

Final Submittal

(Blue Paper)

1. Administrative Questions/JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)

**CRYSTAL RIVER EXAM
50-302/2002-301**

JAN. 28 - FEB. 6, 2002

Facility: Crystal River Unit 3 Exam Level: RO/SRO		Date of Examination: 01-28-2002 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 an Estimated Critical Boron Calculation (ECB) /001A4.10/ 3.5/3.9 (OP-210 Enclosures 4/5) [D, bank]
	Plant Parameter Verification	JPM – Perform a Time to Boil Calculation / 025AA1.02/ 3.8/3.9 (OP-103H) [N, new]
A.2	Surveillance Testing	JPM – Perform RCP Seal Data Sheet / 003A4.04/ 3.1/3.0 (SP-300 Enclosure 2 page 5) [D, bank]
A.3	Radiation Hazards	JPM – Determine worker stay times and dose requirements with survey maps/ 2.3.4/ 2.5/3.1 (RSP-101, and HPP-300) [N, new]
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 (EM-202) [N, new]
A.4	RO Emergency Dose Assessment	JPM – Complete an OFF-Site Dose Assessment during Radiological Emergencies (Control Room Method) 2.3.10/ 2.9 (EM-204A) [D, bank]

Tools/Equipment/Procedures Needed:

1. SP-210 Enclosure 4 and 5
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:

The plant has just completed a 27-day outage, the core has 10 EFPD, and it had to shutdown for the last 24 hours to repair a MSIV. Due to the time frame the reactor engineer has provided the following data:

Xenon -2.43 DeltaK/K Samarium $-.03 \text{ DeltaK/K}$

Plant conditions are as follows:

RCS boron is 2250 ppm RCS temperature is 532 °F

Anticipated critical rod position is 40% on group 6, with group 8 rods at 30%.
Boron 10 atom percent is 19.8

Initiating Cues:

You are requested to perform an ECB.

START TIME: _____

STEP 1:

Obtain a copy of appropriate procedure.

SAT _____

UNSAT _____

STANDARD:

N/A

EXAMINER CUE:

EXAMINER NOTE:

Provide candidate with a clean copy of OP-210 Enclosure 4 and 5, and OP-103C. Calculators will also be provided if the candidate does not have one.

COMMENTS:

<p><u>STEP 2:</u></p> <p>Candidate should complete OP-210 Enclosure 4 and 5.</p> <p><u>STANDARD:</u> Candidate completes. OP-210. Candidate returns materials to you.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> See attached key for answers; each reactivity listed should be within ± 0.05 % $\Delta k/k$.</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY

Enclosure 4

1. 10 EFPD X .991 = 9.91 EFPD		
Curve 1		+15.375
2. Xenon		- 2.43
3. Samarium		- 0.03
4. Temperature 532 therefore no factor		0000
5. Rod Index curve	Group 1-7	-1.541
	Group 8	-0.1605
6. Sum		11.2135DK/K
6b. HZP inverse boron worth		148.8343
6c. Multiply		
6d. ECB		1668.95 (round to 1669) ppm
6e. Boron 10 a/o		19.8
6f. Adjusted B-10 a/o		1669 ppm
6g. +1.0 DK/K		12.2135 DK/K
6h. -1.0 DK/K		10.2135 DK/K
6i. Multiply +1		1817.78 (round to 1818) ppm
6j. +1 boron		1818 ppm
6k. +1 B-10 a/o		1818 ppm
6l. Multiply -1		1520 ppm
6m. -1 boron		1520 ppm
6n. -1 B-10 a/o		1520 ppm

TOLERANCE on boron of ± 100 ppm (this is approximately 5 %)

Enclosure 5

- Step 1 a single ECB is necessary may only use enclosure 4
- Step 2 rod positions are given just a repeat
- Step 3 1520 / 1669 / 1818 Boron concentrations (-1 / ECB / +1)
- Step 4 to be completed N/A
- Step 5 to be completed N/A
- Step 6 data transfer may or may not complete

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

The plant has just completed a 27-day outage, the core has 10 EFPD, and it had to shutdown for the last 24 hours to repair a MSIV. Due to the time frame the reactor engineer has provided the following data:

Xenon -2.43 DeltaK/K Samarium $-.03$ DeltaK/K

Plant conditions are as follows:

RCS boron is 2250 ppm RCS temperature is 532 °F

Anticipated critical rod position is 40% on group 6, with group 8 rods at 30%.
Boron 10 atom percent is 19.8

Initiating Cues:

You are requested to perform an ECB.

Tools/Equipment/Procedures Needed:

1. OP-103H
2. Calculator
- 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 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:

Plant is in MODE 6,
RCS temperature is 100°F,
RCS pressure 0 psig,
Nozzle dams installed,
RCS vessel level 131 feet.
Refueling in progress, 120 burned fuel assemblies in the core.
Plant was shutdown at 0800 01/12/02
Current date is 0800 01/19/02

Initiating Cues:

You are requested to perform a time to boil / time to core uncover calculation (OP-103H).

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> N/A</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Provide candidate with a clean copy of OP-103H. Calculators will also be provided if the candidate does not have one.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 2:</u></p> <p>Candidate should complete OP-103H using enclosure 7</p> <p><u>STANDARD:</u> Candidate completes. OP-103H. Candidate returns materials to you.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> See attached key for answers;</p> <p><u>COMMENTS:</u></p> <p> </p> <p> </p> <p> </p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY	PROCEDURE 103H rev. 3
1.1	100°F
1.2	131 Ft.
1.3	120
1.4	1/12/02
1.5	1/19/02
2.0	7 Days
3.1	1.965
3.2	$177/120 = 1.475$
3.3	$1.965 \times 1.475 = 2.898375$
4.0	No; the head is off the vessel, and Nozzle dams installed
5.0	No; the head is off the vessel
6.0	No; Nozzle dams installed
7.0	Yes; RCS vented, Head OFF, Nozzle dams installed
7.1	14.21
7.2	120.79
7.3	$2.8983 \times 14.21 = 41.85 \text{ min}$ (40 to 43 minutes tolerance)
7.4	$2.8983 \times 120.79 = 350.08 \text{ min}$ (345 to 355 minutes tolerance)
8.0	No; RCS intact

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

Plant is in MODE 6,
RCS temperature is 100°F,
RCS pressure 0 psig,
Nozzle dams installed,
RCS vessel level 131 feet.
Refueling in progress, 120 burned fuel assemblies in the core.
Plant was shutdown at 0800 01/12/02
Current date is 0800 01/19/02

Initiating Cues:

You are requested to perform a time to boil / time to core uncover calculation (OP-103H).

Tools/Equipment/Procedures Needed:

1. SP-300
2. Calculator
- 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 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% rated thermal power (N766).

Reactor inlet temperature is 557°F (R730).

RC system pressure is 2160 psig (R724).

MUT temperature is 108°F (X208).

Beginning time for seal leak-off was 0800.

Ending time for seal leak-off flow was 1200.

Seal leak-off count at the beginning time for all RCPs was 0.

Seal leak-off count at the ending time: RCP-1A, 110; RCP-1B, 92; RCP-1C, 86; RCP-1D, 120.

Seal injection flow for each pump: RCP-1A, 9 gpm; RCP-1B, 10 gpm; RCP-1C, 9 gpm; RCP-1D, 11 gpm.

All the RCPs have a controlled bleed-off flow rate of 1.5 gpm.

Component cooling water temperature is 79°F (X334).

Initiating Cues:

Given a copy of Group 15, Seal Data, you are directed to perform the RC Pump Seal Data Sheet in SP-300.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> N/A</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Provide candidate with a copy of the RC Pump Seal Data Sheet in SP-300 and Group 15 data sheet.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 2:</u></p> <p>Complete SP-300 RC Pump Seal Data Sheet</p> <p><u>STANDARD:</u> Candidate will complete the RC Pump Seal Data Sheet and return completed SP to examiner.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> If this JPM is conducted in the control room, allow the candidate to collect the data from plant parameters to show they can find the information. Then provide the data to complete from the cue sheet. See attached key for answers;</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY

SP-300 Enclosure 2 page 5

RCS inlet temperature	557°F
RCS Pressure	2160 psig
Rx Power	100%
MUT Temperature	108°F

RCP "A" $110 \times .25 / 240 \text{ min} = .1145 - .05 = .064$

RCP "B" $92 \times .25 / 240 \text{ min} = .0958 - .05 = .045$

RCP "C" $86 \times .25 / 240 \text{ min} = .0895 - .05 = .039$

RCP "D" $120 \times .25 / 240 \text{ min} = .125 - .05 = .075$

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.

The plant is at 100% rated thermal power (N766).

Reactor inlet temperature is 557°F (R730).

RC system pressure is 2160 psig (R724).

MUT temperature is 108°F (X208).

Beginning time for seal leak-off was 0800.

Ending time for seal leak-off flow was 1200.

Seal leak-off count at the beginning time for all RCPs was 0.

Seal leak-off count at the ending time: RCP-1A, 110; RCP-1B, 92; RCP-1C, 86; RCP-1D, 120.

Seal injection flow for each pump: RCP-1A, 9 gpm; RCP-1B, 10 gpm; RCP-1C, 9 gpm; RCP-1D, 11 gpm.

All the RCPs have a controlled bleed-off flow rate of 1.5 gpm.

Component cooling water temperature is 79°F (X334).

Initiating Cues:

Given a copy of Group 15, Seal Data, you are directed to perform the RC Pump Seal Data Sheet in SP-300.

Tools/Equipment/Procedures Needed:

1. SP-300
2. Calculator
- 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 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:

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Reactor inlet temperature is 557°F (R730).

RC system pressure is 2160 psig (R724).

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Seal leak-off count at the ending time: RCP-1A, 110; RCP-1B, 92; RCP-1C, 86; RCP-1D, 120.

Seal injection flow for each pump: RCP-1A, 9 gpm; RCP-1B, 10 gpm; RCP-1C, 9 gpm; RCP-1D, 11 gpm.

All the RCPs have a controlled bleed-off flow rate of 1.5 gpm.

Component cooling water temperature is 79°F (X334).

Initiating Cues:

Given a copy of Group 15, Seal Data, you are directed to perform the RC Pump Seal Data Sheet in SP-300.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> N/A</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Provide candidate with a copy of the RC Pump Seal Data Sheet in SP-300 and Group 15 data sheet.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 2:</u></p> <p>Complete SP-300 RC Pump Seal Data Sheet</p> <p><u>STANDARD:</u> Candidate will complete the RC Pump Seal Data Sheet and return completed SP to examiner.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> If this JPM is conducted in the control room, allow the candidate to collect the data from plant parameters to show they can find the information. Then provide the data to complete from the cue sheet. See attached key for answers;</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY

SP-300 Enclosure 2 page 5

RCS inlet temperature	557°F
RCS Pressure	2160 psig
Rx Power	100%
MUT Temperature	108°F

RCP "A" $110 \times .25 / 240 \text{ min} = .1145 - .05 = .064$

RCP "B" $92 \times .25 / 240 \text{ min} = .0958 - .05 = .045$

RCP "C" $86 \times .25 / 240 \text{ min} = .0895 - .05 = .039$

RCP "D" $120 \times .25 / 240 \text{ min} = .125 - .05 = .075$

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.

The plant is at 100% rated thermal power (N766).

Reactor inlet temperature is 557°F (R730).

RC system pressure is 2160 psig (R724).

MUT temperature is 108°F (X208).

Beginning time for seal leak-off was 0800.

Ending time for seal leak-off flow was 1200.

Seal leak-off count at the beginning time for all RCPs was 0.

Seal leak-off count at the ending time: RCP-1A, 110; RCP-1B, 92; RCP-1C, 86; RCP-1D, 120.

Seal injection flow for each pump: RCP-1A, 9 gpm; RCP-1B, 10 gpm; RCP-1C, 9 gpm; RCP-1D, 11 gpm.

All the RCPs have a controlled bleed-off flow rate of 1.5 gpm.

Component cooling water temperature is 79°F (X334).

Initiating Cues:

Given a copy of Group 15, Seal Data, you are directed to perform the RC Pump Seal Data Sheet in SP-300.

Tools/Equipment/Procedures Needed:

1. HP-300
2. RSP-101
3. Provided Survey

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:

A work platform must be erected over the two letdown coolers inside the RB.
The individual that erects the platform must stand between the two coolers for 45 minutes.
The attached survey 01-10-0127 identifies the dose rates for the letdown room, the attached sheet provides the data on the individuals that can perform this work

Initiating Cues:

For each of the three individuals listed; identify **WHY** and/or **WHY NOT** they can perform this work.

For dose calculations only consider the dose during the 45 minute job, all other doses for transient and escorts are not to be used.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Operator obtains copies of HPP-300 and RSP-101.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Provide operator with the pre-marked survey, and the data sheet with each individual's information.</p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/>	<p>SAT _____</p> <p>UNSAT _____</p>
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STEP 2:

Determination of radiation conditions.

Critical Step

SAT _____

UNSAT _____

STANDARD:

Operator determines that:

SEE ATTACHED KEY

EXAMINER CUE:

EXAMINER NOTE:

Provide Operator with the pre-marked survey.

COMMENTS:

<p><u>STEP 3:</u></p> <p>Determinations of stay times.</p> <p><u>STANDARD:</u> Operator determines:</p> <p>SEE ATTACHED KEY</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY

WORKER HISTORY

Worker #1 John Paul Jones

1. Contract worker with completed NRC form 5
2. This worker is not badged at CR3 so he will be issued dosimetry and escorted (**The escort does not need to be considered for the dose, they will be in a low dose area**)
3. 2.0 REM TEDE (from another work location)
Can complete the job in stay time for 1.5 Rem (45 minutes) Would be able to do the job, limits are the same as other radiation workers (2 REM CR3; total 4)

Worker #2 George Custer

1. CR3 employee with completed NRC form 5 and yellow badge.
2. 1.5 Rem TEDE for the year
CAN NOT do the job, would exceed 2 Rem CR3 dose

Worker #3 Don Corleone

1. Contract worker with completed NRC form 5 and yellow badge.
2. 3.5 Rem TEDE (from another work location)
CAN NOT do the job, would exceed 4 Rem total dose.

NO SPECIAL AUTHORIZATIONS OR EXTENUATING CIRCUMSTANCES ARE ALLOWED.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

A work platform must be erected over the two letdown coolers inside the RB.

The individual that erects the platform must stand between the two coolers for 45 minutes.

The attached survey 01-10-0127 identifies the dose rates for the letdown room, the attached sheet provides the data on the individuals that can perform this work

Initiating Cues:

For each of the three individuals listed; identify **WHY** and/or **WHY NOT** they can perform this work. For dose calculations only consider the dose during the 45 minute job, all other doses for transient and escorts are not to be used.

DATA SHEET

WORKER HISTORY

Worker #1 John Paul Jones

1. Contract worker with completed NRC form 5
2. This worker is not badged at CR3 so he will be issued dosimetry and escorted (**The escort does not need to be considered for the dose, they will be in a low dose area**)
3. 2.0 REM TEDE (from another work location)

Worker #2 George Custer

1. CR3 employee with completed NRC form 5 and yellow badge.
2. 1.5 Rem TEDE for the year

Worker #3 Don Corleone

1. Contract worker with completed NRC form 5 and yellow badge.
2. 3.5 Rem TEDE (from another work location)

NO SPECIAL AUTHORIZATIONS OR EXTENUATING CIRCUMSTANCES ARE ALLOWED.

Tools/Equipment/Procedures Needed:

1. EM-204A
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.

A Radiological Emergency is in progress.
RM-A2 low-range gas channel reads 6000 cpm.

Initiating Cues:

You are directed to perform EM-204A.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EM-204A.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Provide candidate with a copy of the EM-204A.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 2:</u></p> <p>Completes EM-204A Enclosure 1.</p> <p><u>STANDARD:</u> Candidate will complete EM-204A; meteorological data may vary per candidate.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u> Each completed procedure will have to be evaluated during and following the administration of the JPM.</p> <p>If this JPM is conducted in the control room, allow the candidate to collect the data from plant parameters to show they can find the information. Then provide the data to complete from the cue sheet. See attached key for answers;</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

KEY

EM-204 A

Step 4.1.2	RMA-2 Low range gas channel			6000 cpm	
Step 4.2.1	Sigma Theta if in Control Room				
Step 4.2.2	Primary tower Delta T			-1.50	
Step 4.2.3	Wind direction (33')			268	
Step 4.2.4	Wind Speed (33')			5.2	
Step 4.2.4.1	Wind Speed MPH			11.648	
Step 4.2.5	Stability Class			A	
Step 4.3.1	DDE 4.7 E-02	THYROID	1.3 E-01	TEDE 5.9 E-02	
Step 4.4.1	DDE .009	THYROID	.025	TEDE .011	
Step 4.5.1	Duration of release			1 Hour	
Step 4.5.2	DDE .009	THYROID	.025	TEDE .011	
Step 4.6.1	NOBLE GAS	7.9 E-03		IODINE	7.9 E-05
Step 4.6.2	Affected Sectors			DEF	
Step 4.7.1	Signature				

DATA Sheet for completion after data taken at plant indications

EM-204 A

Step 4.1.2	RMA-2 Low range gas channel	6000 cpm
Step 4.2.1	Sigma Theta if in Control Room	
Step 4.2.2	Primary tower Delta T	-1.50
Step 4.2.3	Wind direction (33')	268
Step 4.2.4	Wind Speed (33')	5.2

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the REACTOR OPERATOR.

A Radiological Emergency is in progress.
RM-A2 low-range gas channel reads 6000 cpm.

Initiating Cues:

You are directed to perform EM-204A.

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 Superintendent of Shift Operations (SSO).

See attached data sheet

Initiating Cues:

Determine the highest emergency action level for the time line data provided. Document your answer on the first 7 blocks of Enclosure 2 of EM-202 for time 1400 based on the information provided.

At 1300 today the plant was at 100% power, the plant experiences a transient and the following 15 minute time line, of indications occur:

TIME	1315
RCS PRESSURE	45 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	45 PSIG
RMG - 29 & 30	9 R/HR

TIME	1330
RCS PRESSURE	46 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	46 PSIG
RMG - 29 & 30	72 R/HR

TIME	1345
RCS PRESSURE	48 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	48 PSIG
RMG - 29 & 30	127 R/HR

TIME	1400
RCS PRESSURE	47 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	47 PSIG
RMG - 29 & 30	245 R/HR

Based on the above information identify the highest EAL.
FOR THIS EXERCISE DO NOT USE ANY EC DISCRETION!

START TIME: _____

<p><u>STEP 1:</u></p> <p>Candidate determines classification for the data provided.</p> <p><u>STANDARD:</u> Candidate determines the classification:</p> <p>MATRIX:</p> <table><tr><td>FUEL CLAD LOSS FACTOR</td><td>+4</td></tr><tr><td>RCS LOSS FACTOR</td><td>+4</td></tr><tr><td>CONTAINMENT POT LOSS</td><td>+1.5</td></tr><tr><td>TOTAL</td><td>9.5</td></tr></table> <p>GENERAL EMERGENCY</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	FUEL CLAD LOSS FACTOR	+4	RCS LOSS FACTOR	+4	CONTAINMENT POT LOSS	+1.5	TOTAL	9.5	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>
FUEL CLAD LOSS FACTOR	+4								
RCS LOSS FACTOR	+4								
CONTAINMENT POT LOSS	+1.5								
TOTAL	9.5								
<p>END OF TASK</p>									

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the Superintendent of Shift Operations (SSO).

See attached data sheet

Initiating Cues:

Determine the highest emergency action level for the time line data provided. Document your answer on the first 7 blocks of Enclosure 2 of EM-202 for time 1400 based on the information provided.

At 1300 today the plant was at 100% power, the plant experiences a transient and the following time line of indications occur:

TIME	1315
RCS PRESSURE	45 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	45 PSIG
RMG - 29 & 30	9 R/HR

TIME	1330
RCS PRESSURE	46 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	46 PSIG
RMG - 29 & 30	72 R/HR

TIME	1345
RCS PRESSURE	48 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	48 PSIG
RMG - 29 & 30	127 R/HR

TIME	1400
RCS PRESSURE	47 PSIG
PRESSURIZER LEVEL	0 "
INCORES	370°F
RX BLDG SPRAY FLOW	0 GPM
RX BLDG PRESSURE	47 PSIG
RMG - 29 & 30	245 R/HR

Based on the above information identify the highest EAL.

FOR THIS EXERCISE DO NOT USE ANY EC DISCRETION!

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

Date of Examination: 01-28-2002
Operating Test No.: 1

B.1 Control Room Systems

System/JPM Title/KA	Type Code*	Safety Function
a. CRD - Transfer Control Rod Group 1 to the Auxiliary Power Supply / 001K4.03/ 3.5/3.8/ (OP-502)	D, S	1
b. MUP – Perform an Emergency Boration / 024AA2.01/ 3.8/4.1 / (AP-490)	N, A, S	2
c. ECCS – Transfer ECCS suction to the RB sump / 009EK3.21/ 4.2/4.5 (EOP-14 Enclosure 19)	D, S	3
d. AFW – Emergency Feedwater Management / E14.EA1.3/ 3.6/3.8 / (EOP-14 Enclosure 7)	D, A, S	4
e. BS – Ensure BS actuation / 026A3.01/ 4.3/4.5 / (EM-225C)	D, A, S	5
f. RPS – Energize RPS Channel/ 012A2.02/ 3.6/3.9 / (OP-507)	D, S	7
g. RM – Adjust RM-L2 setpoints for release/ 059AA1.01/ 3.5/3.5 / (OP-505)	N, S	9

B.2 Facility Walk-Through

a. VITAL ELEC – Energize VBIT-1A and supply the vital bus / 062A4.07/ 3.1/3.1 / (OP-703)	N	6
b. FS/OTSG – Transfer contaminated secondary inventory to FST/ 037AK3.07/ 4.2/4.4 / (EOP-14 Enclosure 9)	D	8
c. WG – Perform a Waste Gas release / G2.3.11/ 2.7/3.2 / (OP-412B)	D, A, 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

ES-301 Control Room Systems and Facility Walk-Through Test Outline Form ES-301-2

Facility: Crystal River Unit 3
Exam Level: SRO(U)

Date of Examination: 01-28-2002
Operating Test No.: 1

B.1 Control Room Systems

System/JPM Title/KA	Type Code*	Safety Function
a. MUP – Perform an Emergency Boration / 024AA2.01/ 3.8/4.1 / (AP-490)	N, A, S	2
b. ECCS – Transfer ECCS suction to the RB sump / 009EK3.21/ 4.2/4.5 (EOP-14 Enclosure 19)	D, S	3
c. CRD - Transfer Control Rod Group 1 to the Auxiliary Power Supply / 001K4.03/ 3.5/3.8/ (OP-502)	D, S	1

B.2 Facility Walk-Through

a. FS/OTSG – Transfer contaminated secondary inventory to FST/ 037AK3.07/ 4.2/4.4 / (EOP-14 Enclosure 9)	D	8
b. WG – Perform a Waste Gas release / G2.3.11/ 2.7/3.2 / (OP-412B)	D, A, 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

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. Alarm override Deaerator level (1500)

SIMULATOR OPERATOR INSTRUCTIONS:

1. Any power IC #11

Tools/Equipment/Procedures Needed:

1. OP-502 Rev. 45

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 stable at power, Control Rod surveillance is in progress.

Initiating Cues:

You are requested to transfer group 3 rods to the Auxiliary Power Supply. Following transfer of the group, leave the reactor diamond and demand stations in manual for further manipulations.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of OP-502.</p> <p><u>EXAMINER CUE:</u> For purposes of this JPM assume the CRS concurs with each rod manipulation.</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 2: (Step 4.16.1)</p> <p>CAUTION: Tave control could go to Feedwater regulation.</p> <p>Place Reactor Diamond in MANUAL.</p> <p>DEPRESS "MANUAL" VERIFY "MANUAL" light on, " AUTO." light is off</p> <p><u>STANDARD:</u> Operator depresses the Diamond Panel MANUAL pushbutton, and observes the MANUAL light ON and the AUTO light OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 3: (Step 4.16.2)</p> <p>Place Reactor Demand control station in Hand. DEPRESS HAND VERIFY "REACTOR DEMAND" in Mini Track ("AUTO." and "HAND" lights on)</p> <p><u>STANDARD:</u> Operator depresses the HAND pushbutton on the Reactor Demand (Bailey) HAND/AUTO station and observes that both the HAND and AUTO lights are "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p><u>STEP 3:</u> (Step 4.16.3)</p> <p>Select GROUP SELECT Switch to desired group.</p> <p><u>STANDARD:</u> Operator verifies that GROUP SELECT Switch is selected to Group 3.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p><u>STEP 4:</u> (Step 4.16.4)</p> <p>Select ALL or desired rod. Use SINGLE SELECT Switch.</p> <p><u>STANDARD:.</u> Operator verifies that SINGLE SELECT Switch is selected to all.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 5:</u> (Step 4.16.5)</p> <p>Select SEQ OR. Verify SEQ OR light "ON", SEQ light "ON".</p> <p><u>STANDARD:.</u> Operator depresses the SEQ/SEQ OR pushbutton and verifies both lights "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 6: (Step 4.16.6)</p> <p>Select AUXIL.</p> <p><u>STANDARD:</u> Operator depresses the AUXIL/GROUP pushbutton and verifies AUXIL light "ON" and GROUP light "OFF". VERIFY control on light for GP 3 is "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 7: (Step 4.16.7)</p> <p>Place SPEED SELECTOR switch in JOG.</p> <p><u>STANDARD:</u> Operator rotates RUN/JOG switch to JOG and verify SY light "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 8: (Step 4.16.8)</p> <p>Select CLAMP.</p> <p><u>STANDARD:</u> Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP light "ON" and CLAMP REL light "OFF".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 9: (Step 4.16.9)</p> <p>CAUTION: If Amber control ON lights for more than one group is ON, STOP, and notify CRS.</p> <p>Depress MAN TRANS.</p> <p><u>STANDARD:</u> Operator depresses MAN TRANS pushbutton and verifies TR CF light "ON". The operator will also verify the amber CONTROL ON light for group 3 is "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 10: (Step 4.16.10)</p> <p>Select CLAMP REL.</p> <p><u>STANDARD:</u> Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP REL light "ON" and CLAMP light "OFF".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 11: (Step 4.16.11)

Select GROUP

Critical Step

SAT _____

UNSAT _____

STANDARD:

Operator depresses GROUP/AUXIL pushbutton and verifies GROUP light "ON" and AUXIL light "OFF". The operator will also verify the SY light "OFF".

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p><u>STEP 12:</u> (Step 4.16.12)</p> <p>If latching Safety Rods in accordance with section 4.2, return to Section 4.2.3 after completion of this step</p> <p><u>STANDARD:</u> N/A</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 13: (Step 4.16.13)</p> <p>Place SPEED SELECTOR switch in RUN.</p> <p><u>STANDARD:</u> Operator rotates RUN/JOG switch to RUN, observes the white (Diamond panel) "CONTROL ON" light for group 3 is "ON", and the amber (PI panel) "CONTROL ON" lights for rod group 3 rods is "ON".</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

STEP 14: (Step 4.16.14)

Restore SINGLE SELECT Switch. Place SINGLE SELECT Switch to OFF.

STANDARD:

Operator rotates SINGLE SELECT Switch to OFF.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 15: (Step 4.16.15)</p> <p>Restore GROUP SELECT Switch. Place GROUP SELECT Switch to OFF.</p> <p><u>STANDARD:</u> Operator rotates GROUP SELECT switch to OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 16: (Step 4.16.16)</p> <p>NOTE: When in "SEQ" the Control ON lamp and Amber Control ON lamps are on for rods on the Aux Power Supply and controlling rod group (Usually group 7)</p> <p>Select SEQ. Verify SEQ light "ON" and SEQ OR light "OFF".</p> <p>STANDARD: Operator depresses SEQ/SEQ OR pushbutton and verifies SEQ light "ON" and SEQ OR light "OFF".</p> <p>EXAMINER CUE: You have transferred group 3 rods to the Auxiliary Power Supply; the JPM is complete.</p> <p>EXAMINER NOTE:</p> <p>COMMENTS:</p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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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 stable at power, Control Rod surveillance is in progress..

Initiating Cues:

You are requested to transfer group 3 rods to the Auxiliary Power Supply. Following transfer of the group, leave the reactor diamond and demand stations in manual for further manipulations.

**CRYSTAL RIVER UNIT 3
SIMULATOR JOB PERFORMANCE MEASURE**

Task: Borate the RCS to ensure >1% SDM 73°
System: Chemical Addition

Alternate Path: Yes

JPM #: B1B (2K2) [NEW]

K/A Rating/Importance: 024AA1.17 / 3.9/3.9

Task Number/Position: 1150502013 / RO

Task Standard: Perform an emergency boration in accordance with AP-490

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator In-Plant Admin Perform Simulate

References:

1. AP-490 Rev. 3

Validation Time: 15 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. Dropped rod IC # 64
2. CAV-60 is failed where it will not open as part of the IC
- 3.
4. Alarm override hotwell level (0092 ; 0094)
- 5.

SIMULATOR OPERATOR INSTRUCTIONS:

Tools/Equipment/Procedures Needed:

1. AP-490
- 2.

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:

The plant has experienced a dropped rod. After completion of SP-421, SDM is less than 1% delta K/K which places the plant in LCO 3.1.1

Initiating Cues:

Initiate boration to restore SDM within limits.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of AP-490</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (step 3.1)

IF entry into this procedure was directed by an EOP, **THEN GO TO** Step 3.17 in this procedure.

STANDARD:
N/A

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 3: (step 3.2)

IF at any time, in Modes 3 through 5, AND an unacceptable increase in neutron flux exists, THEN ensure Rx is tripped.

SAT _____

UNSAT _____

STANDARD:

N/A

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 4: (step 3.3)

IF in Mode 6, THEN stop core alterations and positive reactivity changes.

SAT _____

UNSAT _____

STANDARD:
N/A

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 5: (step 3.4)</p> <p>IF RB is occupied, <u>THEN</u> evacuate RB.</p> <p><u>STANDARD:</u> N/A</p> <p><u>EXAMINER CUE:</u> RB is unoccupied.</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 6: (step 3.5)

Notify personnel of entry into AP-490

PA announcement

STA

SSO (evaluate plant conditions for potential entry into the Emergency Plan)

Reactor Engineer

Chemistry (to sample RCS boron)

SAT _____

UNSAT _____

STANDARD:

Perform announcement on the PA, all others are understood as complete.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 7: (step 3.6)

IF RCS cooldown is in progress, THEN stop cooldown.

SAT _____

UNSAT _____

STANDARD:

N/A

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 8: (step 3.7)

Stop any deborations in progress.

SAT _____

UNSAT _____

STANDARD:

N/A

EXAMINER CUE:

No deborations are in progress

EXAMINER NOTE:

If student ask: MU demin 1A has been in service for the last 100 days

COMMENTS:

STEP 9: (step 3.8)

IF in Mode 5, **OR** 6, **THEN GO TO** Step 3.25 in this procedure.

STANDARD:

N/A

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 10: (step 3.9)

IF no BAST is available, **THEN GO TO** Step 3.15 in this procedure.

STANDARD:

BAST is available

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

<p>STEP 11: (step 3.10)</p> <p>Initiate RCS boration from BAST.</p> <ol style="list-style-type: none"> 1. Open CAV-60 2. IF CAV-60 is NOT available, THEN PERFORM Enclosure 1, Operation of the Batch Controller, in this procedure. <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. CAV-60 fails to open 2. Perform Enclosure 1 <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 11a: (step 1.1)</p> <p>Adjust batch controller for feed.</p> <ol style="list-style-type: none"> 1. Depress "STOP" 2. Depress "BATCH SET" 3. Enter 1200 gallons and depress "ENTER" 4. Depress upper "DISPLAY" to exit the Batch Set Mode 5. Depress "TOTAL" and verify "TOT GAL" is displayed. <p><u>STANDARD:</u> Operate batch controller as directed in procedure steps</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>

STEP 11b: (step 1.2)

Ensure MUV-108 demand is set to "0%" (closed).

1. Depress "VALVE SET"
2. Depress "VALVE CE"
3. Ensure the entered value for MUV-108 is "0%" (closed):
4. Depress "0"
5. Depress "ENTER"
6. Depress "RUN"

STANDARD:

Operate batch controller as directed in procedure steps

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

Critical Step
SAT _____

UNSAT _____

<p>STEP 11c: (step 1.3)</p> <p>Select "FEED SELECTOR SW." to BAST and pull handle up.</p> <p><u>STANDARD:</u> Rotate switch to BAST and pull "UP"</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>

<p>STEP 11d: (step 1.4)</p> <p>Open CAV-57</p> <p><u>STANDARD:</u> Rotate switch and observe the valve "OPENS"</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>

STEP 11e: (step 1.5)

WHEN "FEED PERMIT" is lit, THEN open MUV-541

STANDARD:

Rotate switch and observe the valve "OPENS"

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 11f: (step 1.6)</p> <p>Prepare batch controller for boration.</p> <ol style="list-style-type: none"> 1. Set MUV-108 to 100% in batch controller and depress "ENTER" 2. Depress lower "DISPLAY" 3. Depress "RATE" and verify "RATE GPM" is shown. <p><u>STANDARD:</u> Operate batch controller as directed in procedure steps</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>
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STEP 11g: (step 1.7)

EXIT this enclosure. Return to step 3.11.

SAT _____

UNSAT _____

STANDARD:

Return to Step 3.11

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 12: (step 3.11)</p> <p>Ensure all available CAPs are running. CAP-1A CAP-1B</p> <p><u>STANDARD:</u> Rotate pump start switches to start and observe both pumps start</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>

<p>STEP 13: (step 3.12)</p> <p>Ensure post-filter bypass valve is open. Open MUV-100</p> <p><u>STANDARD:</u> Rotate switch and observe the valve "OPENS"</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step SAT _____</p> <p>UNSAT _____</p>

STEP 14: (step 3.13)

Determine boration flow rate.

Determine flow rate using any of the following:

MUT level (30.8 gal/in)

Computer point X359 for MUT level (30.8 gal/in)

Computer point X201 for A BAST level

See OP-103F, Tank Volumes, Figure 7

Computer point X204 for B BAST level

See OP-103F, Tank Volumes, Figure 7

Batch controller

SAT _____

UNSAT _____

STANDARD:

Verify batch controller flow is >10 gpm

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 15: (step 3.14)</p> <p>IF boration flow rate is > 10 gpm, <u>THEN GO TO</u> Step 3.17 in this procedure.</p> <p><u>STANDARD:</u> Verify batch controller flow is >10 gpm</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>SAT _____</p> <p>UNSAT _____</p>
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<p>END OF TASK</p>	
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TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

The plant has experienced a dropped rod. After completion of SP-421, SDM is less than 1% delta K/K which places the plant in LCO 3.1.1

Initiating Cues:

Initiate boration to restore SDM within limits.

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. BWST level is 19 feet
2. Acknowledge subcooling margin alarm.
3. IC # 65
4. Alarm override MUT level High/Low (1065), and Hotwell level (0094) both done in IC

SIMULATOR OPERATOR INSTRUCTIONS:

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

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 19 feet.

Initiating Cues:

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

START TIME: _____

<p><u>STEP 1:</u> Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EOP-14 enclosure 19.</p> <p><u>EXAMINER NOTE:</u> When candidate demonstrates they can locate procedure then hand them Enclosure 19 of EOP-14.</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
---	---

STEP 2: (step 19.1 of EOP-14 enclosure 19)

PROCEDURE CAUTION: DHV-34 AND DHV-35 must be closed prior to BWST level < 7ft.

If 1 LPI pump is aligned for DHR, then go to step 19.17 in this enclosure.

STANDARD:

Candidate continues to step 19.2.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 3: (step 19.2)</p> <p>Ensure at least 1 train of LPI is properly aligned.</p> <p>1. BWST to DHP valves open:</p> <table border="0"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-34</td> <td>DHV-35</td> </tr> </table> <p>2. LPI pumps and required cooling water pumps operating:</p> <table border="0"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DCP-1A</td> <td>DCP-1B</td> </tr> <tr> <td>RWP-3A</td> <td>RWP-3B</td> </tr> <tr> <td>DHP-1A</td> <td>DHP-1B</td> </tr> <tr> <td colspan="2">[Rule 5, EDG Control]</td> </tr> </table> <p>3. DHP isolation valves open:</p> <table border="0"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-210</td> <td>DHV-211</td> </tr> </table> <p>4. LPI injection valves open:</p> <table border="0"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-5</td> <td>DHV-6</td> </tr> </table> <p><u>STANDARD:</u> 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.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	DHV-34	DHV-35	<u>A Train</u>	<u>B Train</u>	DCP-1A	DCP-1B	RWP-3A	RWP-3B	DHP-1A	DHP-1B	[Rule 5, EDG Control]		<u>A Train</u>	<u>B Train</u>	DHV-210	DHV-211	<u>A Train</u>	<u>B Train</u>	DHV-5	DHV-6	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>																						
DHV-34	DHV-35																						
<u>A Train</u>	<u>B Train</u>																						
DCP-1A	DCP-1B																						
RWP-3A	RWP-3B																						
DHP-1A	DHP-1B																						
[Rule 5, EDG Control]																							
<u>A Train</u>	<u>B Train</u>																						
DHV-210	DHV-211																						
<u>A Train</u>	<u>B Train</u>																						
DHV-5	DHV-6																						

<p><u>STEP 4:</u> (step 19.3)</p> <p>Adjust LPI control valve setpoint for RB sump operation. While observing for proper control, adjust LPI control valve setpoint to 2000 gpm:</p> <table border="0" style="margin-left: 40px;"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-110</td> <td>DHV-111</td> </tr> </table> <p><u>STANDARD:</u> Candidate adjusts thumb wheels of DHV-110 and DHV-111 to 2000 gpm and verifies flow follows.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	DHV-110	DHV-111	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>				
DHV-110	DHV-111				

<p>STEP 5: (step 19.4)</p> <p>When BWST level is < 15 ft, then adjust BS for RB sump operation. Select 1200 gpm and LOCAL for BSP discharge valves:</p> <table style="margin-left: 40px;"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>BSV-3</td> <td>BSV-4</td> </tr> </table> <p><u>STANDARD:</u> Candidate selects BSV-3 and BSV-4 control stations to REMOTE/LOCAL switch to LOCAL.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	BSV-3	BSV-4	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>				
BSV-3	BSV-4				

<p>STEP 6: (step 19.5)</p> <p>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</p> <p><u>STANDARD:</u> Candidate rotates control switches for DHV-11 and DHV-12 to open and verifies for each valve red light ON and green light OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <p> </p> <p> </p> <p> </p> <p> </p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 7: (step 19.6)

Critical Step

PROCEDURE CAUTION: Aligning ECCS to RB sump may cause high radiation in AB.

SAT _____

Align ECCS pump suction to RB sump.
Open RB sump to DHP valves:

<u>A Train</u>	<u>B Train</u>
DHV-42	DHV-43

UNSAT _____

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.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 8: (step 19.7)</p> <p>Isolate BWST from LPI. Close BWST to DHP valves:</p> <table border="0" style="margin-left: 40px;"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-34</td> <td>DHV-35</td> </tr> </table> <p><u>STANDARD:</u> Candidate rotates control switches for DHV-34 and DHV-35 to close and verifies for each valve green light ON and red light OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	DHV-34	DHV-35	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>				
DHV-34	DHV-35				
<p>END OF TASK</p>					

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 19 feet.

Initiating Cues:

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

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. BWST level is 19 feet
2. Acknowledge subcooling margin alarm.
3. IC # 65
4. Alarm override MUT level High/Low (1065), and Hotwell level (0094) both done in IC

SIMULATOR OPERATOR INSTRUCTIONS:

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

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 19 feet.

Initiating Cues:

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

START TIME: _____

<p><u>STEP 1:</u> Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EOP-14 enclosure 19.</p> <p><u>EXAMINER NOTE:</u> When candidate demonstrates they can locate procedure then hand them Enclosure 19 of EOP-14.</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>STEP 2: (step 19.1 of EOP-14 enclosure 19)</p> <p>PROCEDURE CAUTION: DHV-34 AND DHV-35 must be closed prior to BWST level < 7ft.</p> <p>If 1 LPI pump is aligned for DHR, then go to step 19.17 in this enclosure.</p> <p><u>STANDARD:</u> Candidate continues to step 19.2.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
---	---

STEP 3: (step 19.2)

Critical Step

Ensure at least 1 train of LPI is properly aligned.

SAT _____

1. BWST to DHP valves open:

UNSAT _____

<u>A Train</u>	<u>B Train</u>
DHV-34	DHV-35

2. LPI pumps and required cooling water pumps operating:

<u>A Train</u>	<u>B Train</u>
DCP-1A	DCP-1B
RWP-3A	RWP-3B
DHP-1A	DHP-1B
[Rule 5, EDG Control]	

3. DHP isolation valves open:

<u>A Train</u>	<u>B Train</u>
DHV-210	DHV-211

4. LPI injection valves open:

<u>A Train</u>	<u>B Train</u>
DHV-5	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.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

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:

<u>A Train</u>	<u>B Train</u>
DHV-110	DHV-111

Critical Step

SAT _____

UNSAT _____

STANDARD:

Candidate adjusts thumb wheels of DHV-110 and DHV-111 to 2000 gpm and
verifies flow follows.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 5: (step 19.4)</p> <p>When BWST level is < 15 ft, then adjust BS for RB sump operation. Select 1200 gpm and LOCAL for BSP discharge valves:</p> <table style="margin-left: 40px;"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>BSV-3</td> <td>BSV-4</td> </tr> </table> <p><u>STANDARD:</u> Candidate selects BSV-3 and BSV-4 control stations to REMOTE/LOCAL switch to LOCAL.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	BSV-3	BSV-4	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>				
BSV-3	BSV-4				

<p>STEP 6: (step 19.5)</p> <p>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</p> <p><u>STANDARD:</u> Candidate rotates control switches for DHV-11 and DHV-12 to open and verifies for each valve red light ON and green light OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

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:

<u>A Train</u>	<u>B Train</u>
DHV-42	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.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 8: (step 19.7)</p> <p>Isolate BWST from LPI. Close BWST to DHP valves:</p> <table border="0" style="margin-left: 40px;"> <tr> <td><u>A Train</u></td> <td><u>B Train</u></td> </tr> <tr> <td>DHV-34</td> <td>DHV-35</td> </tr> </table> <p><u>STANDARD:</u> Candidate rotates control switches for DHV-34 and DHV-35 to close and verifies for each valve green light ON and red light OFF.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<u>A Train</u>	<u>B Train</u>	DHV-34	DHV-35	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<u>A Train</u>	<u>B Train</u>				
DHV-34	DHV-35				
<p>END OF TASK</p>					

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 19 feet.

Initiating Cues:

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

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. Red Tag EFP-3 is red tagged OOS for maintenance
2. EFP-2 Tripped on overspeed when it started
3. EFP-1 in PTL

This JPM is without EFP-2/3 pumps and a LOOP that requires feeding with AFW.

SIMULATOR OPERATOR INSTRUCTIONS:

1. IC# 66

The IC does all of the evolutions with the exception of red tagging EFP-3.

Tools/Equipment/Procedures Needed:

1. EOP-14; Enclosure 7

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:

A Loss of Offsite Power has occurred, EFP-3 is red tagged for air start system repair. The CRS is progressing through the EOP's for the plant conditions.

Initiating Cues:

You are the Reactor Operator and the CRS tells you to perform EOP-14; Enclosure 7.

START TIME: _____

<p><u>STEP 1:</u> Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EOP-14; Enclosure 7 Rev. 8</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (Step 7.1)

Verify EFP-3 is running.

IF EFP-3 is **NOT** running, **THEN GO TO** Step 7.5 in this enclosure.

STANDARD:

The operator identifies the red tag on EFP-3 and the pump start switch is in PTL.
EFP-3 OOS alarm is actuated.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 3: (step 7.5)

Verify EFP-2 is running.

IF EFP-2 is NOT running, THEN GO TO Step 7.7 in this enclosure.

STANDARD:

The operator observes that EFP-2 is not available, no flow is indicated, and alarms for EFP-2 (Start Fail and Trip) are actuated.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 4: (step 7.7)

IF EDG A is supplying power to A ES 4160V Bus, **THEN GO TO** Step 7.13 in this enclosure.

SAT _____

UNSAT _____

STANDARD:

Verify the "A" EDG carrying the "A" ES 4160 V bus, observe the 3209 breaker is closed and load is displayed on the Kw meter.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 5: (step 7.13)

Verify AFW is available.

FWP-7

CDT-1 level > 9 ft

IF AFW is **NOT** available, **THEN GO TO** Step 7.19 in this enclosure.

STANDARD:

FWP-7 is available, no tags or initial conditions to the contrary. Verify CDT level using MCB (CD-67-LI2) indications.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 6: (step 7.14)

Verify 4160 Volt Reactor Aux Bus 3 is energized.

IF 4160 Volt Reactor Aux Bus 3 is NOT energized, THEN energize 4160 Volt Reactor Aux Bus 3

Open Bkr 3223

Select MTDG-1 to "RUN"

Verify "MTDG-1 "READY" light (red) is lit.

Close Bkr 3225

Verify 4160 Volt Reactor Aux Bus 3 voltage is stable.

SAT _____

UNSAT _____

STANDARD:

The candidate should locate the Rx Aux Bus and verify that the Rx Aux Bus 3 is de-energized, by observing no voltage on the bus.

EXAMINER CUE:

EXAMINER NOTE:

This now becomes an alternate path JPM; The alternate path steps are broken out on the next five sub steps (6a through 6e).

COMMENTS:

STEP 6a: (Step 7.14) Continued

Open Breaker 3223

SAT _____

UNSAT _____

EXAMINER NOTE:

STANDARD:

Locate Breaker 3223 control handle, rotate breaker 3223 control handle to the OPEN position, and observe breaker red light goes out and green light comes on

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 6b: (Step 7.14) Continued</p> <p>Select MTDG-1 to “RUN”.</p> <p><u>STANDARD:</u> Locate MTDG-1 control switch and rotate MTDG-1 control switch to “RUN”</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 6c: (Step 7.14) Continued

Verify "MTDG-1 "READY" light (red) is lit.

SAT _____

UNSAT _____

STANDARD:

Observe MTDG-1 "READY" light (red) comes on

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 6d: (Step 7.14) Continued</p> <p>Close Breaker 3225</p> <p><u>STANDARD:</u> Locate breaker 3225 control handle, rotate breaker 3225 control handle to the CLOSED position, and observe voltage on the bus.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p> <hr/> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 6e: (Step 7.14) Continued

Verify 4160 Volt Reactor Aux Bus 3 voltage is stable.

SAT _____

UNSAT _____

STANDARD:

Observe stable voltage

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 7: (Step 7.15)

IF EFP-2 is running, THEN ensure EFW control valves are closed.

SAT _____

UNSAT _____

STANDARD:

The operator observes that EFP-2 is not available, no flow is indicated, and alarms for EFP-2 show the pump is OOS.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 8: (Step 7.16)</p> <p>Establish AFW flow to each available OTSG. FWV-216 FWV-217 Start FWP-7</p> <p><u>STANDARD:</u> Verify that FWV-216 / 217 are closed, observe the valve controllers set to zero and the flow indication is zero.</p> <p>Locate FWP-7 control handle and rotate CW to start, verify current increase and the red running light ON.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

STEP 8a: (Step 7.16) Continued

Critical Step

Establish EFW flow to each available OTSG.

SAT _____

IF adequate SCM exists, AND OTSG level is $\leq 12\frac{1}{2}$ in, THEN feed each available dry OTSG with continuous AFW flow within the following limits:

UNSAT _____

Cooldown rate minimized

See Table 2

Flow rate < 300 gpm to each dry OTSG

STANDARD:

Monitor RCS parameters using SPDS indications and/or Alpha pages of SPDS. Review table 2, and when flow is established feed at a rate of < 300 gpm. IF OTSG IS NOT DRY THIS IS N/A!!!

EXAMINER CUE:

EXAMINER NOTE:

The OTSG may or may not be DRY depending on the simulator setup for this JPM. If this step is not appropriate then this step is NOT CRITICAL!

COMMENTS:

<p>STEP 8b: (Step 7.16) Continued</p> <p><u>IF</u> adequate SCM exists, <u>AND</u> OTSG level is > 12½ in, <u>THEN</u> ensure AFW flow is controlled. [Rule 3, EFW/AFW Control]</p> <p><u>STANDARD:</u> Control FWV-216, and FWV-217 to feed OTSG(s) in a controlled manner, IAW rule 3.</p> <p><u>IF</u> adequate SCM does <u>NOT</u> exist, <u>THEN</u> feed available OTSGs at inadequate SCM flow rate. [Rule 3, EFW/AFW Control]</p> <p><u>STANDARD:</u> N/A, SCM exists for this JPM.</p> <p><u>EXAMINER CUE:</u> When flow is established with FWP-7 this JPM is complete.</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>END OF TASK</p>	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

A Loss of Offsite Power has occurred, EFP-3 is red tagged for air start system repair. The CRS is progressing through the EOP's for the plant conditions.

Initiating Cues:

You are the Reactor Operator and the CRS tells you to perform EOP-14; Enclosure 7.

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. Description: A LOCA is in progress; Reactor Building pressure is < 30 psig; the BWST level is > 20 ft.
2. IC # 67
3. Acknowledge SCM alarm.
4. BSP-1A shaft shears, must start BSP-1B this is done in the IC
5. Check CRTs to ensure RB temperatures (if displayed) are high

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 CRS 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: _____

<p><u>STEP 1:</u> Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EM-225C.</p> <p><u>EXAMINER NOTE:</u> When candidate demonstrates they can locate procedure then hand them EM-225C.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (step 4.6)

If a building spray pump is required and EC concurrence has been obtained, then perform the following:

SAT _____

UNSAT _____

STANDARD:

Candidate performs the following steps.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

STEP 3: (step 4.6.1)

Ensure load is available on the emergency diesel generators per EOP-13, Rule 5.

SAT _____

UNSAT _____

STANDARD:

N/A, the emergency diesel generators are not running.

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 4: (step 4.6.2)</p> <p>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.</p> <p><u>STANDARD:</u> 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.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 5: (step 4.6.3)</p> <p>Notify the control room to start one building spray pump.</p> <p><u>STANDARD:</u> 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 Control Room Supervisor (CRS). 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).</p> <p><u>EXAMINER CUE:</u> (If required) the TSC requests you start Building Spray.</p> <p><u>EXAMINER NOTE:</u> Role-play as Control Room Supervisor (CRS) when candidate discovers problem with BSP-1A. Direct candidate to establish Building Spray with the "B" train. (Once BSP-1B is started the JPM is complete.)</p> <p><u>COMMENTS:</u></p> <p> </p> <p> </p> <p> </p> <p> </p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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<p>END OF TASK</p>	
---------------------------	--

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 CRS 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: Set radiation monitor warning and high alarm setpoints.
System: Rad Monitoring

Alternate Path: No

JPM #: B1G (2K2) [NEW]

K/A Rating/Importance: 073A4.03 3.7/3.7

Task Number/Position: 0720102001/RO

Task Standard: Reset alarm setpoints for liquid release

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator In-Plant Admin Perform Simulate

References:

1. OP-505 Rev 18

Validation Time: 7 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. OP-505
2. Ensure Setpoints are reset prior to performing JPM
3. Initial Settings:
WARNING 1.00 E3
HIGH 1.00 E5
They do not reset when the simulator resets!!!
- 4.
5. IC # 11, or any IC will work.

SIMULATOR OPERATOR INSTRUCTIONS:

Tools/Equipment/Procedures Needed:

1. OP-505
- 2.

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:

The plant is lining up to perform a liquid release

Initiating Cues:

You are requested to change the setpoints on RML-2 as follows:

Warning should be set at 3.75 E 5

High alarm should be set at 4.25 E 6

START TIME: _____

<p><u>STEP 1:</u> Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of OP-505.</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (step 4.4.2.1)

NOTE: The logic of the circuit does not allow HIGH alarm setpoint to be lower than the WARNING setpoint.

PULL OUT monitor to allow access to setpoint controls, if required

SAT _____

UNSAT _____

STANDARD:

N/A the setpoints for this monitor can be changed on the front panel

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 4: (step 4.4.2.2)</p> <p>ADJUST Warning setpoint, as required</p> <p>SELECT the function switch to "1" DEPRESS "Enter" to display Warning setpoint DEPRESS "Digit" to select desired digit (flashing) DEPRESS "Value" to change selected digit as required DEPRESS "Enter" DEPRESS "Warning" and VERIFY proper setpoint</p> <p><u>STANDARD:</u> Locate the indications and depress the pushbuttons as directed. When the "DIGIT" is selected it selects the specific number to change. Select "VALUE" and depress it as necessary to change the specific number to setpoint of 3.75 E 5.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 5: (step 4.4.2.3)</p> <p>ADJUST High setpoint, as required</p> <p>SELECT the function switch to "0" DEPRESS "Enter" to display High setpoint DEPRESS "Digit" to select desired digit (flashing) DEPRESS "Value" to change selected digit as required DEPRESS "Enter" DEPRESS "High" and VERIFY proper setpoint</p> <p><u>STANDARD:</u> Locate the indications and depress the pushbuttons as directed. When the "DIGIT" is selected it selects the specific number to change. Select "VALUE" and depress it as necessary to change the specific number to setpoint of 4.25 E6.</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

The plant is lining up to perform a liquid release

Initiating Cues:

You are requested to change the setpoints on RML-2 as follows:

Warning should be set at $3.75 \text{ E } 5$

High alarm should be set at $4.25 \text{ E } 6$

Tools/Equipment/Procedures Needed:

1. OP-703 Section 4.7

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:

VBIT-1A is de-energized, maintenance has been completed, the vital bus is aligned to the alternate power source.

Initiating Cues:

You are the Primary Plant Operator:

While operating at 100% full power, the Control Room Supervisor (CRS) directs you to STARTUP Inverter "1A" (VBIT-1A) and TRANSFER Vital bus "A" in accordance with OP-703, section 4.7.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u></p> <p>Candidate obtains a copy of OP-703 Rev. 68</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (step 4.7.1)

DETERMINE Plant effects of inadvertent de-energization of Vital Bus prior to Transfer AND REVIEW Enclosure 1, Static Switch Schematic to familiarize yourself with the static switch

- Vital Bus "A";
- VBXS-1A
- VBXS-3A
- VBDP-3
- VBDP-8

STANDARD:
N/A

EXAMINER CUE:
This would be done in a pre-job brief and is complete. The enclosure is the last page of the procedure and you have that page for their review if they so desire.

EXAMINER NOTE:
Only one Vital Bus should be transferred at a time. All reset functions should be completed prior to transfer of subsequent Vital Bus power supplies.

SP-321, Power Distribution Breaker Alignment and Power Availability Verification, should be performed within 24 hours (if possible) to verify the Vital Bus lineup after energizing a vital bus from its redundant transformer power supply.

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

<p><u>STEP 3:</u> (step 4.7.2)</p> <p><u>IF</u> transferring Vital Bus "A", "C" or "D",</p> <p><u>THEN NOTIFY</u> Security prior to transfer</p> <p style="padding-left: 40px;">Security notified</p> <p><u>STANDARD:</u> Call the control room to notify security</p> <p><u>EXAMINER CUE:</u> Control room will notify security</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 4: (step 4.7.3)

IF A, Inverter startup is required,

THEN ENERGIZE Inverter VBIT-1A per the following details

ENSURE "CT SHORTING SWITCH" toggle is in the "ON" position.

DEPRESS AND HOLD "precharge pushbutton until the "Precharged" Light is lit and the "BATTERY INPUT" circuit breaker is closed on VBIT-1A.

CLOSE "BATTERY INPUT" circuit breaker AND RELEASE the "Precharge" pushbutton on VBIT-1A.

CLOSE "AC INPUT" circuit breaker on VBIT-1A.

VERIFY the "IN SYNC" light is lit on VBIT-1A.

CLOSE "INVERTER OUTPUT" circuit breaker on VBIT-1A.

STANDARD:
Locate components and simulate indications as stated

EXAMINER CUE:
CT Short toggle switch is in the ON position
When the precharge pushbutton is depressed the white light will be LIT, must hold the precharge pushbutton until the Battery Input breaker is closed.
Battery Input breaker is closed.
AC Input breaker is closed.
"IN SYNC" light is LIT
Inverter Output Breaker is Closed.

EXAMINER NOTE:
Inverter Startup and Shutdown procedures are posted on plaques on the inverters.
Any changes to the following instructions requires there to be identical changes to the installed plaques.
VBTR-4A/4B/4C/4D inlet and outlet breakers are to remain closed at all times unless required open for maintenance.

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 5: (step 4.7.4)

AFTER Inverter startup, **THEN NOTIFY** Electric Shop to verify CVT core temperature

Have Electric Shop verify the CVT core temp is $\geq 90^{\circ}\text{C}$ by measuring ≥ 134.7 ohms at CVT core temperature test points "CVT Temp. (T801)" TC-4 J2-7 to J2-8

STANDARD:

Notify control room to contact electric shop

EXAMINER CUE:

Electricians have checked temperatures and they are $> 90^{\circ}\text{C}$.

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 6: (step 4.7.5)

VERIFY Normal Inverter AC Output Voltage
Approximately 120V

STANDARD:

Observe Inverter voltage at 120V

EXAMINER CUE:

Inverter Voltage is approximately 120V

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 7: (step 4.7.6)

EXAMINER CUE:

WHEN transferring Vital Bus from Alternate Source to the INVERTER,

THEN VERIFY following indications on respective VBXS-1A

"Inverter Supplying Load" lamp is OFF
 "Alternate Source Supplying Load" lamp is OFF
 "In Sync" lamp is OFF
 "Inverter Available FU-204" lamp is ON
 "Auto Retransfer" switch is OFF
 "Alternate Source AC Input" circuit breaker is OFF
 "Manual Bypass" switch is in ALTERNATE SOURCE TO LOAD position

STANDARD:
 Locate components and simulate indications as stated

EXAMINER CUE:

"Inverter Supplying Load" lamp is OFF (amber light off)
 "Alternate Source Supplying Load" lamp is OFF (red light off)
 "In Sync" lamp is OFF (green light off)
 "Inverter Available FU-204" lamp is ON (green light on)
 "Auto Retransfer" switch is OFF (toggle switch off)
 "Alternate Source AC Input" circuit breaker is OFF (circuit breaker off)
 "Manual Bypass" switch is in ALTERNATE SOURCE TO LOAD position (rotary switch selected to alternate source to load)

EXAMINER NOTE:
 VBTR-4A/4B/4C/4D inlet and outlet breakers are to remain closed at all times unless required open for maintenance.

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 8: (step 4.7.7)

SELECT "Alternate Source AC Input" Circuit Breaker on VBXS-1A to the ON position

STANDARD:
Locate component and simulate indication to ON

EXAMINER CUE:
"Alternate Source AC Input" Circuit Breaker on VBXS-1A to the ON position

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 9: (step 4.7.8)

VERIFY "Alternate Source Supplying Load" lamp and "In Sync" lamp on VBXS-1A are ON

 "Alternate Source Supplying Load" lamp ON
 "In Sync" lamp ON

STANDARD:
Locate component and simulate indication to ON

EXAMINER CUE:
 "Alternate Source Supplying Load" lamp ON (red light on)
 "In Sync" lamp ON (green light on)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 10: (step 4.7.9)

SELECT "Manual Bypass" switch on VBXS-1A to NORMAL OPERATION position

STANDARD:

Locate component and simulate indication to Normal Operation

EXAMINER CUE:

SELECT "Manual Bypass" switch on VBXS-1A to NORMAL OPERATION position (rotary switch selected to normal operation)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 11: (step 4.7.10)

DEPRESS "Inverter to Load" pushbutton for VBXS-1A

STANDARD:

Locate component and simulate depressing pushbutton

EXAMINER CUE:

DEPRESS "Inverter to Load" pushbutton for VBXS-1A (depress pushbutton)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 12: (step 4.7.11)

VERIFY "Inverter Supplying Load" lamp comes ON and "Alternate Source Supplying Load" lamp goes OFF

"Inverter Supplying Load" lamp ON
"Alternate Source Supplying Load" lamp OFF

STANDARD:

Locate components and simulate indications "ON" and "OFF"

EXAMINER CUE:

"Inverter Supplying Load" lamp ON (amber light on)
"Alternate Source Supplying Load" lamp OFF (red light off)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p><u>STEP 13:</u> (step 4.7.12)</p> <p>SELECT "Auto Retransfer" switch on VBXS-1A to ON</p> <p><u>STANDARD:</u> Locate components and simulate indication "ON"</p> <p><u>EXAMINER CUE:</u> SELECT "Auto Retransfer" switch on VBXS-1A to ON (toggle switch to on)</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 14: (step 4.7.13)</p> <p>VERIFY Inverter VBIT-1A status meters are Stable</p> <p><u>STANDARD:</u> Observe Inverter meters are stable</p> <p><u>EXAMINER CUE:</u> VERIFY Inverter VBIT-1A status meters are Stable (meter indications are stable)</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 15: (step 4.7.14)</p> <p>VERIFY following indications on respective VBXS-3A</p> <p style="padding-left: 40px;"> "Inverter Supplying Load" lamp is OFF "Alternate Source Supplying Load" lamp is OFF "In Sync" lamp is OFF "Inverter Available FU-204" lamp is ON "Auto Retransfer" switch is OFF "Alternate Source AC Input" Circuit Breaker is OFF "Manual Bypass" switch is in ALTERNATE SOURCE TO LOAD position </p> <p>STANDARD: Locate components and simulate indications "ON" and "OFF"</p> <p>EXAMINER CUE: "Inverter Supplying Load" lamp is OFF (amber light off) "Alternate Source Supplying Load" lamp is OFF (red light off) "In Sync" lamp is OFF (green light off) "Inverter Available FU-204" lamp is ON (green light on) "Auto Retransfer" switch is OFF (toggle switch off) "Alternate Source AC Input" circuit breaker is OFF (circuit breaker off) "Manual Bypass" switch is in ALTERNATE SOURCE TO LOAD position (rotary switch selected to alternate source to load) </p> <p>EXAMINER NOTE: VBTR-4A/4B/4C/4D inlet and outlet breakers are to remain closed at all times unless required open for maintenance.</p> <p>COMMENTS:</p> <hr/> <hr/> <hr/>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 16: (step 4.7.15)

SELECT "Alternate Source AC Input" Circuit Breaker on VBXS-3A to the ON position

STANDARD:

Locate component and simulate indication to ON

EXAMINER CUE:

"Alternate Source AC Input" Circuit Breaker on VBXS-3A to the ON position

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 17: (step 4.7.16)

VERIFY "Alternate Source Supplying Load" lamp and "In Sync" lamp on VBXS-3A are ON

 "Alternate Source Supplying Load" lamp ON
 "In Sync" lamp ON

STANDARD:
Locate components and simulate indications to "ON"

EXAMINER CUE:
 "Alternate Source Supplying Load" lamp ON (red light on)
 "In Sync" lamp ON (green light on)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

STEP 18: (step 4.7.17)

SELECT "Manual Bypass" switch on VBXS-3A to NORMAL OPERATION position

STANDARD:

Locate component and simulate indication to Normal Operation

EXAMINER CUE:

SELECT "Manual Bypass" switch on VBXS-3A to NORMAL OPERATION position (rotary switch selected to normal operation)

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 19: (step 4.7.18)</p> <p>DEPRESS "Inverter to Load" pushbutton for VBXS-3A</p> <p>Clears Control Room Inverter Bypass Alarm</p> <p><u>STANDARD:</u> Locate component and simulate depressing pushbutton</p> <p><u>EXAMINER CUE:</u> Control room acknowledges alarm clear</p> <p><u>EXAMINER NOTE:</u> Notification is not critical</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 20: (step 4.7.19)</p> <p>VERIFY "Inverter Supplying Load" lamp comes ON and "Alternate Source Supplying Load" lamp goes OFF</p> <p>"Inverter Supplying Load" lamp ON "Alternate Source Supplying Load" lamp OFF</p> <p>STANDARD: Locate components and simulate indications "ON" and "OFF"</p> <p>EXAMINER CUE: "Inverter Supplying Load" lamp ON (amber light on) "Alternate Source Supplying Load" lamp OFF (red light off)</p> <p>EXAMINER NOTE:</p> <p>COMMENTS:</p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 21:</u> (step 4.7.20)</p> <p>SELECT "Auto Retransfer" switch on VBXS-3A to ON position</p> <p><u>STANDARD:</u> Locate components and simulate indication "ON"</p> <p><u>EXAMINER CUE:</u> SELECT "Auto Retransfer" switch on VBXS-3A to ON (toggle switch to on)</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

STEP 22: (step 4.7.21)

VERIFY Inverter VBIT-1A status meters are Stable

SAT _____

UNSAT _____

STANDARD:

Observe Inverter meters are stable

EXAMINER CUE:

VERIFY Inverter VBIT-1A status meters are Stable (meter indications are stable)

EXAMINER NOTE:

COMMENTS:

END OF TASK

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

VBIT-1A is de-energized, maintenance has been completed, the vital bus is aligned to the alternate power source.

Initiating Cues:

You are the Primary Plant Operator.

While operating at 100% full power, the Control Room Supervisor (CRS) directs you to STARTUP Inverter "1A" (VBIT-1A) and TRANSFER Vital bus "A" in accordance with OP-703, section 4.7.

Tools/Equipment/Procedures Needed:

1. EOP-14, Enclosure 9, Rev 8
2. A "P" key is required to gain entry to the Fire Pump House. CDV-103 lock should be on the SPO key ring

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:

In EOP-6 OTSGs steaming to the condenser, with at least 1 RCP operating. Additional secondary water inventory storage is desired.

Initiating Cues:

You are the Turbine Building Operator:

Perform EOP-14 enclosure 9, OTSG contaminated waste water management.

START TIME: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy of appropriate procedure.</p> <p><u>STANDARD:</u> Candidate obtains a copy of EOP-14, Enclosure 9, Rev 8</p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

STEP 2: (step 9.1)

Align FSP recirc Hdr to FST-1B

Ensure FSV-28 "FST-1B INLET ISO" is open (119 ft Berm between FSTs).

Close FSV-27 "FST-1A INLET ISO" (119 ft Berm between FSTs).

Open FSV-24 "FSP RECIRC LINE TO FST ISO" (119 ft FSPH northwest wall)

Critical Step

SAT _____

UNSAT _____

STANDARD:

Locate the identified valves and simulate operation to the appropriate position.

EXAMINER CUE:

FSV -- 28 is OPEN
 FSV – 27 is CLOSED
 FSV – 24 is OPEN

EXAMINER NOTE:

COMMENTS:

STEP 3: (step 9.2)

Verify FSP-2B is available.

IF FSP-2B is **NOT** available, **THEN GO TO** Step 9.9 in this enclosure.

STANDARD:

Go to Step 9.9

EXAMINER CUE:

FSP-2B is NOT available

EXAMINER NOTE:

Steps 9.3 through 9.8 are N/A; the next step is 9.9

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p><u>STEP 4:</u> (step 9.9)</p> <p>Open FSV-41 "FSP SUCTION HDR CROSS-TIE" (119 ft FSPH north wall).</p> <p><u>STANDARD:</u> Locate the identified valves and simulate operation to the appropriate position.</p> <p><u>EXAMINER CUE:</u> FSV – 41 is OPEN</p> <p><u>EXAMINER NOTE: STATUS</u> FSP-2B not available.</p> <p>FSP-1 available for alignment to FST-1B to support FS.</p> <p>FSP-2A available to transfer FST-1A to FST-1B.</p> <p><u>COMMENTS:</u></p> 	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

STEP 5: (step 9.10)

Close FSV-13 "FSP SUCTION HDR CROSS-TIE" (119 ft FSPH north wall).

STANDARD:
 Locate the identified valves and simulate operation to the appropriate position.

EXAMINER CUE:
 FSV – 13 is CLOSED

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

<p>STEP 6: (step 9.11)</p> <p>Establish recirc flow to FST-1B</p> <p style="padding-left: 40px;">Notify Control Room to start FSP-2A</p> <p style="padding-left: 40px;">Verify FSP-2A is running (119 ft FSPH).</p> <p style="padding-left: 40px;">*Throttle open FSV-23 "FSP-2A RECIRC ISO" (119 ft FSPH southeast wall) to establish 2100 gpm) as indicated on FS-12-FIS"FSP-1/1A/1B RECIRC FLOW".</p> <p>STANDARD: Call control room to start FSP-2A Observe FSP-2A is running *Locate valve and throttle to 2100 gpm</p> <p>EXAMINER CUE: Control room reports that FSP-2A is running Indicate that FSP-2A is running As operator throttles FSV-23 indicate flow increase to 2100 gpm on FS-12-FIS</p> <p>EXAMINER NOTE: FSP-1 or FSP-2B aligned to FST-1B to support FS</p> <p>FSP-2A available to transfer FST-1A to FST-1B</p> <p>COMMENTS:</p> 	<p>Critical Step*</p> <p>SAT _____</p> <p>UNSAT _____</p>
--	--

STEP 7: (step 9.12)

Notify Control Room that FST-1A transfer is in progress and request to be notified when FST-1A level is 6 ft.

SAT _____

UNSAT _____

STANDARD:

Call control room and ask for notification

EXAMINER CUE:

Notify operator that level is 6 ft.

EXAMINER NOTE:

COMMENTS:

STEP 8: (step 9.13)

WHEN notified by Control Room that FST-1A level is 6 ft,

THEN stop recirc flow.

Close FSV-23 "FSP-2A RECIRC ISO" (119 ft FSPH southeast wall).

Select FSP-2A "START MODE SELECTOR SWITCH" to "OFF" (119 ft FSPH).

WHEN FSP-2A stops, **THEN** select FSP-2A "START MODE SELECTOR SWITCH" to "AUTO" (119 ft FSPH).

Close FSV-24 "FSP RECIRC LINE TO FST ISO" (119 ft FSPH northwest wall).

STANDARD:
Locate the identified valves and switches and simulate operation to the appropriate position.

EXAMINER CUE:
FSV-23 is CLOSED
Start Mode is OFF
FSP-2A is stopped Start mode to AUTO
FSV-24 is CLOSED

EXAMINER NOTE:

COMMENTS:

Critical Step

SAT _____

UNSAT _____

<p>STEP 9: (step 9.14)</p> <p>Align FSP suction to FST-1B</p> <p>Ensure the following pumps are stopped (119 ft FSPH): FSP-1 FSP-2A</p> <p>*Close FSV-3 "FST-1A OUTLET ISO" (119 ft Berm behind FST-1A).</p> <p>*Open FSV-41 "FSP SUCTION HDR CROSS-TIE" (119 ft FSPH north wall).</p> <p>*Ensure FSV-13 "FSP SUCTION HDR CROSS-TIE" is open (119 ft FSPH north wall).</p> <p>STANDARD: Locate the identified valves and simulate operation to the appropriate position.</p> <p>EXAMINER CUE: FSP-1 / 2A are stopped *FSV-3 is CLOSED *FSV-41 is OPEN *FSV-13 is OPEN</p> <p>EXAMINER NOTE: STATUS FST-1A level ≈ 6 ft</p> <p>FST transfer complete</p> <p>COMMENTS:</p>	<p>Critical Step*</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p><u>STEP 10:</u> (step 9.15)</p> <p>Notify Control Room of FST-1A status.</p> <p style="padding-left: 40px;">FST-1A is pumped down and isolated.</p> <p style="padding-left: 40px;">FST-1A and CDT-1 are to be cross-tied</p> <p><u>STANDARD:</u> Notify control room of FST-1A status</p> <p><u>EXAMINER CUE:</u> Respond as control room that FST-1A is pumped down and that it will be cross-tied to CDT-1</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 11: (step 9.16)</p> <p>Cross-tie FST-1A to CDT-1</p> <p style="padding-left: 40px;">Close CDV-288 "FST TO CDT-1 CROSS-TIE DRAIN" (119 ft Berm by FST-1A).</p> <p style="padding-left: 40px;">Open CDV-289 "FST TO CDT-1 CROSS-TIE ISO" (119 ft Berm by FST-1A).</p> <p style="padding-left: 40px;">Open FSV-918 "FST TO CDT-1 CROSS-TIE ISO" (119 ft Berm by FST-1A)</p> <p style="padding-left: 40px;">Open CDV-103 "CDT-1 TO EFP SUCTION" (119 ft Berm by CDT-1).</p> <p><u>STANDARD:</u> Locate the identified valves and simulate operation to the appropriate position.</p> <p><u>EXAMINER CUE:</u> CDV-288 is CLOSED CDV-289 is OPEN FSV-918 is OPEN CDV-103 is OPEN</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 12: (step 9.17)

Notify TSC to monitor FST-1A and CDT-1 level.

SAT _____

UNSAT _____

STANDARD:

N/A the control room would perform this step

EXAMINER CUE:

EXAMINER NOTE:

COMMENTS:

<p>STEP 13: (step 9.18)</p> <p>Exit this Enclosure</p> <p><u>STANDARD:</u></p> <p><u>EXAMINER CUE:</u></p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

TIME STOP _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

In EOP-6 OTSGs steaming to the condenser, with at least 1 RCP operating. Additional secondary water inventory storage is desired.

Initiating Cues:

You are the Turbine Building Operator:

Perform EOP-14 enclosure 9, OTSG contaminated waste water management.

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: _____

<p><u>STEP 1:</u></p> <p>Obtain a copy appropriate procedure.</p> <p><u>STANDARD:</u></p> <p>Candidate obtains a copy of OP-412B.</p> <p><u>EXAMINER NOTE:</u></p> <p>When the candidate has completed reading the cue provide them with the GRWRP and a partially completed OP-412B.</p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 2: (step 4.1.32)</p> <p>PERFORM Valve Alignment for WGDT "C" Discharge</p> <p>CLOSE the following:</p> <p style="padding-left: 40px;">WDV-392, WGDT WDT 1C Inlet Isol WDV-435, WGDT WDT 1C Drain Isol WDV-395, WGDT WDT 1C Outlet Isol to Recycle</p> <p>OPEN the following:</p> <p style="padding-left: 40px;">WDV-439, Waste Gas Discharge CV WDV-438, WGDT WDT 1C Outlet Release WDV-477, Outlet Isolation to RM-11A</p> <p>STANDARD:</p> <p>Candidate verifies green light ON and red light OFF for WDV-392. Candidate rotates hand wheel for WDV-435 clockwise until hard stop. 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.</p> <p>EXAMINER CUE:</p> <p>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.</p> <p>EXAMINER NOTE:</p> <p>IF the valve alley is inaccessible then report that WDV-435 was closed earlier by an operator in the valve alley.</p> <p>COMMENTS:</p> 	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
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STEP 3: (step 4.1.33)

COMPLETE Valve Alignment for WGDT Release

CLOSE WDV-566, Nitrogen Gas Sampler Purge Isolation

CLOSE WDV-549, Nitrogen Gas Sampler Purge Isolation

OPEN WDV-565, Inlet to RM-A11 Isolation

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.

EXAMINER NOTE:

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.

Perform independent verification of discharge lineup.

Annotate completion of two independent verifications of the discharge lineup on the GRWRP.

STANDARD:

N/A

EXAMINER CUE:

RM-A11 is operable.

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

STEP 5: (step 4.1.35)

Notify Security of Waste Gas Release.

Verify roof patrols have been secured.

STANDARD:
N/A

EXAMINER CUE:
This has been completed by the Control Room.

EXAMINER NOTE:

COMMENTS:

SAT _____

UNSAT _____

<p>STEP 6: (step 4.1.36)</p> <p>Ensure Channel Check on WD-19-FQI is completed. WD-19-FQI Channel Check Complete Step 4.1.15 has been completed SAT OR PT-168B, Section 4.1 has been completed SAT</p> <p>Annotate completion of WD-19-FR Channel Check on the GRWRP OR WD-19-FQI is inoperable and to step 4.1.39</p> <p><u>STANDARD:</u> 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.</p> <p><u>EXAMINER CUE:</u> Candidate checks step 4.1.15 has been completed SAT signs off step 4.1.36 and continues on in the procedure</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 7: (step 4.1.37)</p> <p>PROCEDURE CAUTION: Do not pressurize GM tube in RM-A11 above 8 psig.</p> <p>Start WGDT release to ventilation filter units.</p> <p style="padding-left: 40px;">Unlock and throttle WDV-478 adjusting flow to the most conservative of the following: Flow less than 10 scfm on WD-19-FQI.</p> <p style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">Flow less than limits established on GRWRP.</p> <p><u>STANDARD:</u> Candidate unlocks WDV-478 and rotates hand wheel counter-clockwise to a throttled position.</p> <p><u>EXAMINER CUE:</u> WDV-478 is in a throttled position</p> <p><u>EXAMINER NOTE:</u></p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>

<p>STEP 8: (step 4.1.38)</p> <p>Determine if WD-19-FQI is operating properly.</p> <p>If flow rate appears accurate, then go to step 4.1.40</p> <p>OR</p> <p>If no flow rate is indicated or appears inaccurate, then close WDV-478 and notify the NSS/NSM</p> <p><u>EXAMINER CUE:</u> WD-19-FQI reads 999.99</p> <p><u>STANDARD:</u> Candidate rotates WDV-478 hand wheel clockwise until hard stop reached. Candidate notifies NSS/NSM of inaccuracy of WD-19-FQI</p> <p><u>EXAMINER CUE:</u> WDV-478 is closed. The JPM is complete.</p> <p><u>COMMENTS:</u></p>	<p>Critical Step</p> <p>SAT _____</p> <p>UNSAT _____</p>
<p>END OF TASK</p>	

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