

| Facility: FENOC BVPS Unit 2 | | Date of Examination: 5/29/01 |
|---|--|---|
| Examination Level (circle one): RO | | Operating Test Number: <u>2LOT3</u> |
| Administrative Topic/Subject Description | Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions | |
| A.1 | Conduct of Operations | Calculate RCS Subcooling Margin [JPM] K/A 2.1.7 3.7 ✓ |
| | Conduct of Operations | Perform an ECP Calculation [JPM] K/A 192008 K1.07 3.5 ✓ |
| A.2 | Equipment Control | Prepare a Clearance Tagout [JPM] K/A 2.2.13 3.6 ✓ |
| A.3 | Radiation Control | Knowledge of Pre-Planning ALARA [Q] K/A 2.3.2 2.5 ✓ |
| | | Knowledge of Tech Specs for High Radiation Area [Q] K/A 2.3.1 2.6 ✓ |
| A.4 | Emergency Preparedness | Knowledge of Emergency Plan [Q] K/A 2.4.29 2.6 ✓ |
| | | Knowledge of Emergency Plan [Q] K/A 2.4.29 2.6 ✓ |

| | | |
|--|------------------------|--|
| Facility: FENOC BVPS Unit 2 | | Date of Examination: 5/29/01 |
| Examination Level (circle one): SRO | | Operating Test Number: <u>2LOT3</u> |
| Administrative Topic/Subject Description | | Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions |
| A.1 | Conduct of Operations | Calculate RCS Subcooling Margin [JPM] K/A 2.1.7 4.4 ✓ |
| | Conduct of Operations | Review Estimated Critical Position Calculation [JPM] K/A 2.1.7 4.4 ✓ |
| A.2 | Equipment Control | Review a Clearance Tagout [JPM] K/A 2.2.13 3.8 ✓ |
| A.3 | Radiation Control | Knowledge of Pre-Planning ALARA [Q] K/A 2.3.2 2.9 |
| | | Knowledge of Tech Specs for High Radiation Area [Q] K/A 2.3.1 3.0 |
| A.4 | Emergency Preparedness | Determine Protective Action Recommendation (PAR) [JPM] K/A 2.4.44 4.0 ✓ |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-009

JPM REVISION: 4a

JPM TITLE: Calculate RCS Subcooling Margin

K/A REFERENCE: 2.1.7 3.7/4.4

TASK ID: 0061-009-01-013

JPM APPLICATION: ☐ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|---|---|--|---|
| <input checked="" type="checkbox"/> Perform | <input type="checkbox"/> Plant Site | <input type="checkbox"/> Annual Requal Exam | <input type="checkbox"/> BVT |
| <input type="checkbox"/> Simulate | <input checked="" type="checkbox"/> Simulator | <input checked="" type="checkbox"/> Initial Exam | <input checked="" type="checkbox"/> NRC |
| | <input type="checkbox"/> Classroom | <input type="checkbox"/> OJT/TPE | <input type="checkbox"/> Other: |
| | | <input type="checkbox"/> Training | |
| | | <input type="checkbox"/> Other: | |

| EVALUATION RESULTS | | | |
|---|------------------|----------------|--|
| Performer Name: | | Performer SSN: | |
| Time <input type="checkbox"/> Yes | Allotted | Actual | |
| Critical: <input checked="" type="checkbox"/> No | Time: 15 minutes | Time: minutes | |
| JPM RESULTS: <input type="checkbox"/> SAT | | | |
| <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) | | | |
| Comments: _____ | | | |
| _____ | | | |
| OBSERVERS | | | |
| Name/SSN: | | Name/SSN: | |
| Name/SSN: | | Name/SSN: | |
| EVALUATOR | | | |
| Evaluator (Print): _____ | | Date: _____ | |
| Evaluator Signature: _____ | | | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-009

JPM REVISION: 4a

JPM TITLE: Calculate RCS Subcooling Margin

EVALUATOR DIRECTION SHEET

TASK STANDARD: Correctly calculate RCS subcooling margin using control board indications and Steam Tables.

**RECOMMENDED
STARTING LOCATION:** Control Room

DIRECTIONS: Calculate RCS subcooling margin using control board indications and Steam Tables.

INITIAL CONDITIONS: The reactor was manually tripped from 100% power due to a CCP leak requiring a shutdown of all RCPs. The plant computer, Safety Parameter Display System (SPDS), and Plant Safety Monitoring System (PSMS) are out of service. Core Exit Thermocouple temperatures are NOT available.

INITIATING CUE: Your Supervisor directs you to determine the RCS subcooling margin using control board indications and Steam Tables.

REFERENCES: None

TOOLS: Steam Tables
Calculator

HANDOUT: None

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Calculate RCS subcooling margin using control board indications and Steam Tables.

INITIAL CONDITIONS: The reactor was manually tripped from 100% power due to a CCP leak requiring a shutdown of all RCP's. The plant computer, Safety Parameter Display System (SPDS), and Plant Safety Monitoring System (PSMS) are out of service. Core exit thermocouple temperatures are NOT available.

INITIATING CUE: Your Supervisor directs you to determine the RCS subcooling margin using control board indications and Steam Tables.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce " I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-009

JPM REVISION: 4a

JPM TITLE: Calculate the RCS Subcooling Margin

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|--|-----|
| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
| | START TIME: _____ | |
| | Setup: Initialize IC-177. Place YCT on SPDS, PSMS Plant Computer, 2RCS*Y001 (VB-B) 2RCS*YR001 (VB-B) & 2RCS*Y152E (VB-B). | |
| 1. Obtain RCS hot leg wide range temperature. <div style="border: 1px solid black; padding: 5px;"> Simulator value: <u>~ 575°F (Range 570 - 580°F)</u> </div> | 1.1 Candidate locates RCS hot leg wide range temperature indication [2RCS-TR413]. <div style="border: 1px solid black; padding: 5px;"> SIMULATED CUE: Recorder indicates 575°F. </div> COMMENTS: | |
| 2. Obtain RCS pressure and convert to psia. <div style="border: 1px solid black; padding: 5px;"> Simulator values: <u>~ 2140 psig (NR)</u> <u>(2155 psia)</u> <u>~ 2150 psig (WR)</u> <u>(2165 psia)</u> </div> | 2.1 Candidate locates PRZR pressure indication. (Either wide or narrow range). <div style="border: 1px solid black; padding: 5px;"> SIMULATED CUE: Indicator shows 2140 psig NR (2155 psia). </div> COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-009

JPM REVISION: 4a

JPM TITLE: Calculate the RCS Subcooling Margin

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|---|-----|
| <p>3. Find RCS saturation temperature using Steam Tables.</p> <div data-bbox="199 527 589 646" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Saturation temperature should be ~ 646°F (644 – 648°F). </div> | <p>3.1 Candidate locates the saturation temperature in the Steam Tables for the given PRZR pressure.</p> <p>COMMENTS:</p> | |
| <p>4.C Determine the RCS subcooling margin.</p> <div data-bbox="199 1209 545 1308" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> RCS is approximately 70° ± 10° subcooled. </div> | <p>4.1.C Candidate subtracts RCS hot leg temperature from saturation temperature.</p> <p>COMMENTS:</p> | |
| | STOP TIME: _____ | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002
JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

K/A REFERENCE: 192008 K1.07 3.5
2.1.23 3.9

TASK ID: 0011-003-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|--|--|---|--|
| <input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate | <input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom | <input type="checkbox"/> Annual Requal Exam <input checked="" type="checkbox"/> Initial Exam <input type="checkbox"/> OJT/TPE <input type="checkbox"/> Training <input type="checkbox"/> Other: | <input type="checkbox"/> BVT <input checked="" type="checkbox"/> NRC <input type="checkbox"/> Other: |

EVALUATION RESULTS

Performer Name:

Performer SSN:

Time ☐ Yes
Critical: ☒ NoAllotted
Time: 25 minutesActual
Time: minutesJPM RESULTS: ☐ SAT
☐ UNSAT (Comments required for UNSAT evaluation)

Comments: _____

OBSERVERS

Name/SSN:

Name/SSN:

Name/SSN:

Name/SSN:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002
JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

EVALUATOR DIRECTION SHEET

TASK STANDARD: DATA SHEET 1 (FORM ECP-1) Parts A through E completed correctly.

**RECOMMENDED
STARTING LOCATION:** Control Room

DIRECTIONS: You are to simulate (perform) the task of calculating an Estimated Critical Position (ECP).

INITIAL CONDITIONS:

- The plant computer is NOT available for calculation.
- Plant startup following a reactor trip.
- Specific parameters for power history, core age, time since reactor trip, estimated time to criticality, RCS boron concentration and Tavg are provided on the accompanying data sheet.

INITIATING CUE: Your Supervisor directs you to perform an ECP calculation and determine the critical boron concentration with an estimate of criticality occurring with Control Bank 'D' at 100 steps.

REFERENCES: 2OM-50.4.F, Rev. 2
BV-2 Curve Book

TOOLS: Calculator

HANDOUT:

- 2OM-50.4.F, Rev. 2 with Critical Data recorded in DATA SHEET 1
- ECP INITIAL CONDITIONS Data Sheet
- BV-2 Curve Book

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Perform an ECP calculation.

INITIAL CONDITIONS:

- The plant computer is NOT available for calculation.
- Plant startup following a reactor trip.
- Specific parameters for power history, core age, time since reactor trip, estimated time to criticality, RCS boron concentration and Tavg are provided on the accompanying data sheet.

INITIATING CUE: Your Supervisor directs you to perform an ECP calculation and determine the critical boron concentration with an estimate of criticality occurring with Control Bank 'D' at 100 steps.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|---|-----|
| | START TIME: _____ | |
| | <div data-bbox="721 575 1357 680" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Provide the Candidate with the ECP Initial Conditions Data Sheet. </div> | |
| 1. Obtain 2OM-50.4.F, Performing An Estimated Critical Position Calculation. | <div data-bbox="721 764 1357 852" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: This step is optional. Evaluator may elect to provide procedure. </div> <div data-bbox="662 877 1172 911"> 1. Candidate locates procedure 2OM-50.4.F. </div> <div data-bbox="721 924 1357 1230" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: After Candidate locates the procedure, provide a copy of DATA SHEET 1 (FORM ECP-1) with the following data entered: <ul style="list-style-type: none"> • Column I, PRIOR TO SHUTDOWN: <ul style="list-style-type: none"> ➤ Boron Concentration ➤ Power ➤ Control Rod Position • Column II, EXPECTED AT CRITICALITY: <ul style="list-style-type: none"> ➤ Control Rod Position </div> <div data-bbox="662 1260 818 1289">COMMENTS:</div> | |
| 2. Obtain BV-2 Plant Curve Book. | <div data-bbox="721 1524 1347 1612" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: This step is optional. Evaluator may elect to provide Curve Book. </div> <div data-bbox="652 1625 1153 1654"> 2. Candidate obtains the BV-2 Curve Book. </div> <div data-bbox="652 1688 812 1717">COMMENTS:</div> | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|--|-----|
| 3. Record (review) the given information in Part A, Critical Data. | 3.1 Candidate reviews data in Column I, PRIOR TO SHUTDOWN: ➤ Boron Concentration ➤ Power ➤ Control Rod Position 3.2 Candidate reviews data in Column II, EXPECTED AT CRITICALITY: ➤ Control Rod Position COMMENTS: | |
| 4. Complete Part A, Critical Data, Column I, PRIOR TO SHUTDOWN. | 4.1 Candidate refers to Figure CB-12 to estimate Xenon percent. 4.2 Candidate refers to Figure CB-22 to estimate Samarium percent. COMMENTS: | |
| 5. Complete Part A, Critical Data, Column II, EXPECTED AT CRITICALITY. | 5.1 Candidate refers to Figure CB-23 to estimate Xenon percent. 5.2 Candidate refers to Figure CB-22 to estimate Samarium percent. COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|---|-----|
| 6. Determine Part B.1, Power Reactivity Defect. | 6.1 Candidate refers to Figure CB-21 to determine the power reactivity defect and enters value in Part B, Column I, Line 1. COMMENTS: | |
| 7. Determine Part B.2, Control Rod Reactivity Defect. | 7.1 Candidate refers to Figure CB-24B to estimate integral rod worth prior to shutdown. 7.2 Candidate refers to Figure CB-24B to estimate integral rod worth expected at criticality. COMMENTS: | |
| 8. Determine Part B.3, Xenon Reactivity Defect. | 8.1 Candidate refers to Figure CB-23 to estimate Xenon worth prior to shutdown. 8.2 Candidate refers to Figure CB-23 to estimate Xenon worth expected at criticality. COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|--|-----|
| 9. Determine Part B.4, Samarium Reactivity Defect. | 9.1 Candidate refers to Figure CB-22 to estimate Samarium worth prior to shutdown. 9.2 Candidate refers to Figure CB-22 to estimate Samarium worth expected at criticality. COMMENTS: | |
| 10. Calculate Part B.5, Reactivity Change. | 10.1 For each Part B defect, Candidate subtracts Column I from Column II and enters the value in Column III. 10.2 Candidate sums all Part B, Column III values and enters the value in Part B, Line 5. COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|--|-----|
| <p>11.C Calculate Part C, Critical Boron Concentration.</p> | <p>11.1 Candidate enters Reactivity Change value from Part B, Line 5 in Part C, Column I, Line 1.</p> <p>11.2 Candidate refers to Figure CB-20 to estimate differential boron worth for the Part A, Column I boron concentration and enters the value in Part C, Column II, Line 1.</p> <p>11.3 Candidate calculates boron change by dividing Part C, Column I, Line 1 by Part C, Column II, Line 1 and enters the value in Part C, Column III, Line 1.</p> <p>11.4 Candidate enters the boron concentration from Part A, Column I in Part C, Column IV, Line 1.</p> <p>11.5 Candidate adds the boron change from Part C, Column III, Line 1 to Part C, Column IV, Line 1 and enters the value in Part C, Column V, Line 1.</p> <p>11.6 Candidate refers to Figure CB-20 to estimate differential boron worth for the boron concentration from Part C, Column V, Line 1 and enters the value in Part C, Column II, Line 2.</p> <p>11.7 Candidate calculates boron change by dividing Part C, Column I, Line 1 by Part C, Column II, Line 2 and enters the value in Part C, Column III, Line 2.</p> <p>11.8 Candidate enters the boron concentration from Part A, Column I in Part C, Column IV, Line 2.</p> <p>11.9.C Candidate adds Part C, Column III, Line 2 to Part C, Column IV, Line 2 and enters the value in Part C, Column V, Line 2.</p> <div data-bbox="751 1476 1406 1629" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>EVALUATOR NOTE: This step is SAT if the method of calculation is correct and the boron concentration for startup is within the the tolerance band listed on the ECP CALCULATION SHEET.</p> </div> | |
| COMMENTS: | | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 5

JPM TITLE: Perform an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---------------------------------------|---|-----|
| | <div data-bbox="727 457 1380 554">EVALUATOR NOTE: If Candidate continues with procedure, conclude JPM at this point.</div> | |
| | STOP TIME: _____ | |

THIS SHEET TO BE GIVEN TO CANDIDATE

| |
|-------------------------------|
| ECP INITIAL CONDITIONS |
|-------------------------------|

Hours since the reactor tripped: 60

Hours to expected criticality: 20

Power history prior to the reactor trip: 100% for 1 month

Core age: MOL (5750 MWD/MTU)

Tavg: 547°F

Initial RCS boron concentration: 1000 ppm

**JPM 2CR , Rev. 5
ECP CALCULATION**

| | Boron | Power | CB-23 % Xenon | CB-22 % Samarium | Rods |
|--------------------------|-------|-------|------------------|---------------------|------|
| Prior to Shutdown: | 1000 | 100% | 78% | 100% | 230 |
| Expected at Criticality: | | 0% | 1% | 120% | 100 |

CORE AGE = MOL

| Unit 2 Cycle 9 Data | | |
|---------------------|-------|--------|
| Core AGE | EQ XE | EQ SAM |
| MOL | 2692 | 616 |

B. Reactivity Balance

| Column: | I | II | III (II-I) |
|----------------------|-----------|-------------|------------|
| | Prior S/D | Exp at Crit | Difference |
| 1. Power | 1780 | 0 | -1780 |
| 2. Control Rods | 0 | 818 | 818 |
| 3. Xenon | 2692.0 | 53.8 | -2638.2 |
| 4. Samarium | 616.0 | 822.4 | 206.4 |
| 5. Reactivity Change | | | -3393.8 |

C. Critical Boron Concentration

| Column: | I | II | III | IV | V |
|---------|---------|-------------|--------|---------|---------|
| | Rx Chng | Diff B Wrth | B Chge | B @ S/D | B @ S/U |
| 1 | -3393.8 | -8.30 | 408.9 | 1000 | 1408.9 |
| 2 | | -7.70 | 440.8 | 1000 | 1440.8 |

JPM PASS CRITERIA

± 500 PCM from calculated boron
of C.2.V must be between:

1376 and 1506

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-503

JPM REVISION: 0

JPM TITLE: Review Estimated Critical Position Calculation

K/A REFERENCE: 192008 K1.07 3.6
2.1.7 4.4

TASK ID: 1340-007-03-023

JPM APPLICATION: ☐ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☒ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|---|---|--|---|
| <input checked="" type="checkbox"/> Perform | <input type="checkbox"/> Plant Site | <input type="checkbox"/> Annual Requal Exam | <input type="checkbox"/> BVT |
| <input type="checkbox"/> Simulate | <input type="checkbox"/> Simulator | <input checked="" type="checkbox"/> Initial Exam | <input checked="" type="checkbox"/> NRC |
| | <input checked="" type="checkbox"/> Classroom | <input type="checkbox"/> OJT/TPE | <input type="checkbox"/> Other: |
| | | <input type="checkbox"/> Training | |
| | | <input type="checkbox"/> Other: | |

| EVALUATION RESULTS | | | |
|--|--------------------------|----------------|---------|
| Performer Name: | | Performer SSN: | |
| Time <input type="checkbox"/> Yes | Alotted Time: 30 minutes | Actual Time: | minutes |
| Critical: <input checked="" type="checkbox"/> No | | | |
| JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) | | | |
| Comments: _____ | | | |
| _____ | | | |
| OBSERVERS | | | |
| Name/SSN: | | Name/SSN: | |
| Name/SSN: | | Name/SSN: | |
| EVALUATOR | | | |
| Evaluator (Print): _____ | | Date: _____ | |
| Evaluator Signature: _____ | | | |

OPERATIONS JOB PERFORMANCE MEASURE

| | |
|--|---|
| JPM NUMBER: 2CR-503 JPM REVISION: 0 | JPM TITLE: Review Estimated Critical Position Calculation |
|--|---|

EVALUATOR DIRECTION SHEET

TASK STANDARD: DATA SHEET 1 (FORM ECP-1) reviewed and error(s) identified.

**RECOMMENDED
STARTING LOCATION:** Control Room

DIRECTIONS: You are to simulate (perform) the task of reviewing an Estimated Critical Position (ECP) calculation.

INITIAL CONDITIONS:

- The plant computer is NOT available for calculation.
- A plant startup is in progress following a reactor trip.

INITIATING CUE: Reactor Engineering has prepared an ECP calculation for a reactor startup. The NSS requests you to verify that the ECP is accurate for given plant conditions and report the results of your review.

REFERENCES: 2OM-50.4.F, Rev. 2
BV-2 Curve Book

TOOLS: Calculator

HANDOUT:

- DATA SHEET 1 (FORM ECP-1) completed through Part C.
- ECP Initial Conditions Data Sheet
- BV-2 Curve Book

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Review an ECP calculation.

INITIAL CONDITIONS:

- The plant computer is NOT available for calculation.
- A plant startup is in progress following a reactor trip.

INITIATING CUE: Reactor Engineering has prepared an ECP calculation for a reactor startup. The NSS requests you to verify that the ECP is accurate for the given plant conditions and report the results of your review.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce " I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 4b

JPM TITLE: Review an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|---|-----|
| | START TIME: _____ | |
| | <div data-bbox="724 554 1360 688" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Provide the Candidate with the ECP Initial Conditions Data Sheet and completed DATA SHEET 1 (FORM ECP-1). </div> | |
| 1. Obtain 2OM-50.4.F, Performing An Estimated Critical Position Calculation. | <div data-bbox="724 730 1360 814" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: This step is optional. Evaluator may elect to provide procedure. </div> 1. Candidate locates procedure 2OM-50.4.F. COMMENTS: | |
| 2. Obtain BV-2 Plant Curve Book. | <div data-bbox="724 1115 1360 1199" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: This step is optional. Evaluator may elect to provide the Curve Book. </div> 2. Candidate obtains the BV-2 Curve Book. COMMENTS: | |
| 3. Verify the information in Part A, Column I. | 3.1 Candidate verifies data in Column I, PRIOR TO SHUTDOWN: <ul style="list-style-type: none"> ➤ Boron Concentration from ECP Initial Conditions Data Sheet. ➤ Power from ECP Initial Conditions Data Sheet. ➤ Xenon percent from Figure CB-12 ➤ Samarium percent from Figure CB-22 ➤ Control Rod Position from ECP Initial Conditions Data Sheet. COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 4b

JPM TITLE: Review an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|--|-----|
| 4. Verify the information in Part A, Column II. | 3.2 Candidate verifies data in Column II, EXPECTED AT CRITICALITY: <ul style="list-style-type: none"> ➤ Xenon percent from Figure CB-23 ➤ Samarium percent from Figure CB-22 ➤ Control Rod Position from ECP Initial Conditions Data Sheet. COMMENTS: | |
| 5. Part B.1, Power Reactivity Defect. | 5.1 Candidate verifies data from Figure CB-21 for the power reactivity defect equals the value entered in Part B, Column I, Line 1. COMMENTS: | |
| 6. Part B.2, Control Rod Reactivity Defect. | 6.1 Candidate verifies data from Figure CB-24B equals the value for estimated integral rod worth prior to shutdown. 7.2 Candidate verifies data from Figure CB-24B equals the value for estimated integral rod worth expected at criticality. COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 4b

JPM TITLE: Review an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|--|-----|
| 7. Part B.3, Xenon Reactivity Defect. | <p>7.1 Candidate verifies data from Figure CB-23 equals the value entered for Xenon worth prior to shutdown.</p> <p>7.2 Candidate verifies data for Xenon worth expected at criticality equals the value determined in procedure step IV.B.3.</p> <p>COMMENTS:</p> | |
| 8. Part B.4, Samarium Reactivity Defect. | <p>9.1 Candidate verifies data from Figure CB-22 equals the value for Samarium worth prior to shutdown.</p> <p>9.2 Candidate verifies data for Samarium worth expected at criticality equals the value determined in procedure step IV.B.4.</p> <p>COMMENTS:</p> | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 4b

JPM TITLE: Review an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---------------------------------------|---|-----|
| 9.C Part B.5, Reactivity Change. | <p data-bbox="662 453 1390 512">9.1 For each Part B defect, Candidate verifies the correct value entered in Column III.</p> <p data-bbox="662 548 1442 609">9.2.C Candidate determines that the value entered in Part B, Line 5 is NOT correct.</p> <div data-bbox="760 636 1395 751"><p>EVALUATOR NOTE: The value entered in Part B, Line 5 is incorrect due to a math error. The correct value is 2119.6.</p></div> <div data-bbox="760 789 1395 951"><p>EVALUATOR NOTE: When Candidate reports results, inform Candidate to complete Part C, Critical Boron Concentration using the correct Reactivity Change value.</p></div> <p data-bbox="662 995 821 1022">COMMENTS:</p> | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-002

JPM REVISION: 4b

JPM TITLE: Review an Estimated Critical Position Calculation

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|--|-----|
| 11.C Calculate Part C, Critical Boron Concentration. | <p>11.1 Candidate enters correct Reactivity Change value in Part C, Column I, Line 1.</p> <p>11.2 Candidate refers to Figure CB-20 to estimate differential boron worth for the Part A, Column I boron concentration and enters the value in Part C, Column II, Line 1.</p> <p>11.3 Candidate calculates boron change by dividing Part C, Column I, Line 1 by Part C, Column II, Line 1 and enters the value in Part C, Column III, Line 1.</p> <p>11.4 Candidate enters the boron concentration from Part A, Column I in Part C, Column IV, Line 1.</p> <p>11.5 Candidate adds the boron change from Part C, Column III, Line 1 to Part C, Column IV, Line 1 and enters the value in Part C, Column V, Line 1.</p> <p>11.6 Candidate refers to Figure CB-20 to estimate differential boron worth for the boron concentration from Part C, Column V, Line 1 and enters the value in Part C, Column II, Line 2.</p> <p>11.7 Candidate calculates boron change by dividing Part C, Column I, Line 1 by Part C, Column II, Line 2 and enters the value in Part C, Column III, Line 2.</p> <p>11.8 Candidate enters the boron concentration from Part A, Column I in Part C, Column IV, Line 2.</p> <p>11.9.C Candidate adds Part C, Column III, Line 2 to Part C, Column IV, Line 2 and enters the value in Part C, Column V, Line 2.</p> <div data-bbox="755 1451 1409 1604" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> EVALUATOR NOTE: This step is SAT if the method of calculation is correct and the boron concentration is between 1206 and 1334 ppm (± 500 pcm tolerance band). </div> <p>COMMENTS:</p> | |
| | STOP TIME: _____ | |

THIS SHEET TO BE GIVEN TO CANDIDATE

| |
|-------------------------------|
| ECP INITIAL CONDITIONS |
|-------------------------------|

Hours since the reactor tripped: 60

Hours to expected criticality: 20

Power history prior to the reactor trip: 100% for 1 month

Core age: MOL (5750 MWD/MTU)

Tavg: 547°F

Initial RCS boron concentration: 1000 ppm

Control Rod Position Prior to Shutdown: CB 'D' at 200 steps

Control Rod Position Expected at Criticality: CB 'D' at 120 steps

PERFORMING AN ESTIMATED CRITICAL POSITION CALCULATION

DATA SHEET 1

FORM ECP-1

A. Critical Data

| (I) | (II) |
|--|--|
| PRIOR TO SHUTDOWN | EXPECTED AT CRITICALITY |
| Date <u>X / X / X</u> Time <u>60 hrs. ago</u> | Date <u>X / X / X</u> Time <u>+20 hrs.</u> |
| Boron Conc. <u>1000</u> ppm Power <u>50</u> % | |
| Xenon <u>78</u> % (Use Fig CB-12 or N/A) | Xenon _____ % (Use Fig CB-23 or N/A) |
| Samarium <u>100</u> % (Use Fig CB-22 or N/A) | Samarium _____ % (Use Fig CB-22 or N/A) |
| Control Rod Position A <u>230</u> C <u>230</u> B <u>230</u> D <u>200</u> | Control Rod Position A <u>230</u> C <u>230</u> B <u>230</u> D <u>120</u> |

B. Reactivity Balance – (Record absolute values in Columns I and II)

| Reactivity Defects | (I) | (II) | (III) |
|--|-------------------|-------------------------|---------------------|
| | Prior to Shutdown | Expected at Criticality | (II – I) Difference |
| 1. Power (Fig CB-21) (OR Consult RX ENGR) | 865 pcm | 0 (zero) pcm | (-) 865 pcm |
| 2. Control Rods (Circle Fig. used) (Fig. CB-24A, <u>24B</u> 24C OR Consult RX ENGR) | 120 pcm | 815 pcm | (±) 695 pcm |
| 3. Xenon (Fig. CB-23) | 2099.8 pcm | 26.4 pcm | (±) 2072.8 pcm |
| 4. Samarium (Fig. CB-22) | 616 pcm | 739.2 pcm | (±) 123.2 pcm |
| 5. Reactivity Change (Sum of 1-4) = | | | (±) 3509.6 pcm |

PERFORMING AN ESTIMATED CRITICAL POSITION CALCULATION

DATA SHEET 1 (continued)

FORM ECP-1

C. Critical Boron Concentration

| | (I) Reactivity Change (B.5) | (II) Differential Boron Worth (Fig. CB-20) | (III) Boron Change (I) ÷ (II) | (IV) Boron Conc. at Shutdown | (V) Boron Conc. for Startup (III) + (IV) |
|----|-----------------------------------|---|-------------------------------------|------------------------------------|---|
| 1. | (±) pcm | (-) $\frac{\text{pcm}}{\text{ppm}}$ | (±) ppm | ppm | ppm |
| 2. | | (-) $\frac{\text{pcm}}{\text{ppm}}$ | (±) ppm | ppm | ppm |

D. Estimated Rod Position Correction

| (I) Boron Sample | (II) Boron Conc. For Startup C.1.h | (III) Boron Deviation (I) - (II) | (IV) Differential Boron Worth (Fig. CB-20) |
|--|---|---|--|
| ppm | ppm | (±) ppm | (-) $\frac{\text{pcm}}{\text{ppm}}$ |
| (V) Rod Worth Correction (III) × (IV) | (VI) Rod Worth Expected At Criticality (B.2) | (VII) Corrected Rod Worth Expected At Criticality (V) + (VI) | (VIII) Corr Critical Rod Pos. (Circle Figure used) (Fig CB-24A, 24B, 24C OR Consult RX ENGR) |
| (±) pcm | pcm | (-) pcm | Steps |

PERFORMING AN ESTIMATED CRITICAL POSITION CALCULATION

2. For the control rod positions listed on Data Sheet 1(2), Part A (Critical Data) determine and record the control rod reactivity defect for Part B, Columns I and II as follows:

- a. BV-2 Curve Book Figure 24A, 24B, or 24C, "Integral Rod Worth vs. Steps Withdrawn Banks D and C Moving with Overlap".

OR

- b. Have the Reactor Engineer provide the current value using either the PC version of the Nuclear Design Report (PCNDR) or other NRC approved nuclear design codes.

3. Determine Xenon worth for Data Sheet 1, Part B, Columns I and II as follows:

- a. If BV-2 Curve Book Figure CB-12 and/or CB-23, were used in Steps IV.A.1.e and IV.A.2.c, perform the following calculations and record the value obtained in Column C below on Data Sheet 1, Part B, Columns I and II:

| | A | B | C |
|--------------------------------------|--|---|-------------------------------------|
| | Percent Equil. Xenon Part A Critical Data | Equilibrium Xenon BOL, MOL, or EOL CB-12 or CB-23 | Col. A x Col. B/100% Xenon Worth |
| Prior to Shutdown Column I | 78 | 2692 pcm | 2099.8 pcm |
| Expected at Criticality Column II | 1 | 2692 pcm | 26.9 pcm |

OR

- b. Have the Reactor Engineer provide Xenon values in pcm using a computer program that approximates Xenon worth.

PERFORMING AN ESTIMATED CRITICAL POSITION CALCULATION

4. Determine Samarium worth for Data Sheet 1(2), Part B, Columns I and II as follows:
 - a. If BV-2 Curve Book, Figure CB-22, was used in Step IV.A.2.d, perform the following calculations and record the value obtained in Column C below on Data Sheet 1(2), Part B, Columns I and II:

| | A | B | C |
|--------------------------------------|--|---|--|
| | Percent Equil. Samarium Part A Critical Data | Equilibrium Samarium BOL, MOL, or EOL CB-22 | Col. A x Col. B/100% Samarium Worth |
| Prior to Shutdown Column I | 100 | 616 pcm | 616 pcm |
| Expected at Criticality Column II | 120 | 616 pcm | 739.2 pcm |

OR

- b. Have the Reactor Engineer provide Samarium values in pcm using a computer program that approximates Samarium worth.
5. Calculate the reactivity change as follows:
 - a. On Data Sheet 1(2), Part B, "Reactivity Balance", subtract Column I from Column II for each line.
 - b. Enter the results in Column III, "Difference".
 - c. Sum all the values in Column III and enter on Line 5.
 - d. Record this value on Data Sheet 1(2), Part C, Column I, Line 1.

C. Critical Boron Concentration for Startup

1. Data Sheet 1 Calculations

- a. Using BV-2 Curve Book, Figure CB-20, "H2P Differential Boron Worth vs. Boron Concentration", AND the Boron Concentration from Part A, Column I, enter the Differential Boron Worth on Data Sheet 1, Part C, Column II, Line 1.
- b. Divide the Reactivity Change (Column I, Line 1) by the Differential Boron Worth (Column II, Line 1) and enter the value on Data Sheet 1, Part C, Column III, Line 1. **Be cautious of signs.**
- c. Enter the Boron Concentration from Part A, Column I on Data Sheet 1, Part C, Column IV, Line 1.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New
JPM REVISION: 0

JPM TITLE: Prepare a Clearance Tagout

K/A REFERENCE: 2.2.13

3.6

TASK ID: 0481-020-03-013

JPM APPLICATION: ☐ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|--|--|---|--|
| <input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate | <input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom | <input type="checkbox"/> Annual Requal Exam <input checked="" type="checkbox"/> Initial Exam <input type="checkbox"/> OJT/TPE <input type="checkbox"/> Training <input type="checkbox"/> Other: | <input type="checkbox"/> BVT <input checked="" type="checkbox"/> NRC <input type="checkbox"/> Other: |

EVALUATION RESULTS

Performer Name:

Performer SSN:

Time ☐ YesCritical: ☒ NoAllotted
Time:

20 minutes

Actual
Time:

minutes

JPM RESULTS: ☐ SAT
☐ UNSAT (Comments required for UNSAT evaluation)

Comments: _____

OBSERVERS

Name/SSN:

Name/SSN:

Name/SSN:

Name/SSN:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

| | |
|--|---------------------------------------|
| JPM NUMBER: 2LOT3 - New JPM REVISION: 0 | JPM TITLE: Prepare a Clearance Tagout |
|--|---------------------------------------|

EVALUATOR DIRECTION SHEET

TASK STANDARD:

Prepare a clearance tagout.

RECOMMENDED
STARTING LOCATION:

Control Room

DIRECTIONS:

You are to simulate (perform) the task of preparing a clearance tagout.

INITIAL CONDITIONS:

The plant is operating at 100% power with all systems in their normal operating alignment. A clearance tagout has been prepared to isolate and drain [2CDS-P22B] Chiller Cond Wtr Booster Pump.

INITIATING CUE:

As the Reactor Operator, your Supervisor requests you to review the clearance tagout for completeness and report your results.

REFERENCES:

NPDAP-3.4, Rev. 14

TOOLS:

None

HANDOUT:

NPDAP-3.4, Rev. 14
Copy of Op. Manual Figures No. 30-4 & 30-5

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Prepare a clearance tagout.

INITIAL CONDITIONS: The plant is operating at 100% power with all systems in their normal operating alignment. A clearance tagout has been prepared to isolate and drain [2CDS-P22B] Chiller Cond Wtr Booster Pump.

INITIATING CUE: As the Reactor Operator, your Supervisor requests you to review the clearance tagout for completeness and report your results.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce " I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New

JPM REVISION: 0

JPM TITLE: Prepare a Clearance Tagout

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---------------------------------------|---|-----|
| | START TIME: _____ | |
| | <div data-bbox="722 583 1399 787" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: This task is normally performed using the NOMS clearance computer and signed electronically. For the purpose of the JPM, inform the Candidate to report the results of the tagout review in place of signing the tagout form.</p> </div> | |
| <p>1. Locates NPDAP-3.4.</p> | <div data-bbox="714 945 1388 1117" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: This step is optional and may not be performed by Candidate. Mark step N/A if not performed. After locating procedure, provide Candidate a copy of NPDAP 3.4.</p> </div> <p>1. Candidate locates procedure NPDAP-3.4.</p> <p>COMMENTS:</p> | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New

JPM REVISION: 0

JPM TITLE: Prepare a Clearance Tagout

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|---|-----|
| 2.C. Review clearance points for adequacy and report results. | <div data-bbox="753 457 1386 562" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">EVALUATOR NOTE: Provide JPM handout with tagout forms and Op Manual figures.</div> <p>Candidate verifies appropriate clearance points are selected.</p> <p>2.2.C Candidate identifies the following tagout errors:</p> <p>2.2.1 480V breaker tag type is listed as "No Tag" (correct type is "Danger Tag").</p> <p>2.2.2 Valve 2SWC-45 is incorrectly listed in the "OPEN" position for tag placement.</p> <p>2.2.3 Valve 2SWC-39 is incorrectly listed in the "SHUT" position for tag restoration.</p> <p>2.3. Reports that the tagout is NOT correct as written based on the errors noted.</p> <p>COMMENTS:</p> | |
| | STOP TIME: _____ | |

2W10-29 -CDS-003

Beaver Valley Power Sta. 2BVP-01-1

05/17/2001 14:55

Page 1 of 1

Equipment ID:

2CDS-SP22B

Description:

ISOLATE AND DRAIN PUMP TO INSPECT AND CLEAN CYCLONE SEPERATOR.

Reason:

ONE CHILLER CND WTR BOOSTER PUMP WILL NORMALLY BE IN CONTINUOUS OPERATION

Hazards:

PLACE 2CDS-SP22A IN SERVICE BEFORE SECURING 2CDS-SP22B

Work Required prior to Completion:

| Attribute Description | Attribute Value |
|------------------------------------|-----------------|
| Equipment Required For Mode Change | No |
| Restored/Removed Prior to Mode | NOT APPLICABLE |
| ESF Clearance Required | No |
| Tagout Type | Non-Outage |
| Clearance Type | Danger |

| Number | Equipment ID | Description |
|---------------|--------------|--|
| 00-019047-000 | 2CDS-SP22B | CLEAN AND INSPECT FILTER CYCLONE SEPARATOR TO 2CDS-P22B |

| Status | Description | User | Verification Date |
|--------------------|-----------------------|-------------|-------------------|
| Prepared | Prepared By | Wooley, Tom | 05/17/2001 14:55 |
| Reviewed | Reviewed By | | 00/00/0000 00:00 |
| Second Reviewed | Second Reviewed By | | 00/00/0000 00:00 |
| Approved | Approved By | | 00/00/0000 00:00 |
| Issued for Work | Issued for Work By | | 00/00/0000 00:00 |
| Restoration Review | Restoration Review By | | 00/00/0000 00:00 |
| Removal Authorized | Removal Authorized By | | 00/00/0000 00:00 |
| Clearance Closed | Clearance Closed By | | 00/00/0000 00:00 |

| Equipment ID | Equipment Description | Equipment Location | Tag Serial | Tag Type | Place. Config. | Place. Seq. | Rest. Config. | Rest. Seq. | Notes |
|------------------|--|-------------------------------|------------|----------|----------------|-------------|---------------|------------|---------------------------|
| 2CDS-P22B-CS | CODENSER WATER BOOSTER PUMP | 2-TRBB-730-BASEMENT | | Caution | NORMAL | 1 | NORMAL | 7 | S/D-"NORMAL" (AFTER STOP) |
| 480VUS-2-1-04/6D | 480VUS-2-1 ACB 04/2B6D | 2-SRVB760 | | Danger | OFF | 2 | ON | 6 | |
| 480VUS-2-1-6D | 480V BKR FOR COND WATER BOOSTER PUMP (2CDS-P22B) | 2-SRVB-760-- | | No Tag | RACKED OUT | 3 | RACKED IN | 5 | |
| 2SWC-45 | BOOSTER PUMP (2CDS-P22B) DISCH ISOL | 2-TRBB-730--EAST OF A CHILLER | | Danger | OPEN | 4 | OPEN | 4 | 30-4/C4 |
| 2SWC-39 | BOOSTER PUMP (2CDS-P22B) SUCTION ISOL | 2-TRBB-730-- | | Danger | SHUT | 5 | SHUT | 3 | 30-4/C3 |
| 2SWC-343 | COND WTR BOOSTER PUMP (2CDS-P22B) SUCTION DRN | 2-TRBB-730-- | | Danger | OPEN | 6 | SHUT | 2 | 30-4/C3 |
| 2SWC-973 | (2CDS-P22B) SUCTION TCN ISOL | 2-TRBB-730-- | | Danger | OPEN | 7 | SHUT | 1 | 30-4/C3 |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New
JPM REVISION: 0

JPM TITLE: Review a Clearance Tagout

K/A REFERENCE: 2.2.13

3.8

TASK ID: 1310-003-03-023

JPM APPLICATION: ☐ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☒ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|--|--|---|--|
| <input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate | <input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom | <input type="checkbox"/> Annual Requal Exam <input checked="" type="checkbox"/> Initial Exam <input type="checkbox"/> OJT/TPE <input type="checkbox"/> Training <input type="checkbox"/> Other: | <input type="checkbox"/> BVT <input checked="" type="checkbox"/> NRC <input type="checkbox"/> Other: |

| EVALUATION RESULTS | | | |
|--|---------------------------|----------------------|--|
| Performer Name: | | Performer SSN: | |
| Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No | Allotted Time: 20 minutes | Actual Time: minutes | |
| JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ | | | |
| OBSERVERS | | | |
| Name/SSN: | | Name/SSN: | |
| Name/SSN: | | Name/SSN: | |
| EVALUATOR | | | |
| Evaluator (Print): _____ | | Date: _____ | |
| Evaluator Signature: _____ | | | |

OPERATIONS JOB PERFORMANCE MEASURE

| | |
|--|--------------------------------------|
| JPM NUMBER: 2LOT3 - New JPM REVISION: 0 | JPM TITLE: Review a Clearance Tagout |
|--|--------------------------------------|

EVALUATOR DIRECTION SHEET

TASK STANDARD: Review a clearance tagout and correctly identify any error(s).

**RECOMMENDED
STARTING LOCATION:** Control Room

DIRECTIONS: You are to simulate (perform) the task of reviewing a clearance tagout.

INITIAL CONDITIONS: The plant is operating at 100% power with all systems in their normal operating alignment. A clearance tagout has been prepared to replace the mechanical seal on [2CHS*P22A] Boric Acid Transfer Pump.

INITIATING CUE: The NSS requests you to review the clearance tagout for completeness and report the results of your review.

REFERENCES: NPDAP 3.4, Rev. 14

TOOLS: None

HANDOUT: NPDAP 3.4, Rev. 14
Copy of Op. Manual Figure No. 7-2 & 7-4

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Review a clearance tagout.

INITIAL CONDITIONS: The plant is operating at 100% power with all systems in their normal operating alignment. A clearance tagout has been prepared to replace the mechanical seal on [2CHS*P22A] Boric Acid Transfer Pump.

INITIATING CUE: The NSS requests you to review the clearance tagout for completeness and report the results of your review.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New
JPM REVISION: 0

JPM TITLE: Review a Clearance Tagout

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|---|-----|
| | START TIME: _____ | |
| | <div data-bbox="721 594 1393 779" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: This task is normally performed using the NOMS clearance computer and signed electronically. For the purpose of the JPM, inform the Candidate to report the results of the tagout review in lieu of signing the tagout form.</p> </div> | |
| <p>1. Locates procedure NPDAP-3.4.</p> | <div data-bbox="721 936 1393 1052" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: This step is optional and may not be omitted by the Candidate. Mark step N/A if not performed. Evaluator may elect to provide procedure.</p> </div> <p>1. Candidate locates procedure NPDAP-3.4.</p> <p>COMMENTS:</p> | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2LOT3 - New
JPM REVISION: 0

JPM TITLE: Review a Clearance Tagout

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|---|--|-----|
| <p>2.C. Review clearance points for adequacy and reports results.</p> | <div data-bbox="743 451 1414 569" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: After Candidate locates procedure, provide attached tagout forms and OP Manual figures.</p> </div> <p>2.1 Candidate verifies appropriate clearance points are selected.</p> <p>2.2.C Candidate identifies the following tagout errors:</p> <p>2.2.1 Valve 2CHS-98 is NOT correctly tagged in the Locked Shut position for tag placement (listed as Open).</p> <p>2.2.2 No tag is included for the pump benchboard control switch for tag placement.</p> <p>2.2.3 Valve 2CHS-98 is NOT correctly tagged in the Locked Shut position for restoration (listed as Open).</p> <p>2.3. Reports that the tagout is NOT correct as written based on the errors noted.</p> <div data-bbox="732 1087 1406 1243" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: Candidate may also identify that the tagout may be enhanced by altering the sequence of tags. This is not required to satisfactorily complete the JPM.</p> </div> <p>COMMENTS:</p> | |
| | <p>STOP TIME: _____</p> | |

Beaver Valley Power Sta. 2BVP-01-1

Equipment ID:

2CHS-P22A

Description:

Replace the pump mechanical seals for 2CHS-P22A.

Reason:

None identified

Hazards:

System contains boric acid solution.

Work Required prior to Completion:

Run pump OST prior to return to service.

| Attribute Description | Attribute Value |
|------------------------------------|-----------------|
| Equipment Required For Mode Change | No |
| Restored/Removed Prior to Mode | POWER OPERATION |
| ESF Clearance Required | No |
| Tagout Type | Non-Outage |
| Clearance Type | Danger |

| Status | Description | User | Verification Date |
|--------------------|-----------------------|------------|-------------------|
| Prepared | Prepared By | Unit 2 NCO | 05/01/2001 09:29 |
| Reviewed | Reviewed By | Unit 2 NCO | 05/01/2001 09:30 |
| Second Reviewed | Second Reviewed By | | 00/00/0000 00:00 |
| Approved | Approved By | | 00/00/0000 00:00 |
| Issued for Work | Issued for Work By | | 00/00/0000 00:00 |
| Restoration Review | Restoration Review By | | 00/00/0000 00:00 |
| Removal Authorized | Removal Authorized By | | 00/00/0000 00:00 |
| Clearance Closed | Clearance Closed By | | 00/00/0000 00:00 |

| Equipment ID | Equipment Description | Equipment Location | Tag Serial | Tag Type | Place. Config. | Place. Seq. | Rest. Config. | Rest. Seq. | Notes |
|--------------|--|--------------------------|------------|----------|----------------|-------------|---------------|------------|-------|
| MCC-2-E13-3F | MOTOR STARTER FOR BORIC ACID TRANSFER PUMP 2CHS-P22A | 2-MSCV-735-- | | Danger | OPEN | 1 | CLOSED | 7 | |
| 2CHS-73 | BORIC ACID PP 22A SUCT ISOL | 2-AXLB-755-P22A CUB -757 | | Danger | SHUT | 2 | OPEN | 6 | |
| 2CHS-98 | PRI WTR TO BORIC ACID PP 22A | 2-AXLB-755-P22A CUB -758 | | Danger | OPEN | 3 | OPEN | 5 | |
| 2CHS-77 | BORIC ACID TK 21A RECIRC ISOL | 2-AXLB-755-P22A CUB -759 | | Danger | SHUT | 4 | OPEN | 4 | |
| 2CHS-79 | BORIC ACID PP 22A TO BORIC ACID FILTER | 2-AXLB-755-P22A CUB -759 | | Danger | SHUT | 5 | OPEN | 3 | |
| 2CHS-868 | BORIC ACID TRANSFER PUMP 22A CASING DRAIN | 2-AXLB-755-P22A CUB -756 | | Danger | OPEN | 6 | SHUT | 2 | |
| 2CHS-625 | BORIC ACID PP 22A SUCT STR TEST | 2-AXLB-755-P22A CUB -757 | | Danger | OPEN | 7 | SHUT | 1 | |

| Component | Annotations |
|-----------|---------------------|
| 2CHS-98 | KEY REQUIRED [SR-2] |

| Component | Print Number |
|-----------|--------------|
| | |

QUESTION: A.3.1.1

- a. After signing onto the RWP for the Safeguards Area to manually operate the AFW throttle valves, how can you determine the path of entry that will result in the lowest radiation exposure?

- b. Assume that a LOCA has occurred, the Control Room is working through the EOP's having just verified transfer to the Recirculation Mode, and the Emergency Preparedness Plan has been entered with all facilities currently activated. How would you now access this area and what dose considerations, if any, now exist?

Answer:

- a. By reviewing the posted area dose maps, OR obtaining a Health Physics Technician briefing.

- b. With the EPP facilities activated, access to this area must be made through the Radiological Operations Center (ROC). Dose considerations will now include the increases from the recirculation piping, which passes through the safeguards building, with the potential for large and quickly changing radiation doses.

Technical Reference(s): Health Physics Manual; EPP/IP 1.5, Section 2.0

Learning Objective: 08-01-801, ELO 32; 9250, ELO 12

K/A: 2.3.2

Importance Rating 2.5/2.9

Comments:

QUESTION: A.3.1.2

Several days following a large break LOCA, the plant has been stabilized in Mode 5, and Health Physics has resurveyed the entire plant to update the radiological conditions and postings. You have been sent to the VCT cubicle, to check instrumentation, and found on the RWP that the dose rates inside the cubicle can be as high as 2499 mR/hour.

- a. What radiation protection controls would you expect to find at the VCT access point?
- b. What Technical Specification requirements must be met for you to enter the cubicle?

Answer:

- a. The door [barricade] shall be conspicuously posted [as a high radiation area] and locked, [with the keys maintained under administrative control of the on duty NSS and/or a facility radiation protection supervisor.]
- b. To gain entry requires issuance of an RWP, which must be signed on, and at least one of the following:
 - A radiation monitoring device which continuously indicates dose rate in the area, or
 - A radiation monitoring device which continuously integrates the radiation dose in the area and alarms when a preset integrated dose is received, or
 - An individual qualified in radiation protection procedures who is equipped with a radiation dose rate monitoring device, is responsible for positive control over activities in the area.

[] bracketed information not required for full credit.

| | |
|-------------------------|---|
| Technical Reference(s): | Technical Specifications 6.12.1, 6.12.2 |
| Learning Objective: | 08-04-006, ELO 5 |
| K/A: | 2.3.1 |
| Importance Rating | 2.6/3.0 |

Comments:

RO ONLY

QUESTION: A.4.1.1

NOTE: This is a closed reference question.

What is the minimum Emergency Plan classification level that requires activation of the Operations Support Center?

Answer:

Alert

| | |
|-------------------------|-------------------------|
| Technical Reference(s): | BVPS EPP/I-3, Section E |
| Learning Objective: | EPP 9250, ELO 6 & 7 |
| K/A: | 2.4.29 |
| Importance Rating | 2.6 |

Comments:

RO ONLY

QUESTION: A.4.1.2

NOTE: This is a closed reference question.

Following the declaration of a Site Area Emergency at BVPS, which organization is assigned responsibility for accountability of site personnel, and what is the time limit to complete the accountability?

Answer:

Security, within 30 minutes.

| | |
|-------------------------|-------------------------|
| Technical Reference(s): | BVPS EPP/IP 3.2, Rev. 9 |
| Learning Objective: | EPP 9250, ELO 6 |
| K/A: | 2.4.29 |
| Importance Rating | 2.6 |

Comments:

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: ADM-PAR
JPM REVISION: 0a

JPM TITLE: Determine Protective Action Recommendation (PAR)

K/A REFERENCE: 2.4.44

4.0

TASK ID: 1350-007-03-023

JPM APPLICATION: ☐ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

| EVALUATION METHOD: | LOCATION: | TYPE: | ADMINISTERED BY: |
|--|--|---|--|
| <input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate | <input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom | <input type="checkbox"/> Annual Requal Exam <input checked="" type="checkbox"/> Initial Exam <input type="checkbox"/> OJT/TPE <input type="checkbox"/> Training <input type="checkbox"/> Other: | <input type="checkbox"/> BVT <input checked="" type="checkbox"/> NRC <input type="checkbox"/> Other: |

| EVALUATION RESULTS | | | |
|--|---------------------------|----------------------|--|
| Performer Name: | | Performer SSN: | |
| Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No | Allotted Time: 15 minutes | Actual Time: minutes | |
| JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ | | | |
| OBSERVERS | | | |
| Name/SSN: | | Name/SSN: | |
| Name/SSN: | | Name/SSN: | |
| EVALUATOR | | | |
| Evaluator (Print): _____ | | Date: _____ | |
| Evaluator Signature: _____ | | | |

OPERATIONS JOB PERFORMANCE MEASURE

| | |
|---|---|
| JPM NUMBER: ADM-PAR JPM REVISION: 0a | JPM TITLE: Determine Protective Action Recommendation (PAR) |
|---|---|

EVALUATOR DIRECTION SHEET

TASK STANDARD:

Protective Action Recommendations determined in accordance with EPP/IP 4.1.

RECOMMENDED
STARTING LOCATION:

Control Room

DIRECTIONS:

Determine Protective Action Recommendations (PAR).

INITIAL CONDITIONS:

A General Emergency has been declared at BVPS Unit 2 following a LOCA and the continued loss of all 4KV Emergency Power.

The following plant conditions exist:

- 35' wind direction is from 270° at 4 MPH.
- 150' wind direction is from 270° at 11 MPH.
- 500' wind direction is from 285° at 15 MPH.
- No radioactive release has occurred or is anticipated.
- Health Physics has provided the following dose projections:
 - At the EAB: 11 REM
 - At 5 miles: 0.9 REM TEDE, 5.5 REM CDE

INITIATING CUE:

You are the Emergency Director and the TSC/EOF have not yet been activated. You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.

REFERENCES:

EPP/IP 4.1, Rev. 13

TOOLS:

None

HANDOUT:

None. (EPP and EPP/IP's are to be made available to Candidate.)

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐

Read:

TASK:

Determine Protective Action Recommendations (PAR).

INITIAL CONDITIONS:

A General Emergency has been declared at BVPS Unit 2, following a LOCA and the continued loss of all 4KV Emergency Power.

The following plant conditions exist:

- 35' wind direction is from 270° at 4 MPH.
- 150' wind direction is from 270° at 11 MPH.
- 500' wind direction is from 285° at 15 MPH.
- No radioactive release has occurred or is anticipated.
- Health Physics has provided the following dose projections:
At the EAB: 11 REM
At 5 miles: 0.9 REM TEDE, 5.5 REM CDE

INITIATING CUE:

You are the Emergency Director and the TSC/EOF have not yet been activated. You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce " I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: ADM-PAR
JPM REVISION: 0a

JPM TITLE: Determine Protective Action Recommendation (PAR)

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|---|-----|
| | START TIME: _____ | |
| 1. Locate procedure EPP/IP 4.1. | 1.1 Candidate locates EPP/IP 4.1. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> EVALUATOR CUE: You DO NOT need to fill out an Initial Notification Form (EPP/IP 1.1 Attachment 1) for the purposes of this JPM. </div> COMMENTS: | |
| 2. Refer to Offsite Protection Action Recommendation Flow Chart. | 2.1 Candidate enters Offsite Protective Action Recommendation Flowchart for General Emergency declaration. COMMENTS: | |
| 3. Navigates PAR flow chart. | 3.1 Candidate navigates PAR flow chart as follows: 3.1.1 General Emergency already declared (↓). 3.1.2 Met data provided in initial conditions (↓). 3.1.3 None of the following are TRUE (↓): 35' wind speed < 2 MPH Either 150' or 500' wind direction unavailable 150' & 500' wind direction difference ≥ 165 and ≤ 195 degrees Release started or imminent Release transport spans sunrise or sunset 3.1.4 Dose projection results available – YES (→). 3.1.5 EAB TEDE < 10 REM – NO (↓). 3.1.6 5 mile dose >1 REM TEDE or >5 REM CDE – YES (→). COMMENTS: | |

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: ADM-PAR
JPM REVISION: 0a

JPM TITLE: Determine Protective Action Recommendation (PAR)

| STEP ("C" Denotes CRITICAL STEP) | STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ | S/U |
|--|--|-----|
| 4. Determine Downwind Wedge. | 4.1 Candidate determines that the 150' elevation downwind sectors are 'CDEFG'. 4.2 Candidate determines that the 500' elevation downwind sectors are 'DEFGH'. COMMENTS: | |
| 5.C Determine Offsite Protective Action Recommendations. | 5.1.C Candidate determines the following Protective Action Recommendations: Evacuate 360°for two miles, and Evacuate Sectors 'CDEFGH' for ten miles, and Shelter the remainder of 10 mile EPZ. COMMENTS: | |
| | STOP TIME: _____ | |