATE SECTORS	SHELTER SECTORS
0 – 2			
2 – 5			
5 – 10			

13. HAS EVENT BEEN TERMINATED?: A. ☒ NO B. ☐ YES: Time _____ Date _____

14. SUPPLEMENTAL FORM IS ATTACHED?: A. ☒ NO B. ☐ YES
15. MESSAGE RECEIVED BY: Name Name Time Time Date Date
IS CRYSTAL RIVER UNIT 3. ☒ THIS IS A DRILL. ☐ THIS IS AN ACTUAL EVENT. END OF MESSAGE.
EC/EOC DIRECTOR INITIALS: _____

SUPPLEMENTAL DATA SHEET

The following supplemental data is to be completed by the TSC or EOF for an Alert or higher emergency declaration.

Supplement to Message Number _____

PLANT CONDITIONS INFORMATION

RITICAL SAFETY FUNCTIONS:

REACTOR SHUTDOWN? ☐ YES ☐ NO

B. CORE ADEQUATELY COOLED? ☐ YES ☐ NO

C. ADEQUATE EMERGENCY POWER AVAILABLE (DIESELS OR OFFSITE SOURCE) ☐ YES ☐ NO

FISSION PRODUCT BARRIER STATUS: (Check one condition for each barrier)

BARRIER	✓	INTACT	✓	CHALLENGED	✓	LOST	✓	REGAINED
FUEL CLADDING		No indication of clad damage		Clad is intact but losing subcooling, water level, etc.		Clad has failed, indicated by high temps., high containment rad, etc		Cooling restored, no further degradation expected
PRI. REACTOR COOLANT SYSTEM		Leakage is within normal charging or makeup pump capacity		Leakage is within safety injection capacity		Leakage exceeds safety injection capacity		Leakage reduced to within injection capacity (system repaired)
CONTAINMENT		No evidence of containment leakage or tube rupture release is only through condenser		No leakage but containment pressure is at or above safety system actuation points		Evidence of containment leakage (known release path or rad surveys)		Repair efforts have isolated leak or containment pressure has reduced to stop leakage

COMPLETED BY:_____ TIME:_____ DATE:_____

RADIOLOGICAL DOSE ASSESSMENT DATA

RELEASE STATUS: A. ☐ No Release (no further data required) C. ☐ A Release occurred, but stopped

B. ☐ A Release is occurring

2. RELEASE RATE:

A. ☐ NOBLE GASES: _____ Curies per second ☐ Measured ☐ Default

B. ☐ IODINES: _____ Curies per second ☐ Measured ☐ Default

3. TYPE OF RELEASE:

A. ☐ AIRBORNE Time/Date Started:_____ Time /Date Stopped:_____

B. ☐ LIQUID Time/Date Started:_____ Time/Date Stopped:_____

4. PROJECTED OFFSITE DOSE RATE:

DISTANCE	THYROID DOSE RATE (CDE)	TOTAL DOSE RATE (TEDE)
1 Mile (Site Boundary)	A._____mrem/hr	B._____mrem/hr
2 Miles	C._____mrem/hr	D._____mrem/hr
5 Miles	E._____mrem/hr	F._____mrem/hr
10 Miles	G._____mrem/hr	H._____mrem/hr

5. WEATHER DATA (used for the above data):

A. Wind Direction from _____ degrees.

B. Wind Speed _____ MPH (2.24 X meters/sec.)

S ility Class_____ (Sigma Theta or Wind Range; See page 3 of 5)

LETED BY: _____ TIME:_____ DATE:_____

STATE OF FLORIDA NOTIFICATION PROTOCOL
[NOCS 96024]

WITHIN 15 MINUTES of declaration of emergency classification, NOTIFY STATE WARNING POINT TALLAHASSEE. (This also notifies Citrus and Levy counties and the Department of Health, Bureau of Radiation Control (DHBRC)-Orlando. If information is not available, do not delay notification to State Warning Point Tallahassee.

Using one of the following communications networks listed by priority:

- STATE Hot Ringdown (SHRD) - Station 120 or 121
- Commercial Telephone System - 1-850-413-9911 or 1-800-320-0519 or 1-850-413-9900
- Florida Emergency Satellite Communication System - (ESATCOM)
- Local Government Radio (LGR) via Citrus County
- Portable Satellite Phone (Located in TSC cabinet)

If the Commercial Telephone is used for notification, a separate notification to Citrus (746-2555) and Levy County (1-352-486-5212 or 1-352-486-5111 after hours) is required.

When making the initial notification of an emergency condition to SWPT, report the current emergency classification declared at the time the notification is made. If prior to initial notification or since the previous notification conditions were met (even briefly) for a higher classification, explain in Incident Description or Update.

INITIAL NOTIFICATION

Once communications are established with the SWPT Duty Officer and the station roll call is complete, READ the message in its entirety and REPEAT information and answer questions as requested. FAX the State Form by using Group 1 from the Fax machine.

SECTORS AFFECTED

DEGREES	SECTORS	DEGREES	SECTORS	DEGREES	SECTORS
349-11 (349-371)	H J K	102-123 (462-483)	N P Q	214-236	B C D
12-33 (372-393)	J K L	124-146 (484-506)	P Q R	237-258	C D E
34-56 (394-416)	K L M	147-168 (507-528)	Q R A	259-281	D E F
57-78 (417-438)	L M N	169-191 (529-540)	R A B	282-303	E F G
79-101 (439-461)	M N P	192-213	A B C	304-326	F G H
				327-348	G H J

STABILITY CLASS

SIGMA THETA (deg)	WIND RANGE (deg)	STABILITY CLASS
≥ 22.5	≥ 135	A (most dispersed plume)
<22.5 to 17.5	134 to 105	B
<17.5 to 12.5	104 to 75	C
<12.5 to 7.5	74 to 45	D
< 7.5 to 3.8	44 to 23	E
<3.8 to 2.1	22 to 12	F
<2.1	<12	G

UPDATE NOTIFICATION

Update SWPT every sixty minutes after initial notification and upgrades of emergency classification.

The use of the FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM is required for:

- Initial notification that an emergency condition exists (Item 4)
- Any change in emergency classification (Item 4)
- Any change in Protective Action Recommendations (Item 12)
- Termination of an emergency classification (Item 13)

Updated information not meeting the above criteria does not require the use of the Form.

The sixty minute update notification is still required with a statement there is no change from last update, unless the SWPT agrees to less frequent updates.

GUIDANCE FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

1. Select appropriate box based on a drill or actual event. Ensure offsite agencies are on-line. If not, separate notifications to Citrus and Levy County are required.

2. A. Enter the time contact is made with the State Warning Point or Risk County. This time must be within 15 minutes of the "Current Emergency Declaration" time or within 60 minutes of the previous notification if used for an update (Item 5).

   B. Enter name and title of person making the notification.

   C. Enter message number (beginning with #1 and following through sequentially in all facilities).

   D. Enter location from which the notification is made.

3. Check Crystal River Unit 3.

4. Check the classification corresponding to current plant conditions. If, prior to the initial notification or since the previous notification, conditions were met (even briefly) for a higher classification, ensure that classification and condition is noted in Item 7, "Additional Information or Update."

5. Enter the emergency declaration time and date for the current accident classification.

6. Enter wording to indicate the Emergency Action Level or Fission Product Barrier loss or potential loss used to declare the event. This information should remain the same throughout update messages unless there is a classification change.

7. Enter additional significant events here, including if conditions briefly existed for a higher emergency classification but no longer exist, or conditions that would have independently warranted declaration of an equal or lower classification (e. g. a fire within the Protected Area during a SITE AREA or GENERAL EMERGENCY).

8. Item "A"; Check "YES" only if there are injuries that require off-site support (EMS, hospital). Check "Unk" if the extent of the injuries is unknown at this time or if it is not yet known if offsite treatment is necessary. Check "Unk" in item "B" if the nature of the injuries has prevented thorough monitoring onsite or if there is any doubt whether contamination is present.

Enter the wind direction in degrees in Item "A" and the three downwind sectors in Item "B." The downwind sectors confirm wind direction because of potential confusion with degrees "from" versus degrees "to."

10. **Check Item "A"** if there are no indications of a release, then go to Item 12. **Check Item "B"** if a release is occurring, even though it may be less than normal operating limits. **Check Item "C"** if a release has occurred but stopped. Specific dose information will be supplied on the supplemental data sheet after the TSC is declared operational at an ALERT or higher. **RELEASE:** any increase in count rate on an effluent monitor that is a direct result of an event that has initiated an emergency declaration, or radioactivity escaping unmonitored from the plant, but detected by environmental monitoring.

11. **Check Item "A"** if Release Significance Category (See page 5 of 5) information is not available at the time of notification and follow up as soon as possible with information. **Check Item "B"** if the current release is or the previous release was within normal operating limits (ITS/ODCM). Releases monitored by RM-A1 or RM-A2 are within normal operating limits if the low-range gas channel is below its high alarm setpoint. **Check Item "C"** if the current release is or the previous release was greater than normal operating limits, but less than EPA PAG values. This involves any radiological release that may occur when there is no fuel damage. No PARs are required at this level. **Check Item "D"** if there is any indication of fuel damage (cladding failure or melt) and there is any indication of a release (effluent monitors, surveys, etc.). PARs would be automatically required. This terminology should be easily understood by decision-makers at all levels within the utility and at the State and local levels.

12. **Check Item "A"** if no Protective Actions are necessary. **Check Item "B"** if PARs are necessary and enter Zone designation. (Item "C" is used by other Florida nuclear sites.)

13. Enter the time the event has been terminated or when the transition from the "Emergency Phase" to the "Recovery Phase" has taken place.

14. Check "no" unless a Supplemental Form has been completed for this particular message. If a Supplemental Form is attached, the Form is to be read as part of the emergency notification from the TSC or EOF and faxed.

15. Enter the name of the SWPT Duty Officer or the individual that receives the notification. Enter time and date call is completed or when Form is provided to Deputy State Coordinating Officer at the EOF.

Supplemental Page - Complete at the TSC or EOF at an Alert Classification or higher and provide to State & locals with Page 1.

RELEASE SIGNIFICANCE CATEGORIES

CORE CONDITION	RELEASE STATUS	RELEASE SIG CATEGORY
No Core Damage	No release	NR
	Release in progress	<NOL, NS
Clad Failure	No release	NR
	Release in progress	PAG
Core Melt	No release	NR
	Release in progress	EHE (PAG* State Form)

NR: NO RELEASE
This category indicates no release is occurring. This category is appropriate regardless of core status, if there are no indications of a release (e.g., unexplained containment pressure decrease, unexplained abnormal radiation levels in Auxiliary Building or Intermediate Building, on the berm, or in the field). Do not assume Design Basis Leakage is occurring if it has not been detected. If a release occurred but has now stopped, maintain the appropriate category below until EPZ doses have dissipated.

<NOL: RELEASE WITHIN NORMAL OPERATING LIMITS (ITS/ODCM)
This category indicates releases that are monitored by RM-A1 or RM-A2, occurring when the fuel is undamaged. These releases are within normal operating limits if the low-range gas channel is below its high alarm setpoint. Do not make this selection for releases not monitored by RM-A1 or RM-A2 unless they have been evaluated per the ODCM.

NS: NON-SIGNIFICANT (FRACTION OF PROTECTIVE ACTION GUIDELINE VALUES)
This category indicates releases that are occurring when the fuel is undamaged. It includes releases exceeding RM-A1 or RM-A2 high alarm setpoint and releases not monitored by RM-A1 or RM-A2 (e.g., releases due to LOCA, Waste Gas System failures, and steam generator tube ruptures). These releases will not produce site boundary doses that approach the EPA Protective Action Guideline values of 1 REM TEDE and/or 5 REM thyroid. No Protective Action Recommendations are necessary.

PAG: AT OR NEAR PROTECTIVE ACTION GUIDELINE VALUES
This category indicates releases that are occurring after at least some fuel cladding failure has taken place. It includes damage to irradiated fuel stored in the fuel pools. Site Boundary doses greater than the EPA Protective Action Guideline of 1 REM TEDE and/or 5 REM thyroid are possible. The category is appropriate with fuel cladding failure even if only minor offsite doses are detected. Evacuation of at least 5 miles, 360° (Zone 1) should be recommended. Shelter or evacuation beyond 5 miles should be determined based on plant status and dose projections.

EHE: EARLY HEALTH EFFECTS (not on State Notification Form, see NOTE below)
This category indicates releases that are occurring after severe core damage has taken place and where containment has failed early in the event. Doses of 25 REM TEDE and/or 2500 RADS thyroid could cause early health effects and these doses are easily possible within three miles from the plant. Evacuation of the Energy Complex should be performed and evacuation of the 10-mile EPZ (Zones 1,2,3) should be recommended (never sheltering) even if evacuees are exposed to the plume.

* NOTE: This category is not listed on the State Notification Form because the State implements protective actions at the PAG range above. However, it will be posted on status boards in the TSC and EOF.