

Facility: <u>Wolf Creek</u>		Date of Examination: <u>January 2012</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A1 Conduct of Operations	D, R	Review completed boration requirement calculation for a downpower evolution. 2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management (CFR 41.1 / 43.6 / 45.6) (SRO: 4.6)
A2 Conduct of Operations	D, R	Using a supplied data (STS SF-002, Core Axial Flux Difference), complete and evaluate the acceptance criteria. 2.1.20 Ability to interpret and execute procedure step. (CFR 41.10 / 43.5 / 45.12) (SRO: 4.6) 2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc. (CFR 41.10 / 43.6 / 45.6) (SRO: 4.3)
A3 Equipment Control	N, R	Evaluate plant conditions and determine if a mode change can occur. 2.2.35 Ability to determine Technical Specification Mode of Operation (CFR: 41.7 / 41.10 / 43.2 / 45.13) (SRO: 4.5) 2.2.40 Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3) (SRO: 4.7)
A4 Radiation Control	N, R	Evaluate an Emergency Exposure Authorization. 2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (CFR 41.12 / 43.4 / 45.10) (SRO: 3.7)
A5 Emergency Procedures/Plan	N, S	Complete an Emergency Notification. 2.4.41 Knowledge of the emergency action level thresholds and classification. (CFR 41.10 / 43.5 / 45.11) (SRO: 4.6)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom
 (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
 (N)ew or (M)odified from bank (≥ 1)
 (P)revious 2 exams (≤ 1 ; randomly selected)

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Review completed boration requirement calculation for a downpower evolution.	JPM No.:	<u>A1</u>
K/A Reference:	2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management	This JPM contains Proprietary Information.	

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	x	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>The following plant conditions exist:</p> <ul style="list-style-type: none"> • The unit burnup is at 10,000 MWD/MTU • Current boron = 600 ppm B • BAT boron concentration is 7600 ppm B • RCS temperature = 585 °F • BOR/DIL is Out of Service • Fresh boron has recently been added, boron depletion correction factor = 1
Task Standard:	<p>Applicant has calculated that 63 to 92 gallons of boric acid are required for a reactivity change using half boron and half control rods for a 5% down power from 95% to 90% power.</p> <p>Reactor Operator supplied calculation is incorrect (116 gallons boric acid).</p> <p>Boric acid calculation is not approved.</p>
Required Materials:	WCRX-24, rev 12, Control Room Operating Curves and Tables Reference Manual (except pages labeled: "Reactivity Plan for Routine Operations" and "Reactivity Plan for Rapid Downpower")

General References:	WCRX-24, Control Room Operating Curves and Tables Reference Manual
Handouts:	WCRX-24, Control Room Operating Curves and Tables Reference Manual, scratch paper, calculator
Initiating Cue:	<p>The Reactor Operator has calculated a 116-gallon boration amount for a reactivity change using half boron and half control rods for a 5% down power from 95% to 90% power.</p> <p>Using the Boration/Dilution Equation from Control Room Operating Curves and Tables Reference Manual, you are required to review the RO's boration – gallon calculation.</p> <p>Provide an independent calculation and based on the result, Approve or Disapprove the boration.</p> <p>Approve or Disapprove</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	17 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

*	Performance Step: 1	Using Figure 6.2-4, Differential Boron Worth vs. Burnup, from WCRX-24, Control Room Operating Curves and Tables Reference Manual, Cycle 19: determine pcm/ppm for 10,000 MWD/MTU.
	Standard:	From Figure 6.2-4: Applicant determined \cong [REDACTED] pcm/PPM for 10,000 MWD/MTU. Acceptable range = [REDACTED] pcm/PPM
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Proprietary information Figure 6.2-4 – see page #5.3 of Curves and Tables

*	Performance Step: 2	Using either Figure 7.7-2, Total Power Defect as a Function of Power Level at MOL OR Table 7.7-2, ARO Total Power Defect (pcm) As A Function of Power and Boron Concentration At MOL from WCRX-24, Control Room Operating Curves and Tables Reference Manual, Cycle 19: determine pcm for 95% power level
	Standard:	From Figure 7.7-2 (using the 600 ppm line): Applicant determined: 95% \cong [REDACTED] pcm OR Table 7.7-2 (600 ppm and interpolating between 90 and 100%): 95% \cong [REDACTED] pcm Acceptable range = [REDACTED] pcm
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Proprietary information Figure 7.7-2 – see page #3.3 of Curves and Tables Table 7.7-2 – see page #3.4 of Curves and Tables

*	Performance Step: 3	Using either Table 7.7-2, ARO Total Power Defect (pcm) As A Function of Power and Boron Concentration At MOL OR Figure 7.7-2, Total Power Defect as a Function of Power Level at MOL: determine pcm for 90%
	Standard:	<p>From Figure 7.7-2 (using the 600 ppm line): Applicant determined:</p> <p>90% \cong [REDACTED] pcm</p> <p style="text-align: center;">OR</p> <p>From Table 7.7-2 (using 600 ppm and 90%): Applicant determined:</p> <p>90% = [REDACTED] pcm</p> <p>Acceptable range = [REDACTED] pcm</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	<p>Proprietary information</p> <p>Figure 7.7-2 – see page #3.3 of Curves and Tables</p> <p>Table 7.7-2 – see page #3.4 of Curves and Tables</p>

*	Performance Step: 4	Calculate required pcm change (from 95% to 90%).
	Standard:	<p>From Figure 7.7-2, Applicant calculated pcm change from 95% to 90%:</p> <p> <div data-bbox="581 422 813 464" style="background-color: black; width: 143px; height: 20px; display: inline-block;"></div> pcm change <div data-bbox="581 474 813 516" style="background-color: black; width: 143px; height: 20px; display: inline-block;"></div> pcm change </p> <p style="text-align: center;">OR</p> <p>From Table 7.7-2, Applicant calculated pcm change from 95% to 90%:</p> <p> <div data-bbox="581 705 813 747" style="background-color: black; width: 143px; height: 20px; display: inline-block;"></div> pcm change <div data-bbox="581 758 813 800" style="background-color: black; width: 143px; height: 20px; display: inline-block;"></div> pcm change <div data-bbox="581 810 813 852" style="background-color: black; width: 143px; height: 20px; display: inline-block;"></div> pcm change </p> <p>Acceptable range = <div data-bbox="841 905 954 947" style="background-color: black; width: 70px; height: 20px; display: inline-block;"></div> pcm change</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Proprietary information Figure 7.7-2 – see page #3.3 of Curves and Tables

*	Performance Step: 5	Cue states half from boron and half from control rods – determine half pcm requirement
	Standard:	<p>Applicant determined half pcm requirement:</p> <p>██████████ ██████████</p> <p>██████████ ██████████</p> <p>██████████ ██████████</p> <p>██████████ ██████████</p> <p>██████████ ██████████</p> <p>Acceptable range = ██████████ pcm</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6	Calculate pcm/ppm boron change to determine half boron in ppm.
	Standard:	<p>Applicant calculated pcm/ppm boron change using -6.58 to -6.6 pcm/PPM for 10,000 MWD/MTU.</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Acceptable range = [REDACTED] ppm</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 7	Using Boration/Dilution Equation, calculate boration gallon requirement.
	Standard:	$G = \frac{M}{8.33} \ln \left(\frac{C_i - C_{inj}}{C - C_{inj}} \right)$ <p> <i>C</i> = final RCS boron concentration (ppm) Or 600 + = ppm <i>C</i> = final RCS boron concentration (ppm) Or 600 + = ppm <i>C_i</i> = initial RCS boron concentration (ppm) Or 600 ppm <i>C_{inj}</i> = injection boron concentration (ppm) Or 7600 ppm <i>G</i> = fluid addition (gallons) <i>M</i> = total system mass (lbm) Or 543,285 at 585°F </p> <p>Calculated using ppm:</p> $G = \left(\frac{543,285}{8.33} \right) \ln \left(\frac{600 - 7600}{\text{ - 7600}} \right)$ $G = (65220.3) \ln \left(\frac{-7000}{\text{ }} \right)$ $G = (65220.3 \ln \text{ })$ $G = (65220.3 (\text{ })$ $G = \text{ gallons}$ <p>Calculated using ppm:</p> $G = \left(\frac{543,285}{8.33} \right) \ln \left(\frac{600 - 7600}{\text{ - 7600}} \right)$ $G = (65220.3) \ln \left(\frac{-7000}{\text{ }} \right)$ $G = (65220.3 \ln \text{ })$ $G = (65220.3 (\text{ })$ $G = \text{ gallons}$ <p>Acceptable Range = gallons</p>

	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	WCRX-24, Control Room Operating Curves and Tables Reference Manual, see page #5.9 (Boration/Dilution Equation)

*	Performance Step: 8	<p>Senior Reactor Operator Applicant has calculated that 63 to 92 gallons of boric acid are required for a reactivity change using half boron and half control rods for a 5% down power from 95% to 90% power.</p> <p>Reactor Operator supplied calculation is incorrect (116 gallons boric acid)</p> <p>Boric acid calculation is not approved.</p>
	Standard:	
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Calculation without using Acceptable Range methodology:	<p> $200 \text{ pcm} - 1893 \text{ pcm} = 107 \text{ pcm}$ $107 \text{ pcm change} \div 2 = 53.5 \text{ pcm}$ $53.5 \div 6.58 = 8.1 \text{ OR } 53.5 \div 6.6 = 8.1 \text{ ppm}$ </p> $G = \left(\frac{543,285}{8.33} \right) \ln \left(\frac{600 - 7600}{608.1 - 7600} \right)$ $G = (65220.3) \ln \left(\frac{-7000}{-6991.9} \right)$ $G = (65220.3) \ln(1.001158483)$ $G = (65220.3)(0.001157813)$ $G = 75.5 \text{ gallons}$
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Job Performance Measure No.:	<u>A1</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The following plant conditions exist:</p> <ul style="list-style-type: none">• The unit burnup is at 10,000 MWD/MTU• Current boron = 600 ppm B• BAT boron concentration is 7600 ppm B• RCS temperature = 585 °F• BOR/DIL is Out of Service• Fresh boron has recently been added, boron depletion correction factor = 1
INITIATING CUE:	<p>The Reactor Operator has calculated a 116-gallon boration amount for a reactivity change using half boron and half control rods for a 5% down power from 95% to 90% power.</p> <p>Using the Boration/Dilution Equation from Control Room Operating Curves and Tables Reference Manual, you are required to review the RO's boration – gallon calculation.</p> <p>Provide an independent calculation and based on the result, Approve or Disapprove the boration.</p> <p>Approve or Disapprove</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Using supplied STS SF-002, CORE AXIAL FLUX DIFFERENCE, data sheet; complete form and evaluate the acceptance criteria.	JPM No.:	<u>A2</u>
K/A Reference:	2.1.20 Ability to interpret and execute procedure step. 2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	x	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	Initial Conditions: <ul style="list-style-type: none"> Core life is 20,143 MWD/MTU. Unit is at 60% power one hour after a downpower. NPIS is inoperable. A Reactor Operator has partially completed STS SF-002, CORE AXIAL FLUX DIFFERENCE.
Task Standard:	Applicant completed STS SF-002, CORE AXIAL FLUX DIFFERENCE, Attachment A, AXIAL FLUX DIFFERENCE LOG. Applicant determined NI42 and NI44 did NOT meet acceptance criterion. Applicant determined TS 3.2.3, Condition A, Required Action A1 applied: Reduce power within 30 minutes to less than 50%.

Required Materials:	STS SF-002 rev 9, CORE AXIAL FLUX DIFFERENCE; Core Operating Limits Report, Cycle 19, rev 0; Technical Specification 3.2.3, Axial Flux Difference, calculator
General References:	STS SF-002, CORE AXIAL FLUX DIFFERENCE; Core Operating Limits Report, Cycle 19, Technical Specification 3.2.3, Axial Flux Difference
Handouts:	STS SF-002, CORE AXIAL FLUX DIFFERENCE
Initiating Cue:	Using the partially completed STS SF-002, CORE AXIAL FLUX DIFFERENCE, Attachment A, AXIAL FLUX DIFFERENCE LOG, data sheet: <ol style="list-style-type: none"> 1. Complete the data sheet. 2. Evaluate the Acceptance Criteria and document results on the Cue Sheet.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	5 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	STS SF-002, CORE AXIAL FLUX DIFFERENCE, section 8.0 DETERMINING AXIAL FLUX DIFFERENCE, step 8.1 Monitor Axial Flux Difference (AFD) by performing the following:
*	Performance Step: 1 8.1.2	Compare the data recorded from each operable power range channel to the limits of Figure 2.5, Axial Flux Difference (AFD) of the COLR.
	Standard:	Applicant calculated AFD limit for 60% using COLR, Figure 2.5: Limit: $(29 - 15) \div 50\% = 2.8$ At 60%: $29 - 2.8 = 26.2$ maximum power range flux difference
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Attachment A, Axial Flux Difference Log COLR Figure 2.5

*	Performance Step: 2 8.1.3	Designate whether the indicated POWER RANGE FLUX DIFF is within the ACCEPTABLE OPERATION range of Figure 2.5, Axial Flux Difference (AFD) of the COLR for each operable channel on ATTACHMENT A, AXIAL FLUX DIFFERENCE LOG, by placing a check mark in the Yes (Y) or No (N) column. Initialing, and dating.
	Standard:	<p>Applicant compared Power Range Flux Difference (provided in step 8.1.1) to the calculated 60% AFD limit (26.2).</p> <p>At time 2113:</p> <p>NI41C: 24 < 26.2 → SAT</p> <p>NI42C: 28 > 26.2 → UNSAT</p> <p>NI43C: 26 < 26.2 → SAT</p> <p>NI44C: 28 > 26.2 → UNSAT</p> <p>Applicant check marked the Yes column for N41 and N43 at time 2113.</p> <p>Applicant check marked the No column for N42 and N44 at time 2113.</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTE prior to step 8.2: The AFD shall be considered outside the limits when two or more operable excore channels indicate AFD to be outside the limits.

*	Performance Step: 3 8.2	<u>IF</u> the indicated POWER RANGE FLUX DIFF is outside the acceptable limits of Figure 2.5, Axial Flux Difference (AFD) of the COLR on two or more operable power range channels, <u>THEN</u> refer to Technical Specification 3.2.3.
	Standard:	Applicant determined NI42 and NI44 were outside AFD limits.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 4	Applicant evaluates Technical Specification 3.2.3, Axial Flux Difference (AFD).
	Standard:	Applicant determined TS 3.2.3, Condition A applied: Reduce power within 30 minutes to less than 50%.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>A2</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>Initial Conditions:</p> <ul style="list-style-type: none">• Core life is 20,143 MWD/MTU.• Unit is at 60% power one hour after a downpower.• NPIS is inoperable.• A Reactor Operator has partially completed STS SF-002, CORE AXIAL FLUX DIFFERENCE.
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INITIATING CUE:	<p>Using the partially completed STS SF-002, CORE AXIAL FLUX DIFFERENCE, Attachment A, AXIAL FLUX DIFFERENCE LOG, data sheet:</p> <ol style="list-style-type: none">1. Complete the data sheet.2. Evaluate the Acceptance Criteria and document results on the Cue Sheet.
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Evaluate plant conditions and determine if a mode change can occur	JPM No.:	<u>A3</u>
K/A Reference:	2.2.35 Ability to determine Technical Specification Mode of Operation 2.2.40 Ability to determine Technical Specification for a system		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	x	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>The plant is in MODE 4 and preparing to start up following a refueling outage.</p> <ul style="list-style-type: none"> During the outage, the Turbine Driven Auxiliary Feedwater (TDAFW) pump was overhauled. The maintenance was satisfactory and the TDAFW pump will function if steam generator pressure were available to the AFW pump turbine. AFW pump functional testing (SR 3.7.5.2) has not been performed due to insufficient steam pressure. "A" and "B" Motor Driven Auxiliary Feedwater Pumps are OPERABLE.
Task Standard:	<p>The Applicant evaluated plant conditions, TS and BASES and determined that Yes, MODE 3 can be entered.</p> <p>The NOTE to SR 3.7.5.2 requires sufficient steam generator pressure prior to its performance. It is an exception for SR 3.0.4.</p>
Required Materials:	Technical Specifications and Bases

General References:	Technical Specifications and Bases
Handouts:	Technical Specifications and Bases
Initiating Cue:	Evaluate plant conditions and determine if the reactor startup can proceed to MODE 3 with the Turbine Driven Auxiliary Feedwater Pump (TDAFW) in this condition. Explain your answer.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	BASES for LCO and SR 3.0.4 support allowing the MODE change to proceed so that the testing of the TDAFW pump can occur.
*	Performance Step: 1	Evaluate plant conditions and determine if the reactor startup can proceed to MODE 3 with the Turbine Driven Auxiliary Feedwater Pump (TDAFW) in this condition. Explain your answer.
	Standard:	Yes, MODE 3 can be entered. Explain your answer: The NOTE to SR 3.7.5.2 defines plant conditions that are required in order to perform the surveillance. These plant conditions will not be met until the unit is in MODE 3. SR 3.0.4 allows the unit to enter MODE 3 (or otherwise specified condition) so that the surveillance test can be performed. Entry into MODE 3 is allowed.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

FYI - Background information if needed follows:

TS and BASES state in part:

TS 3.7.5, requiring all three AFW trains be OPERABLE is applicable in MODES 1, 2, and 3. The NOTE to SR 3.7.5.2 is an exception to SR 3.0.4 to allow entry into MODE 3 to perform the test when sufficient steam pressure is available.

- TS 3.7.5 LCO and APPLICABILITY: All three AFW trains must be OPERABLE in MODES 1, 2, and 3.
- NOTE prior to SR 3.7.5.2: Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator.
- SR 3.7.5.2: Verify the developed head for each AFW pump at the flow test point is greater than or equal to the required developed head. (In accordance with the Inservice Test Program)
- LCO 3.0.1 states: LCO's shall be met during the MODES or specified conditions in the Applicability, except as provided in LCO 3.0.2, LCO 3.0.7, and LCO 3.0.8.
- SR 3.0.1 states in part: SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR.
- SR 3.0.4 states in part: Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.
- BASES SR 3.0.1 states in part: SR 3.0.1 establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance with the specified Frequency, in accordance with SR 3.0.2, constitutes a failure to meet an LCO.

Systems and components are assumed OPERABLE when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components are OPERABLE when:

- a. The systems or components are known to be inoperable, although still meeting the SR's; or
- b. The requirements of the Surveillance(s) are known not to be met between required Surveillance performances.

See example 1.4-3 in Section 1.4, "Frequency."

Job Performance Measure No.:	<u>A3</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The plant is in MODE 4 and preparing to start up following a refueling outage.</p> <ul style="list-style-type: none">• During the outage, the Turbine Driven Auxiliary Feedwater (TDAFW) pump was overhauled.• The maintenance was satisfactory and the TDAFW pump will function if steam generator pressure were available to the AFW pump turbine.• AFW pump functional testing (SR 3.7.5.2) has not been performed due to insufficient steam pressure.• "A" and "B" Motor Driven Auxiliary Feedwater Pumps are OPERABLE.
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INITIATING CUE:	<p>Evaluate plant conditions and determine if the reactor startup can proceed to MODE 3 with the Turbine Driven Auxiliary Feedwater Pump (TDAFW) in this condition.</p> <p>Explain your answer.</p>
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(Circle one) Yes / No, to MODE 3 entry. Explain your answer below.

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Evaluate Emergency Exposure Authorization	JPM No.:	A4
K/A Reference:	2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	x	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>The plant has experienced a severe accident and a General Emergency has been declared.</p> <p>The following conditions exist:</p> <ul style="list-style-type: none"> • Inadequate core cooling has damaged the core. • Containment Isolation was incomplete. • Safeguards bus NB01 is de-energized. • Dose rates inside the Auxiliary Building have forced evacuation of the Auxiliary building. • The Technical Support Center (TSC) is activated. • Only essential personnel remain on site. • The TSC recommends locally closing EJ HV-8809A, RHR TO ACCUMULATOR INJECTION LOOPS 1 & 2, to isolate a 35-gpm LOCA outside Containment.
Task Standard:	<p>The Applicant evaluated exposure based on the table in EPP 06-013, EXPOSURE CONTROL AND PERSONNEL PROTECTION.</p> <p>The Applicant determined exposure to Extremities (175 REM) exceeded the limit (100 REM) of EPP 06-013 Attachment A, PLANNED EMERGENCY EXPOSURE GUIDELINES.</p>
Required Materials:	EPF 06-013-02 rev 0, EMERGENCY EXPOSURE AUTHORIZATION

General References:	AP 25A-001, rev 14A RADIATION PROTECTION MANUAL, EPP 06-013 rev 6, EXPOSURE CONTROL AND PERSONNEL PROTECTION, ATTACHMENT A, EPF 06-013-02 rev 0, EMERGENCY EXPOSURE AUTHORIZATION
Handouts:	EPF 06-013-02, EMERGENCY EXPOSURE AUTHORIZATION
Initiating Cue:	<p>You are an extra SRO providing assistance to the Site Emergency Manager.</p> <p>The Radiological Coordinator has provided an EMERGENCY EXPOSURE AUTHORIZATION form, EPF 06-013-02, to the Site Emergency Manager.</p> <p>An Operator will enter the South Penetration Room to locally close EJ HV-8809A, RHR TO ACCUMULATOR INJECTION LOOPS 1 & 2 isolation valve.</p> <p>The volunteer Operator has a total of 1.05 Rem for the year.</p> <p>Evaluate the exposure authorization and make a recommendation (Yes or No) to the Site Emergency Manager for this exposure.</p> <p>Explain your recommendation.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

*	Performance Step: 1	Provided a copy of EPF 06-013-02, EMERGENCY EXPOSURE AUTHORIZATION, evaluate the exposure for authorization by the Site Emergency Manager.													
	Standard:		<table border="1"> <thead> <tr> <th></th> <th>CORRECTIVE OR* PROTECTIVE ACTIONS (REM)</th> <th>LIFE-SAVING** ACTIONS (REM)</th> </tr> </thead> <tbody> <tr> <td>TEDE</td> <td>10</td> <td>25</td> </tr> <tr> <td>Thyroid</td> <td>125</td> <td>No limits</td> </tr> <tr> <td>Extremities</td> <td>100</td> <td>300</td> </tr> </tbody> </table>		CORRECTIVE OR* PROTECTIVE ACTIONS (REM)	LIFE-SAVING** ACTIONS (REM)	TEDE	10	25	Thyroid	125	No limits	Extremities	100	300
	CORRECTIVE OR* PROTECTIVE ACTIONS (REM)	LIFE-SAVING** ACTIONS (REM)													
TEDE	10	25													
Thyroid	125	No limits													
Extremities	100	300													
		<p>The SRO Applicant evaluated exposure based on the table in EPP 06-013, EXPOSURE CONTROL AND PERSONNEL PROTECTION.</p> <p>Applicant determined based on Initial Conditions and Initiating Cues that isolation of EJ HV8809A was a Corrective or Protective Action falling within the guidance of column one.</p> <p>Applicant determined exposure to Extremities (175 REM) exceeded the limit (100 REM) of EPP 06-013 Attachment A, PLANNED EMERGENCY EXPOSURE GUIDELINES.</p> <p>Applicant recommended NOT sending the Operator with an Extremity Dose in excess of procedural guidelines.</p>													
	Cue:														
	Score: SAT or UNSAT	SAT or UNSAT													
	Comment:														

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>A4</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The plant has experienced a severe accident and a General Emergency has been declared.</p> <p>The following conditions exist:</p> <ul style="list-style-type: none">• Inadequate core cooling has damaged the core.• Containment Isolation was incomplete.• Safeguards bus NB01 is de-energized.• Dose rates inside the Auxiliary Building have forced evacuation of the Auxiliary building.• The Technical Support Center (TSC) is activated.• Only essential personnel remain on site.• The TSC recommends locally closing EJ HV-8809A, RHR TO ACCUMULATOR INJECTION LOOPS 1 & 2, to isolate a 35-gpm LOCA outside Containment.
INITIATING CUE:	<p>You are an extra SRO providing assistance to the Site Emergency Manager.</p> <p>The Radiological Coordinator has provided an EMERGENCY EXPOSURE AUTHORIZATION form, EPF 06-013-02, to the Site Emergency Manager.</p> <p>An Operator will enter the South Penetration Room to locally close EJ HV-8809A, RHR TO ACCUMULATOR INJECTION LOOPS 1 & 2 isolation valve.</p> <p>The volunteer Operator has a total of 1.05 Rem for the year.</p> <p>Evaluate the exposure authorization and make a recommendation (Yes or No) to the Site Emergency Manager for this exposure.</p> <p>Explain your recommendation.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Complete an Emergency Notification	JPM No.:	<u>A5</u>
K/A Reference:	2.4.41 Knowledge of the emergency action level thresholds and classifications		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	Unit is at 100%		

Task Standard:	<p>Applicant classified the Emergency and completed EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION form items within fifteen minutes.</p> <p>These form items must be completed:</p> <p>3. <u>Type</u>: Immediate box checked</p> <p>4. <u>Emergency Classification</u>:</p> <ul style="list-style-type: none"> • Time and date: current time and date of classification • ALERT box checked <p>5. <u>Reason for Classification</u>: 3-LRCB box checked</p> <ul style="list-style-type: none"> • EAL flow path: 1, 2, 3, 5, 6, 7 <p>6. <u>Meteorological data</u>:</p> <ul style="list-style-type: none"> • Stability class – D • Wind at 10.2 mph, from 29.3° towards 209.3° <p>7. <u>Radiological release</u>: None box checked</p> <p>8. <u>Protective Action Recommendation</u>: None box checked</p> <p>13. <u>Approval</u>: Applicant signature, title filled in and current date</p>
Required Materials:	<p>EPF 06-007-01 rev 11, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION, APF 06-002-01 rev 15A, EMERGENCY ACTION LEVELS</p> <p>Simulator set up: IC 30, Simulator file S10 ;s10 IMF mBB06D f:1.5 r:30 k:1 (Small Break LOCA, 1.5" Break on D Hot Leg) IMF mEM01A i:-1 f:-1 d:120 k:1 (Failure of "A" Safety Injection Pump to start) ICM mtrDPAL01B t:2 d:90 k:1 (Failure of "A" Auxiliary Feed Water Pump) ;end</p> <p>RUN Key 1 Throttle Auxiliary Feedwater to ~270K (per FOLDOUT page criteria when cold leg temperature < 557°F performed by the Booth/Floor operator or designee)</p> <p>Freeze the Simulator after five minutes – with the Main Control Board alarms illuminated.</p>

General References:	EPP 06-001, CONTROL ROOM OPERATIONS, EPP 06-005, EMERGENCY CLASSIFICATION, EPP 06-007, EMERGENCY NOTIFICATIONS, EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION, APF 06-002-01, EMERGENCY ACTION LEVELS
Handouts:	Available in Simulator Shift Manager Office: EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION, APF 06-002-01, EMERGENCY ACTION LEVELS
Initiating Cue:	<p>An event will occur.</p> <p>The Simulator will run for five minutes. A Floor operator will perform any required actions.</p> <p>After five minutes have elapsed, the Simulator will be taken to FREEZE; an announcement will be made to declare Time ZERO.</p> <p>Using APF 06-002-01, EMERGENCY ACTION LEVELS, Classify the event and complete EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Performance Step: 1	In the Simulator setting: the file is inserted, allowing the Applicant to observe the event.
	Standard:	Applicant observed the event.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE	Stop time _____ – Time Zero _____ = _____ (≤ 15 minutes)
*	Performance Step: 2	<p>When event complete and Simulator taken to “FREEZE”, the Applicant is notified when Time ZERO clock begins.</p> <p>The Applicant:</p> <ul style="list-style-type: none"> Classifies the event using APF 06-002-01, EMERGENCY ACTION LEVELS and Completes form items on EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION

	Standard:	<p>Applicant:</p> <ul style="list-style-type: none"> Classified the event using APF 06-002-01, EMERGENCY ACTION LEVELS and Completed form items on EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION within fifteen minutes. <p>EAL-3 LRCB → Steps 1, 2, 3, 5, 6, 7 → Alert</p> <p>These form items must be completed:</p> <p>3. <u>Type</u>: Immediate box checked</p> <p>4. <u>Emergency Classification</u>:</p> <ul style="list-style-type: none"> Time and date: current time and date of classification ALERT box checked <p>5. <u>Reason for Classification</u>: 3-LRCB box checked</p> <ul style="list-style-type: none"> EAL flow path: 1, 2, 3, 5, 6, 7 <p>6. <u>Meteorological data</u>:</p> <ul style="list-style-type: none"> Stability class – D Wind at 10.2 mph, from 29.3° towards 209.3° <p>7. <u>Radiological release</u>: None box checked</p> <p>8. <u>Protective Action Recommendation</u>: None box checked</p> <p>13. <u>Approval</u>: Applicant signature, title filled in and current date</p> <p>(See attached KEY for the Emergency Notification form.)</p>
	Cue:	Time Zero Declared (Time _____)
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	<p>Step 5.1 and 7.2 of EPP 06-001, CONTROL ROOM OPERATIONS</p> <p>Step 7.2 of EPP 06-007, EMERGENCY NOTIFICATIONS</p>

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>A5</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	Unit is at 100%
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INITIATING CUE:	<p>An event will occur.</p> <p>The Simulator will run for five minutes. A Floor operator will perform any required actions.</p> <p>After five minutes have elapsed, the Simulator will be taken to FREEZE; an announcement will be made to declare Time ZERO.</p> <p>Using APF 06-002-01, EMERGENCY ACTION LEVELS, Classify the event and complete EPF 06-007-01, WOLF CREEK GENERATING STATION EMERGENCY NOTIFICATION.</p>
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Facility: <u>Wolf Creek</u>		Date of Examination: <u>January 2012</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: _____

Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
Alternate Success Path JPM's are Bolded.		
System / JPM Title	Type Code*	Safety Function
S1 Perform a manual makeup to the Volume Control Tank (VCT). 004 CVCS A4 Ability to manually operate and/or monitor in the Control Room: (CFR 41.7 / 45.5 to 45.8) A4.12 Boration/Dilution batch control (SRO: 3.3) A4.13 VCT level control and pressure control (SRO: 2.9) A4.15 Boron concentration (SRO: 3.7)	D, S	2
S2 Depressurize the RCS during Natural Circulation conditions. 010 Pressurizer Pressure Control System (PZR PCS) A1 Ability to predict and /or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: (CFR 41.5 / 45.5) A1.07 RCS pressure (SRO: 3.7) A4 Ability to manually operate and / or monitor in the Control Room: (CFR 41.7 / 45.5 to 45.8) A4.01 PZR spray valve (SRO: 3.5) PSA – Top Risk Significant System by PSA (BB – Reactor Coolant System)	N, S, L	3
S3 Transfer steam load from Turbine to the Steam Dumps. 041 Steam Dump System and Turbine Bypass Control (SDS) A3 Ability to monitor automatic operation of the SDS, including: (CFR 41.7 / 45.5): A3.02 RCS pressure, RCS temperature, and reactor power (SRO: 3.4) A3.03 Steam flow (SRO: 2.8) A4 Ability to manually operate and/ or monitor in the Control Room: (CFR 41.7 / 45.5 to 45.8) A4.08 Steam dump valves (SRO: 3.1)	N, S	4S

<p>S4 Respond to high RCP seal flow.</p> <p>003 Reactor Coolant Pumps (RCP)</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the RCPs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13)</p> <p>A2.01 Problems with RCP seals, especially rates of seal leak-off (SRO: 3.9)</p> <p>A2.02 Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP (SRO: 3.9)</p> <p>PSA – Top Risk Significant System by PSA (BB – Reactor Coolant System)</p>	N, A, S	4P
<p>S5 Perform EMG E-0, Attachment F Automatic Signal Verification.</p> <p>103 Containment System</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13)</p> <p>A2.03 Phase A and Phase B isolation (SRO: 3.8)</p> <p>PSA – Top Risk Significant System by PSA (SA – Engineered Safeguards Features Actuation System)</p>	M, A, S, L	5
<p>S6 Align Safeguards Bus to Alternate Power Source.</p> <p>062 A.C. Electrical Distribution</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the AC distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13)</p> <p>A2.05 Methods for energizing a dead bus (SRO: 3.3)</p> <p>055 Loss of Offsite and Onsite Power (Station Blackout)</p> <p>EA2 Ability to determine or interpret the following as they apply to a Station Blackout (CFR 43.5 / 45.13)</p> <p>EA2.03 Actions necessary to restore power (SRO: 4.7)</p> <p>PSA – Station Blackout – Core Damage Frequency by Initiating Event & Event tree</p>	M, A, S, L	6

S7 Determine IR Instrumentation Malfunction. 015 Nuclear Instrumentation System (NIS) K6. Knowledge of the effect of a loss or malfunction on the following will have on the NIS: (CFR 41.7 / 45.7) K6.02 Discriminator / compensation circuits (SRO: 2.9) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13) A2.02 Faulty or erratic operation of detectors or compensating components (SRO: 3.5) LER 2009-011, Intermediate Range detector NI36 inoperable	N, A, L, S	7
h. NA		
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
P1 Start a Rod Drive Motor Generator Set. 001 Control Rod Drive System (CRDM) 2.2.1 Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. (CFR 41.5 / 41.10 / 43.5 / 45.1) (SRO: 4.4) LER 2003-001, Manipulation of component outside of procedural guidance causes reactor trip	D, R	1
P2 Align Auxiliary Feedwater alternate suction from Fire Protection Standpipe. 061 Auxiliary Feedwater System (AFW) A2 Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13) A2.04 Pump failure or improper operation (SRO: 3.8) PSA – Top Risk Significant System by PSA (AL – Auxiliary Feedwater System)	D, L, E	4S

<p>P3 Increasing Spent Fuel Pool level.</p> <p>033 Spent Fuel Pool Cooling System (SFPCS)</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR 41.5 / 43.5 / 45.3 / 45.13)</p> <p>A2.03 Abnormal spent fuel pool water level or loss of water level (SRO: 3.5)</p>	<p>N, A, R</p>	<p>8</p>
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
<p>* Type Codes</p>	<p>Criteria for RO / SRO-I / SRO-U</p>	
<p>(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator</p>	<p>4-6 / 4-6 / 2-3</p> <p>$\leq 9 / \leq 8 / \leq 4$</p> <p>$\geq 1 / \geq 1 / \geq 1$</p> <p>- / - / ≥ 1 (control room system)</p> <p>$\geq 1 / \geq 1 / \geq 1$</p> <p>$\geq 2 / \geq 2 / \geq 1$</p> <p>$\leq 3 / \leq 3 / \leq 2$ (randomly selected)</p> <p>$\geq 1 / \geq 1 / \geq 1$</p>	

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Perform a manual makeup to the Volume Control Tank (VCT).	JPM No.:	<u>S1</u>
K/A Reference:	004 A1.12 Ability to manually operate and /or monitor in the Control Room: Boration / Dilution batch control. 004 A1.13 Ability to manually operate and /or monitor in the Control Room: VCT level control and pressure control. 004 A1.15 Ability to manually operate and /or monitor in the Control Room: Boron concentration.		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	
Classroom	Simulator	Plant	

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	Unit is at 100%; MOL; MWD/MTU is 10,000. Auto-initiate function of controller BG HS-25, RCS M/U CTRL SEL, is out of service. Alarm ALR 00-042B, VCT LEV HILO, illuminated. ALR 00-042B, VCT LEV HILO, directs the operator to initiate makeup to the VCT. Current RCS boron concentration is 996 ppm. BAT concentration is 7600 ppm.
Task Standard:	Applicant added 200 gallons (\pm 2 gallons) of blended flow at 996 ppm boron to the VCT at 100 gpm (\pm 2 gpm).

Required Materials:	<p>SYS BG-216 rev 30, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, Control Room Operating Curves and Tables Reference Manual, Cycle 19 (WCRX-24), rev 14, calculator</p> <p>Simulator setup IC 324, MOL (made from IC 30) Place a FUB next to BG HS-25, RCS M/U CTRL SEL Ensure BG FK-110, BA FLOW CTRL pot setting at 6.0 Ensure BG FK-111, REACTOR M/U WTR FLOW CTRL pot setting at 9.0</p> <p>Lift the red covers and Ensure the thumbwheels are set at zero for BG FY-110B, BA COUNTER and BG FY-111B, COMBINED M/U & BA COUNTER</p>
General References:	<p>SYS BG-216, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, Boron / Dilution Tables; Control Room Operating Curves and Tables Reference Manual, Cycle 19 (WCRX-24)</p>
Handouts:	<p>SYS BG-216, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, Control Room Operating Curves and Tables Reference Manual, Cycle 19 (WCRX-24)</p>
Initiating Cue:	<p>Perform a single batch addition of 200 gallons of blended flow at current RCS concentration at 100-gpm rate to the VCT per SYS BG-216, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, section 6.1 up to step 6.1.25.</p> <p>Do NOT set Boric Acid and Combined Makeup counters greater than batch amount.</p> <p>Current Backup Heater in service is adequate for mixing.</p> <p>Procedure prerequisites are met.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	30 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	SYS BG-216, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, section 6.1, Manual Makeup To VCT Outlet
*	Performance Step: 1 6.1.1	Determine Reactor Makeup Water Flow Control potentiometer setting using the formula below: <ul style="list-style-type: none"> Perform the following calculation: $\text{Total desired flow rate in gpm} \div 16 \text{ gpm/turn} = \text{Reactor Makeup Flow Control POT Setting}$
	Standard:	Applicant calculated Reactor Makeup Water Flow Control POT setting: $100 \text{ gpm} \div 16 \text{ gpm/turn} = 6.25 \text{ POT setting}$
	Cue:	Acknowledge Independent Verification (IV) check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Note for step 6.1.1 is Not Applicable.

*	Performance Step: 2 6.1.2	Determine Boric Acid Flow Control potentiometer setting as follows: <ul style="list-style-type: none"> Perform the following calculation: $(\text{Total desired flow rate in gpm} \times \text{desired } C_b \text{ in ppm} \times \text{Boron 10 correction factor (B10CF)}) \div (\text{Current BAT } C_b \text{ in ppm} \times 4 \text{ gpm/turn}) = \text{POT setting}$
	Standard:	Applicant calculated Boric Acid Flow Controller POT setting: $(100 \text{ gpm} \times 996 \times 0.916) \div (7600 \times 4) = 3.00 \text{ POT setting}$
	Cue:	Acknowledge IV check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Boron Correction Factor found in WCRX-24, Curves and Tables, page 5.8.

	Performance Step: 3 6.1.3	Determine Boric Acid Counter and Combined Makeup And Boric Acid Counter settings using either of the following: <ul style="list-style-type: none"> * Calculate counter settings using ATTACHMENT A, CALCULATING BA COUNTER SETTING. * Boric Acid Counter and Combined Makeup And Boric Acid Counters will be set to values greater than the required number of gallons to be added.
	Standard:	Applicant went to ATTACHMENT A, CALCULATING BA COUNTER SETTING
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	ATTACHMENT A, CALCULATING BA COUNTER SETTING
	Performance Step: 4 A.1	Determine total gallons of blended flow to be added.
	Standard:	Applicant wrote 200 gallons.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 5 A.2.1	Determine boric acid flow rate. Boric Acid POT setting \times 4 gpm/turn = Boric Acid flow rate (gpm)
	Standard:	Applicant calculated boric acid flow rate: $3.00 \times 4 \text{ gpm/turn} = 12 \text{ gpm}$
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6 A.3	Determine Boric Acid Counter Setting using the following ratio: BA counter setting = (gpm Boric Acid) (Combined M/U and BA) ÷ gpm blended flow
	Standard:	BA counter setting = (12 gpm) (200) ÷ 100 = 24
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Applicant returns to step 6.1.4
	Performance Step: 7 6.1.4	(ρ) Turn on Pressurizer Back Up heaters, as necessary, to mix Reactor Coolant System with Pressurizer water. * BB HIS-51A for Group A – CLOSED * BB HIS-52A for Group B – CLOSED
	Standard:	Applicant checked box for in service heater.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 6.1.5	<u>IF</u> required, <u>THEN</u> ensure RMW TO CHEM MIX TK/BA BLENDING TEE HDR ISO and RMW TO BA BLENDING TEE FO-10 UPSTREAM ISO are unlocked and open. ○ BG-V178 – UNLOCKED / OPEN ○ BG-V601 – UNLOCKED / OPEN
	Standard:	Applicant may also N/A this step since checklist position in MODE 1 is OPEN.
	Cue:	If asked: BG-V178 and BG-V601 are open.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant may contact Auxiliary Building Watch to ascertain valve status. Note for step 6.1.5 is Not Applicable.

*	Performance Step: 9 6.1.6	Set BG FK-111, REACTOR M/U WTR FLOW CTRL potentiometer to setting determined in step 6.1.1.
	Standard:	Applicant rotated potentiometer counterclockwise or counter-clockwise to short hand one increment past 6 and long hand midway between 2 and 3.
	Cue:	Acknowledge IV check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	(6.25 pot setting)

	Performance Step: 10 6.1.7	Ensure REACTOR M/U WTR FLOW CTRL in automatic. ○ BG FK-111 - AUTOMATIC
	Standard:	Applicant checked BG FK-111 AUTO Red light LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 11 6.1.8	Momentarily place RCS M/U CTRL switch in stop and spring return to normal. ○ BG HS-26 – STOP <u>AND</u> SPRING RETURN TO NORMAL
	Standard:	Applicant rotated BG HS-26 J-handle to STOP position and released handle.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 12 6.1.9	Place RCS M/U CTRL SEL switch to manual. ○ BG HS-25 - MANUAL
	Standard:	Applicant rotated BG HS-25 J-handle to MANUAL position.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 13 6.1.10	Set BA FLOW CTRL potentiometer to setting determined in Step 6.1.2. ○ BG FK-110 – SET AT DETERMINED SETTING
	Standard:	Applicant adjusted potentiometer BG FK-110 clockwise or counter clockwise to short hand on 3 and long hand on 0.
	Cue:	Acknowledge IV check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	(3.0 pot setting)

	Performance Step: 14 6.1.11	Ensure BA FLOW CTRL in automatic. ○ BG FK-110 - AUTOMATIC
	Standard:	Applicant checked BG FK-110 AUTO Red light LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 15 6.1.12	Set the BA COUNTER to the desired number of gallons to be added using thumbwheels, as determined in step 6.1.3. ○ BG FY-110B – SET AT DESIRED GALLON VALUE
	Standard:	Applicant set BG FY-110B thumbwheels to 240.
	Cue:	Acknowledge IV check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	(24 gallons on counter = 240) NOTE: The last thumbwheel of the Boric Acid Flow Totalizer is used to set tenths of a gallon.

	Performance Step: 16 6.1.13	Reset BA COUNTER lower register. ○ BG FY-110B - RESET
	Standard:	Applicant momentarily depressed the reset button on BG FY-110B and counters reset to zeros.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 17 6.1.14	Set COMBINED M/U & BA COUNTER to the desired number of gallons to be added using thumbwheels, as determined in step 6.1.3. ○ BG FY-111B – SET AT DESIRED GALLON VALUE
	Standard:	Applicant set thumbwheels on BG FY-111B to 200.
	Cue:	Acknowledge IV check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 18 6.1.15	Reset COMBINED M/U & BA COUNTER lower register. ○ BG FY-111B - RESET
	Standard:	Applicant momentarily depressed BG FY-111B reset button and counters reset to zeros.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 19 6.1.16	Open MAKEUP TO VCT OUTLET. ○ BG HIS-110B - OPEN
	Standard:	Applicant depressed BG HIS-110B OPEN pushbutton and locked it down: ○ Green light EXTINGUISHED ○ Red light LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 20 6.1.17	<u>IF</u> borating to Loop 1, <u>THEN</u> ensure either "A" REACTOR COOLANT PUMP or "A" RESIDUAL HEAT REMOVAL PUMP is running. * PBB01A * PEJ01A
	Standard:	Applicant N/A'd step.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Note for step 6.1.17 is Not Applicable

	Examiner NOTE:	Applicant may ensure RCP "D" is running. Mixing is not required since Applicant is adding makeup at current boron concentration to VCT.
	Performance Step: 21 6.1.18	<u>IF</u> borating to Loop 4, <u>THEN</u> ensure "D" REACTOR COOLANT PUMP is running. ○ PBB01D
	Standard:	Applicant N/A'd step.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Note for step 6.1.18 is Not Applicable

	Performance Step: 22 6.1.19	<p><u>IF</u> desired, <u>THEN</u> place one BORIC ACID TRANSFER PUMP in pull-to-lock.</p> <ul style="list-style-type: none"> * BG HIS-5A – PULL-TO-LOCK * BG HIS-6A – PULL-TO-LOCK
	Standard:	<p>Applicant requested CRS direction.</p> <p>Applicant marked step N/A.</p>
	Cue:	It is not desired.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 23 6.1.20	<p>(ρ) Momentarily place RCS M/U CTRL switch in run and spring return to normal.</p> <ul style="list-style-type: none"> ○ BG HS-26 – RUN AND SPRING RETURN TO NORMAL
	Standard:	Applicant rotated BG HS-26 J-handle to RUN momentarily and released to NORMAL position.
	Cue:	<p>Acknowledge peer check.</p> <p>Acknowledge notification of initiation of makeup to VCT.</p>
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 24 6.1.21.1	Verify flow rates: 1. Ensure BA FLOW CTRL potentiometer adjusted, as necessary, to obtain calculated flow. <ul style="list-style-type: none"> ○ BG FR-110 Red Pen – AT PROPER FLOW RATE (12 gpm) ○ BG FK-110 – SET TO OBTAIN CALCULATED FLOWRATE (3.00)
	Standard:	Applicant monitored BG FR-110 BA BLENDING FLOW RECORDER Red Pen. Acceptable Range: Flowrate $\cong 12 \pm 0.4$ Applicant adjusted BG FK-110 if required.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 25 6.1.21.2	Verify flow rates: 2. Ensure REACTOR M/U WTR FLOW CTRL potentiometer adjusted, as necessary, to obtain calculated flow. <ul style="list-style-type: none"> ○ BG FR-110 Green Pen – AT PROPER FLOW RATE (100 gpm) ○ BG FK-111 – SET TO OBTAIN CALCULATE FLOW RATE (6.25)
	Standard:	Applicant monitored BG FK-110 Green Pen. Acceptable Range: Flowrate $\cong 100 \pm 2$. Applicant adjusted BG FK-111 if required.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Note for step 6.1.21.2 is Not Applicable.

	Performance Step: 26 6.1.22	<u>IF</u> Boric Acid and Reactor Makeup Water counters were set greater than the amount required to be added, <u>THEN</u> perform the following:
	Standard:	Applicant N/A'd step.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 27 6.1.23.1	<u>IF</u> exact number of gallons of Boric Acid and Reactor Makeup Water to be added was set on the Boric Acid and Reactor Makeup Water counters, <u>THEN</u> ensure the following occurs: 1. <u>WHEN</u> the number of gallons per step 6.1.12 have been added, <u>THEN</u> ensure boration flow stops. ○ BG FY-110B – BORATION FLOW STOPS
	Standard:	1. Applicant monitored BG FY-110B boration flow STOPPED. (Acceptable Range: 24.0 ± .4 gallons)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 28 6.1.23.2	2. <u>WHEN</u> the desired number of gallons per step 6.1.14 have been added, <u>THEN</u> ensure dilution flow stops. ○ BG FY-111B – DILUTION FLOW STOPS
	Standard:	2. Applicant monitored BG FY-111B total flow STOPPED. (Acceptable Range: 200 ± 6 gallons)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 29 6.1.23.3	3. Place RCS M/U CTRL switch in stop and spring return to normal. ○ BG HS-26 – STOP AND SPRING RETURN TO NORMAL
	Standard:	3. Applicant rotated BG HS-26 J-handle to STOP and released.
	Cue:	Acknowledge concurrent verification (CV).
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 30 6.1.24	Place MAKEUP TO VCT OUTLET in auto. ○ BG HIS-110B – AUTO/CLOSED
	Standard:	Applicant depressed OPEN/AUTO pushbutton to release the latch detent holding the OPEN button down: ○ Red light EXTINGUISHED ○ Green light LIT
	Cue:	Acknowledge IV.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 31 6.1.25	<u>IF</u> desired, <u>THEN</u> repeat steps 6.1.16 through 6.1.24, as needed, to maintain VCT level.
	Standard:	Applicant recognized step 6.1.25 not required to be performed per Initiating Cue.
	Cue:	If asked: No further makeup to the VCT is required.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S1</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>Unit is at 100%; MOL; MWD/MTU is 10,000.</p> <p>Auto-initiate function of controller BG HS-25, RCS M/U CTRL SEL, is out of service.</p> <p>Alarm ALR 00-042B, VCT LEV HILO, illuminated. ALR 00-042B, VCT LEV HILO, directs the operator to initiate makeup to the VCT.</p> <p>Current RCS boron concentration is 996 ppm. BAT concentration is 7600 ppm.</p>
INITIATING CUE:	<p>Perform a single batch addition of 200 gallons of blended flow at current RCS concentration at 100-gpm rate to the VCT per SYS BG-216, REACTOR MAKE-UP CONTROL SYSTEM ALTERNATE OPERATION, section 6.1 up to step 6.1.25.</p> <p>Do NOT set Boric Acid and Combined Makeup counters greater than batch amount.</p> <p>Current Backup Heater in service is adequate for mixing.</p> <p>Procedure prerequisites are met.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Depressurize the RCS during Natural Circulation conditions.	JPM No.:	<u>S2</u>
K/A Reference:	010 A4.01 Ability to manually operate and/or monitor in the Control Room: PZR spray valve 010 A1.07 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: RCS pressure		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	The plant experienced a loss of off-site power. The Control Room has been requested to perform a Natural Circulation Cooldown to Cold Shutdown. The crew has entered EMG ES-04, NATURAL CIRCULATION COOLDOWN. NPIS terminal has been setup to display the following points: BBD0495A, BLOCK PZR SI TRAIN A BBD0496E, BLOCK PZR SI TRAIN B ABD0570D, SG LO STM P SI RX TR 1 BLOK ABD0571D, SG LO STM LINE P SI RX TR 2 BLOK
Task Standard:	The Applicant depressurized the RCS to less than 1920 psig and blocked SI actuations.

Required Materials:	<p>EMG ES-04 rev14B, NATURAL CIRCULATION COOLDOWN</p> <p>Simulator Setup: IC 326</p> <p>RO NPIS computer terminal screen setup: From Main Menu, select Tabular Display.</p> <p>Mouse click on the POINT NAME area. A Data Point List Selection screen populates the screen.</p> <p>Using the Point search option, select the following points: BBD0495A, BLOCK PZR SI TRAIN A BBD0496E, BLOCK PZR SI TRAIN B</p> <p>ABD0570D, SG LO STM P SI RX TR 1 BLOK ABD0571D, SG LO STM LINE P SI RX TR 2 BLOK</p>
General References:	EMG ES-04, NATURAL CIRCULATION COOLDOWN
Handouts:	EMG ES-04, NATURAL CIRCULATION COOLDOWN
Initiating Cue:	<p>The Control Room Supervisor has directed you to perform the following EMG ES-04, NATURAL CIRCULATION COOLDOWN actions:</p> <p>Perform step 11, Depressurize RCS to 1920 psig</p> <p>Perform step 12, Block SI Actuation</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE	EMG ES-04, NATURAL CIRCULATION COOLDOWN, step 11 Depressurize RCS to 1920 PSIG:
	Performance Step: 1 11a	Check Normal Letdown – IN SERVICE
	Standard:	<ul style="list-style-type: none"> • Applicant checked BG HIS-459 OPEN • Applicant checked BG HIS-460 OPEN • Applicant checked at least one 75 gpm orifice isolation BG HIS-8149BA or BG HIS-8149CA OPEN
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant may also check the following (diverse indication): BG FI-121A, CHG HDR FLOW BG HIS-8160 and BG HIS-8152, LTDN SYS INNER & OUTER CTMT ISO VLVs (OPEN)

*	Performance Step: 2 11b 1)	Depressurize RCS using auxiliary spray. 1) Open Regenerative HX To PZR Auxiliary Spray valve. ○ BG HIS-8145
	Standard:	Applicant depressed and latched OPEN pushbutton for BG HIS-8145: Green light EXTINGUISHED, Red light LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	If BG HIS-8147 is NOT closed RCS will not quickly depressurize due to flow going to the cold leg vice PZR.
*	Performance Step: 3 11b 2)	2) Ensure Regenerative Heat Exchanger To Loop Cold Leg valves closed. <ul style="list-style-type: none"> ○ BG HIS-8146 For Loop 1 ○ BG HIS-8147 For Loop 4
	Standard:	For Loop 4: Applicant depressed CLOSE pushbutton for BG HIS-8147: Red light EXTINGUISHED, Green light LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	For Loop 1: Applicant checked CLOSED BG HIS-8146 (Green light LIT). (Not Critical)

	Performance Step: 4 11.c	Check RCS Pressure – LESS THAN 1920 PSIG
	Standard:	Applicant checked Pressurizer pressure less than 1920 psig.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	RCS depressurization stopped when BG HIS-8147 was OPENED. 1830 psig is PZR pressure Safety Injection actuation setpoint. If pressure is reduced to 1830 psig without blocking SI a Safety Injection Signal will occur.
*	Performance Step: 5 11d 1) a	Stop RCS depressurization: 1) Check aux spray used for depressurization. a) Align Regenerative Heat Exchanger To Loop Cold Leg valves to establish only one open. * BG HIS-8146 For Loop 1 * BG HIS-8147 For Loop 4
	Standard:	Either valve opened when Pressurizer pressure <1920 psig and >1830 psig. Applicant depressed OPEN pushbutton for BG HIS-8147: Green light EXTINGUISHED, Red light LIT. No Safety Injection Signal actuation due to low Pressurizer pressure at 1830 psig occurred.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Loop 1 (not aligned initially): Applicant may elect to use BG HIS-8146 to meet step.

*	Performance Step: 6 11d 1) b	Close Regenerative HX To PZR Auxiliary Spray valve. o BG HIS-8145
	Standard:	Applicant depressed CLS pushbutton to CLOSE BG HIS-8145: Red light EXTINGUISHED, Green light LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	The selected computer points on the RO NPIS computer points will indicate ESFAS SI status.
*	Performance Step: 7 12	Block SI Actuation: <ul style="list-style-type: none"> ○ SB HS-9, For Steamline Pressure SI Red Train ○ SB HS-10, For Steamline Pressure SI Yellow Train ○ SB-HS-8, For PZR Pressure SI Red Train ○ SB-HS-7, For PZR Pressure SI Yellow Train
	Standard:	Applicant determined from NPIS that P-11 was clear and the BLOCKS could be actuated. <ul style="list-style-type: none"> ○ Applicant depressed BLOCK on SB HS-9 ○ Applicant depressed BLOCK on SB HS-10 ○ Applicant depressed BLOCK on SB HS-8 ○ Applicant depressed BLOCK on SB HS-7
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant monitored NPIS computer points (these points will change state when BLOCKs are depressed) <ul style="list-style-type: none"> ○ BBD0495A, BLOCK PZR SI TRAIN A ○ BBD0496E, BLOCK PZR SI TRAIN B ○ ABD0570D, SG LO STM P SI RX TR 1 BLOK ○ ABD0571D, SG LO STM LINE P SI RX TR 2 BLOK

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S2</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The plant experienced a loss of off-site power.</p> <p>The Control Room has been requested to perform a Natural Circulation Cooldown to Cold Shutdown.</p> <p>The crew has entered EMG ES-04, NATURAL CIRCULATION COOLDOWN.</p> <p>NPIS terminal has been setup to display the following points: BBD0495A, BLOCK PZR SI TRAIN A BBD0496E, BLOCK PZR SI TRAIN B ABD0570D, SG LO STM P SI RX TR 1 BLOK ABD0571D, SG LO STM LINE P SI RX TR 2 BLOK</p>
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INITIATING CUE:	<p>The Control Room Supervisor has directed you to perform the following EMG ES-04, NATURAL CIRCULATION COOLDOWN actions:</p> <p>Perform step 11, Depressurize RCS to 1920 psig</p> <p>Perform step 12, Block SI Actuation</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Transfer steam load from Turbine to the Steam Dumps.	JPM No.:	<u>S3</u>
K/A Reference:	041 A3.02 Ability to monitor automatic operation of the Steam Dump System including: RCS pressure, RCS temperature, and reactor power 041 A3.03 Ability to monitor automatic operation of the Steam Dump System including: Steam flow 041 A4.08 Ability to manually operate and / or monitor in the Control Room: Steam Dump valves		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	Unit is 100%, MOL SYS OPS requests a load reduction to 90%.
Task Standard:	Steam Dumps are cycling OPEN/CLOSED. Turbine load reduced ~ 20 MWE. Reactor power less than or equal to 3565 MW thermal by RJU157MA (RX PWER TEN MIN MOV AVG) on NPIS.

Required Materials:	<p>OFN AF-025 rev 36, UNIT LIMITATIONS, ATTACHMENT D, TURBINE/GENERATOR LOAD DECREASE USING STEAM DUMPS</p> <p>Simulator setup: IC 324 (made from IC 30: 100%, MOL) NOTE: This IC is used for S1 also.</p> <p>ENSURE a stopwatch is available.</p> <p>VERIFY STEAM HDR PRESS CTRL, AB PK-507, set to 7.28 (RL006). ENSURE ROD BANK AUTO/MAN SEL, SE HS-9, is in MANUAL (RL003). ENSURE AC1 on NPIS by the BOP.</p>
General References:	OFN AF-025, UNIT LIMITATIONS, ATTACHMENT D, TURBINE/GENERATOR LOAD DECREASE USING STEAM DUMPS
Handouts:	ATTACHMENT D, TURBINE/GENERATOR LOAD DECREASE USING STEAM DUMPS of OFN AF-025, UNIT LIMITATIONS
Initiating Cue:	<p>In anticipation of the load reduction, transfer steam load from the Main Turbine to the Steam Dumps using ATTACHMENT D, TURBINE/GENERATOR LOAD DECREASE USING STEAM DUMPS of OFN AF-025, UNIT LIMITATIONS, steps D2.2 through D2.10.3.</p> <p>Decrease load the first ~20 MWE using the Load Limit Potentiometer.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	30 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	Attachment D, TURBINE /GENERATOR LOAD DECREASE USING STEAM DUMP, step D1 and D.2.1 have already been performed.
	Performance Step: 1 D2.2	Record AB PK-507, STEAM HDR PRESS CTRL setpoint Setpoint_____
	Standard:	Applicant determined AB PK-507 setpoint = 7.28 and recorded the value.
	Cue:	If requested, Acknowledge Peer Check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 D2.3	Place STEAM HDR PRESS CTRL in manual ○ AB PK-507
	Standard:	Applicant depressed the MANUAL pushbutton on controller AB PK-507 ○ MANUAL Red light LIT. ○ AUTO Red light EXTINGUISHED.
	Cue:	If requested, Acknowledge Peer Check.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	AB PK-507 output is set at zero; however, Applicant may depress the down output pushbutton to ensure output is at zero.
	Performance Step: 3 D2.4	Manually set STEAM HDR PRESS CTRL output to zero. ○ AB PK-507
	Standard:	Applicant observed AB PK-507 controller output is at zero.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 4 D2.5	Place STEAM DUMP SEL to STM PRESS position. ○ AB US-500Z
	Standard:	At AB US-500Z, Applicant rotated J-handle to the STM PRESS position (right).
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	CAUTION prior to Step D2.5: Place the Steam Dumps in the Tavg Mode if a reactor trip or load rejection occurs during the performance of this evolution.

	Performance Step: 5 D2.6	Ensure Miscellaneous Status Panel SC066W lights for Steam Dump Valves Armed are lit. ○ LP COND STM DUMP VLVS ARMED ○ IP COND STM DUMP VLVS ARMED ○ HP COND STM DUMP VLVS ARMED
	Standard:	At SC066W, Applicant verified LP, IP and HP COND STM DUMP VLVS ARMED - Red lights are LIT.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6 D2.7	(p) Place STEAM HDR PRESS CTRL in auto ○ AB PK-507
	Standard:	Applicant placed AB PK-507 in AUTO by depressing the AUTO pushbutton. ○ AUTO Red light LIT and the MANUAL Red light EXTINGUISHED.
	Cue:	If needed: Acknowledge placing AB PK-507 controller in AUTO.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Final AB PK-507 setpoint value ~6.6 to 6.7. If a Reactor Trip occurs, the JPM is terminated.
*	Performance Step: 7 D2.8	Using slow incremental decreases in AB PK-507, STEAM HDR PRESS CTRL setpoint, decrease the setpoint until at least one valve in the first group of steam dumps starts cycling open and closed at least once every ten seconds controlling steam pressure.
	Standard:	Applicant rotated AB PK-507 pot in the counter clockwise direction. Applicant observed Steam Dump valve OPEN / CLOSED change response on AB ZL-34/35, STEAM DUMP VLVS. <ul style="list-style-type: none"> ○ Red light LIT ○ Green light LIT Applicant observed STEAM DUMP VLV OPEN response on meters AB ZI-34, AB ZI-45 and AB ZI-41. Applicant monitored Tavg and reactor power.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	CAUTION prior to step D2.8: Rapid changes in steam header pressure can cause SI actuation due to rate compensation effects. Changes in steam dump control signals should be made slowly and in small increments to prevent SI actuation. NOTE prior to step D2.8: AB PK-507, STEAM HDR PRESS CTRL setpoint must be adjusted to the point where the steam dumps are actually controlling steam pressure so they will respond as soon as turbine load is changed.

	Performance Step: 8 D2.9	Maintain adjacent condensers Δ Ps less than or equal to 2" Hg.
	Standard:	
	Cue:	Additional Operators will monitor condenser Δ Ps.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 9 D2.10.1	At AC XX-1, decrease load using Load Set pushbuttons or Load Limit potentiometer, as follows: 1. Use LOAD LIMIT SET potentiometer to decrease load
	Standard:	Applicant rotated LOAD LIMIT potentiometer in the counter clockwise direction, monitoring LOAD MW and LOAD SET MW, until a reduction of ~ 20 MWE occurred. Applicant observed Control Valve No. 4 CLOSING using VALVE POSITION meter. Applicant monitored Tavg and reactor power.
	Cue:	If needed: Acknowledge load decrease.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTES prior to Step D2.10: <ul style="list-style-type: none"> ○ AB PK-507 setpoint may be adjusted, as necessary, to maintain reactor power as turbine load is decreased. ○ Annunciators 00-065E, TREF/TAUCT LO and 00-103D, FW HTR DUMP VLV OPEN may alarm while the steam dumps are being used. ○ The main turbine load will be controlled by the most limiting signal between Load Set and Load Limit. The Load Set signal potentiometers output is based on 60 Hz operation at rated pressure and the value demanded. Depending upon actual parameters, the demanded load set may have to be reduced substantially below actual load (as much as 50 MW) before the Load Set and Load Limit signals will null to come off of the Load Limiting control. ○ If decreasing load due to loss of 345 Kv offsite supply, the load dispatcher will request 800 MWE NET which is 845 MWE GROSS. The generator load indicated on AC XX-1 is gross load. ○ It may be desirable to monitor turbine exhaust hood temperatures. Extended operation on the steam dumps may affect exhaust temperatures.

	Performance Step: 10 D2.10.2	2. Use Load Set as follows: N/A
	Standard:	Not performed as Applicant used LOAD LIMIT SET potentiometer for the load decrease as identified in Initiating Cue.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 11 D2.10.3	3. Adjust steam dumps, as necessary, to maintain reactor power less than or equal to 3565 MW thermal.
	Standard:	<ul style="list-style-type: none"> ○ Applicant monitored reactor power using NPIS (RJU157MA) ○ Applicant monitored Tavg. ○ Applicant reduced turbine load by ~ 20 MWE. ○ Applicant adjusted steam dumps using AB PK-507 and observed the OPEN / CLOSE lights as necessary.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S3</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	Unit is 100%, MOL SYS OPS requests a load reduction to 90%.
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INITIATING CUE:	In anticipation of the load reduction, transfer steam load from the Main Turbine to the Steam Dumps using ATTACHMENT D, TURBINE/GENERATOR LOAD DECREASE USING STEAM DUMPS of OFN AF-025, UNIT LIMITATIONS, steps D2.2 through D2.10.3. Decrease load the first ~20 MWE using the Load Limit Potentiometer.
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Respond to high RCP seal flow.	JPM No.:	<u>S4</u>
K/A Reference:	<p>003 A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the RCPs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems with RCP seals, especially rates of seal leak-off.</p> <p>003 A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the RCPs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP</p>		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	<p>100%, MOL</p> <p>Main Control Board alarm 00-072A, RCP #1 SEAL FLOW HI, is illuminated.</p>		

Task Standard:	The Applicant stopped RCP "C" and isolated seal return valve BB HIS-8141C, RCP C SEAL WTR RETURN VLV, after three minutes and before five minutes elapsed.
Required Materials:	ALR 00-072A rev 9A, RCP #1 SEAL FLOW HI, OFN BB-005 rev 20, RCP MALFUNCTIONS Simulator set-up: IC 325, 100%, MOL (IC 30 with mBG06C at 10 gpm)
General References:	ALR 00-072A, RCP #1 SEAL FLOW HI, OFN BB-005, RCP MALFUNCTIONS
Handouts:	ALR 00-072A, RCP #1 SEAL FLOW HI, OFN BB-005, RCP MALFUNCTIONS
Initiating Cue:	The CRS directs you to perform ALR 00-072A, RCP #1 SEAL FLOW HI.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	ALR 00-072A, step 1 Figure 1 of ALR 00-072A may be used. Number 1 seal leakoff for the “C” RCP is in the Unacceptable Region. Applicant may display Turn On Code BB3 on NPIS terminal.
	Performance Step: 1 1a	Determine Affected Reactor Coolant Pump(s): a. Check number 1 seal leakoff – GREATER THAN 5.7 GPM * BG FR-157 for RCP “A” * BG FR-156 for RCP “B” * BG FR-155 for RCP “C” * BG FR-154 for RCP “D”
	Standard:	Applicant found RCP “C” seal leakoff: o 8 gpm using BG FR-155, RCS C SEAL LEAKOFF & INJ FLOW o >9 gpm on NPIS Turn On Code BB3
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 2	Go To OFN BB-005, RCP MALFUNCTIONS.
	Standard:	Applicant transitioned to OFN BB-005, RCP MALFUNCTIONS.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	OFN BB-005, RCP MALFUNCTIONS, step 1 The Applicant may use Foldout page item #1 asterisk 6, “A value for Number 1 seal leakoff <u>OR</u> total #1 seal leakoff on Attachment E which directs you to go to Attachment B,” to go directly to Attachment E. <u>See Performance Step 10.</u>
	Performance Step: 3 1	Monitor RCP Temperatures: * Turn on Code BB3 on the NPIS computer <u>OR</u> * BB TR-500
	Standard:	Applicant displayed BB3 on NPIS terminal.
	Cue:	If BB TR-500 mimic used: Use NPIS.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	BB TR-500 is on RP068 in the Control Room – only a mimic is available in the Simulator.

	Examiner NOTE:	OFN BB-005 step 2: Check If RCPs Can Remain Running:
	Performance Step: 4 2 a.	a. Check Number 1 Seal And Bearing Water Temperature – LESS THAN 230°F
	Standard:	Applicant determined RCP Number 1 Seal And Bearing Water Temperatures were in GREEN BAND.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 2 b.	b. Check Motor Bearing Temperatures – LESS THAN 195°F o Upper radial bearing o Upper thrust bearing o Lower radial bearing o Lower thrust bearing
	Standard:	Applicant determined Motor Bearing Temperatures were in GREEN BAND.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 2 c.	c. Check Motor Stator Winding Temperatures – LESS THAN 299°F
	Standard:	Applicant determined Motor Stator Winding Temperatures were in GREEN BAND.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 2 d.	d. Frame Vibration – LESS THAN 5 MILS
	Standard:	At REACTOR COOLANT PMP VIBRATION MONITOR, BB YI-471, Applicant determined frame vibrations < 5 mils.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 2 e.	e. Shaft Vibration – LESS THAN 20 MILS
	Standard:	At REACTOR COOLANT PMP VIBRATION MONITOR, BB YI-471, Applicant determined shaft vibrations < 20 mils.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 3	All RCP Number 1 Seal Leakoff Flows – LESS THAN 6 GPM <ul style="list-style-type: none"> ○ BG FR-157 for RCP “A” ○ BG FR-156 for RCP “B” ○ BG FR-155 for RCP “C” ○ BG FR-154 for RCP “D”
	Standard:	Applicant determined RCP “C” seal leakoff reading 8 gpm on BG FR-155, RCS C SEAL LEAKOFF & INJ FLOW. Applicant performed RNO: Go to Attachment E and transitioned to ATTACHMENT E, RCP SEAL LEAKOFF FLOW RATE.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	OFN BB-005, ATTACHMENT E, RCP SEAL LEAKOFF FLOW RATE, step E1
*	Performance Step: 10 E1	Determine Required Action Using Table.
	Standard:	Applicant used Table to determine Total #1 Seal Leakoff was greater than 8 gpm with pump bearing/seal inlet temperatures stable or increasing requiring Attachment B to mitigate. Applicant transitioned to Attachment B.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	See Attachment E below. Alternate Success path step (Att. B)

# 1 Leakoff Indication	#2 Leakoff Indication	Total #1 Seal Flow (#1 leakoff plus #2 leakoff)	Pump Bearing / Seal Inlet Temperature	Action
Greater than 6 gpm		Greater than 6 gpm	Increasing	Go To Attachment B
Greater than 6 gpm		Between 6 gpm and 8 gpm	Stable	Shutdown RCP Within 8 Hours
		Greater than 8 gpm	Stable or Increasing	Go To Attachment B
Less than 0.8 gpm	Zero or negligible	Less than 0.8 gpm	Stable	Shutdown RCP Within 8 Hours
Less than 0.8 gpm	Zero or negligible	Less than 0.8 gpm	Increasing	Go To Attachment B

	Examiner NOTE:	OFN BB-005 ATTACHMENT B, step 1: Check If Reactor Should Be Tripped:
	Performance Step: 11 B1 a.	Check Reactor – CRITICAL
	Standard:	Applicant determined reactor was critical.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 12 B1 b.	Check RCPs – ONLY ONE BEING SHUTDOWN
	Standard:	Applicant determined only “C” RCP being stopped.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 13 B1 c.	Check Reactor Power – GREATER THAN 48%
	Standard:	Applicant determined reactor power was near 100% (NPIS screen and / or NI instrumentation).
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 14 B2	Manually Trip Reactor And Stabilize Plant Using EMGs While Continuing With This Procedure.
	Standard:	1. Applicant informed CRS reactor trip required (not critical) 2. Applicant turned J-handle SB HS-1, REACTOR TRIP MAN ACTUATION to the left (TRIP position) and released.
	Cue:	Continue actions as directed per OFN BB-005, other Operators will perform actions of EMG E-0.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment B, RCP SHUTDOWN, step B3: Shutdown Affected RCP's:
	Performance Step: 15 B3 a.	a. Check RCP "A" being stopped.
	Standard:	Performed RNO a. Go to step B3.c.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 16 B3 c.	c. Check RCP B being stopped.
	Standard:	Performed RNO c. Go to step B3.e.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 17 B3 e.	e. Defeat Tav _g and ΔT for RCS loop with affected RCP. <ul style="list-style-type: none"> ○ BB TS-412T For Tav_g ○ BB TS-411F For ΔT
	Standard:	Applicant performed the following: <ul style="list-style-type: none"> ○ J-handle for BB TS-412T was manipulated to the right pointing to T432 position; ○ J-handle for BB TS-411F was manipulated to the right pointing to T431 position.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Record time RCP stopped: _____
*	Performance Step: 18 B3 f.	f. Stop affected RCP(s).
	Standard:	At RL021 Applicant manipulated RCP "C" J-handle BB HIS-39/PA0205 left to STOP position and released the handle. Applicant observed the following (not critical): <ul style="list-style-type: none"> ○ Handswitch Red light EXTINGUISHED, Green light LIT. ○ Loop 3 flow meters on RL022 decreasing: <ol style="list-style-type: none"> 1. BB FI-434 2. BB FI-435 3. BB FI-436 ○ BB II-3 RCP AMPs on RL021 decreasing.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 19 B3 g.	g. Number 1 seal leakoff was LESS THAN 6 GPM prior to securing RCP.
	Standard:	Applicant recalled seal leakoff was greater than 8 gpm and performed the RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	<p>Closing valve BB HIS-8141C after three minutes have elapsed is the critical nature of this step.</p> <p>Record time BB HIS-8141C CLOSED _____</p> <p>BB HIS-8141C Time _____ - RCP Stop Time _____</p> <p>Total Time = _____ minutes</p>
*	Performance Step: 20 B3 g. RNO g.	<p><u>WHEN</u> affected RCP has been secured for greater than 3 minutes but less than 5 minutes, <u>THEN</u> close RCP Seal Water Outlet Isolation on affected RCP(s).</p> <ul style="list-style-type: none"> ○ BB HIS-8141A for RCP "A" ○ BB HIS-8141B for RCP "B" ○ BB HIS-8141C for RCP "C" ○ BB HIS-8141D for RCP "D"
	Standard:	<p>Applicant timed RCP "C" shutdown greater than three minutes and less than five minutes before closing the valve.</p> <p>Applicant depressed CLOSE pushbutton on BB HIS-8141C, Green light LIT, Red light EXTINGUISHED.</p>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S4</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	100%, MOL Main Control Board alarm 00-072A, RCP #1 SEAL FLOW HI, is illuminated.
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INITIATING CUE:	The CRS directs you to perform ALR 00-072A, RCP #1 SEAL FLOW HI.
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Perform EMG E-0, Attachment F Automatic Signal Verification.	JPM No.:	<u>S5</u>
K/A Reference:	105 A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Systems; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Phase A and B isolation		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom		Simulator	x
		Plant	
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	The plant experienced an event and Safety Injection has actuated. The CRS has entered EMG E-0, REACTOR TRIP OR SAFETY INJECTION.		

Task Standard:	The Applicant CLOSED:			
	Status Panel	Attachment B	Handswitch	NPIS Point
	RX M/U WATER CTMT ISO	BL HV-8047 Reactor Makeup Water Outside CTMT Iso	REACTOR M/U WTR CTMT ISO VLV BL HIS-8047	BLE8047 RX M/U CTMT ISO VLV
	INST AIR SPLY TO CTMT ISO	KA FV-29 Reactor Bldg Instr Air Supply Outside CTMT Iso	INST AIR SPLY CTMT ISO VLV KA HIS-29	KAE0029 INST AIR CTMT ISO VLV
	LTDN SYS CTMT VLV BGHV8160	BG HV-8160 Letdown System Inside CTMT Iso	LTDN SYS INNER CTMT ISO VLV BG HIS-8160	BGE8160 REGEN HX TO LTDN HX
Required Materials:	EMG E-0 rev 26, REACTOR TRIP OR SAFETY INJECTION, Attachment F, AUTOMATIC SIGNAL VERIFICATION Simulator setup: IC 327 (IC 327 includes the auto actuation defeats)			
General References:	EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, AUTOMATIC SIGNAL VERIFICATION			
Handouts:	EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, AUTOMATIC SIGNAL VERIFICATION			
Initiating Cue:	The CRS directs you to perform Attachment F, AUTOMATIC SIGNAL VERIFICATION, of EMG E-0, REACTOR TRIP OR SAFETY INJECTION.			
Time Critical Task: (Yes or No)	No			
Alternate Success Path: (Yes or No)	Yes			
Validation Time:	5 minutes			

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	Attachment F, AUTOMATIC SIGNAL VERIFICATION, step 1 Verify Feedwater Isolation
	Performance Step: 1 F1 a	Main feedwater pumps – TRIPPED <ul style="list-style-type: none"> ○ Annunciator 120A, MFP A TRIP - LIT ○ Annunciator 123A, MFP B TRIP - LIT
	Standard:	Applicant checked Main feedwater pumps – TRIPPED <ul style="list-style-type: none"> ○ Annunciator 120A, MFP A TRIP - LIT ○ Annunciator 123A, MFP B TRIP - LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 F1 b	Main feedwater regulating valves – CLOSED <ul style="list-style-type: none"> ○ AE ZL-510 – Green light LIT for S/G A ○ AE ZL-520 – Green light LIT for S/G B ○ AE ZL-530 – Green light LIT for S/G C ○ AE ZL-540 – Green light LIT for S/G D
	Standard:	Applicant checked Main feedwater regulating valves – CLOSED <ul style="list-style-type: none"> ○ AE ZL-510 – Green light LIT for S/G A ○ AE ZL-520 – Green light LIT for S/G B ○ AE ZL-530 – Green light LIT for S/G C ○ AE ZL-540 – Green light LIT for S/G D
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 F1 c	Main feedwater regulating bypass valves – CLOSED <ul style="list-style-type: none"> ○ AE ZL-550 – Green light LIT for S/G A ○ AE ZL-560 – Green light LIT for S/G B ○ AE ZL-570 – Green light LIT for S/G C ○ AE ZL-580 – Green light LIT for S/G D
	Standard:	Applicant checked Main feedwater regulating bypass valves – CLOSED <ul style="list-style-type: none"> ○ AE ZL-550 – Green light LIT for S/G A ○ AE ZL-560 – Green light LIT for S/G B ○ AE ZL-570 – Green light LIT for S/G C ○ AE ZL-580 – Green light LIT for S/G D
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 F1 d	Main feedwater isolation valves – CLOSED <ul style="list-style-type: none"> ○ AE HIS-39 for S/G A – Green light LIT, Red light EXTINGUISHED ○ AE HIS-40 for S/G B – Green light LIT, Red light EXTINGUISHED ○ AE HIS-41 for S/G C – Green light LIT, Red light EXTINGUISHED ○ AE HIS-42 for S/G D – Green light LIT, Red light EXTINGUISHED
	Standard:	Applicant checked feedwater isolation valves – CLOSED <ul style="list-style-type: none"> ○ AE HIS-39 for S/G A – Green light LIT, Red light EXTINGUISHED ○ AE HIS-40 for S/G B – Green light LIT, Red light EXTINGUISHED ○ AE HIS-41 for S/G C – Green light LIT, Red light EXTINGUISHED ○ AE HIS-42 for S/G D – Green light LIT, Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 F1 e	Main feedwater chemical injection valves – CLOSED <ul style="list-style-type: none"> ○ AE HIS-43 for S/G A – Green light LIT, Red light EXTINGUISHED ○ AE HIS-44 for S/G B – Green light LIT, Red light EXTINGUISHED ○ AE HIS-45 for S/G C – Green light LIT, Red light EXTINGUISHED ○ AE HIS-46 for S/G D – Green light LIT, Red light EXTINGUISHED
	Standard:	Applicant checked Main feedwater chemical injection valves – CLOSED <ul style="list-style-type: none"> ○ AE HIS-43 for S/G A – Green light LIT, Red light EXTINGUISHED ○ AE HIS-44 for S/G B – Green light LIT, Red light EXTINGUISHED ○ AE HIS-45 for S/G C – Green light LIT, Red light EXTINGUISHED ○ AE HIS-46 for S/G D – Green light LIT, Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 F1 f	Check ESFAS status panel SGBSIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> ○ Red train ○ Yellow train
	Standard:	Applicant checked ESFAS status panel (SA-066X and SA-066Y) SGBSIS section – ALL WHITE LIGHTS LIT, both trains
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 F2 a	Verify Containment Isolation Phase A: Check ESFAS status panel CISA section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> ○ Red Train ○ Yellow Train
	Standard:	On SA-066X (Red Train) Applicant determined: <ul style="list-style-type: none"> ○ LTDN SYS CTMT VLV BGHV8160 – NOT LIT ○ INST AIR SPLY TO CTMT ISO – NOT LIT On SA-066Y (Yellow Train) Applicant determined: <ul style="list-style-type: none"> ○ RX M/U WATER CTMT ISO VLV – NOT LIT Applicant referred to RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	This is the Alternate success step.

	Performance Step: 8 F2 RNO a 1)	<u>IF</u> containment isolation phase A has <u>NOT</u> actuated, <u>THEN</u> manually actuate containment isolation phase A. <ul style="list-style-type: none"> ○ SB HS-47 ○ SB HS-48
	Standard:	Applicant recognized phase A was actuated: <ul style="list-style-type: none"> ○ Some White lights in CPIS section of ESFAS panel – LIT ○ Or using NPIS computer – CPIS actuated
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	The System level CPIS lights are NOT LIT.

	Examiner NOTE:	Applicant may refer to Attachment B, VALVES CLOSED BY CONTAINMENT ISOLATION SIGNAL PHASE A, for valve numbers (see table below).																			
*	Performance Step: 9 F2 RNO a 2)	<p><u>IF</u> any CISA valve <u>NOT</u> closed, <u>THEN</u> manually close valve.</p> <p><u>IF</u> valve(s) can <u>NOT</u> be closed, <u>THEN</u> manually or locally isolate affected containment penetration. Refer to ATTACHMENT B, VALVES CLOSED BY CONTAINMENT ISOLATION SIGNAL PHASE A.</p>																			
	Standard:	<p>Applicant performed the following:</p> <p>On RL001:</p> <ul style="list-style-type: none"> Depressed the CLOSE pushbutton on BG HIS-8160, LTDN SYS INNER CTMT ISO VLV: Red light EXTINGUISHED and Green light LIT Depressed the CLOSE pushbutton on BL HIS-8047, REACTOR M/U WTR CTMT ISO VLV: Red light EXTINGUISHED and Green light LIT <p>On RL024:</p> <ul style="list-style-type: none"> Depressed CLOSE pushbutton on KA HIS-29, INST AIR SPLY CTMT ISO VLV: Red light EXTINGUISHED and Green light LIT <table border="1"> <thead> <tr> <th>Status Panel</th><th>Attachment B</th><th>Handswitch</th><th>NPIS Point</th></tr> </thead> <tbody> <tr> <td>RX M/U WATER CTMT ISO</td><td>BL HV-8047 Reactor Makeup Water Outside CTMT Iso</td><td>REACTOR M/U WTR CTMT ISO VLV BL HIS-8047</td><td>BLE8047 RX M/U CTMT ISO VLV</td></tr> <tr> <td>INST AIR SPLY TO CTMT ISO</td><td>KA FV-29 Reactor Bldg Instr Air Supply Outside CTMT Iso</td><td>INST AIR SPLY CTMT ISO VLV KA HIS-29</td><td>KAE0029 INST AIR CTMT ISO VLV</td></tr> <tr> <td>LTDN SYS CTMT VLV BGHV8160</td><td>BG HV-8160 Letdown System Inside CTMT Iso</td><td>LTDN SYS INNER CTMT ISO VLV BG HIS-8160</td><td>BGE8160 REGEN HX TO LTDN HX</td></tr> </tbody> </table> <p>Applicant verified White lights LIT at ESFAS status panels.</p>				Status Panel	Attachment B	Handswitch	NPIS Point	RX M/U WATER CTMT ISO	BL HV-8047 Reactor Makeup Water Outside CTMT Iso	REACTOR M/U WTR CTMT ISO VLV BL HIS-8047	BLE8047 RX M/U CTMT ISO VLV	INST AIR SPLY TO CTMT ISO	KA FV-29 Reactor Bldg Instr Air Supply Outside CTMT Iso	INST AIR SPLY CTMT ISO VLV KA HIS-29	KAE0029 INST AIR CTMT ISO VLV	LTDN SYS CTMT VLV BGHV8160	BG HV-8160 Letdown System Inside CTMT Iso	LTDN SYS INNER CTMT ISO VLV BG HIS-8160	BGE8160 REGEN HX TO LTDN HX
Status Panel	Attachment B	Handswitch	NPIS Point																		
RX M/U WATER CTMT ISO	BL HV-8047 Reactor Makeup Water Outside CTMT Iso	REACTOR M/U WTR CTMT ISO VLV BL HIS-8047	BLE8047 RX M/U CTMT ISO VLV																		
INST AIR SPLY TO CTMT ISO	KA FV-29 Reactor Bldg Instr Air Supply Outside CTMT Iso	INST AIR SPLY CTMT ISO VLV KA HIS-29	KAE0029 INST AIR CTMT ISO VLV																		
LTDN SYS CTMT VLV BGHV8160	BG HV-8160 Letdown System Inside CTMT Iso	LTDN SYS INNER CTMT ISO VLV BG HIS-8160	BGE8160 REGEN HX TO LTDN HX																		
	Cue:																				
	Score: SAT or UNSAT	SAT or UNSAT																			
	Comment:																				

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S5</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	The plant experienced an event and Safety Injection has actuated. The CRS has entered EMG E-0, REACTOR TRIP OR SAFETY INJECTION.
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INITIATING CUE:	The CRS directs you to perform Attachment F, AUTOMATIC SIGNAL VERIFICATION, of EMG E-0, REACTOR TRIP OR SAFETY INJECTION.
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Align Safeguards Bus to Alternate Power Source	JPM No.:	<u>S6</u>
K/A Reference:	062 EA2.03 Ability to determine or interpret the following as they apply to a Station Blackout: Actions necessary to restore power.		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>The plant has experienced a complete loss of AC electrical power to the switchyard.</p> <p>EDG "B" is tagged out for maintenance and is currently disassembled.</p> <p>Bus NB01 experienced a bus lockout and Electrical Maintenance estimates it will take three hours to clear it.</p> <p>EDG "A" has been secured.</p> <p>The crew is performing EMG C-0, LOSS OF ALL AC POWER.</p>
Task Standard:	The Applicant aligned switchyard 69kV bus power to NB02 and re-energized the ESF bus using XNB01.

Required Materials:	<p>OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02) rev 27</p> <p>Simulator Setup: IC 323</p> <p>Booth:</p> <p>Place Test Caution Tags on KJ HS-108A <u>and</u> NB HIS-26.</p> <p>Place NB HIS-26 in PTL.</p> <p>Perform steps 14 and 15 of EMG C-0 – placing equipment in PTL.</p> <p>The Booth Operator will insert Key 3 at the proper time.</p> <p>NOTE: IC 323 made from IC 30 and includes the following ACTIONS: mSY01: Loss of all off-site power (Key 1) mNB03: NB01 Lockout(Key 1) Delete mSY01 rSY11: Close Breaker 69-14 from Athens (1ZL-SY012 red) rSY18: Open disconnect 13-23 (Key 3)</p>
General References:	OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02)
Handouts:	OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02)
Initiating Cue:	<p>System Operations has informed the Control Room that they have re-energized the 69kv Bus in the Switchyard.</p> <p>The Control Room Supervisor directs you to perform OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02), to restore power from the Switchyard to NB02 Bus using XNB01.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	20 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02), step 1
	Performance Step: 1 1	Check AC Emergency Buses – AT LEAST ONE ENERGIZED * NB01 Voltage – Normal <u>OR</u> * NB02 Voltage – Normal
	Standard:	Applicant recognized neither bus had voltage. Applicant transitioned to the Response Not Obtained column.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 1RNO a	<u>IF</u> entering this procedure from EMG C-0, LOSS OF ALL AC POWER, or OFN NB-034, LOSS OF ALL AC POWER – SHUTDOWN CONDITIONS, <u>THEN</u> go to the desired attachment: * Attachment A, Step A14 for NB01 * Attachment B, Step B14 for NB02
	Standard:	Applicant recognized only NB02 could be energized from Initiating Cue and transitioned to Attachment B, Step 14.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment B, LOSS OF NB02
	Performance Step: 3 B14	Check NB02 Bus Lockout Relays – RESET <ul style="list-style-type: none"> Annunciator 00-021A, NB02 BUS LOCKOUT - CLEAR
	Standard:	Applicant checked MCB alarm window 021A – NOT LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	CAUTION prior to step B14: Prior to using any normal operating procedure to restore equipment and/or resetting any lockout relays, all faults should be verified to be clear.

	Performance Step: 4 B15	Check Emergency Diesel NE02 - RUNNING
	Standard:	Applicant identified EDG “B” NE02 was tagged out from Initial Conditions and Test Caution tags on MCB. Applicant transitioned to the Response Not Obtained Column.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Power to the East or West Switchyard bus is required to energize XNB02. East and West Bus voltage lights are extinguished.
	Performance Step: 5 B15 RNOa	<u>IF</u> SM/CRS directs that NB02 be energized from a source other than the diesel, <u>THEN</u> go to: <ul style="list-style-type: none"> * Step B18 for normal offsite power via XNB02 <u>OR</u> <ul style="list-style-type: none"> * Step B20 for alternate offsite power via XNB01
	Standard:	Applicant recognized normal offsite power to the Startup Transformer and XNB02 was not available or recalled from Initiating Cue to energize NB02 from XNB01 and transitioned to step B20.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Also acceptable to trace the MCB mimic to verify no power to the transformer.
	Performance Step: 6 B20a	Check Alternate Offsite Power Supply – AVAILABLE Check Annunciator 00-019A, XNB01 XFMR LOCKOUT – CLEAR
	Standard:	Applicant checked MCB window 019A – NOT LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 B20b	Check ESF Transformer XNB01 – ENERGIZED BY OFFSITE POWER
	Standard:	Applicant used Main Control Board mimic to verify 0 volts on XNB01. Applicant checked voltage from XNB01 – 0 Volts then transitioned to the Response Not Obtained column
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 B20 RNO b1	Energize XNB01, using Attachment C, PLACING XNB01 ON SL-7
	Standard:	Applicant transitioned to Attachment C step C1.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	This is the Alternate Success Path.

	Examiner NOTE:	Attachment C, PLACING XNB01 ON SL-7
	Performance Step: 9 C1	Verify Annunciator 00-012E, #4/#5 XFMR NOT PARALLEL - CLEAR
	Standard:	Applicant checked MCB alarm window 012E – NOT LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 10 C2	On AC Panel BD, Verify Power Supply To #4 Transformer Load Tap Changer – ON <ul style="list-style-type: none">○ Circuit 13○ Circuit 15
	Standard:	Applicant called the Site Watch to verify LTC power available.
	Cue:	Circuit 13 is ON Circuit 15 is ON
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 11 C3	On AC Panel BD, Verify Power Supply To #5 Transformer Load Tap Changer – ON <ul style="list-style-type: none">○ Circuit 2○ Circuit 4
	Standard:	Applicant called the Site Watch to verify LTC power available.
	Cue:	Circuit 2 is ON Circuit 4 is ON
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 12 C4a	Ensure 13.8 KV Breaker 13-8 Alternate Feeder To XNB01 Is Ready To Be Closed: a. Breaker 13-8 – RACKED IN
	Standard:	Applicant identified Green light on handswitch 1HS-SY018 – LIT (and/or contacted Site Watch).
	Cue:	If Site Watch contacted: Breaker is racked in.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 13 C4b	b. Breaker 13-8 – OPEN
	Standard:	Applicant identified Green light on handswitch 1HS-SY018 – LIT (and/or contacted Site Watch).
	Cue:	If Site Watch contacted: Breaker is open.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 14 C4c	c. Breaker 13-8 – PROTECTIVE DEVICES RESET
	Standard:	Applicant called Site Watch.
	Cue:	Site Watch cue: Protective devices are reset.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 15 C5	Check MANUAL XFR SWITCH 13-21 Closed o 1ZL-SY025
	Standard:	Applicant identified 1ZL-SY025: o Red light LIT o Green light - EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 16 C6	Place 13.8 KV BKR 13-48 NORMAL FDR TO XNB01 In Pull-To-Lock. <ul style="list-style-type: none">○ 1HS-SY022
	Standard:	Applicant rotated 1HS-SY022 J-handle to the left to TRIP. Applicant observed TRIP Green light - LIT Applicant rotated handle left to PULL TO LOCK and pulled handle out (handle was latched).
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 17 C7a	Energize XNB01 From Bus SL7, As Follows: Ensure #4 Transformer and #5 Transformer load tap changers in auto. <ul style="list-style-type: none">○ #4 Transformer○ #5 Transformer
	Standard:	Applicant contacted Site Watch.
	Cue:	Site Watch cue: Tap changers are in auto.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTE prior to step C7.a When switching load tap changers to auto, minimize the time one transformer is in auto and the other transformer is in manual. A delay may cause the transformers to be out of step due to the transformer in auto to begin stepping while the transformer in manual is not stepping.

	Performance Step: 18 C7b	Check #4 Transformer and #5 Transformer load tap changers near Neutral (N). <ul style="list-style-type: none"> ○ #4 Transformer ○ #5 Transformer
	Standard:	Applicant contacted Site Watch.
	Cue:	Site Watch cue: Tap indicators are at Neutral.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTE prior to step C7. b When the load tap changer on #4 and #5 transformers are placed in auto, they will step to almost ZERO. This is to prevent a degraded voltage condition on NB01.

	Examiner NOTE:	Supervisory System signal will delay breaker closure by a few seconds.
*	Performance Step: 19 C7c	Close 13.8 KV BKR 13-8 ALT FDR TO XNB01. <ul style="list-style-type: none"> ○ 1HS-SY018
	Standard:	Applicant rotated 1HS-SY018 J-handle to the right and observed: <ul style="list-style-type: none"> ○ Red Light – LIT ○ Green Light - EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Requires Booth operator to open the disconnect by inserting KEY 3.
	Performance Step: 20 C8	Open Manual Transfer Switch 13-23 <ul style="list-style-type: none"> ○ 1ZL-SY026
	Standard:	Applicant contacted the Site Watch to open disconnect 1ZL-SY026 Red light – EXTINGUISHED, Green light - LIT Applicant returned to step B20 b. RNO 2)
	Cue:	Booth: insert Key 3. After Key 3 insert, report: Site watch cue: Disconnect 13-23 is open.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment B, LOSS OF NB02, step B20 RNO b 2
	Performance Step: 21 B20 RNO b 2	IF ESF transformer XNB01 can be energized, <u>THEN</u> go to step 21.
	Standard:	Applicant recognized the transformer was energized from bus SL7 and transitioned to step 21.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 22 B21	Check NB01 Normal Supply Breaker NB0112 – OPEN <ul style="list-style-type: none"> ○ NB HIS-2
	Standard:	Applicant identified on NB HIS-2: <ul style="list-style-type: none"> ○ Red Light – EXTINGUISHED ○ Green Light – LIT ○ Amber light - LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment B, LOSS OF NB02, step 22: Reenergize NB02 From Alternate Offsite Power Supply:
*	Performance Step: 23 B22a	Place NB02 Alternate Supply Sync Transfer switch to ON position. <ul style="list-style-type: none"> ○ NB HS-9
	Standard:	Applicant rotated NB HS-9 J-handle to the right 2 clicks (arrow pointed to ON).
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 24 B22b	Place 4.16 KV BUS NB02 SYN-SCOPE SEL to ALT FDR BRKR position. ○ NB HS-11
	Standard:	Applicant rotated NB HS-11 J-handle (left or right) 2 clicks (arrow on handle pointed to ALT FDR BRKR).
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 25 B22c	Check BUS NB02 VOLTAGE INCOMING SOURCE – NORMAL ○ NB EI-29
	Standard:	Applicant observed a voltage reading near the GREEN BAND on NB EI-29.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 26 B22d	Close NB02 Alternate Supply Breaker NB0212. ○ NB HIS-5
	Standard:	Applicant rotated NB HIS-5 J-handle to the right and observed: ○ Red light – LIT ○ Green light – EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 27 B22e	Place NB02 Alternate Supply Sync Transfer switch to OFF. ○ NB HS-9
	Standard:	Applicant rotated NB HS-9 J-handle 2 clicks left until the arrow pointed to OFF.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 28 B22f	Place 4.16 KV BUS NB02 SYNC-SCOPE SEL to OFF. ○ NB HS-11
	Standard:	Applicant rotated NB HS-11 J-handle (left or right) 2 clicks until the arrow pointed to OFF.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 29 B23	Check NB02 - ENERGIZED
	Standard:	Applicant checked bus voltage meter NB EI-2 voltage in GREEN BAND. Applicant checked White light LIT on 4.16KV BUS NB02, NB ZL-6
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S6</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The plant has experienced a complete loss of AC electrical power to the switchyard.</p> <p>EDG "B" is tagged out for maintenance and is currently disassembled.</p> <p>Bus NB01 experienced a bus lockout and Electrical Maintenance estimates it will take three hours to clear it.</p> <p>EDG "A" has been secured.</p> <p>The crew is performing EMG C-0, LOSS OF ALL AC POWER.</p>
INITIATING CUE:	<p>System Operations has informed the Control Room that they have re-energized the 69kv Bus in the Switchyard.</p> <p>The Control Room Supervisor directs you to perform OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02), to restore power from the Switchyard to NB02 Bus using XNB01.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Determine IR Instrumentation Malfunction.	JPM No.:	<u>S7</u>
K/A Reference:	<p>015 K6.02 Knowledge of the effect of a loss or malfunction on the following will have on the NIS: Discriminator / compensation circuits</p> <p>015 A2.02 Ability to (a) predict the impacts of the following malfunctions or operation on the NIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty or erratic operation of detectors or compensating components</p>		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	x
Classroom	Simulator	x	Plant
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	A reactor trip occurred from 100% sixteen minutes ago.		

Task Standard:	<p>Applicant evaluated plant conditions using EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST), and diagnosed valid yellow paths for:</p> <p>Subcriticality tree: EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN.</p> <p>Heat Sink tree: EMG FR-H5, RESPONSE TO STEAM GENERATOR LOW LEVEL.</p> <p>Applicant manually energized source range detectors using EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN.</p>
Required Materials:	<p>EMG F-0 rev 16, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST)</p> <p>EMG FR-S2 rev 9, RESPONSE TO LOSS OF CORE SHUTDOWN</p> <p>Simulator set-up: IC 329 (started with IC 30 with mSE04B at 4.0E-8)</p> <p>Place White OOS Sticker on NR-45 and turn recorder off.</p>
General References:	EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST), EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN
Handouts:	EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST), EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN
Initiating Cue:	<p>The CRS directs you to perform EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST).</p> <p>Notify the CRS of any valid Red, Orange or Yellow path procedures.</p> <p>NR-45 is out of service.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST), step 1
	Performance Step: 1 1	Check Containment Pressure – LESS THAN 5 PSIG
	Standard:	<p>Applicant determined Containment pressure < 5 psig</p> <ul style="list-style-type: none"> * GN PR-934, CTMT PRESS RECORDER * GN PI-934, CTMT ATMS PRESS * GN PI-936, CTMT ATMS PRESS * GN PI-935, CTMT ATMS PRESS * GN PI-937, CTMT ATMS PRESS * GN PI-939, CTMT ATMS PRESS * GN PR-938, CTMT PRESS RECORDER
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	<p>NOTES prior to step 1 of EMG F-0:</p> <ul style="list-style-type: none"> o Notes and cautions within EMG procedures which prohibit the use of functional restoration procedures shall take precedence over the requirements of this procedure. o Monitoring of Critical Safety Function Status Trees shall be performed by a Licensed Operator or qualified Shift Technical Advisor. o Foldout page shall be monitored throughout this procedure.

	Performance Step: 2 2	Check Containment Radiation – HAS REMAINED LESS THAN 10^5 R/HR <ul style="list-style-type: none">○ GTA 591○ GTA 601○ GT RR-60
	Standard:	Applicant checked radiation remained $< 10^5$ R/HR: <ul style="list-style-type: none">○ RM-11 (SP056A) computer display(s)○ NPIS terminal displays: GTN0591, GTN0601○ RL020 Recorder GT RR-60, CTMT RAD RECORDER
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 3	Use Normal Containment Setpoints
	Standard:	Applicant used normal Containment setpoints.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	NPIS computer may indicate an Orange path during the time the “good” NI is bouncing around zero startup rate. Orange path EMG FR-S1 is not valid because NI-36 is under compensated reading greater than 4.0E-8 on the MCB meter SE NI-36B, INTERMEDIATE RANGE AMPS METER.
*	Performance Step: 4 4a	Check Critical Safety Functions – SATISFIED a. Subcriticality using FIGURE 1
	Standard:	Applicant used FIGURE 1, SUBCRITICALITY, and determined: <ul style="list-style-type: none"> * NO valid Red or Orange path * Valid Yellow path terminus EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN. Using Foldout Page Item #3, Applicant continued with procedure.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comments	<p>Foldout Page item #3 Yellow Path Condition Criteria:</p> <p><u>IF</u> a yellow path is diagnosed, <u>THEN</u> perform the following:</p> <p>a. Continue to check the status of all remaining critical safety functions.</p> <p>b. <u>IF</u> no red or orange paths exist, <u>THEN</u> perform one of the following as determined by Shift Manager or Control Room Supervisor:</p> <ul style="list-style-type: none"> * Continue with procedure and step in effect. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> * Go to or continue with highest priority yellow path functional restoration procedure for affected critical safety functions. <p>NOTES prior to step 4:</p> <ul style="list-style-type: none"> ○ Critical safety functions shall be monitored in order listed. ○ Core exit temperature shall be determined using five hottest core exit thermocouples. ○ The Safety Parameter Display System (SPDS) may be used on place of figures provided in this procedure. ○ When adverse containment conditions exist, use Gamma-Metrics indication.

	Performance Step: 5 4b	Check Critical Safety Functions – SATISFIED b. Core Cooling using FIGURE 2
	Standard:	Applicant used FIGURE 2, CORE COOLING, and determined: * NO valid Red, Orange or Yellow path
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comments	

*	Performance Step: 6 4c	Check Critical Safety Functions – SATISFIED c. Heat Sink using FIGURE 3
	Standard:	Applicant used FIGURE 3, HEAT SINK, and determined: * NO valid Red or Orange path * Valid Yellow path terminus, EMG FR-H5, RESPONSE TO STEAM GENERATOR LOW LEVEL
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 4d	Check Critical Safety Functions – SATISFIED d. Integrity using FIGURE 4
	Standard:	Applicant used FIGURE 4, INTEGRITY, and determined: * NO valid Red, Orange or Yellow path
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 4e	Check Critical Safety Functions – SATISFIED e. Containment using FIGURE 5
	Standard:	Applicant used FIGURE 5, CONTAINMENT, and determined: * NO valid Red, Orange or Yellow path
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 4f	Check Critical Safety Functions – SATISFIED f. Inventory using FIGURE 6
	Standard:	Applicant used FIGURE 6, INVENTORY, and determined: * NO valid Red, Orange or Yellow path
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN is a higher priority procedure based on it will actually mitigate a plant condition. EMG FR-H5 RESPONSE TO STEAM GENERATOR LOW LEVEL is not required because the AFW pumps are operating and level increase in the Steam Generators occurs without Operator action.
*	Performance Step: 10 5	Notify Control Room Operators Of Critical Safety Function Monitoring Results.
	Standard:	Applicant stated: <ul style="list-style-type: none"> o No valid Red path procedures o No valid Orange path procedures o Valid Yellow path procedures: <ol style="list-style-type: none"> 1) EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN 2) EMG FR-H5, RESPONSE TO STEAM GENERATOR LOW LEVEL
	Cue:	You will perform ONE of these yellow path procedures. Which procedure do you recommend be performed to meet EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES?
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	This is the Alternate path step. If Applicant performs step 1 of EMG FR-H5, RESPONSE TO STEAM GENERATOR LOW LEVEL, JPM is complete.

	Examiner NOTE:	EMG FR-S2, RESPONSE TO LOSS OF CORE SHUTDOWN, step 1
*	Performance Step: 11 1	Check Intermediate Range Flux – LESS THAN 10^{-10} AMPS [GAMMA METRICS LESS THAN $6 \times 10^{-5}\%$]
	Standard:	Applicant at RL003 checked Intermediate Flux < 10^{-10} amps: <ul style="list-style-type: none"> o SE NI-35B – Yes, AMPS stable at 10^{-11} o SE NI-36B – No, AMPS 4×10^{-8}; Perform RNO
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Performance Step: 12 1RNO a.	<u>IF</u> flux decreasing, <u>THEN</u> perform the following: 1) Monitor flux. 2) <u>WHEN</u> flux is less than 10^{-10} amps [GAMMA METRICS less than $6 \times 10^{-5}\%$], <u>THEN</u> do steps 2 and 3. 3) Continue with procedure step in effect.
Standard:	Applicant found flux stable.
Cue:	
Score: SAT or UNSAT	SAT or UNSAT
Comment:	

Performance Step: 13 1RNO b. 1)	Check intermediate range channels for under compensation: 1) Perform channel check
Standard:	Applicant compared SE NI-35B amps to SE NI-36B amps and noted a large differential.
Cue:	
Score: SAT or UNSAT	SAT or UNSAT
Comment:	

Performance Step: 14 1RNO b. 2)	2) Check post-trip trace on NR-45 recorder – NOT NORMAL
Standard:	Applicant found NR-45 recorder was Out-Of-Service.
Cue:	
Score: SAT or UNSAT	SAT or UNSAT
Comment:	

Performance Step: 15 1RNO b. 3)	3) <u>WHEN</u> reactor has been tripped for greater than 15 minutes, <u>THEN</u> check source range detectors – NOT ENERGIZED
Standard:	Applicant recalled from Initial Conditions the reactor trip was 16 minutes ago and SR not energized.
Cue:	
Score: SAT or UNSAT	SAT or UNSAT
Comment:	

*	Performance Step: 16 1RNO c.	<u>IF</u> either intermediate range channel is under compensated, <u>THEN</u> go to step 2.
	Standard:	Applicant found SE NI-36B under compensated and transitioned to step 2.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 17 2 a.	Check source range detectors - ENERGIZED.
	Standard:	Applicant determined source range detectors were not energized and performed the RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 18 2 a. RNO a.	Manually reset source range detectors. <ul style="list-style-type: none"> ○ SE HS-5 ○ SE HS-10
	Standard:	Applicant depressed: <ul style="list-style-type: none"> ○ SE HS-5 ○ SE HS-10 Source range meter SE NI-31B went up scale Source range meter SE NI-32B went up scale
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>S7</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	A reactor trip occurred from 100% sixteen minutes ago.
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INITIATING CUE:	<p>The CRS directs you to perform EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST).</p> <p>Notify the CRS of any valid Red, Orange or Yellow path procedures.</p> <p>NR-45 is out of service.</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Start a Rod Drive Motor Generator Set	JPM No.:	<u>P1</u>
K/A Reference:	001 2.2.1 Ability to perform pre-startup procedures for the facility, including those controls associated with plant equipment that could affect reactivity		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:	x	Actual Performance:	
Classroom		Simulator	
		Plant	x

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Auxiliary Building operator. GEN 00-003, HOT STANDBY TO MINIMUM LOAD, is in progress.
Task Standard:	The first Rod Drive Motor Generator, SF01, has been started and loaded with generator volts between 255 volts and 265 volts.
Required Materials:	SYS SF-120, ROD CONTROL SYSTEM OPERATION, rev 35
General References:	SYS SF-120, ROD CONTROL SYSTEM OPERATION
Handouts:	SYS SF-120, ROD CONTROL SYSTEM OPERATION
Initiating Cue:	<p>The Control Room Supervisor directs you to perform SYS SF-120, ROD CONTROL SYSTEM OPERATION, to start and load Rod Drive Motor Generator (RDMG) set, SF01, up to and including step 6.1.6.</p> <p>The prerequisites have been completed.</p> <p>Do not operate any components in the plant, upon arriving at a component, describe what you expect to see, what you expect to do, and what you expect to happen.</p>

Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 Minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of SYS SF-120 to Applicant.

START TIME: _____

	Examiner NOTE:	SYS SF-120, ROD CONTROL SYSTEM OPERATION, section 6.1, Starting The First Rod Drive MG Set
	Performance Step: 1 6.1.1	Ensure the MG set output breaker on the rod drive MG set being started is racked in.
	Standard:	Applicant described breaker SF103A521, #1 Rod Drive MG Set Generator Output Breaker, inside panel SF103A is racked in and charged flag showing.
	Cue:	Breaker window displays "CHARGED" Breaker window displays as found.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTES prior to step 6.1.1 <ul style="list-style-type: none">○ MG set input and output breakers are normally operated by their handswitches on SF103A/B. If required the breakers may be operated locally.○ If either RDMG set output breaker is racked out, neither output breaker can be closed from the handswitch on the panel.

*	Performance Step: 2 6.1.2	Close the motor input breaker for the rod drive MG set to be started. * Motor Input Breaker for SF01 - CLOSED <u>OR</u> * Motor Input Breaker for SF02 – CLOSED
	Standard:	1. <input type="checkbox"/> Applicant on panel SF01 simulated rotating the switch handle to CLOSE. 2. <input type="checkbox"/> Applicant verified the Red lamp illuminated and the Green lamp extinguished. 3. <input type="checkbox"/> Applicant described SF01 startup sounds.
	Cue:	1. Red lamp is LIT and the Green lamp is EXTINGUISHED. Handswitch flag is Red. 2. Startup noise is heard.sound has leveled off.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant may select voltmeter indication at this time (reading will be zero until field is flashed).

*	Performance Step: 3 6.1.3	<u>WHEN</u> the first rod drive MG set is at speed, <u>THEN</u> depress its Generator Field Flash pushbutton. ○ Generator Field Flash - DEPRESSED
	Standard:	1. <input type="checkbox"/> Applicant simulated depressing Generator Field Flash button on panel SF103A (above the input and output breaker handswitches). 2. <input type="checkbox"/> Applicant simulated selecting position 1-2, 2-3, or 3-1 on voltmeter handswitch verifying voltage increasing.
	Cue:	Generator line voltage is increasing.....generator line voltage stabilized at 250 volts.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Locking thumbscrew must be loosened before adjusting potentiometer and tightened after adjustments are complete.
*	Performance Step: 4 6.1.4	Adjust the voltage adjust potentiometer, as necessary, to establish generator line voltage between 255 to 265 volts. ○ Generator Line Voltage - BETWEEN 255 VOLTS AND 265 VOLTS
	Standard:	1. <input type="checkbox"/> Applicant simulated turning the potentiometer toward High. 2. <input type="checkbox"/> Applicant simulated rotating the voltage selector switch to position 1-2, 2-3, or 3-1 to check voltage between 255 and 265 volts.
	Cue:	Generator line voltage is 260 volts.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 5 6.1.5	Close the generator output breaker on the first Rod Drive MG set. ○ Generator Output Breaker - CLOSED
	Standard:	1. <input type="checkbox"/> Applicant simulated rotating the handle to the Close position. 2. <input type="checkbox"/> Applicant checked the Red lamp LIT and the Green lamp EXTINGUISHED.
	Cue:	Red lamp is LIT and the Green lamp is EXTINGUISHED. Handswitch flag is Red.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 6.1.6	Section 6.1, Starting the first Rod Drive MG set, complete.
	Standard:	Applicant simulated contacting Control Room Supervisor of having completed SYS SF-120 up to and including step 6.1.6.
	Cue:	Acknowledge report.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>P1</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	You are the Auxiliary Building operator. GEN 00-003, HOT STANDBY TO MINIMUM LOAD, is in progress.
INITIATING CUE:	<p>The Control Room Supervisor directs you to perform SYS SF-120, ROD CONTROL SYSTEM OPERATION, to start and load Rod Drive Motor Generator (RDMG) set, SF01, up to and including step 6.1.6.</p> <p>The prerequisites have been completed.</p> <p>Do not operate any components in the plant, upon arriving at a component, describe what you expect to see, what you expect to do, and what you expect to happen.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Align Auxiliary Feedwater alternate suction from Fire Protection Standpipe	JPM No.:	<u>P2</u>
K/A Reference:	061 A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: pump failure or improper operation		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:	<input checked="" type="checkbox"/>	Actual Performance:	<input type="checkbox"/>
Classroom	<input type="checkbox"/>	Plant	<input checked="" type="checkbox"/>

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	The plant has experienced a Reactor Trip and a Safety Injection.
Task Standard:	The Applicant simulated installing a fire hose from a Fire Protection standpipe to ESW suction piping at AL-V157 using a fire hose to National Pipe Thread adapter. The Applicant simulated initiating full flow to pump suction piping from the fire protection header using standpipe valve KC-V278.
Required Materials:	EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, rev 25A
General References:	EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, step 33.c RNO, and Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE.

Handouts:	<p>EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE (pages 112 –114)</p> <p>Handout 1 Photograph of Emergency Locker contents. Handout 2 Photograph of Fire protection to NPT adapter. Handout 3 Photograph of Fitting for APV0006</p>
Initiating Cue:	<p>The Control Room Supervisor informs you that all Auxiliary Feedwater (AFW) has been lost and directs you to locally align the Fire Protection System to AFW per EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE to Motor Driven AFW pump B.</p> <p>Do not operate any components in the plant, upon arriving at a component, describe what you expect to see, what you expect to do, and what you expect to happen.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	20 Minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	When the Applicant states they would obtain a copy of EMG FR-H1, Attachment E, from the AFW Corridor emergency locker or the Control Room or print a copy using a computer terminal, provide the Information Only copy of Attachment E of the procedure.
	Performance Step: 1	Applicant obtains Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE of EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
	Standard:	Applicant determined a copy of Attachment E was needed to complete the task.
	Cue:	Provide ATTACHMENT E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE, step E1, Align Fire Water To AFW.
*	Performance Step: 2 E1 a	Obtain adapter from AFW Emergency Locker in AFP Room corridor.
	Standard:	Applicant: <ul style="list-style-type: none"> ○ Described unlocking and opening the cabinet. ○ Described the adapter in AFW Emergency Locker in AFP Room corridor. ○ Applicant must point out the correct adapter for the task.
	Cue:	Handout 1 after lock is removed and doors are open. Handout 2 after Applicant identifies the correct adapter. Handout 3 if Applicant identifies the incorrect adapter. "Adaptor in hand."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	The AFW Emergency Locker is required to be locked. Once the Applicant describes locker contents, supply the Applicant with the photograph of the locker with doors open. Applicant may simulate taking out pipe wrench and hose coupling wrenches at this time.

	Examiner NOTE:	Door 13291 is the shield door to the AFW Corridor that requires badging to enter.
	Performance Step: 3 E1 b	Secure door 13291 open.
	Standard:	Applicant described method to hold door 13291 OPEN.
	Cue:	"Door is secured open." Cues if requested: <ul style="list-style-type: none">○ Work Controls SRO will prepare a breach permit.○ Security has been notified.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 4 E1 c	<p>Connect 3 inch fire hose from KC-V278 (located 2000' TURB BLDG, INSIDE STAIR SE CORNER DOOR 43141) to one of the following AFP suction flush valves:</p> <ul style="list-style-type: none"> * AL-V157, B ESW TO B MDAFP SUCTION FLUSH VLV (Area 5 down the ladder West side of room) to MDAFP B suction for S/Gs A and D <ul style="list-style-type: none"> o Ensure AL HV-30, ESW TO MD AFP B ISO VALVE – CLOSED
	Standard:	<ol style="list-style-type: none"> 1. <input type="checkbox"/> Applicant located 3-inch fire hose in a fire hose house or from Fire Brigade locker. 2. <input type="checkbox"/> Applicant described attaching female end of fire hose to KC-V278 by threading hose coupling clockwise on to standpipe fitting and tightened using a hose wrench. 3. <input type="checkbox"/> Applicant simulated unrolling fire hose from KC-V278 through Turbine Building stairwell door, around toilets and mop closet. Hose links were coupled together using 2 hose wrenches and then unrolled through door 13291 into the AFW corridor, then down through the hatchway into the suction piping lower level. 4. <input type="checkbox"/> Applicant located AL-V157 in the Aux Feedwater Pump Valve Pit on the west side. Applicant simulated obtaining a large pipe wrench. Applicant simulated using pipe wrench to rotate AL V-157 pipe cap in the counter-clockwise direction to remove the cap. 5. <input type="checkbox"/> Applicant simulated threading adapter onto drain line from AL-V157 by threading it on clockwise. 6. <input type="checkbox"/> Applicant threaded male end of fire hose to adapter by threading it on clockwise. 7. <input type="checkbox"/> Applicant checked stem and position indication of AL HV-30, ESW TO MD AFP B ISO VALVE - CLOSED.
	Cue:	<ol style="list-style-type: none"> 1. "Hose located." 2. "Hose attached to KC-V278." 3. "Hose is unrolled." 4. "AL-V157 cap removed." 5. "Adapter installed." 6. "Fire hose attached to adapter." 7. "AL HV-30 – CLOSED."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 E1 d	Ensure fire pump is running.
	Standard:	Applicant simulated gaitronics call to the Control Room to request fire pump status.
	Cue:	"Motor Driven Fire pump is running."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6 E1 e	Locally disable valve travel stop and open Turbine Building Fire Hose Isolation to pressurize the hose. ○ KC-V278 - OPEN
	Standard:	<ol style="list-style-type: none"> <input type="checkbox"/> Applicant simulated valve travel stop removal using Allen key or bending travel stop up so it does not engage valve collar. <input type="checkbox"/> Applicant simulated operating KC-V278 handwheel in the counter clockwise direction until it stops turning, stem fully extended. <input type="checkbox"/> Applicant described hearing water flow noise and seeing fire hose inflate.
	Cue:	<ol style="list-style-type: none"> "KC-V278 valve travel stop disabled." "KC-V278 stem fully extended." "Flow noise heard. Fire hose inflated until hard."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 7 E1 f	Locally open the AFW suction flush valve that was used in Step E1. c. * AL-V157, B ESW TO B MDAFP SUCTION FLUSH VLV to MDAFP B suction for S/Gs A and D.
	Standard:	Applicant simulated rotating AL-V157 handwheel counter clockwise until the handwheel stopped turning, stem fully extended.
	Cue:	"AL-V157 valve stem is extended."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 E1 g	Notify Shift Manager / Control Room Supervisor that fire protection has been aligned to supply Aux Feedwater per Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE.
	Standard:	Applicant simulated gaitronics call and notified Control Room that fire protection was aligned to supply Aux Feedwater per Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE.
	Cue:	Acknowledge the report.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 E1 h	Return to procedure and step in effect.
	Standard:	Applicant determined fire protection aligned to supply Aux Feedwater per Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE and JPM task was complete.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>P2</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	The plant has experienced a Reactor Trip and a Safety Injection.
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INITIATING CUE:	<p>The Control Room Supervisor informs you that all Auxiliary Feedwater (AFW) has been lost and directs you to locally align the Fire Protection System to AFW per EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Attachment E, AFW ALTERNATE SUCTION FROM FIRE PROTECTION STANDPIPE to Motor Driven AFW pump B.</p> <p>Do not operate any components in the plant, upon arriving at a component; describe what you expect to see, what you expect to do, and what you expect to happen.</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Increasing Spent Fuel Pool level.	JPM No.:	P3
K/A Reference:	033 A2.03 Ability to (a) predict the impacts of the following malfunctions or operation on the Spent Fuel Pool Cooling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunction or operations: Abnormal spent fuel pool water level or loss of water level.		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:	x	Actual Performance:	
Classroom		Simulator	
		Plant	x

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>Unit is in MODE 1.</p> <p>A Chemistry Operations Action Form (COAF) has been received in the Control Room to add 4 inches to the Spent Fuel Pool using Reactor Makeup Water (BL) per COAF #000012345.</p> <p>Spent Fuel Pool Cleanup Pump "A" is in service.</p> <p>Spent Fuel Pool Cooling Train "A" is in service.</p>
Task Standard:	Spent Fuel Pool level increased after Spent Fuel Pool Cleanup Pump "A" (PEC02A) was secured and isolated.
Required Materials:	SYS EC-201 rev 4, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER, SYS EC-320 rev 21, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN

General References:	SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER, SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN
Handouts:	SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER; SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN; COAF # 000012345
Initiating Cue:	<p>The Control Room Supervisor assigned you to perform section 6.1 of SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER. Prerequisites are met.</p> <p>Do not operate any components in the plant, upon arriving at a component; describe what you expect to see, what you expect to do, and what you expect to happen.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	30 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER, section 6.1
*	Performance Step: 1 6.1.1	Ensure FUEL POOL CLEANUP DEMIN TO SPENT FUEL POOL DNSTM ISO is open. <ul style="list-style-type: none"> EC-V076 - OPEN
	Standard:	<p>A. Valve found OPEN - Applicant described valve open with valve stem fully extended through handwheel. (Not Critical)</p> <p>B. Valve found CLOSED – Applicant simulated turning handwheel counter-clockwise, stem rising through handwheel and handwheel stopped when stem fully extended.</p>
	Cue:	"Stem is full up."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	EC-V076 on 2000' Fuel Bldg., SFP HX "A" Room, behind HX.

	Examiner NOTE:	<p>Applicant may call Control Room to start second RMW Pump. Low pressure signal (provides MCB alarm) starts second pump, which may occur when opening EC-V128.</p> <p>Applicant may turn handwheel and check with Control Room before continuing to open valve.</p>
*	Performance Step: 2 6.1.2	Unlock and slowly throttle open RMW TO SPENT FUEL POOL ISO. <ul style="list-style-type: none"> EC-V128 – UNLOCKED AND THROTTLED OPEN
	Standard:	Applicant unlocked valve by using side-cutters (or other tool), removed chain and turned handwheel in the counter-clockwise direction.
	Cue:	If needed: "Discharge pressure is still 140 psig."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	<p>CAUTION prior to step 6.1.2: Addition of Reactor Makeup Water to the Spent Fuel Pool will dilute Spent Fuel Pool boron concentration. Spent Fuel Pool boron concentration should not be allowed to decrease below 2400 ppm.</p> <p>Applicant located EC-V128 on 2000' Fuel Bldg., SFP HX "A" Room, Skimmer pump area. EC-V128 located behind skimmer pump under scaffold.</p>

	Examiner NOTE:	Applicant may continue to throttle EC-V128 until full open.
	Performance Step: 3 6.1.3	Check SFP LEV increasing. ○ EC LI-39A – LEVEL INCREASING
	Standard:	Applicant simulated using gaitronics to call Control Room to request Spent Fuel Pool level trend from MCB EC LI-39A.
	Cue:	“EC LI-39A is stable, NPIS level trend for Spent Fuel Pool is not changing.”
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTE prior to step 6.1.3: If Spent Fuel Pool level does not increase, Reactor Makeup Water flow may not be able to overcome Fuel Pool Cleanup System pressure. The Fuel Pool Cleanup System may have to be secured to makeup from the Reactor Makeup Water System.

	Examiner NOTE:	After Applicant determined SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN, is required, provide the procedure.
	Performance Step: 4 6.1.4.1	<u>IF</u> level is <u>NOT</u> increasing, <u>THEN</u> perform the following: 1. Shutdown Fuel Pool and Transfer Canal Cleaning System using SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN.
	Standard:	Applicant transitioned to SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN.
	Cue:	Hand Applicant prepared SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Alternate success path step.

	Examiner NOTE:	SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN
	Performance Step: 5	Applicant reviews SYS EC-320, FUEL POOL COOLING AND CLEANING SYSTEM SHUTDOWN, to determine correct procedure section.
	Standard:	Applicant determined section 6.6, Shutting Down Fuel Pool and Transfer Canal Cleaning, is the appropriate section to perform.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Section 6.6, Shutting Down Fuel Pool And Transfer Canal Cleaning
*	Performance Step: 6 6.6.1	Ensure FUEL POOL CLEANUP PUMPS stopped. <ul style="list-style-type: none"> ○ EC HS-23 – STOPPED ○ EC HS-24 - STOPPED
	Standard:	Applicant located Fuel Pool Cleanup Pump LOCAL controls in Fuel Bldg, Spent Fuel Pool Cooling Train “B” Room. <ul style="list-style-type: none"> ○ EC HS-23 local control for “A” Spent Fuel Pool Cleanup Pump. Applicant simulated rotating J-handle EC HS-23 to STOP position. ○ EC HS-24 local control for “B” Spent Fuel Pool Cleanup Pump. Applicant checked J-handle pointing to STOP.
	Cue:	“Fuel Pool Cleanup Pump “A” (PEC02A) no longer rotates.” If asked: “Pump discharge pressure (EC PI-21) is 50 psig.”
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Controls are located on the East and North walls near the pumps.

*	Performance Step: 7 6.6.2	<u>IF</u> SFP Cooling Train A is supplying the cleanup system, <u>THEN</u> close FUEL POOL COOLING HX 1A TO FUEL POOL CLEANUP PUMPS ISO. ○ EC-V025 - CLOSED
	Standard:	Applicant simulated rotating handwheel EC-V025, Fuel Pool HX 1A to Fuel Pool Cleanup Pumps Iso, in the clockwise direction until the stem was fully inserted and handwheel stopped.
	Cue:	"Valve handwheel stops turning, stem fully inserted." If asked: "Pump discharge pressure EC PI-21 indication 10 psig."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Valve located at 2000' Fuel Bldg, SFP HX "A" Room, HX Area (west side of heat exchanger).

	Performance Step: 8 6.6.3	<u>IF</u> SFP Cooling Train B is supplying the cleanup system, <u>THEN</u> close FUEL POOL COOLING HX 1B TO FUEL POOL CLEANUP PUMPS ISO. ○ EC-V033 - CLOSED
	Standard:	Applicant recognized SFP Cooling Train A was supplying the clean up system and NA'd the step.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 6.6.4	<u>IF</u> desired, <u>THEN</u> install transfer canal gate.
	Standard:	Applicant simulated gaitronics contacting the Control Room.
	Cue:	"Transfer gate installation NOT required."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 10 6.6.5	<u>IF</u> STN GP-001, PLANT WINTERIZATION is open, <u>THEN</u> re-establish RWST recirc, using SYS EC-121, RECIRC OF THE RWST THROUGH THE FUEL POOL CLEANUP SYSTEM.
	Standard:	Applicant simulated gaitronics contact of Control Room.
	Cue:	"Another Operator will perform SYS EC-121."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 11 6.6.6	Inform Chemistry of cleanup system flowpath
	Standard:	Applicant simulated gaitronics contact with Control Room or Chemistry.
	Cue:	If Control Room called cue: "Chemistry will be notified." If Chemistry called cue: "Cleanup flow is secured."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 12 6.6.7	Section 6.6, Shutting Down Fuel Pool And transfer Canal Cleaning, complete.
	Standard:	Applicant completed section 6.6 of SYS EC-320. Applicant returned to SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER, step 6.1.4.2
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER, step 6.1.4: <u>IF</u> level is <u>NOT</u> increasing, <u>THEN</u> perform the following:
	Performance Step: 13 6.1.4.2	2. Check SFP LEV increasing. ○ EC LI-39A – LEVEL INCREASING
	Standard:	Applicant simulated gaitronics call to Control Room to request Spent Fuel Pool level trend from MCB EC LI-39A meter.
	Cue:	“EC LI-39A indicates level up slow and NPIS level trend indicates SFP up slow.”
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 14 6.1.5	<u>When</u> Spent Fuel Pool is at desired level, <u>THEN</u> close and lock RMW TO SPENT FUEL POOL ISO. ○ EC-V128 – LOCKED CLOSED
	Standard:	Applicant will wait for cue from Control Room to secure the fill.
	Cue:	“Control Room will contact you when fill is complete, continue your rounds.”
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM is complete.
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STOP TIME: _____

Job Performance Measure No.:	<u>P3</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>Unit is in MODE 1.</p> <p>A Chemistry Operations Action Form (COAF) has been received in the Control Room to add 200 gallons to the Spent Fuel Pool using Reactor Makeup Water.</p> <p>Spent Fuel Pool Cleanup Pump "A" is in service.</p> <p>Spent Fuel Pool Cooling Train "A" is in service</p>
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INITIATING CUE:	<p>The Control Room Supervisor assigned you to perform section 6.1 of SYS EC-201, FILLING SPENT FUEL POOL FROM REACTOR MAKEUP WATER. Prerequisites are met.</p> <p>Do not operate any components in the plant, upon arriving at a component; describe what you expect to see, what you expect to do, and what you expect to happen.</p>
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