

Facility: <u>FENOC BVPS Unit 2</u>		Date of Examination: <u>12/2002</u>
Examination Level: <u>RO</u>		Operating Test Number: <u>2002-01</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	2.1.7 (3.7) Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. JPM: Perform a QPTR Manual Calculation
	Conduct of Operations	2.1.18 (2.9) Ability to make accurate, clear, and concise logs, records, status boards, and reports. JPM: Complete Operating Logs
A.2	Equipment Control	2.2.12 (3.0) Knowledge of surveillance procedures. JPM: Perform AC Sources Alignment Verification
A.3	Radiation Control	2.3.10 (2.9) Ability to perform procedures to reduce excessive levels of radiation and guard against personal exposure. QUESTION: Give a set of conditions, specify actions when high dose rate is encountered.
	Radiation Control	2.3.1 (2.6) Knowledge of 10CFR20 and related facility radiation control requirements. QUESTION: Give plant conditions and a personal exposure history, calculate stay time.
A.4	Emergency Preparedness	2.4.29 (2.6) Knowledge of the emergency plan. QUESTION: List the ERO facilities activated.
	Emergency Preparedness	2.4.39 (3.3) Knowledge of RO's responsibilities during emergency plan implementation. QUESTION: Responsibilities during search and rescue operations.

Facility: <u>FENOC BVPS Unit 2</u>		Date of Examination: <u>12/2002</u>	
Examination Level: <u>SRO</u>		Operating Test Number: <u>2002-01</u>	
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1	Conduct of Operations	2.1.7 (4.4)	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. JPM: Review a QPTR Manual Calculation
	Conduct of Operations	2.1.18 (3.0)	Ability to make accurate, clear, and concise logs, records, status boards, and reports. JPM: Review Operating Logs
A.2	Equipment Control	2.2.12 (3.4)	Knowledge of surveillance procedures. JPM: Review AC Sources Alignment Verification
A.3	Radiation Control	2.3.1 (3.0)	Knowledge of 10CFR20 and related facility radiation control requirements. JPM: Approve Emergency Exposure
A.4	Emergency Preparedness	2.4.41 (4.1)	Knowledge of emergency action level thresholds and classifications. JPM: Classify an EPP Event

Facility: **BVPS Unit 2** Task No.:
Task Title: Perform a QPTR Manual Calculation JPM No.: 2002 NRC A1a RO
K/A Reference: 015000A1.04 (3.5/3.7)
015000A4.02 (3.9/3.9)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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: The Unit is in Mode 1 at 80% power. The plant computer is NOT available.

Task Standard: QPTR calculation completed and compared to Acceptance Criteria.

Required Materials: Calculator

General References: 2OST-2.4A, Quadrant Power Tilt Ratio Manual Calculation, Rev. 4

Handouts: 2OST-2.4A, Rev. 4
QPTR Parameter Sheet

Initiating Cue: The Unit Supervisor directs you to perform a QPTR manual calculation and report the results.

Time Critical Task: No

Validation Time: 10 minutes

(Denote Critical Steps with an asterisk)

NOTE: The order of QPTR calculation does not have to follow the order of the procedure as long as the method of calculation is correct.

CUE: Provide Candidate with a copy of 2OST-2.4A and QPTR Parameter Sheet.

Performance Step: 1 Obtain upper and lower quadrant excore nuclear instrument detector outputs for each quadrant.

Standard: Locates detector current outputs and enters on Data Sheet 1.

Comment:

Performance Step: 2 Record the excore detector normalization factors.

Standard: Locates normalization factors and records their values on Data Sheet 1.

Comment:

NOTE: In the following steps, the Candidate should not be evaluated UNSAT for a math error only, as long as the method of calculation is correct.

Performance Step: 3 Multiply each detector current reading by its normalization factor to obtain a corrected current.

Standard: Calculates corrected current.

Standard: Records the following for "Current (Cor.)":

N41A = 7.263	N41B = 7.363
N42A = 7.232	N42B = 6.575
N43A = 7.196	N43B = 7.906
N44A = 6.930	N44B = 7.056

Comment:

(Denote Critical Steps with an asterisk)

Performance Step: 4 Determine average upper quadrant and average lower quadrant excore NI detector output.

Standard: Calculates average currents.

Standard: Records the following for "AVG":

Top Detectors = 7.155

Bottom Detectors = 7.250

Comment:

* **Performance Step: 5** Divide each quadrant excore NI detector output by the appropriate (Upper or Lower) average NI detector output.

Standard: Calculates tilt ratios.

Standard: Records the following for "Tilt Ratio":

N41A = 1.015

N41B = 1.016

N42A = 1.011

N42B = 0.907

N43A = 1.006

N43B = 1.090

N44A = 0.969

N44B = 0.973

Comment:

Performance Step: 6 Compare highest Quadrant Power Tilt Ratio to Acceptance Criteria.

Standard: Determines that the QPTR exceeds 1.02 on N43B (1.090).

Comment:

Terminating Cue: When the Candidate reports that the QPTR does not meet the Acceptance Criteria, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A1a RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The Unit is in Mode 1 at 80% power. The plant computer is NOT available.

INITIATING CUE:

The Unit Supervisor directs you to perform a QPTR manual calculation and report the results.

Beaver Valley Power Station**Unit 2****FOR TRAINING USE ONLY****2OST-2.4A****Quadrant Power Tilt Ratio Manual Calculation****Revision 4**

Prepared by	Date	Pages Issued	Effective Date
W. K. Giffrow	09/26/01	1 through 14	
Reviewed by	Date	Validated by	Date
F. J. Schaffner	09/26/01	N/A	
OSC Meeting No.	Date	Approved by	Date
OSC Not Required			

FOR TRAINING USE ONLY**Table Of Contents**

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Frequency: W□□		Surveillance Requirements: 4.2.4.a, BVPS-2 Licensing Requirements Manual	
Required for Mode(s): 1□ Performed in Mode(s): 1		Date / Time Completed: _____ / _____ Total Manhours: _____	
TEST RESULTS: (Completed by Performer)		PERFORMED BY:	
(√ or N/A)		<u>Name (Print)</u>	<u>Initial</u>
<input type="checkbox"/> _____ Test Completed SATISFACTORY			
<input type="checkbox"/> _____ Problems Encountered (See Problem Sheet)			
<input type="checkbox"/> _____ Unscheduled/partial OST (explain) _____ _____			
Reviewer Signature/Date			
STA Review _____ / _____			
NSS Approval _____ / _____			
COMMENTS: (Include Date and Initials)			
<input type="checkbox"/> Comments continued on Problem Sheet			

- ☐ Above 50% of rated thermal power.
- ☐ Required at least once every 12 hours during steady-state operation when QPTR alarm is inoperable.

OST PROBLEM SHEET

See Page and Step No. for problem description. See below for corrective action.

PAGE NO.	STEP NO.	DESCRIBE CORRECTIVE ACTION	INITIALS	DATE

I. PURPOSE

To determine by manual calculation the Quadrant Power Tilt Ratio (QPTR) and verify that it does not exceed the limit given in Technical Specification 3.2.4. This procedure may be entered from an AOP.

II. DISCUSSION

The manual calculation of the Quadrant Power Tilt Ratio is performed as follows:

- Prior to exceeding 50% power on a load increase.
- Once every seven days when power is greater than 50% and the QPTR Monitor is OPERABLE, as determined by 2OST-2.4, "Quadrant Power Tilt Ratio Alarm Check".
- Once every 12 hours whenever the QPTR Monitor is inoperable in accordance with the BVPS-2 Licensing Requirements Manual.

III. ACCEPTANCE CRITERIA

Note:	An exception to the Acceptance Criteria exists for physics testing (Tech. Spec. 3.10.2).
-------	--

- A. Quadrant Power Tilt Ratio (QPTR) does not exceed 1.02 (Data Sheet 1) (T.S. 4.2.4.a).

IV. EQUIPMENT AND MATERIALS

- A. A digital voltmeter (DVM), if determined to be necessary during OST performance.

V. PRECAUTIONS AND LIMITATIONS

- A. Perform this OST every 12 hours with the QPTR alarm inoperable.
- B. If it is suspected that the meter indication on the power range drawers is erratic due to static in the meter face, a DVM should be used to determine current values. The DVM measurement should be taken at the test jacks on the front of the power range drawers.

VI. INITIAL CONDITIONS

A. Plant Status Changes

This procedure does not affect plant status.

B. NSS/ANSS Sign-on

1. A QPTR determination is desired to verify conformance to Technical Specification 3.2.4.

CAUTION: IF POWER IS $\geq 75\%$ AND ONE POWER RANGE HIGH NEUTRON FLUX CHANNEL INPUT TO QPTR IS INOPERABLE, QPTR MUST BE VERIFIED AT LEAST ONCE PER 12 HOURS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SURVEILLANCE 4.2.4.b, USING 2RST-3.4, "INCORE ANALYSIS OF QPTR".

2. If one power range high neutron flux channel input to QPTR is inoperable, **AND** thermal power $< 75\%$, the remaining three power range high neutron flux channels may be used for calculating QPTR.
3. No other tests of the power range channels are being performed during this OST.
4. NSS/ANSS verifies the following:
 - Section VI.A, Plant Status Changes, has been reviewed.
 - Requirements of Section VI.B, NSS/ANSS Sign-on have been verified.
 - Performance of this procedure is authorized.

DATE:	TIME:	CURRENT PLANT MODE:
NSS/ANSS COMMENTS:		

NSS / ANSS Signature _____

C. Reactor Operator Sign-on

1. Reactor Operator performs the following:
 - Acknowledge performance of this procedure.

Reactor Operator Signature _____

D. Procedure Performer Initial Conditions

1. Reactor power is being maintained at a steady-state value.

_____/_____
Initial / Date

2. Operator(s) performing this procedure has reviewed this procedure.

_____/_____
Initial / Date

_____/_____
Initial / Date

VII. INSTRUCTIONS**A. Test Preparation**

1. Record the power range detector QPTR normalization factors, found in the Reactor Engineering Data Book, Data Sheet 3 of 2RST-2.3, "Nuclear Power Range Calibration" OR Data Sheet 5 of 2RST-2.4, "Alignment of Excore Instrumentation for Startup After Reload" OR Data Sheet 3 of 2RST-2.9, "NIS Single Point Calibration" (NSS Office), on Data Sheet 1.

_____/_____
Initial / Date

B. QPTR Determination

Note:	If one power range high neutron flux channel input to QPTR is inoperable, AND thermal power < 75%, the remaining three power range high neutron flux channels may be used for calculating QPTR. In this case, the entries on Data Sheet 1 for the OOS detector should be marked "N/A".
--------------	--

1. Record detector current values for each of the power range detectors in the "Current (Uncor.)" column of Data Sheet 1, using either of the following methods:
 - a. Detector current meters located on the power range drawers.

_____/_____
Initial / Date

Note:	If uncertainty exists in reading the current meters, a DVM should be used to obtain the current readings.
--------------	---

- b. Test jacks located below the meter faces using a DVM, in accordance with Attachment A.

_____/_____
Initial / Date

2. Multiply each of the detector current readings by its associated normalization factor AND Record the result in the "Current (Cor.)" column of Data Sheet 1.

_____/_____
Initial / Date

Quadrant Power Tilt Ratio Manual Calculation

3. Perform the following for the Upper Detectors on Data Sheet 1:

- a. Add the values in the "Current (Cor.)" column **AND** Record the result in the space marked "SUM".

_____/_____
Initial / Date

- b. Divide the value in the "SUM" space by 4(3) **AND** Record the result in the space marked "AVG".

_____/_____
Initial / Date

- c. Determine the Tilt Ratio for each of the upper detectors by dividing each value in the "Current (Cor.)" column by the value of "AVG" **AND** Record the results in the "Tilt Ratio" column.

_____/_____
Initial / Date

4. Perform the following for the Lower Detectors on Data Sheet 1:

- a. Add the values in the "Current (Cor.)" column **AND** Record the result in the space marked "SUM".

_____/_____
Initial / Date

- b. Divide the value in the "SUM" space by 4(3) **AND** Record the result in the space marked "AVG".

_____/_____
Initial / Date

- c. Determine the Tilt Ratio for each of the lower detectors by dividing each value in the "Current (Cor.)" column by the value of "AVG" **AND** Record the results in the "Tilt Ratio" column.

_____/_____
Initial / Date

5. If uncertainty exists with the calculated tilt values, Request the TILT map from the PCS (Computer Group Number GP048) **AND** Compare the map with the results of this OST.

_____/_____
Initial / Date

C. Test Completion

1. Consult the Acceptance Criteria for acceptable performance.

_____/_____
Initial / Date

2. Inform the NSS or ANSS of the completion of this test.

_____/_____
Initial / Date

3. Complete the front cover sheet.

_____/_____
Initial / Date

VIII. DATA SHEETS, TABLES, FIGURES AND ATTACHMENTS**A. Data Sheets**

1. Manual QPTR Calculation

B. Tables

NONE

C. Figures

NONE

D. Attachments

1. Use of DVM to Obtain Current Readings

DATA SHEET 1

MANUAL QPTR CALCULATION

UPPER DETECTORS

Current (Uncor.)	Norm Factor	Current (Cor.)	Tilt Ratio
N41A			
N42A			
N43A			
N44A			
		SUM	
		AVG	

LOWER DETECTORS

Current (Uncor.)	Norm Factor	Current (Cor.)	Tilt Ratio
N41B			
N42B			
N43B			
N44B			
		SUM	
		AVG	

Performed By _____/_____/_____ (Init/Time/Date)

Verified By _____/_____ (Init/Date)

Facility: **BVPS Unit 2** Task No.:
Task Title: Review a QPTR Manual Calculation JPM No.: 2002 NRC A1a SRO
K/A Reference: 015000A1.04 (3.5/3.7)
015000A4.02 (3.9/3.9)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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: The Unit is in Mode 1 at 80% power. The plant computer is NOT available.

Task Standard: QPTR calculation reviewed and compared to Acceptance Criteria.

Required Materials: Calculator

General References: 2OST-2.4A, Quadrant Power Tilt Ratio Manual Calculation, Rev. 4

Handouts: 2OST-2.4A, Rev. 4
QPTR Parameter Sheet

Initiating Cue: The Shift Manager directs you to review the QPTR calculation and report the results.

Time Critical Task: No

Validation Time: 10 minutes

(Denote Critical Steps with an asterisk)

CUE: Provide Candidate with a copy of 2OST-2.4A and QPTR Parameter Sheet.

Performance Step: 1

Reviews upper and lower quadrant excore nuclear instrument detector outputs for each quadrant.

Standard:

Reviews values of detector current output for each quadrant on Data Sheet 1.

Comment:

Performance Step: 2

Reviews the excore detector normalization factors.

Standard:

Reviews the normalization factors on Data Sheet 1.

Comment:

Performance Step: 3

Checks for correct value of current by multiplying each detector current reading by its normalization factor to obtain a corrected current.

Standard:

Determines corrected current values are SAT.

Comment:

Performance Step: 4

Reviews average upper quadrant and average lower quadrant excore NI detector outputs.

Standard:

Determines the average currents are SAT.

Comment:

(Denote Critical Steps with an asterisk)

- * **Performance Step: 5** Reviews tilt ratios.
Standard: Determines N43A value is NOT correct (0.9943 vs. 1.006).

Comment:

- * **Performance Step: 6** Compare highest Quadrant Power Tilt Ratio to Acceptance
Criteria.
Standard: Determines that QPTR exceeds 1.02 on N43B (1.090).

Comment:

Terminating Cue: When the Candidate identifies the error and reports the QPTR
does not meet the Acceptance Criteria, the evaluation for this
JPM is complete.

Job Performance Measure No.: 2002 NRC A1a SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The Unit is in Mode 1 at 80% power. The plant computer is NOT available.

INITIATING CUE:

The Shift Manager directs you to review the QPTR calculation and report the results.

(Denote Critical Steps with an asterisk)

Performance Step: 4 Determine average upper quadrant and average lower quadrant excore NI detector output.

Standard: Calculates average currents.

Standard: Records the following for "AVG":

Top Detectors = 7.155

Bottom Detectors = 7.250

Comment:

* **Performance Step: 5** Divide each quadrant excore NI detector output by the appropriate (Upper or Lower) average NI detector output.

Standard: Calculates tilt ratios.

Standard: Records the following for "Tilt Ratio":

N41A = 1.015

N41B = 1.016

N42A = 1.011

N42B = 0.907

N43A = 1.006

N43B = 1.090

N44A = 0.969

N44B = 0.973

Comment:

* **Performance Step: 6** Compare highest Quadrant Power Tilt Ratio to Acceptance Criteria.

Standard: Determines that the QPTR exceeds 1.02 on N43B (1.090).

Comment:

Terminating Cue: When the Candidate reports that the QPTR does not meet the Acceptance Criteria, the evaluation for this JPM is complete.

Facility: **BVPS Unit 2** Task No.: 0481-007-03-013
Task Title: Complete Operating Logs JPM No.: 2002 NRC A1b RO
K/A Reference: 2.2.12 (3.0)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

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 is in Mode 1 at 100% power with all systems in their normal operating alignment.

Task Standard: Candidate determines out-of-specification reading and reports results to the Unit Supervisor.

Required Materials: None

General References: 2OM-54.3.L5, Surveillance Verification Log, Rev. 39

Handouts: 2OM-54.3.L5, Rev. 39 (partial copy)

Initiating Cue: The Unit Supervisor directs you to complete L-5, Surveillance Verification Log and report your results.

Time Critical Task: No

Validation Time: 15 minutes

(Denote Critical Steps with an asterisk)

* **Performance Step: 1** Completes L-5 log.

Standard: Correctly performs L-5 log and determines that 2SIS-TK-21A level channels indicate greater than the 5% allowance:

Comment:

* **Performance Step: 2** Informs Unit Supervisor of out-of-specification readings.

Standard: Informs Unit Supervisor to refer to Technical Specification 4.5.1.a.1 for out-of-specification SI accumulator levels.

Comment:

Terminating Cue: When the Candidate informs the Unit Supervisor to refer to Technical Specifications, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A1b RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is in Mode 1 at 100% power with all systems in their normal operating alignment.

INITIATING CUE: The Unit Supervisor directs you to complete L-5, Surveillance Verification Log and report your results.

Beaver Valley Power Station**Unit 2****FOR TRAINING USE ONLY****20M-54.3.L5****SURVEILLANCE VERIFICATION LOG****Revision 39**

Prepared by C. R. Kuhn	Date 08/09/02	Pages Issued 1 through 48	
Reviewed by C. J. Eberle	Date 08/09/02	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	PAF-02-03415	

FOR TRAINING USE ONLY

SURVEILLANCE VERIFICATION LOG

Operating Modes 1, 2		Date
No.	Surveillance (Required every 12 hours unless noted)	Tech. Specs.
1 through 16	<p>Verification of the following statement can satisfy the control rod surveillances specified. If the following statement is satisfied, L5-3 through L5-7 are N/A and may be omitted; otherwise, perform L5-3 through L5-7.</p> <p>Verify all rods are ≥ 225 steps on the Group Demand Counters AND DRPI is within ± 12 steps of the Group Demand Counters; otherwise, N/A signoffs below and perform L5-3 through L5-7.</p>	<p>4.1.1.1.1.b 4.1.1.1.1.d 4.1.3.1.2 4.1.3.2.1 4.1.3.5.b 4.1.3.6</p>
<div style="display: flex; justify-content: space-around;"> <div> <p>START / STOP</p> <p>0000 - 0800</p> <p>SRO/DESIGNEE</p> </div> <div> <p>START / STOP</p> <p>0800 - 1600</p> <p>DATE</p> </div> <div> <p>START / STOP</p> <p>1600 - 2400</p> </div> </div>		

FOR TRAINING USE ONLY

SURVEILLANCE VERIFICATION LOG

Operating Modes 1, 2, 3, 4				DATE		
No.	Surveillance (Required every 12 hours unless noted)	Tech. Spec.	Performed			
			0000 0800	0800 1600	1600 2400	
134	If in Modes 3 or 4 and 12 hours of steady state operation has occurred, perform 2OST-6.2, "Reactor Coolant System Water Inventory Balance" or verify performance within last 72 hours. 2OST-6.2A, "Computer Generated Reactor Coolant System Water Inventory Balance" may be performed instead of 2OST-6.2 when RCS Tavg is greater than 530F. (Otherwise N/A)	4.4.6.2 b				
47	Record and verify that Containment Pressure Indicators agree within 3.0 PSIG of one another.	Table 4.3-2 Items 1c, 2c, 3b3, 4c				
	[2LMS*PI950]	PSIG				
	[2LMS*PI951]	PSIG				
	[2LMS*PI952]	PSIG				
	[2LMS*PI953]	PSIG				
47a	Record the Containment Wide Range Pressure Recorder [2LMS-PR106] pressure	Not T.S. PSIA				
28 through 33 *	Verify ACCUMULATOR LEVEL/PRESS HIGH/LOW Annunciator A1-4A is <u>NOT</u> ILLUMINATED due to a valid alarm. *Required in MODES 1, 2, 3 when pressurizer pressure above 1000 psig.	4.5.1.a.1				
28 through 33 *	Record Accumulator level and pressure, verify the two indicators on each accumulator agree within 5% for level, 30 PSIG for press.	4.5.1.a.1				
	2SIS-TK21A [2SIS-LI920] [L0610A]	%				
	[2SIS-LI922] [L0611A]	%				
	[2SIS-PI921] [P0610A]	PSIG				
	[2SIS-PI923] [P0611A]	PSIG				
28 through 33 *	2SIS-TK21B [2SIS-LI924] [L0620A]	%				
	[2SIS-LI926] [L0621A]	%				
	[2SIS-PI925] [P0620A]	PSIG				
	[2SIS-PI927] [P0621A]	PSIG				
REMARKS:						
<div> <div>START STOP</div> <div>0000 - 0800</div> <div>SRO/DESIGNEE</div> </div> <div> <div>START STOP</div> <div>0800 - 1600</div> <div>DATE</div> </div> <div> <div>START STOP</div> <div>1600 - 2400</div> </div>						

Facility: **BVPS Unit 2** Task No.: 1300-002-03-023
Task Title: Review Operating Logs JPM No.: 2002 NRC A1b SRO
K/A Reference: 2.2.12 (3.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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: The plant is in Mode 1 at 100% power with all systems in their normal operating alignment.

Task Standard: Candidate identifies out-of-specification reading and reports results.

Required Materials: None

General References: 2OM-54.3.L5, Surveillance Verification Log, Rev. 39

Handouts: 2OM-54.3.L5, Rev. 39 (markup copy)

Initiating Cue: You are directed to perform a review of the L-5, Surveillance Verification Log and report your results.

Time Critical Task: No

Validation Time: 5 minutes

(Denote Critical Steps with an asterisk)

- * **Performance Step: 1** Reviews L-5 log.
Standard: Correctly reviews L-5 log and identifies that 2SIS-TK-21A level channels indicate greater than the 5% allowance:

Comment:

- * **Performance Step: 2** Determines T.S. requirements.
Standard: Correctly refers to Technical Specification action statement 3.5.1.a to restore the accumulator to operable status within 1 hour.

Comment:

Terminating Cue: When the Candidate references the Technical Specifications, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A1b SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is in Mode 1 at 100% power with all systems in their normal operating alignment.

INITIATING CUE: You are directed to perform a review of the L-5, Surveillance Verification Log and report your results.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ACCUMULATORS

LIMITING CONDITION FOR OPERATION

3.5.1 Each Reactor Coolant System accumulator shall be OPERABLE with:

- a. The isolation valve open,
- b. Between 7532 and 7802 gallons of borated water,
- c. Between 2300 and 2600 ppm of boron, and
- d. A nitrogen cover-pressure of between 585 and 665 psig.

APPLICABILITY: MODES 1, 2 and 3.*

ACTION:

- a. With one accumulator inoperable, except as a result of a closed isolation valve, restore the inoperable accumulator to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in HOT STANDBY within one hour and be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.5.1 Each accumulator shall be demonstrated OPERABLE:

- a. At least once per 12 hours by:
 1. Verifying, by the absence of alarms, the contained borated water volume and nitrogen cover-pressure in the tanks, and
 2. Verifying that each accumulator isolation valve is open.
- b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume by verifying the boron concentration of the accumulator solution.

*Pressurizer Pressure above 1000 psig.

Beaver Valley Power Station**Unit 2****FOR TRAINING USE ONLY****20M-54.3.L5****SURVEILLANCE VERIFICATION LOG****Revision 39**

Prepared by	Date	Pages Issued	
C. R. Kuhn	08/09/02	1 through 48	
Reviewed by	Date	Validated by	Date
C. J. Eberle	08/09/02	N/A	
OSC Meeting No.	Date		
OSC Not Required		PAF-02-03415	

SURVEILLANCE VERIFICATION LOG

FOR TRAINING USE ONLY

Operating Modes 1, 2		Date
No.	Surveillance (Required every 12 hours unless noted)	Tech. Specs.
1 through 16	<p>Verification of the following statement can satisfy the control rod surveillances specified. If the following statement is satisfied, L5-3 through L5-7 are N/A and may be omitted; otherwise, perform L5-3 through L5-7.</p> <p>Verify all rods are ≥ 225 steps on the Group Demand Counters AND DRPI is within ± 12 steps of the Group Demand Counters; otherwise, N/A signoffs below and perform L5-3 through L5-7.</p>	<p>4.1.1.1.1.b 4.1.1.1.1.d 4.1.3.1.2 4.1.3.2.1 4.1.3.5.b 4.1.3.6</p>
<div style="display: flex; justify-content: space-between;"> <div> <p><u>0800 / 1000</u> START STOP</p> <p><u>RO1</u> 0000 - 0800</p> <p>SRO/DESIGNEE</p> </div> <div> <p><u> / </u> START STOP</p> <p><u>0800 - 1600</u></p> <p>DATE</p> </div> <div> <p><u> / </u> START STOP</p> <p><u>1600 - 2400</u></p> </div> </div>		

FOR TRAINING USE ONLY**SURVEILLANCE VERIFICATION LOG**

Operating Modes 1, 2, 3, 4				DATE		
No.	Surveillance (Required every 12 hours unless noted)	Tech. Spec.	Performed			
			0000 0800	0800 1600	1600 2400	
134	If in Modes 3 or 4 and 12 hours of steady state operation has occurred, perform 2OST-6.2, "Reactor Coolant System Water Inventory Balance" or verify performance within last 72 hours. 2OST-6.2A, "Computer Generated Reactor Coolant System Water Inventory Balance" may be performed instead of 2OST-6.2 when RCS Tavg is greater than 530F. (Otherwise N/A)	4.4.6.2.b	N/A			
47	Record and verify that Containment Pressure Indicators agree within 3.0 PSIG of one another.	Table 4.3-2 Items 1c, 2c, 3b3, 4c				
	[2LMS*PI950]	PSIG	0.1			
	[2LMS*PI951]	PSIG	0.2			
	[2LMS*PI952]	PSIG	-0.2			
	[2LMS*PI953]	PSIG	0.3			
47a	Record the Containment Wide Range Pressure Recorder [2LMS-PR106] pressure	Not T.S. PSIA	11.8			
28 through 33 *	Verify ACCUMULATOR LEVEL/PRESS HIGH/LOW Annunciator A1-4A is <u>NOT</u> ILLUMINATED due to a valid alarm. *Required in MODES 1, 2, 3 when pressurizer pressure above 1000 psig.	4.5.1.a.1	RO1			
28 through 33 *	Record Accumulator level and pressure, verify the two indicators on each accumulator agree within 5% for level, 30 PSIG for press.	4.5.1.a.1				
	2SIS-TK21A	[2SIS-LI920] [L0610A]	%	55		
		[2SIS-LI922] [L0611A]	%	63		
		[2SIS-PI921] [P0610A]	PSIG	620		
		[2SIS-PI923] [P0611A]	PSIG	640		
28 through 33 *	2SIS-TK21B	[2SIS-LI924] [L0620A]	%	58		
		[2SIS-LI926] [L0621A]	%	56		
		[2SIS-PI925] [P0620A]	PSIG	610		
		[2SIS-PI927] [P0621A]	PSIG	625		
REMARKS:						
0800 / 1000 START STOP						
RO1						
0000 - 0800						
0800 - 1600						
1600 - 2400						
SRO/DESIGNEE						
DATE						

FOR TRAINING USE ONLY

SURVEILLANCE VERIFICATION LOG

Operating Modes 1, 2, 3, 4				DATE		
No.	Surveillance (Required every 12 hours unless noted)		Tech. Spec.	Performed		
				0000 0800	0800 1600	1600 2400
28 through 33 *	2SIS-TK21C	[2SIS-LI928] [L0630A]	%	55		
		[2SIS-LI930] [L0631A]	%	53		
		[2SIS-PI929] [P0630A]	PSIG	605		
		[2SIS-PI931] [P0631A]	PSIG	615		
	*Required in MODES 1, 2, 3 when pressurizer pressure above 1000 psig.					
35 *	Verify accumulator TK21A, B, C outlet isolation valves [2SIS*MOV865A,B,C] are open by observing the red Open lights are ON on BB-A *Required in Modes 1, 2 & 3 when pressurizer pressure above 1000 psig.		4.5.1.a.2	RO1		
35a *	Verify accumulator TK21A, B, C outlet isolation valves [2SIS*MOV865A,B,C] control circuit power is disconnected by removal of the plugs in the lock out jack from the circuits (Window A1-4B) *Required in Modes 1, 2 & 3 when pressurizer pressure above 1000 psig.		4.5.1.c	RO1		
50	Record the Reactor Containment Sump narrow range level indications and verify level is ≤ 10.75 inches		4.4.6.2.a.4			
	[2DAS*LI220]	IN	2.6			
	[2DAS*LI222]	IN	1.4			
REMARKS:						
<div style="display: flex; justify-content: space-between;"> <div> <u>0800 / 1000</u> START STOP <u>RO1</u> 0000 - 0800 SRO/DESIGNEE </div> <div> <u> / </u> START STOP 0800 - 1600 DATE </div> <div> <u> / </u> START STOP 1600 - 2400 </div> </div>						

Facility:	BVPS Unit 2	Task No.:	0481-014-03-013
Task Title:	<u>Perform AC Sources Alignment Verification</u>	JPM No.:	<u>2002 NRC A2 RO</u>
K/A Reference:	2.2.12 (3.0)		

Examinee:	NRC Examiner:
Facility Evaluator:	Date:
<u>Method of testing:</u>	
Simulated Performance:	Actual Performance: <u>X</u>
Classroom _____ Simulator <u>X</u> 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 is in Mode 1 at 100% power with all systems in their normal operating alignment. <ul style="list-style-type: none">• Emergency Diesel Generator No. 1 was declared inoperable and removed from service 20 minutes ago.• 2OST-36.7 is in progress and Train "A" equipment has been verified.
Task Standard:	Candidate correctly completes Data Sheet 1 and informs the Unit Supervisor to refer to Technical Specifications.
Required Materials:	None
General References:	2OST-36.7, Offsite To Onsite Power Distribution System Breaker Alignment Verification, Rev. 8
Handouts:	2OST-36.7, Rev. 8 (markup copy)
Initiating Cue:	The Unit Supervisor directs you to perform Data Sheet 1 of 2OST-36.7, for Train "B" equipment only.
Time Critical Task:	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

NOTE: Candidate may complete sign-offs for Initial Conditions. These steps are not part of the JPM.

* **Performance Step: 1** Complete Data Sheet 1.

Standard: Correctly completes Data Sheet 1 and identifies that the neon light for ACB 342B is NOT lit.

Comment: **CUE:** If the Candidate initiates a bulb check, inform the Candidate that the bulb check is SAT.

CUE: If necessary, direct the Candidate to complete the remaining breaker verifications.

* **Performance Step: 2** Reports results and applicability of T.S. 3.8.1.1 or 3.8.1.2.

Standard: Informs Unit Supervisor that Acceptance Criteria is NOT met and to refer to T.S. 3.8.1.1 or 3.8.1.2.

Comment: **CUE:** If necessary, prompt the Candidate to supply the information regarding T.S. applicability.

Terminating Cue: When the Candidate informs the Unit Supervisor to refer to T.S. 3.8.1.1 or 3.8.1.2, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A2 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result:

SAT

UNSAT

Examiner's Signature: _____

Date: _____

INITIAL CONDITIONS:

The plant is in Mode 1 at 100% power with all systems in their normal operating alignment.

- Emergency Diesel Generator No. 1 was declared inoperable and removed from service 20 minutes ago.
- 2OST-36.7 is in progress and Train "A" equipment has been verified.

INITIATING CUE:

The Unit Supervisor directs you to perform Data Sheet 1 of 2OST-36.7, for Train "B" equipment only.

Beaver Valley Power Station**Unit 2****FOR TRAINING USE ONLY****2OST-36.7****Offsite to Onsite Power Distribution System Breaker
Alignment Verification****Revision 8**

Prepared by W. K. Giffrow	Date 2/7/02	Pages Issued 1 through 14	
Reviewed by R. C. Plummer	Date 2/15/02	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	DRR-02-00634	

Operating Surveillance Test
Offsite to Onsite Power Distribution System Breaker
Alignment Verification

FOR TRAINING USE ONLY

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Frequency: W		Surveillance Requirements: 4.8.1.1.1.a & 4.8.1.2	
Required for Mode(s): 1, 2, 3, 4, 5, 6, #, @ Performed in Mode(s): ALL		Date / Time Completed: _____ / _____ Total Manhours: _____	
TEST RESULTS: (Completed by Performer)		PERFORMED BY:	
(✓ or N/A)		<u>Name (Print)</u>	<u>Initial</u>
		RO1	RO1
<input type="checkbox"/> Test Completed SATISFACTORY			
<input type="checkbox"/> Problems Encountered (See Problem Sheet)			
<input type="checkbox"/> Unscheduled/partial OST (explain) 			
Reviewer Signature/Date			
STA Review _____ / _____			
NSS Approval _____ / _____			
COMMENTS: (Include Date and Initials)			
<input type="checkbox"/> Comments continued on Problem Sheet			

- # During movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.
- @ Within one hour PRIOR to a preplanned removal of a diesel generator from service **OR** within one hour AFTER an unplanned removal of a diesel generator from service (Diesel Inoperable). (T.S. 3.8.1.1)^(IX.C.2)

OST PROBLEM SHEET

See Page and Step No. for problem description. See below for corrective action.

PAGE NO.	STEP NO.	DESCRIBE CORRECTIVE ACTION	INITIALS	DATE

I. PURPOSE

This procedure demonstrates the operability of the two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system.

II. DISCUSSION

The operator will perform this OST by filling out the attached Data Sheet 1 or Data Sheet 2.

III. ACCEPTANCE CRITERIA

Note:	Satisfactory completion means that the required circuits are operable as determined by correct breaker lineup and indicated power availability.
--------------	---

A. Satisfactory completion of Data Sheet 1 for normal offsite alignment (Modes 1-6, or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies).

B. Satisfactory completion of Data Sheet 2 while in Backfeed.

IV. EQUIPMENT AND MATERIAL

NONE

V. PRECAUTIONS AND LIMITATIONS

A. Circuit breakers should **NOT** be operated for the purpose of aligning to the conditions specified on Data Sheet 1 or 2, unless NSS/ANSS has been notified **AND** approval to operate breaker has been given.

VI. INITIAL CONDITIONS**A. Plant Status Changes**

This procedure does not affect plant status.

B. NSS/ANSS Sign-on

1. NSS/ANSS verifies the following:

- Performance of this procedure is authorized.

DATE: 11/17/02	TIME: 0800	CURRENT PLANT MODE: 1
NSS/ANSS COMMENTS: None.		

NSS / ANSS Signature _____ Shift Manager _____

C. Reactor Operator Sign-on

1. Reactor Operator perform the following:

- Acknowledge procedure performance.

Reactor Operator Signature _____

D. Procedure Performer Initial Conditions

1. The operator performing this test has reviewed this procedure.

Initial / Date

VII. INSTRUCTIONS**A. Test Preparation****1. Completion of Data Sheet 1, NOT on Backfeed. (Otherwise N/A)**

- a. The plant is in operational Mode 1, 2, 3, 4, 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.

_____/_____
Initial / Date

- b. The onsite Class 1E distribution system is being powered through the Unit Station Service Transformers OR the System Station Service Transformers.

_____/_____
Initial / Date

2. Completion of Data Sheet 2, on Backfeed. (Otherwise N/A)

- a. The plant is in operational Mode 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.

_____/_____
N/A / Today
Initial / Date

- b. The onsite Class 1E distribution system is being powered through the Unit Station Service Transformers, Backfeed through the Main Transformer.

_____/_____
N/A / Today
Initial / Date

Operating Surveillance Test
Offsite to Onsite Power Distribution System Breaker
Alignment Verification

FOR TRAINING USE ONLY

3. Review OST schedule and determine if this is the scheduled weekly performance of this OST.

RO1 / Today
Initial / Date

- a. For scheduled weekly performance, Blackout Breakers ACB 2A2 and ACB 2D12 are to be checked locally. (Otherwise N/A)

N/A / Today
Initial / Date

OR

- b. If this is not the scheduled weekly performance, verification of Blackout Breakers ACB 2A2 and ACB 2D12 position may be performed via review of Padlock Manipulation Log. (Otherwise N/A)

RO1 / Today
Initial / Date

B. Performance of the OST

Note:	Either Step VII.B.1 OR Step VII.B.2 should be completed AND the other step should be N/A. Only the data sheet required for the current mode of operation should be filled out and completed. The unused data sheet is to be left blank.
--------------	---

1. When in Modes 1 through 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies. (NOT on Backfeed) complete Data Sheet 1. (Otherwise N/A)

- a. Data Sheet 1 completed satisfactorily.

Initial / Date

- b. If Data Sheet 1 cannot be completed satisfactorily notify NSS AND refer to Technical Specifications 3.8.1.1 or 3.8.1.2 as applicable.

Initial / Date

Operating Surveillance Test

Offsite to Onsite Power Distribution System Breaker

Alignment Verification

FOR TRAINING USE ONLY

- c. If this procedure is being performed prior to taking a Diesel Generator out of service, Notify the NSS/ANSS to refer to Licensing Requirements 2.5, 2.6, 2.1, and 2.2. (Otherwise Mark N/A)

N/A / Today
Initial / Date

2. When in Modes 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, AND station power is obtained by backfeeding, complete Data Sheet 2. (Otherwise N/A)

- a. Data Sheet 2 completed satisfactorily.

N/A / Today
Initial / Date

- b. If Data Sheet 2 cannot be completed satisfactorily notify NSS AND refer to Technical Specifications.

N/A / Today
Initial / Date

C. Test Completion

1. Consult the acceptance criteria for acceptable performance.

Initial / Date

2. Inform the NSS/ANSS of the completion of this test.

Initial / Date

3. Complete the front cover sheet.

Initial / Date

Operating Surveillance Test
 Offsite to Onsite Power Distribution System Breaker
 Alignment Verification

DATA SHEET 1**WITHOUT BACKFEED**

(For Modes 1 through 6, or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, see Note 1)

ITEM	REQUIRED POSITION OR READING	(O or S / INITIAL) OR (READING / INITIAL)
138KV BUS 2-Train A 138KV OCB 85 MTR OPER DISC SW 89-2A	CLOSED (RED LIGHT ON) CLOSED (RED LIGHT ON)	S / RO1 S / RO1
2A SSST Volt. Sel. A Bus FDR. (Phase Y) Pos A-B Pos B-C Pos C-A	125V (Note 2) 125V (Note 2) 125V (Note 2)	124 / RO1 125 / RO1 124 / RO1
4KV Bus 2A ACB 42A	OPEN (DIM WHITE LIGHT ON) (NEON LAMP ON) (Note 3) OR CLOSED (TWO RED LIGHTS ON) (NEON LAMP OFF)	O / RO1 ON / RO1 / /
4KV Bus 2A ACB 2A2 ^{C-1}	Locked in the DISC (disconnect) position (Note 4)	DISC / RO1
4KV Bus 2A ACB 2A10	CLOSED (RED LIGHT ON)	S / RO1
4KV Bus 2AE ACB 2E7	CLOSED (RED LIGHT ON)	S / RO1
138KV BUS 1-Train B 138KV OCB 94	CLOSED (RED LIGHT ON)	/
2B SSST Volt. Sel. D Bus FDR. (Phase Y) Pos A-B Pos B-C Pos C-A	125V (Note 2) 125V (Note 2) 125V (Note 2)	/ / /
4KV Bus 2D ACB 342B	OPEN (DIM WHITE LIGHT ON) (NEON LAMP ON) (Note 3) OR CLOSED (TWO RED LIGHTS ON) (NEON LAMP OFF)	/ / / /
4KV Bus 2D ACB 2D12 ^{C-1}	Locked in the DISC (disconnect) position (Note 4)	DISC / RO1
4KV Bus 2D ACB 2D10	CLOSED (RED LIGHT ON)	/
4KV Bus 2DF ACB 2F7	CLOSED (RED LIGHT ON)	/

Notes:

1. It is intended that both circuits be verified as indicated, although during Mode 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, only one of the two circuits is required by Tech Specs to be demonstrated operable.
2. All voltage readings are nominal and the meters are not required to be calibrated. Readings are made on the 4KV Common Voltmeter (VB-C)
3. Illuminated neon lamp signifies that ACB is setup for Automatic Bus Transfer (During Mode 1 operation only).
4. Verify locally each scheduled weekly performance. For additional performances, verification may be via review of Padlock Manipulation Log.

Facility: **BVPS Unit 2**

Task No.:

Task Title: Review AC Sources Alignment
VerificationJPM No.: 2002 NRC A2 SRO

K/A Reference: 2.2.12 (3.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

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:

The plant is in Mode 1 at 100% power with all systems in their normal operating alignment.

- Emergency Diesel Generator No. 1 was declared inoperable and removed from service 1 hour ago.
- The PO has completed 2OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification.
- Emergency Diesel Generator No. 2 was tested satisfactorily per T.S. 4.8.1.1.2.a.5.

Task Standard:

Candidate identifies the Data Sheet 1 error and determines the correct T.S. action requirement.

Required Materials:

None

General References:

2OST-36.7, Offsite To Onsite Power Distribution System Breaker Alignment Verification, Rev. 8
T.S. 3.8.1.1

Handouts:

2OST-36.7, Rev. 8 (markup copy)
T.S. 3.8.1.1

Initiating Cue:

The Shift Manager directs you to review the completed 2OST-36.7 and report your results.

Time Critical Task:

No

Validation Time:

10 minutes

(Denote Critical Steps with an asterisk)

- * **Performance Step: 1** Reviews Data Sheet 1.
- Standard:** Correctly reviews Data Sheet 1 and identifies that the neon light for ACB 342 is NOT lit.
- Comment:** **CUE:** If the Candidate asks for the status of the bulb, inform the Candidate that a bulb check was SAT.
- NOTE:** Provide the Candidate a copy of the T.S. handout.
- * **Performance Step: 2** Reports results and T.S. action requirement.
- Standard:** Informs Shift Manager that Acceptance Criteria is NOT met and that Action Statement T.S. 3.8.1.1.c requires restoring 1 of the inoperable sources to operable status within 12 hours.
- Comment:** **CUE:** If necessary, prompt the Candidate to determine the T.S. action statement requirement for inoperable circuit and diesel generator.
- Terminating Cue:** When the Candidate informs the Shift Manager of the results of the review, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A2 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The plant is operating at 100% power with all systems in their normal operating alignment. DG 1 was declared inoperable and removed from service 40 minutes ago. The PO has successfully completed OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification.

INITIATING CUE:

The Shift Manager directs you to review 2OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification.

Beaver Valley Power Station**Unit 2****FOR TRAINING USE ONLY****2OST-36.7****Offsite to Onsite Power Distribution System Breaker
Alignment Verification****Revision 8**

Prepared by W. K. Giffrow	Date 2/7/02	Pages Issued 1 through 14	
Reviewed by R. C. Plummer	Date 2/15/02	Validated by N/A	Date
OSC Meeting No. OSC Not Required	Date	DRR-02-00634	

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Frequency: W		Surveillance Requirements: 4.8.1.1.1.a & 4.8.1.2	
Required for Mode(s): 1, 2, 3, 4, 5, 6, #, @ Performed in Mode(s): ALL		Date / Time Completed: _____ / _____ Total Manhours: _____	
TEST RESULTS: (Completed by Performer)		PERFORMED BY:	
(✓ or N/A)		<u>Name (Print)</u>	<u>Initial</u>
		PO1	PO1
<input type="checkbox"/> Test Completed SATISFACTORY			
<input type="checkbox"/> Problems Encountered (See Problem Sheet)			
<input type="checkbox"/> Unscheduled/partial OST (explain) _____ _____			
Reviewer Signature/Date			
STA Review _____ / _____			
NSS Approval _____ / _____			
COMMENTS: (Include Date and Initials)			
<input type="checkbox"/> Comments continued on Problem Sheet			

- # During movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.
- @ Within one hour PRIOR to a preplanned removal of a diesel generator from service OR within one hour AFTER an unplanned removal of a diesel generator from service (Diesel Inoperable). (T.S. 3.8.1.1)^(IXC.2)

Operating Surveillance Test

Offsite to Onsite Power Distribution System Breaker

Alignment Verification

OST PROBLEM SHEET

See Page and Step No. for problem description. See below for corrective action.

PAGE NO.	STEP NO.	DESCRIBE CORRECTIVE ACTION	INITIALS	DATE

Operating Surveillance Test
Offsite to Onsite Power Distribution System Breaker
Alignment Verification

FOR TRAINING USE ONLY**I. PURPOSE**

This procedure demonstrates the operability of the two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system.

II. DISCUSSION

The operator will perform this OST by filling out the attached Data Sheet 1 or Data Sheet 2.

III. ACCEPTANCE CRITERIA

Note:	Satisfactory completion means that the required circuits are operable as determined by correct breaker lineup and indicated power availability.
--------------	---

A. Satisfactory completion of Data Sheet 1 for normal offsite alignment (Modes 1-6, or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies).

B. Satisfactory completion of Data Sheet 2 while in Backfeed.

IV. EQUIPMENT AND MATERIAL

NONE

V. PRECAUTIONS AND LIMITATIONS

A. Circuit breakers should **NOT** be operated for the purpose of aligning to the conditions specified on Data Sheet 1 or 2, unless NSS/ANSS has been notified **AND** approval to operate breaker has been given.

VI. INITIAL CONDITIONS**A. Plant Status Changes**

This procedure does not affect plant status.

B. NSS/ANSS Sign-on

1. NSS/ANSS verifies the following:

- Performance of this procedure is authorized.

DATE: 11/17/02	TIME: 0800	CURRENT PLANT MODE: 1
NSS/ANSS COMMENTS: None.		

NSS / ANSS Signature _____ Shift Manager _____

C. Reactor Operator Sign-on

1. Reactor Operator perform the following:

- Acknowledge procedure performance.

Reactor Operator Signature _____ PO1 _____

D. Procedure Performer Initial Conditions

1. The operator performing this test has reviewed this procedure.

PO1 / Today
Initial / Date

Operating Surveillance Test
Offsite to Onsite Power Distribution System Breaker
Alignment Verification

FOR TRAINING USE ONLY

VII. INSTRUCTIONS

A. Test Preparation

1. Completion of Data Sheet 1, **NOT** on Backfeed. (Otherwise N/A)

- a. The plant is in operational Mode 1, 2, 3, 4, 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.

PO1 / Today
Initial / Date

- b. The onsite Class 1E distribution system is being powered through the Unit Station Service Transformers **OR** the System Station Service Transformers.

PO1 / Today
Initial / Date

2. Completion of Data Sheet 2, on Backfeed. (Otherwise N/A)

- a. The plant is in operational Mode 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies.

N/A / Today
Initial / Date

- b. The onsite Class 1E distribution system is being powered through the Unit Station Service Transformers, Backfeed through the Main Transformer.

N/A / Today
Initial / Date

3. Review OST schedule and determine if this is the scheduled weekly performance of this OST.

PO1 / Today
Initial / Date

- a. For scheduled weekly performance, Blackout Breakers ACB 2A2 and ACB 2D12 are to be checked locally. (Otherwise N/A)

N/A / Today
Initial / Date

OR

- b. If this is not the scheduled weekly performance, verification of Blackout Breakers ACB 2A2 and ACB 2D12 position may be performed via review of Padlock Manipulation Log. (Otherwise N/A)

PO1 / Today
Initial / Date

B. Performance of the OST

Note: Either Step VII.B.1 OR Step VII.B.2 should be completed AND the other step should be N/A. Only the data sheet required for the current mode of operation should be filled out and completed. The unused data sheet is to be left blank.

1. When in Modes 1 through 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies. (NOT on Backfeed) complete Data Sheet 1. (Otherwise N/A)

- a. Data Sheet 1 completed satisfactorily.

PO1 / Today
Initial / Date

- b. If Data Sheet 1 cannot be completed satisfactorily notify NSS AND refer to Technical Specifications 3.8.1.1 or 3.8.1.2 as applicable.

PO1 / Today
Initial / Date

- c. If this procedure is being performed prior to taking a Diesel Generator out of service, Notify the NSS/ANSS to refer to Licensing Requirements 2.5, 2.6, 2.1, and 2.2. (Otherwise Mark N/A)

N/A / Today
Initial / Date

2. When in Modes 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, **AND** station power is obtained by backfeeding, complete Data Sheet 2. (Otherwise N/A)

- a. Data Sheet 2 completed satisfactorily.

N/A / Today
Initial / Date

- b. If Data Sheet 2 cannot be completed satisfactorily notify NSS **AND** refer to Technical Specifications.

N/A / Today
Initial / Date

C. Test Completion

1. Consult the acceptance criteria for acceptable performance.

/
Initial / Date

2. Inform the NSS/ANSS of the completion of this test.

/
Initial / Date

3. Complete the front cover sheet.

/
Initial / Date

DATA SHEET 1

WITHOUT BACKFEED

(For Modes 1 through 6, or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, see Note 1)

ITEM	REQUIRED POSITION OR READING	(O or S / INITIAL) OR (READING / INITIAL)
138KV BUS 2-Train A 138KV OCB 85 MTR OPER DISC SW 89-2A	CLOSED (RED LIGHT ON) CLOSED (RED LIGHT ON)	S / PO1 S / PO1
2A SSST Volt. Sel. A Bus FDR. (Phase Y) Pos A-B Pos B-C Pos C-A	125V (Note 2) 125V (Note 2) 125V (Note 2)	124 / PO1 125 / PO1 124 / PO1
4KV Bus 2A ACB 42A	OPEN (DIM WHITE LIGHT ON) (NEON LAMP ON) (Note 3) OR CLOSED (TWO RED LIGHTS ON) (NEON LAMP OFF)	O / PO1 ON / PO1 / /
4KV Bus 2A ACB 2A2 ^{C.1}	Locked in the DISC (disconnect) position (Note 4)	DISC / PO1
4KV Bus 2A ACB 2A10	CLOSED (RED LIGHT ON)	S / PO1
4KV Bus 2AE ACB 2E7	CLOSED (RED LIGHT ON)	S / PO1
138KV BUS 1-Train B 138KV OCB 94	CLOSED (RED LIGHT ON)	S / PO1
2B SSST Volt. Sel. D Bus FDR. (Phase Y) Pos A-B Pos B-C Pos C-A	125V (Note 2) 125V (Note 2) 125V (Note 2)	125 / PO1 124 / PO1 125 / PO1
4KV Bus 2D ACB 342B	OPEN (DIM WHITE LIGHT ON) (NEON LAMP ON) (Note 3) OR CLOSED (TWO RED LIGHTS ON) (NEON LAMP OFF)	O / PO1 OFF / PO1 / /
4KV Bus 2D ACB 2D12 ^{C.1}	Locked in the DISC (disconnect) position (Note 4)	DISC / PO1
4KV Bus 2D ACB 2D10	CLOSED (RED LIGHT ON)	S / PO1
4KV Bus 2DF ACB 2F7	CLOSED (RED LIGHT ON)	S / PO1

Notes:

1. It is intended that both circuits be verified as indicated, although during Mode 5, 6 or during movement of recently irradiated fuel assemblies, and during movement of fuel assemblies over recently irradiated fuel assemblies, only one of the two circuits is required by Tech Specs to be demonstrated operable.
2. All voltage readings are nominal and the meters are not required to be calibrated. Readings are made on the 4KV Common Voltmeter (VB-C)
3. Illuminated neon lamp signifies that ACB is setup for Automatic Bus Transfer (During Mode 1 operation only).
4. Verify locally each scheduled weekly performance. For additional performances, verification may be via review of Padlock Manipulation Log.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generators each with:
 1. Separate day tank containing a minimum of 350 usable gallons of fuel,
 2. A separate fuel storage system containing a minimum of 53,225 usable gallons of fuel,
 3. A separate fuel transfer pump,
 4. Lubricating oil storage containing a minimum total volume of 504 gallons of lubricating oil, and
 5. Capability to transfer lubricating oil from storage to the diesel generator unit.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With one offsite circuit inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator⁽¹⁾ inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and if the diesel

(1) Fuel oil contained in the storage tanks not meeting the properties in accordance with 4.8.1.1.2.d.2 or 4.8.1.1.2.e shall be brought within the specified limits within 7 days.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

generator became inoperable due to any cause other than an independently testable component, testing or preplanned preventative maintenance, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.5 within 24 hours⁽²⁾ unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With one offsite circuit and one diesel generator⁽¹⁾ inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and if the diesel generator became inoperable due to any cause other than an independently testable component, testing or preplanned preventative maintenance, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.5 within 8 hours⁽²⁾ unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of Action Statement a or b, as appropriate with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.5 performed under this Action Statement for an OPERABLE diesel or a restored to OPERABLE diesel satisfies the diesel generator test requirement of Action Statement b.

-
- (1) Fuel oil contained in the storage tanks not meeting the properties in accordance with 4.8.1.1.2.d.2 or 4.8.1.1.2.e shall be brought within the specified limits within 7 days.
- (2) This action is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

Facility: **BVPS Unit 2**

Task No.: N/A

Task Title: Radiological Controls Administrative
QuestionsJPM No.: 2002 NRC A3 ROK/A Reference: 2.3.10 (2.9)
2.3.1 (2.6)

Examinee:

NRC Examiner:

Facility Evaluator: N/A

Date:

Method of testing: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: N/A

Task Standard: Both questions answered correctly.

Required Materials: None

General References: 1/2-ADM-1601, Radiation Protection Standards, Rev. 5
1/2-ADM-1630, Radiation Worker Practices, Rev. 3

Handouts: None

Initiating Cue: N/A

Time Critical Task: No

Validation Time: 5 minutes

ANSWER KEY**RO Admin A3****Question 1**

You and a co-worker are isolating a pump with a leaking seal in a high noise area in the plant. Ten minutes after arriving at the pump your alarming dosimeter (ARD) sounds a dose rate alarm. Your co-worker's ARD is not alarming.

Place the following actions in the correct order of performance in response to the ARD alarm.

- A. Note the indicated dose rate
- B. Notify Radiation Protection Technician
- C. Leave the work area
- D. Have your co-worker check their indicated dose rate

ANSWER: Correct order is A, D, C & B.

Reference: 1/2-ADM-1630, Radiation Worker Practices, Rev. 3

ANSWER KEY**RO Admin A3****Question 2**

An evolution that is expected to take several hours must be performed in a Radiation Area. The individual who will perform the activity has a year to date exposure of 3160 mR (TEDE). The dose rate in the area where the emergency evolution will be performed is 80 mR/hr, and there is no airborne radioactivity present.

Determine the worker's **MAXIMUM** stay time while performing the activity to prevent exceeding any administrative dose guidelines.

ANSWER:

4000 mR Administrative Exposure Limit

3160 mrem YTD Exposure

4000 mrem - 3160 mrem = 840 mR available

$(840 \text{ mrem}) / (80 \text{ mrem/hr}) = 10.5 \text{ hours}$

Reference: 1/2-ADM-1601, Radiation Protection Standards, Rev. 5

Job Performance Measure No.: 2002 NRC A3 RO

Examinee's Name:

Date Performed:

Facility Evaluator: N/A

Number of Attempts: N/A

Time to Complete:

Question Documentation:

Question 1:

Response:

Question 2:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

CANDIDATE COPY**RO Admin A3****Question 1****NO Reference Allowed**

You and a co-worker are isolating a pump with a leaking seal in a high noise area in the plant. Ten minutes after arriving at the pump your alarming dosimeter (ARD) sounds a dose rate alarm. Your co-worker's ARD is not alarming.

Place the following actions in the correct order of performance in response to the ARD alarm.

- A. Note the indicated dose rate
- B. Notify Radiation Protection Technician
- C. Leave the work area
- D. Have your co-worker check their indicated dose rate

CANDIDATE COPY**RO Admin A3****Question 2****NO Reference Allowed**

An evolution that is expected to take several hours must be performed in a Radiation Area. The individual who will perform the activity has a year to date exposure of 3160 mR (TEDE). The dose rate in the area where the emergency evolution will be performed is 80 mR/hr, and there is no airborne radioactivity present.

Determine the worker's **MAXIMUM** stay time while performing the activity to prevent exceeding any administrative dose guidelines.

Beaver Valley Power Station		Procedure Number: 1/2-ADM-1601	
Title: Radiation Protection Standards		Unit: 1/2	Level Of Use: General Skill Reference
		Revision: 5	Page Number: 19 of 126
<p>If an adult's accumulated occupational dose for the year reaches or exceeds one or more of the following Guides, the individual should not receive additional occupational exposure unless authorized as specified in the site Administrative and Radiation Protection procedures:</p>			
7.2.3.2.1	TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE) from external and internal exposure:	4 rems	(40 mSv)
7.2.3.2.2	TOTAL ORGAN DOSE EQUIVALENT (TODE) from internal and external exposure:	40 rems	(400 mSv)
7.2.3.2.3	EYE (LENS) DOSE EQUIVALENT (LDE) from external exposure:	12 rems	(120 mSv)
7.2.3.2.4	SHALLOW-DOSE EQUIVALENT to the skin of the WHOLE BODY (SDE-WB) from external exposure:	40 rems	(400 mSv)
7.2.3.2.5	SHALLOW-DOSE EQUIVALENT to any EXTREMITY (SDE-X) from external exposure:	40 rems	(400 mSv)
7.2.3.3	Individual Exposure Control		
7.2.3.3.1	<u>Authorization</u> - To control Routine exposure or a Planned Special Exposure, an individual may be authorized to receive an appropriate fraction of the external and/or internal exposure that would result in an accumulated dose equal to a Guide or Limit.		
7.2.3.3.2	<u>Restriction/Review</u> - When an individual has received or exceeded the amount of exposure authorized, the individual should be restricted from receiving occupational dose unless additional exposure is authorized. Prior to authorizing additional exposure, the individual's dose status should be reviewed, including the results of TLD badge processing and/or internal dose assessments, if the individual's exposure may exceed the preset percentage, e.g., 80% of the applicable guide.		
7.2.3.3.3	<u>TLD Badge Exchange/Bioassay</u> - if an individual's TLD badge is exchanged or if the individual is monitored with a bioassay before the individual's authorized exposure is expended, the unused portion of the authorized exposure may be used while the TLD badge is being processed or the bioassay results are being evaluated.		

Beaver Valley Power Station		Procedure Number: 1/2-ADM-1630	
Title: RADIATION WORKER PRACTICES		Unit: 1/2	Level Of Use: General Skill Reference
		Revision: 3	Page Number: 43 of 45
7.6.2.1.3	Have all other work party members check their accumulated dose reading and indicated dose rate.		
7.6.2.1.4	If practicable, immediately exit the RCA after placing your work in a safe configuration, as applicable. Notify Health Physics. If it is not practicable to immediately leave the RCA (e.g., if the alarm occurs while working in subatmospheric containment), notify Health Physics as soon as possible and request instruction. ^(3.1.8)		
7.6.2.1.5	Logging out after this type of alarm will result in the generation of an access control terminal printer tape. Take this tape to Health Physics after log off.		
7.6.2.2	Dose rate alarms which occur during transit to or from the local work area may occur when passing localized higher radiation dose rate areas. This type of alarm (transient in nature) does not typically indicate a problem. The potential for a transit dose rate alarm will be included in briefings performed by Health Physics. Notify Health Physics if any unexpected (unbriefed) dose rate alarm occurs, regardless of where the alarm occurs.		
7.6.2.3	In the event of a dose rate alarm at the local work area take the following actions:		
7.6.2.3.1	Note the indicated dose rate.		
7.6.2.3.2	Note the accumulated dose reading.		
7.6.2.3.3	Have all other work party members check their indicated dose rate and accumulated dose reading.		
7.6.2.3.4	Leave the work area. Work party members are not permitted to complete a task while in dose rate alarm.		
7.6.2.3.5	Notify the radiation technician providing coverage for the job/area. Health Physics will determine the cause of the increased radiation levels and take appropriate corrective actions (e.g., a resurvey of the area may be required to raise the default dose rate alarm. ^(3.1.5)		
7.6.2.3.6	Logging out after this alarm will result in the generation of an access control terminal printer tape. Take this tape to Health Physics.		
7.6.2.4	A battery alarm indicates that at least eight hours of ARD battery power remains. In the event of a battery alarm take the following actions:		
7.6.2.4.1	Note the accumulated dose reading.		
7.6.2.4.2	Note the indicated dose rate reading.		

Facility: **BVPS Unit 2** Task No.: 1350-006-03-023
Task Title: Approve Emergency Exposure JPM No.: 2002 NRC A3 SRO
K/A Reference: 2.3.4 (3.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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:
- A Site Area Emergency has been declared at Unit 2.
 - An individual is trapped and bleeding in a Locked High Radiation Area and immediate response is necessary to save their life.
 - It has been clearly determined that actions establishing adequate or equivalent protection, with less dose are not readily available.
 - A qualified individual has volunteered to perform the rescue activity and has been briefed on risks of projected radiation exposure.
 - The individual has a year to date exposure of 880 mR (TEDE).
 - The area dose rate is 1,110 mR/hr and there is no airborne radioactivity present.
 - The rescue activity could take up to 4 hours.

Task Standard: Correctly determine requirements to authorize the rescue activity.

Required Materials: None

General References: EPP/IP 5.3 Emergency Exposure Criteria and Control, Rev. 8

Handouts: EPP/IP 5.3, Rev. 8

Initiating Cue: As the Emergency Director, you are to evaluate the situation and determine and authorize actions as appropriate.

Time Critical Task: No

Validation Time: 5 minutes

(Denote Critical Steps with an asterisk)

* **Performance Step: 1** Evaluates Attachment 1, Emergency Exposure Authorization Limits.

Standard: Determines emergency exposure authorization is allowed.

Comment:

Terminating Cue: When the Candidate reports their determination for authorizing the exposure, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A3 SRO

Examinee's Name:

Date Performed:

Facility Evaluator: N/A

Number of Attempts: N/A

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A Site Area Emergency has been declared at Unit 2.
- An individual is trapped and bleeding in a Locked High Radiation Area and immediate response is necessary to save their life.
- It has been clearly determined that actions establishing adequate or equivalent protection, with less dose are not readily available.
- A qualified individual has volunteered to perform the rescue activity and has been briefed on risks of projected radiation exposure.
- The individual has a year to date exposure of 880 mR (TEDE).
- The area dose rate is 1,110 mR/hr and there is no airborne radioactivity present.
- The rescue activity could take up to 4 hours.

INITIATING CUE:

As the Emergency Director, you are to evaluate the situation and determine and authorize actions as appropriate.

FOR TRAINING USE ONLY

EMERGENCY EXPOSURE CRITERIA
AND
CONTROL

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EPP/Implementing Procedure

EPP/IP 5.3
A5.735B

EMERGENCY EXPOSURE CRITERIA AND CONTROL

APPROVAL PAGE

Intent Related Revision ____ Yes X No

IF YES

OSC and Site Approval

OSC Meeting Number _____ Date _____

Reviewed _____
Manager, Emergency Preparedness _____ Date _____

Approved _____
Director, Plant Services _____ Date _____

IF NO

Reviewed _____
Manager, Emergency Preparedness _____ Date _____

Approved _____
Director, Plant Services _____ Date _____

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EMERGENCY EXPOSURE CRITERIA AND CONTROL

A. PURPOSE

This procedure provides guidance and criteria for dose limitation in situations where it may be necessary for individuals to exceed established exposure limits to save a life or to minimize the consequences of an accident. Authorization for such exposures is provided by 10 CFR 50.47(B)(11).

B. REFERENCES

- 1.0 Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
- 2.0 ICRP Publication 26, "Recommendation of the International Commission on Radiological Protection"
- 3.0 ICRP Publication 28, "The Principals and General Procedures for Handling Emergency and Accidental Exposures of Workers"
- 4.0 EPP 400-R-92/01 (and subsequent revisions), "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents"
- 5.0 Title 10, Code of Federal Regulations Part 20
- 6.0 Title 10, Code of Federal Regulations Part 50
- 7.0 NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."
- 8.0 BVPS Health Physics Manual
- 9.0 NUMARC, Implementation of the New EPA Protective Action Guides in Existing Emergency Programs

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

C. RESPONSIBILITIES

The Emergency Director has the responsibility and authority to ensure that the radiation exposure of personnel performing functions necessary to contend with the emergency condition, are maintained As Low As Reasonably Achievable (ALARA) and in keeping with the provisions of this EPP/IP. The Emergency Director is the only individual who may authorize dose extensions in excess of 10 CFR 20.

D. ACTION LEVELS/PRECAUTIONS/CRITERIA

1.0 ACTION LEVELS

- 1.1 An emergency condition at the Beaver Valley Power Station has resulted in radiation levels within the Station greatly in excess of normal levels which require special considerations for exposure control.

2.0 PRECAUTIONS

- 2.1 Emergency exposure limits apply only to BVPS and contractor personnel who are qualified as radiation workers at the Beaver Valley Power Station and have been issued BVPS dosimetry.
- 2.2 The establishment of these emergency exposure controls in no manner suggests that the exposures are acceptable. Although 10 CFR 50.47(b)(11) requires that the EPP contain emergency exposure control measures, any exposure greater than 10 CFR 20 provisions is reportable to the NRC.

3.0 CRITERIA

3.1 Definitions

- 3.1.1 Accident Exposure: Exposure to radiation or radioactive materials that results from an unexpected event. Accident exposure refers to the immediate consequences of the unexpected event and the immediate corrective/mitigative actions of personnel present at the scene when the event occurred. Accident exposures are not controlled by the Health Physics Manual (HPM) or the Emergency Preparedness Plan (EPP), but may be reportable to the NRC under 10 CFR 20 and/or 10 CFR 50.72.

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EPP/Implementing Procedure

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EMERGENCY EXPOSURE CRITERIA AND CONTROL

- 3.1.2 **Emergency Exposure:** Exposure to radiation or radioactive materials that is the result of actions taken in response to an emergency condition classified and declared pursuant to the BVPS Emergency Preparedness Plan. Emergency exposure refers to radiation exposure caused by those assessment, corrective, and mitigative actions that are required on an immediate basis to save human lives, or to prevent or minimize the collective exposure of large populations. Such activities are directed by the Control Room or by the TSC/EOF. Planned Special Exposures (see 3.1.4) are not considered emergency exposures.
 - 3.1.3 **Life Saving Action:** Those actions related to the search and rescue of injured persons.
 - 3.1.4 **Planned Special Exposure (PSE):** As defined in 10 CFR 20, an infrequent exposure to radiation, separate from and in addition to the annual dose limits. The HPM delineates requirements to be met in classifying an exposure as a PSE. PSEs might be warranted in the recovery phase. However, it is unlikely that the PSE requirements could be met during the initial phases of the emergency.
- 3.2 All emergency exposure extensions are subject to the following conditions:
- 3.2.1 All exposures shall be maintained such that the TEDE is as low as reasonably achievable during emergencies, noting that it may be necessary to tradeoff individual personal exposure against collective population exposure offsite, or in the interest of saving human lives.
 - 3.2.2 Emergency exposure limits apply only during emergencies declared pursuant to the Emergency Preparedness Plan.
 - 3.2.3 The Emergency Director, with the advice of the Radiological Controls Coordinator, shall approve all emergency exposures in excess of 10 CFR 20 limits. This approval shall be documented. However, the approval may be relayed verbally and documented later.

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

- 3.2.4 Emergency Exposure limits apply only to BVPS and contractor personnel who are qualified as radiation workers at the Beaver Valley Power Station and have been issued BVPS dosimeters.
- 3.2.5 Personnel who have received previous accident or emergency exposure in excess of 25 rem TEDE shall not participate in further emergency exposure situations.
 - 3.2.5.1 Since accident and emergency exposures are not required to be included in personnel exposure histories, it may be necessary to interview contractor and visitor personnel regarding such exposures.
- 3.2.6 Personnel who have declared pregnancy in accordance with the HPM, shall not participate in emergency exposure situations.
- 3.2.7 With the exception of emergency exposures in excess of 25 rem TEDE, participation in emergency exposure situations need not be voluntary on the part of the individual emergency worker.
- 3.2.8 The dose of personnel authorized to receive emergency exposures shall be monitored and recorded as provided in the Health Physics Manual.
- 3.3 Exposure Limitation
 - 3.3.1 Except as provided below, control of radiation exposures during an emergency shall be governed by the HPM.
 - 3.3.2 The exposure of emergency response organization personnel should be maintained such that routine radiation exposure limits and administrative controls contained within the HPM are met. These routine exposure limits may be exceeded during the performance of emergency activities identified in paragraphs 3.3.3 - 3.3.5, provided that the conditions of paragraph 3.2 are met.

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

- 3.3.3 For activities performed on an immediate basis to prevent the failure of equipment necessary to protect the public health and safety, the TEDE of personnel directly involved shall not exceed 10 rem. This limit is applicable only if actions establishing adequate or equivalent protection, with a lower dose consequence, are not readily available.
- 3.3.4 For activities necessary on an immediate basis (1) to save human life, (2) to restore equipment necessary to maintain critical safety functions or to establish and maintain a safe shutdown, or (3) to prevent or mitigate a release of radioactivity to the environment for which offsite protective measures may be required, the TEDE of personnel directly involved shall not exceed 25 rem. This limit is applicable only if actions establishing adequate or equivalent protection, with less dose, are not readily available.
- 3.3.5 For activities necessary on an immediate basis (1) to save human life, (2) to restore equipment necessary to maintain critical safety functions or to establish and maintain a safe shutdown, or (3) to prevent or mitigate a release of radioactivity to the environment for which offsite protective measures may be required, the TEDE of personnel directly involved may exceed 25 rem, provided:
 - 3.3.5.1 This limit is applicable only if actions establishing adequate or equivalent protection, with less dose, are not readily available, and,
 - 3.3.5.2 Personnel assigned to these activities shall be volunteers, and,
 - 3.3.5.3 Personnel assigned to these activities shall be briefed on, and understand, the risks associated with the estimated radiation exposure. For life saving activities, this briefing shall include a discussion on the probability of a successful rescue, and,

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

- 3.3.5.4 Concurrence of the Senior Vice President, or designee, shall be obtained for any exposure projected to exceed 75 rem TEDE.
- 3.3.6 In addition to the TEDE limits established above, the dose equivalent to the lens of the eye shall be limited to three (3x) the limits specified in paragraph 3.3.3 and 3.3.4 above. The CDE to any organ (including the skin and body extremities) shall be limited to ten (10x) the limits specified in paragraph 3.3.3 and 3.3.4 above.
- 3.4 The internal exposure of BVPS emergency workers performing activities in the environment (i.e., outside plant buildings) is monitored and controlled as follows:
 - 3.4.1 Monitoring of internal exposure and assessment of CEDE may be waived for BVPS field monitoring team members under the following conditions:
 - 3.4.1.1 The emergency involves a substantial core melt sequences with actual or potential early containment failure or bypass, and,
 - 3.4.1.2 The release plume is present in the areas where the personnel are assigned, and,
 - 3.4.1.3 An evacuation of the public has been ordered, but is incomplete, and,
 - 3.4.1.4 The field monitoring team is assigned tasks out-of-doors associated with quantifying an unmonitored release from the plant in support of decisions related to the need for extending protective measures, and,

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

- 3.4.1.5 If the DDE is likely to exceed 5 rem (i.e., assumes DDE to TEDE ratio of 5) for the duration of the exposure, personnel involved shall be volunteers, and, shall have been briefed on, and understand, the risks associated with the estimated radiation exposure and the uncertainty regarding the unmonitored CEDE, and,
- 3.4.1.6 If the DDE is likely to exceed 5 rem (i.e., assumes DDE to TEDE ratio of 5) potassium iodide shall be issued, and,
- 3.4.1.7 Conditions for emergency exposure delineated in paragraph 3.2 apply to these individuals.
- 3.4.2 Monitoring of internal exposure and assessment of CEDE of emergency personnel working out-of-doors shall be accomplished by establishing pocket dosimeter administrative guides set at that value of DDE that would maintain the sum of the DDE and CEDE below limits specified in paragraph 3.3. In addition:
 - 3.4.2.1 These adjustments should be made using EDE to TEDE ratios determined from dose projections performed during the emergency using actual release source terms, if available. Ratios determined prior to the release from default source terms may be useful as bounding values.
 - 3.4.2.2 These dosimeter administrative guides shall be adjusted on the basis of actual field monitoring data, as these data become available, and,
 - 3.4.2.3 Conditions for emergency exposure delineated in paragraph 3.2 apply to these individuals.

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

3.4.3 Monitoring of internal exposure and assessment of CEDE is not required if the release has not started, or if plume is no longer present, as this reduces the potential for uptake such that CEDE is negligible. In this case, emergency worker administrative guides are based on DDE.

3.5 Post-Exposure Evaluations

3.5.1 Personnel receiving emergency or accident exposures should be restricted from further occupational exposure pending the outcome of exposure evaluations and, if necessary, medical surveillance.

3.5.2 An exposure evaluation shall be performed to determine the individual dose. This dose may include assessment of the following dose quantities as applicable to the exposure situation: SDE, DE, DDE, ALI, CDE, CEDE, and TEDE. This evaluation should be based on observed area dose rates, airborne activity measurements, and dosimetry results. This evaluation shall be documented in an appropriate format and filed with the individual's exposure records. Appropriate reports shall be submitted to the Onsite Safety Committee and the USNRC.

3.5.3 If an individual's external dose exceeds 10 rem DDE, 30 rem dose equivalent to the lens of eye, and/or 100 rem dose equivalent skin or an extremity, the details of the exposure incident shall be brought to the attention of a physician. The physician shall determine the need, extent, and nature of any clinical, biological, or biochemical examinations.

3.5.4 If an individual's external dose exceeds 25 rem DDE, 150 rem dose equivalent to the lens of eye, and/or 250 rem dose equivalent skin or an extremity, the individual shall be examined by a physician. The physician shall determine the need, extent, and nature of any clinical, biological, or biochemical examinations, or necessary medical surveillance.

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EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

3.5.5 If an individual's intake exceeds 1.0 ALI, the details of the exposure incident shall be brought to the attention of a physician. The physician shall determine the need, extent, and nature of any clinical, biological, biochemical examinations, or necessary medical treatment.

E. PROCEDURE

- 1.0 In the event emergency exposure is necessary, the following actions should be performed. Although it is preferable to perform and document these steps prior to the exposure, if necessary the Emergency Director may verbally authorize the increased exposure and complete the documentation at a later time.
 - 1.1 Per Attachment 1, determine the appropriate Emergency Exposure Authorization Limit.
 - 1.2 Complete Section A of the Emergency Exposure Authorization Form (Attachment 2). Line 6 of the form must be signed by the Emergency Director.
 - 1.3 The individual to receive the increased exposure will complete Section B.
 - 1.4 The individual will be briefed on the radiological and other conditions in the area (or expected in the area), the tasks to be performed, ALARA measures applicable to the task, and contingency measures, prior to entry to the affected area. Included in this briefing shall be a discussion of the biological risks associated with the exposure to be incurred.
 - 1.5 The individual performs the assigned tasks.
 - 1.6 Following the exposure, the Radiological Controls Coordinator, or designee, will complete and sign Section C and D of the Emergency Exposure Authorization Form.

FOR TRAINING USE ONLY

EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

F. FINAL CONDITIONS

This procedure will be terminated when all sections of Attachment 1, "Emergency Exposure Authorization Form" have been completed and/or assignments are made for necessary exposure reports. The original of Attachment 1 should be filed in the individual's personnel exposure history records and a copy sent to the Manager, EPP for inclusion in event records.

G. ATTACHMENTS

- 1.0 Emergency Exposure Authorization Limits
- 2.0 Emergency Exposure Authorization Form

FOR TRAINING USE ONLY

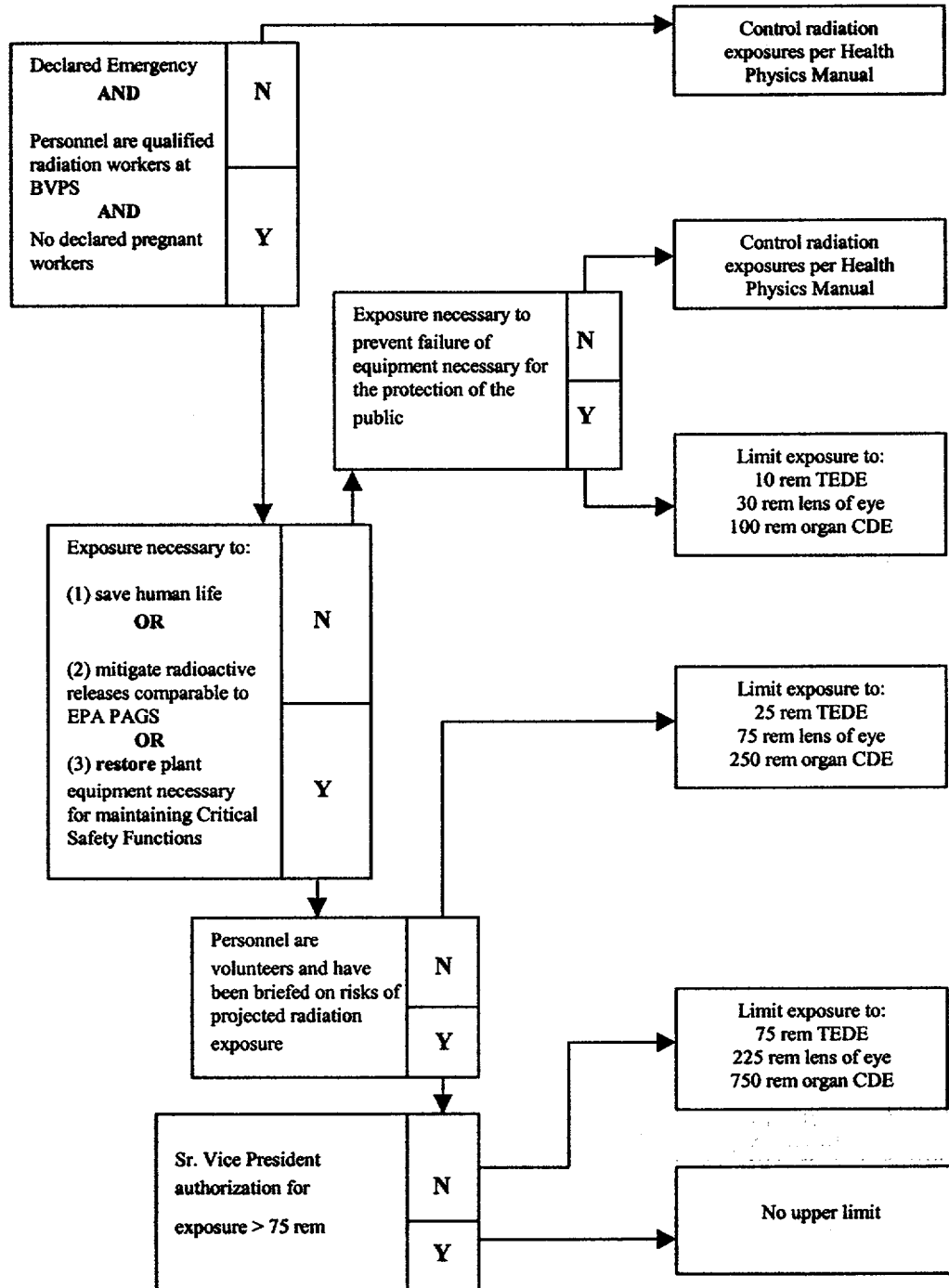
EPP/Implementing Procedure

EPP/IP 5.3

EMERGENCY EXPOSURE CRITERIA AND CONTROL

ATTACHMENT 1 (1 of 1)

EMERGENCY EXPOSURE AUTHORIZATION LIMITS



Facility: **BVPS Unit 2**

Task No.: N/A

Task Title: Emergency Plan Administrative QuestionsJPM No.: 2002 NRC A4 ROK/A Reference: 2.4.29 (2.6)
2.4.39 (3.3)

Examinee:

NRC Examiner:

Facility Evaluator: N/A

Date:

Method of testing:

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: N/A

Task Standard: Both questions answered correctly.

Required Materials: None

General References: EPP/I-4, Site Area Emergency, Rev. 17
EPP/IP 5.1, Search And Rescue, Rev. 7

Handouts: None

Initiating Cue: N/A

Time Critical Task: No

Validation Time: N/A

ANSWER KEY**RO Admin A4****Question 1**

List **FOUR** Emergency Response Facilities that are required to be activated upon declaration of a Site Area Emergency at BVPS.

ANSWER:

Operations Support Center (OSC)
Technical Support Center (TSC)
Emergency Operations Facility (EOF)
Joint Public Information Center (JPIC)

Reference: EPP/I-4, Site Area Emergency, Rev. 17

ANSWER KEY**RO Admin A4****Question 2**

An Alert level classification has been declared due to an in-plant fire. An individual has been determined to be missing following an evacuation of an affected area, as discovered during personnel accountability efforts. The individual is believed to be injured or trapped in an area away from the area of the fire.

Which activity takes precedence, fighting the fire or rescuing the trapped individual?

ANSWER:

Rescue of a victim shall take precedence over fire-fighting efforts.

Reference: EPP/IP 5.1, Search And Rescue, Rev. 7

Job Performance Measure No.: 2002 NRC A4 RO

Examinee's Name:

Date Performed:

Facility Evaluator: N/A

Number of Attempts: N/A

Time to Complete:

Question Documentation:

Question 1:

Response:

Question 2:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

CANDIDATE COPY

RO Admin A4

Question 1

NO Reference Allowed

List **FOUR** Emergency Response Facilities that are required to be activated upon declaration of a Site Area Emergency at BVPS.

CANDIDATE COPY**RO Admin A3****Question 2****NO Reference Allowed**

An Alert level classification has been declared due to an in-plant fire. An individual has been determined to be missing following an evacuation of an affected area, as discovered during personnel accountability efforts. The individual is believed to be injured or trapped in an area away from the area of the fire.

Which activity takes precedence, fighting the fire or rescuing the trapped individual?

Beaver Valley Power Station		Procedure Number: EPP-I-4	
Title: SITE AREA EMERGENCY		Unit: 1/2	Level Of Use: General Skill Reference
		Revision: 17	Page Number: 4 of 14

NOTE:

Activating the Emergency Response Organization beepers will begin activation of the following: Technical Support Center (TSC), Operations Support Center (OSC), Emergency Operations Facility and the Joint Public Information Center (JPIC).

CHECK

- 1.6 A SRO (from the unaffected Unit) **SHALL** complete the blanks below and notify the Emergency Response Organization (ERO). ☐

"This is _____ (Your Name)

at Beaver Valley Power Station. At _____ (time)
hrs.,

Unit _____ has declared a **SITE AREA EMERGENCY** due to:

(Choose One and Continue)

a. Report to your emergency facility. I repeat, report to your emergency facility.

OR

b. Report to your alternate emergency facility. I repeat, report to your alternate emergency facility."

- 1.6.1 From a PAX phone, dial 4370. ☐
- 1.6.2 Interrupt the greeting by **IMMEDIATELY** entering **XXXX**. ☐
- 1.6.3 When prompted, enter scenario number **XXXX**. ☐
- 1.6.4 When prompted, verify scenario number (**9** for **YES** or **6** for **NO**). ☐

(Continue)

SEARCH AND RESCUE**2.0 PRECAUTIONS**

- 2.1 If an individual is trapped or disabled in a high radiation area, the rescue must be performed as expeditiously as possible to minimize the dose to the victim and the doses to the rescue personnel, and to ensure that first aid can be provided as soon as possible.

2.1.1 In an emergency situation, exposure in excess of normal limits to rescue and first aid personnel is appropriate if necessary to save a life. Refer to EPP/IP-5.3, "Emergency Radiation Exposure Criteria and Control".

- 2.2 Rescue of a victim shall take precedence over fire-fighting efforts, unless the fire must be suppressed to effect rescue, or if the fire poses an immediate threat to the lives of others.

Rescue of a victim shall take precedence over isolation of high energy fluids (Steam, hot water under pressure, hydraulic fluids, etc.) unless isolation of the system is necessary to effect rescue; or if failure to isolate the system will seriously affect reactor safety or will place the lives of other personnel in immediate danger.

E. PROCEDURE**1.0 Initial Response**

- 1.1 As soon as it is recognized that one or more individuals are missing, the security supervisor at the Central Alarm Station shall attempt to determine the possible location of the missing individuals, by paging the individual, by conferring with the individual's supervisors and co-workers, via brief searches of the last known location (if possible), and/or calling the individual's home. If following these efforts, the individual is still unaccounted for, the Security Coordinator shall be notified and the following information reported:

- * Name(s) of individual(s) missing
- * Summary of efforts performed to locate the individual(s)
- * Last known location of the individual(s)

Facility: **BVPS Unit 2** Task No.: 1350-004-03-023
Task Title: Classify an EPP Event JPM No.: 2002 Audit A4 SRO
K/A Reference: 2.4.41 (4.1) Scenario No. 1

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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 simulator scenario just completed.

Task Standard: The proper EPP classification is made within 15 minutes.

Required Materials: None

General References: EPP/I-1B, Recognition and Classification of Emergency Conditions, Rev. 2

Handouts: None

Initiating Cue: Classify the events in the scenario just completed in accordance with EPP/I-1B, Recognition and Classification of Emergency Conditions.

Time Critical Task: YES

Validation Time: 5 minutes

(Denote Critical Steps with an asterisk)

Note: The Candidate is being evaluated on classifying the scenario events just completed.

* **Performance Step: 1** Classify the event in accordance with the Emergency Plan.

Standard: Properly classifies the event within 15 minutes.

Scenario #1: Site Area Emergency based on Tab 2.3, Failure of Rx Protection

Scenario #2: Alert based on Tab 1.2, RCS Barrier

Scenario #3: Alert based on Tab 2.3, Failure of Rx Protection, or Tab 3.1, Loss of Power

NOTE: A loss of both 4kV busses for greater than 15 minutes is classified as a Site Area Emergency per Tab 3.1.

Scenario #4: Alert based on Tab 1.2, RCS Barrier

Comment:

Terminating Cue: When the Candidate classifies the event, the evaluation for this JPM is complete.

Job Performance Measure No.: 2002 NRC A4 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The simulator scenario just completed.

INITIATING CUE: Classify the events in the scenario just completed in accordance with EPP/I-1B, Recognition and Classification of Emergency Conditions.