

Facility: PVNGS
 Examination Level: RO ☒ SRO ☐

Date of Examination: 03/19/12
 Operating Test Number: _____

| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
|------------------------------------|---------------|--|
| Conduct of Operations | N,R | Determine ability to stand shift with training and license proficiency time. (2.1.4) |
| Conduct of Operations | M,R | In Lower Mode determine Pressurizer level and RCS volume to be drained to the Refueling Water Tank (RWT). (2.1.25) |
| Equipment Control | N,R | Tech Review a permit (clearance) (2.2.13) |
| Radiation Control | D | Determine the proper REP task and RCA entry requirements. (2.3.7) |
| Emergency Procedures/Plan | | |

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

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

Facility: PVNGS
 Examination Level: RO ☐ SRO ☒

Date of Examination: 03/19/12
 Operating Test Number: _____

| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
|------------------------------------|---------------|--|
| Conduct of Operations | N,R | Determine if manning is met with medical and training requirements. (2.1.4) |
| Conduct of Operations | N,R | Determine "if time shutdown" is met and makeup flow requirements for mid-loop (2.1.20) |
| Equipment Control | M,R | Identify LCOs and Conditions associated with the numerous Main Steam Isolation Valve pressures. (2.2.22) |
| Radiation Control | M,R | Determine hold points exceeded, approval needed, and which AO will perform the task (2.3.4) |
| Emergency Procedures/Plan | D,R | Determine Classification, Protective Action Recommendation and Release status (2.4.41) |

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

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



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|------------------|------------|-----|-------|-----|--|
| TASK: | 1290020301 Conduct of Shift Operations | | | | | | |
| TASK STANDARD: | At the completion of this JPM the applicant will have determined that he IS current in training, he CAN assume RO duties on Dec 31, and he CANNOT assume RO duties on Jan 1 due to not performing at least 5 12-hour shifts in the previous quarter. | | | | | | |
| K/A: | 2.1.4 | K/A RATING: | RO: | 3.3 | SRO: | 3.8 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 10 minutes | | | | |
| REFERENCES: | 40DP-9OP02, Conduct of Shift Operations | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/04/2011

Revised By: _____ Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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1. SIMULATOR SETUP:

- IC#:
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| | |
| | |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

A copy of 40DP-9OP02 available. This JPM was written using Revision 56 of 40DP-9OP02.

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------|
| | | |
| | | |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- You are currently licensed at PVNGS.
- You have been assigned to work control for last 4 months.
- Today is December 27th.
- You attended LOCT training November 8th -11th but did not take the written exam.
- The LOCT cycle completed Friday, December 2nd.
- Attached is a spreadsheet of shifts you covered in this quarter.
- You met all license maintenance requirements for the 3rd quarter.
- You have been asked to take the dayshift on December 31st and January 1st.

INITIATING CUE:

- You are directed to determine if you:
 1. are current in Training
 2. meet requirements to assume RO duties on December 31st
 3. meet requirements to assume RO duties on January 1st.

Provide your answers on the attached sheet.



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 1. * | 3.6.1.1 of 40DP-9OP02 An Operator's training is current when all required material in an LOCT Training Cycle is completed. If any LOCT material is missed during a training cycle, make-up training shall be completed no later than 6 weeks from the end of the training cycle that the training was part of. | | Examinee determines that it has been less than 6 weeks since the completion of the last training cycle and they are therefore current in LOCT. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. * | 3.6.2 of 40DP-9OP02 ACTIVE NRC Operators License exists when an operator has a valid license and has "actively performed" the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter. | | Examinee determines that since they are current in training and met license maintenance requirements in the 3 rd quarter they can take the shift on December 31 st . |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 3. * | 3.6.2 of 40DP-9OP02 ACTIVE NRC Operators License exists when an operator has a valid license and has “actively performed” the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter. | | Examinee determines that they CAN NOT take the shift on January 1 st because they did not perform 5-12 hour shift in the 4 th quarter. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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Answer Key

| | |
|---------------|---------------------------------|
| October 15th | 12 hour day shift (RO) |
| October 16th | 10 hour shift 0630 to 1630 (RO) |
| November 24th | 12 hour day shift (CO) |
| December 11th | 6.5 hours 1200 to 1830 (CO) |
| December 25th | 12 hour day shift (RO) |

1. Are you current in Training **YES** / NO

If **NO** what must be done to become current?

2. Can you assume RO duties on December 31st? **YES** / NO

If **NO** why not?

3. Can you assume RO duties on January 1st? YES / **NO**

If **NO** why not?

The operator did not perform at least 5 -12 hour shifts of license proficiency time in the 4th quarter therefore the operator CAN NOT assume the RO duties in the next quarter.

Answer Key



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|-----------------------------------|
| 000 | 10/04/2011 | | New JPM for 2012 NRC Initial Exam |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- You are currently licensed at PVNGS.
- You have been assigned to work control for last 4 months.
- Today is December 27th.
- You attended LOCT training November 8th -11th but did not take the written exam.
- The LOCT cycle completed Friday, December 2nd.
- Attached is a spreadsheet of shifts you covered in this quarter.
- You met all license maintenance requirements for the 3rd quarter.
- You have been asked to take the dayshift on December 31st and January 1st.

INITIATING CUE:

- You are directed to determine if you:
 1. are current in Training
 2. meet requirements to assume RO duties on December 31st
 3. meet requirements to assume RO duties on January 1st.

Provide your answers on the attached sheet.



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| | |
|---------------|----------------------------|
| October 15th | 12 hour day shift |
| October 16th | 10 hour shift 0630 to 1630 |
| November 24th | 12 hour day shift |
| December 11th | 6.5 hours 1200 to 1830 |
| December 21st | 12 hour day shift |

1. Are you current in Training **YES / NO**

If **NO** what must be done to become current?

2. Can you assume RO duties on December 31st? **YES / NO**

If **NO** why not?

3. Can you assume RO duties on January 1st? **YES / NO**

If **NO** why not?

Conduct of Shift Operations

40DP-9OP02

Revision
56**3.6 Licensed Operator Watchstanding Proficiency**

- 3.6.1 A VALID NRC Operators License exists when the holder of that license is current in Licensed Operator Continuing Training (LOCT).
- 3.6.1.1 An Operator's training is current when all required material in an LOCT Training Cycle is completed. If any LOCT material is missed during a training cycle, make-up training shall be completed no later than 6 weeks from the end of the training cycle that the training was part of.
- 3.6.1.2 If the operator fails to make up the classroom training and simulator training within 6 weeks of the end of the training cycle, the operator shall be removed from license duties until the make-up training is completed.
- 3.6.2 An ACTIVE NRC Operators License exists when an operator has a valid license and has “actively performed” the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter.
- Actively Performed means that the operator held a position on the shift crew that required the individual to be licensed as defined in the Technical Specifications and that the operator carried out and was responsible for the duties covered by that position.
 - For maintenance of an active SRO license any shift spent in either the SM or CRS position will be credited.
 - An SRO must stand at least one complete shift per calendar quarter in an SRO-only supervisory position. The remainder of the shifts required in a calendar quarter may be performed in either a credited SRO or RO position.
 - For time to be credited it must be a continuous shift (i.e., 4 hours of watch shift responsibilities spent on each of 3 different shifts does not equal one 12 hour shift).
 - Overtime may be credited if the overtime work is in a position appropriately credited for watchstanding proficiency. Overtime as an extra helper after the official watch has been turned over to another watchstander does not count toward proficiency time.

Conduct of Shift Operations

40DP-9OP02

Revision
56

- 3.6.3 A third Reactor/Control Operator in excess of those required by technical specifications may be credited with license proficiency hours if the following administrative controls are in place:
- The licensee shall list all licensed shift crew positions, including titles, descriptions of duties and which positions are required by technical specification.
 - For those shift crew positions in excess of those required by technical specifications, a description of how the position is meaningfully and fully engaged in the function and duties of the license position required by technical specification.
 - If these administrative controls are not met, the individual shall not be given watch-standing proficiency credit for shift positions in excess of technical specification requirements.
- 3.6.3.1 At the conclusion of an individual shift, the Shift Manager will determine and concur that the 3rd RO was engaged in the functions and duties of a licensed operator in the Control Room and therefore can utilize the shift time towards their proficiency. This determination will be made by verifying that the 3rd RO:
- Completed the full 12 hour shift
 - Participated in shift turnover both at the beginning and end of shift
 - Participated in licensed operator functions and performed licensed operator duties in the Control Room. Examples of these functions and duties include:
 - Control Board manipulations and monitoring,
 - Performing peer checks and Independent Verifications,
 - Responding to alarms or off-normal conditions,
 - Providing briefings as needed,
 - Performing permit and clearance activities.
- 3.6.3.2 Should the Shift Manager determine that the 3rd RO did not satisfy these requirements, then their completed shift time could not be used towards their proficiency requirement.
- 3.6.4 Only one excess Reactor/Control Operator above the minimum licensed positions required by technical specifications can be credited per shift per Unit.

Conduct of Shift Operations

40DP-9OP02

Revision
56

- 3.6.5 Each licensed individual is responsible to report the completion of the license proficiency hours each quarter to the Nuclear Training department, Operations Training. Failure to complete this notification will result in the suspension of qualifications for licensed duties.

3.6.5.1 Open CORA\AutoLog.

3.6.5.2 From the Tools Menu, select the License Hot Time Tracking Tool.

3.6.5.3 Generate an Individual Licensed Operator Proficiency report and

3.6.5.4 Send it to the Training System Administrator, Nuclear Training Department, Operations Training.

This report should be sent as early in the quarter as possible after you have completed the required proficiency time, to allow enough time for the data to be entered into training records.

- 3.6.6 An individual is classified active for the current calendar quarter if they meet any one of the following conditions:
- The individual meets the requirements of step 3.6.2.
 - The individual has completed the Operator License Reactivation Job Qualification Card in the current or previous calendar quarter. (NLR10-xx-001, xx references the revision number.)
 - The individual has been issued (not renewed) an Operators License (RO or SRO) in the current or previous calendar quarter.
- 3.6.7 Each individual attempting to reactivate an inactive but valid license shall complete the Operator License Reactivation Job Qualification Card prior to resuming licensed operator duties.
- 3.6.8 An SRO being reactivated to assume an SM position shall function under instruction as the SM.
- 3.6.9 An SRO being reactivated to assume the CRS position can function under instructions as either the CRS or SM.
- 3.6.10 SRO licensed personnel functioning as ROs being reactivated to assume an SRO position shall perform 40 hours under direction of the SM/CRS prior to assuming an SRO position.
- 3.6.11 An SRO/RO that reactivates their SRO license also reactivates their ability to perform RO duties.



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PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|-------------|------------------|------------|-------|-----|--|
| TASK: | 270130401, Implement Reactor Coolant System draining operations | | | | | | |
| TASK STANDARD: | Determined Pzr level is ~31% and RWT will increase 1.23 to 1.35% RWT level. | | | | | | |
| K/A: | 2.1.25 | K/A RATING: | RO: | 3.9 | SRO: | 4.2 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | | VALIDATION TIME: | 15 minutes | | | |
| REFERENCES: | 40OP-9ZZ16, RCS Drain Operations | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/05/2011

Revised By: _____ Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
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1. SPECIAL TOOLS/EQUIPMENT:

40OP-9ZZ16. This JPM was written using Revision 72 of 40OP-9ZZ16.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- The plant is in mode 5.
- Pressurizer pressure is 50 PSIA.
- Pressurizer temperature is 150 °F.
- RCN-LI-103 indicates 30%.
- RCA-LI-110X indicates 42%.
- RCB-LI-110Y indicates 38%.
- Preparations are being made to lower RCS level.

INITIATING CUE:

- The CRS directs you to determine the following per 40OP-9ZZ16 (RCS Drain Operations):
 1. ACTUAL PRZR level based on current indications
 2. Using appendix E, calculate the expected change in RWT level if the RCS were drained from actual level to the top of the Reactor Vessel Flange level.

Use the spaces on the cue sheet to document your answers.



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2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 1. * | Precautions and Limitations 3.1.4 Correct channels RCA-LI-110X & RCB-LI-110Y using Appendix B - Pressurizer Indicated Vs. Actual Level For RCA-LI-110X And RCBLI-110Y. | | Using Appendix B examinee determines that : RCA-LI-110X level is $32\% \pm 2\%$. RCB-LI-110Y level is $30\% \pm 2\%$. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 2. * | Precautions and Limitations 3.1.4 Correct RCN-LI-103 using Appendix C - Pressurizer Indicated Vs. Actual Level For RCN-LI-103. | | Using Appendix C examinee determines that : RCN-LI-103 level is $31\% \pm 2\%$. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 3. * | Using appendix E the examinee determines the change in RWT level if the RCS were drained from ~30% pressurizer level to flange level (114 feet). | | <p>Determine amount of water (in gallons) to be drained by in the pressurizer by interpreting from the table or the chart the amount of water at ~ 30% level.</p> <p>Examinee should determine actual initial volume in the RCS is [103400 gal]. Change in RCS volume is [9300 – 10140 gal].</p> <p>The examinee determines the level increase in the RWT by using the graph to determine the gallons of water drained from RCS is 9300-10140 gallons divided by 7538 gallons / % in the RWT = a change of 1.23 to 1.35%</p> <p>Acceptable answer 1.23 to 1.35 % change in RWT Level.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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PVNGS JOB PERFORMANCE MEASURE
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ANSWER KEY

1. Actual pressurizer level per:

- RCN-LI-103 31% (+2%)
- RCA-LI-110X 32% (+2%)
- RCB-LI-110Y 30% (+2%)

2. Expected change in RWT level 1.23 to 1.35%

ANSWER KEY

ANSWER KEY

Once the level is determined at 30%, the applicant subtracts the gallons at 114' (from page 1 of Appendix E) from the gallons at ~30% level to determine the number of gallons drained.

Highest level:

$$103940 - 93800 = 10140 \text{ gallons}$$

Lowest level:

$$103130 - 93800 = 9330 \text{ gallons}$$

Applicant determines change in RWT level by dividing gallons by 7538 gallons/%

$$10140 / 7538 = 1.35\%$$

OR

$$9330 / 7538 = 1.23\%$$

ANSWER KEY

To determine gallons in the RCS at ~ 30% level, applicant must interpolate data on either page 1 or page 2 of Appendix E as follows (using the highest and lowest possible pressurizer level):

Highest level:

$$40 \left[\begin{array}{c} 16 \\ 34 \\ 10 \end{array} \right] \left[\begin{array}{c} 50 \\ 34 \\ 10 \end{array} \right]$$

$$\begin{array}{c} 106100 \\ Y \\ 100700 \end{array} \left[\begin{array}{c} x \\ 5400 \end{array} \right]$$

50% 106100

34% Y

10% 100,700

$$16/40 = x/5400$$

$$X=2160$$

Therefore, y= 103940

Lowest level:

$$40 \left[\begin{array}{c} 22 \\ 28 \\ 10 \end{array} \right] \left[\begin{array}{c} 50 \\ 28 \\ 10 \end{array} \right]$$

$$\begin{array}{c} 106100 \\ Y \\ 100700 \end{array} \left[\begin{array}{c} x \\ 5400 \end{array} \right]$$

50% 106100

28% Y

10% 100,700

$$22/40 = x/5400$$

$$X=2970$$

Therefore, y= 103130

(continued on next page)

RCS Drain Operations

400P-9ZZ16

Revision
72

Appendix B Page 1 of 1

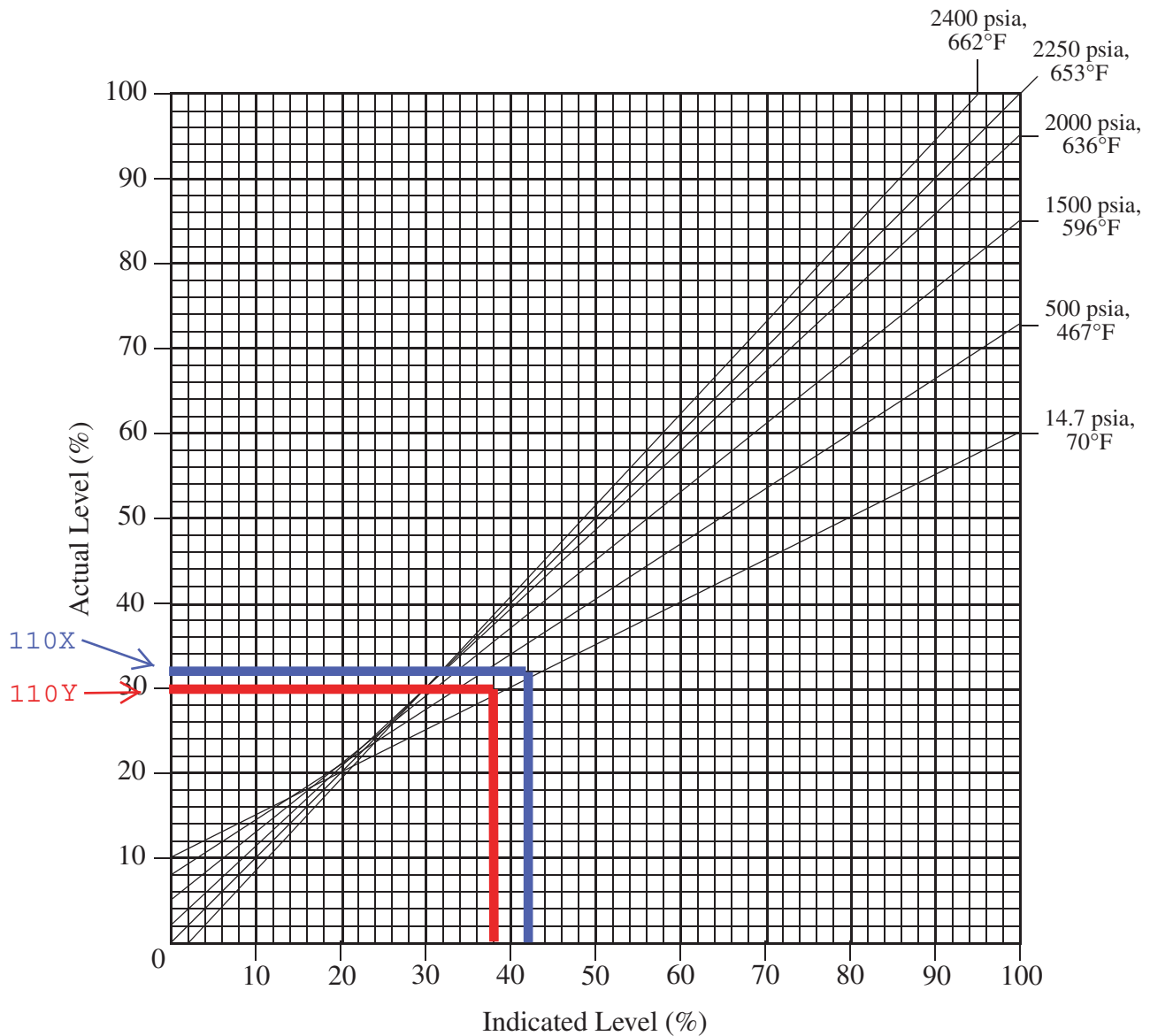
Appendix B - Pressurizer Indicated Vs. Actual Level For RCA-LI-110X And RCB-LI-110Y

ANSWER KEY

Pressurizer Indicated Vs. Actual Level for RCA-LI-110X and RCB-LI-110Y

110X and 110Y

Pressurizer Indicated vs. actual level
for deviation from normal operating
to cold pressurizer conditions.



RCS Drain Operations

400P-9ZZ16

Revision
72

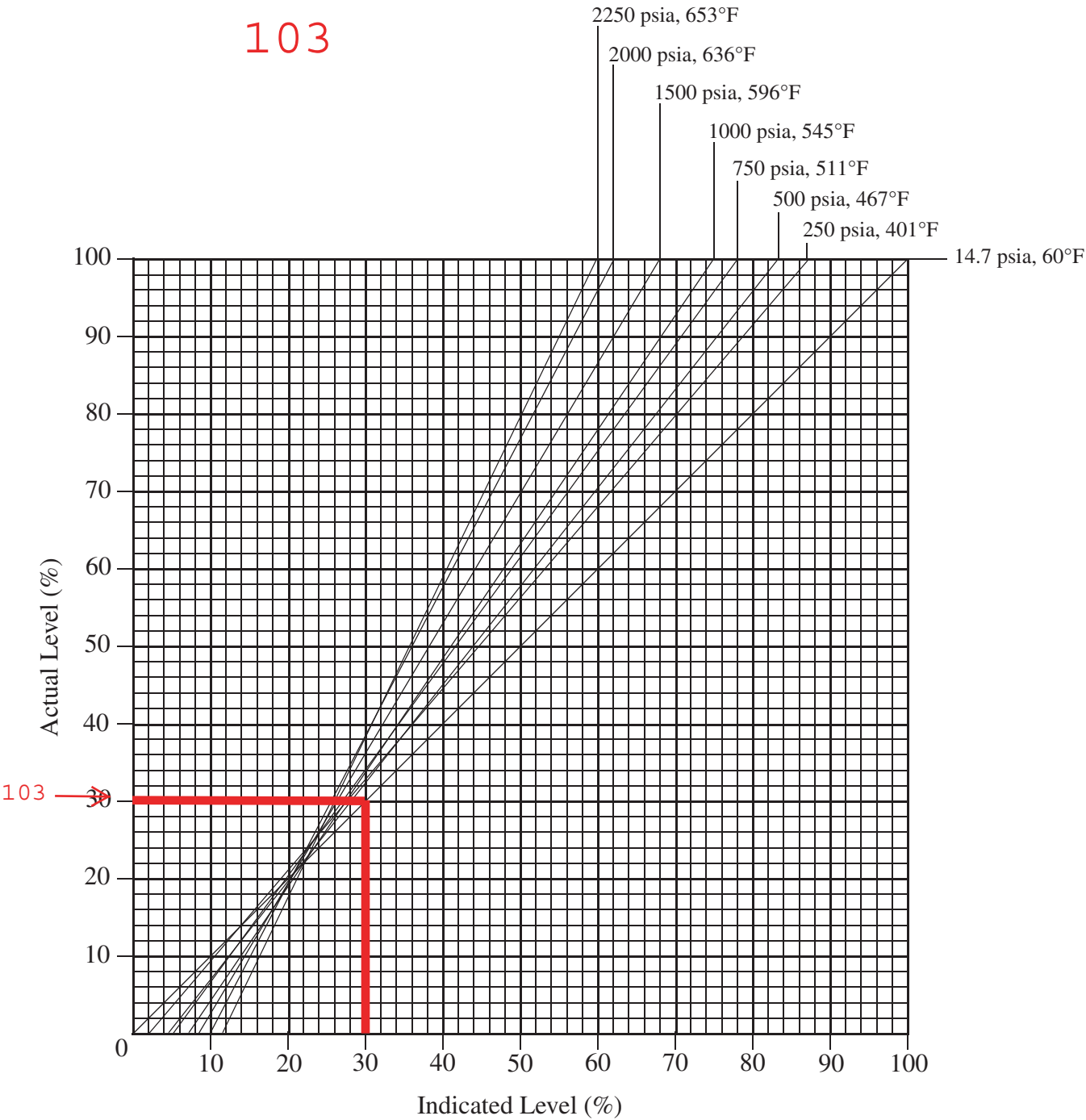
Appendix C Page 1 of 1

Appendix C - Pressurizer Indicated Vs. Actual Level For RCN-LI-103

ANSWER KEY

Pressurizer Indicated Vs. Actual Level for RCN-LI-103

103



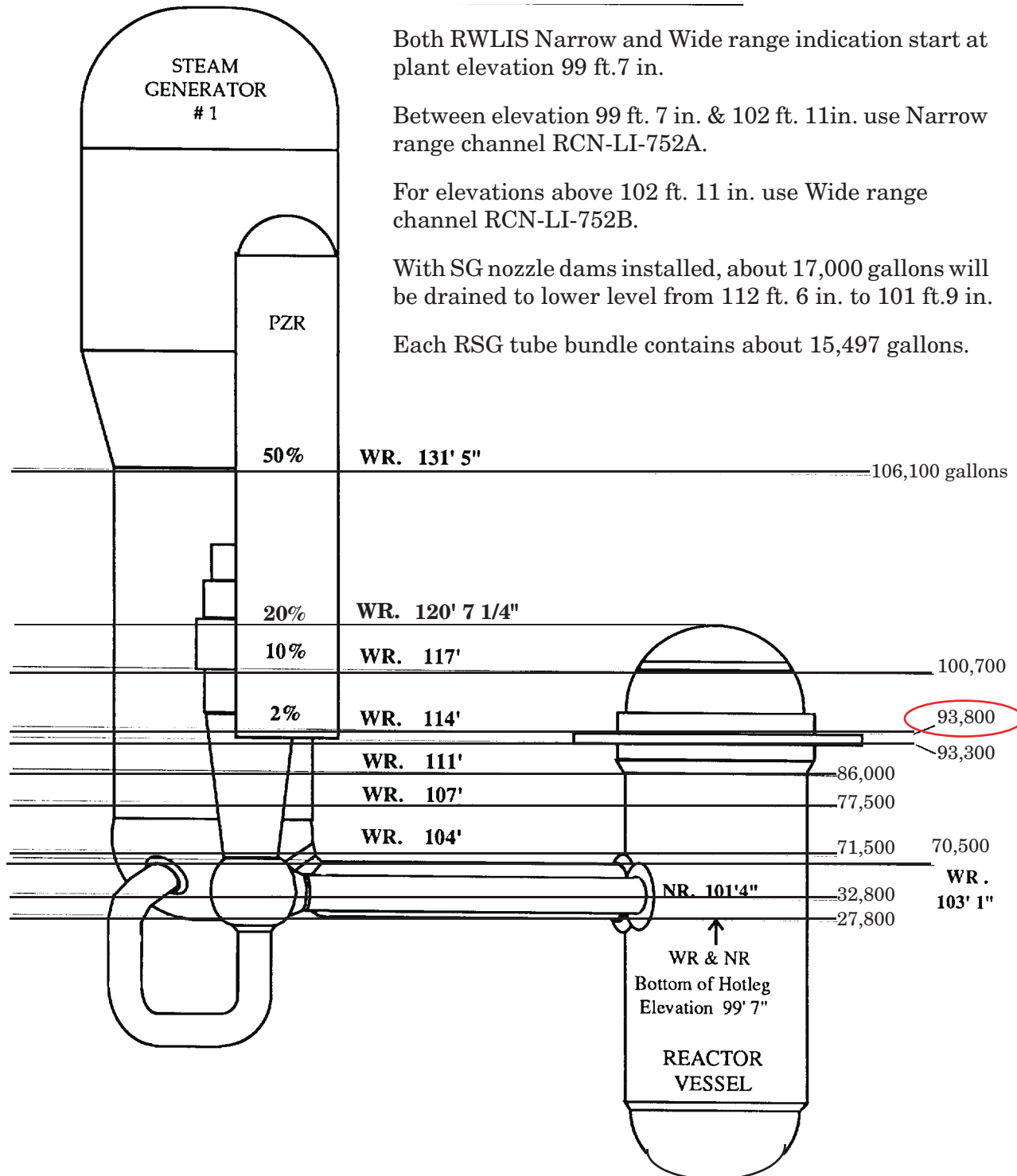
RCS Drain Operations

400P-9ZZ16

Revision
72

Appendix E Page 1 of 4

Appendix E - Determination of Volume to be Drained



RCS Drain Operations

400P-9ZZ16

Revision
72

Appendix E Page 2 of 4

Determination Of Volume To Be Drained

| REFERENCE | (1) RWLIS INDICATION | (2) RCS INVENTORY FOR GIVEN ELEVATION cubic ft / gallons | (3) HUT LEVEL GAIN - ft | (3) RWT LEVEL GAIN - % |
|--|-------------------------|---|-------------------------------|------------------------------|
| 50% PZR Level | 131 ft 5 in WR | 14,183 / 106,100 | +8.4 | +14.1 |
| 10% PZR Level | 117 ft WR | 13,463 / 100,700 | +7.9 | +13.4 |
| Top of Rx Vessel Flange 2% PZR Level | 114 ft WR | 12,533 / 93,800 | +7.4 | +12.4 |
| Refueling Water Level | 113 ft 6 in WR | 12,473 / 93,300 | +7.3 | +12.4 |
| Enter Reduced Inventory | 111 ft WR | 11,499 / 86,000 | +6.8 | +11.4 |
| Limited to 1 SDC Pump / Loop | 107 ft WR | 10,365 / 77,500 | +6.1 | +10.3 |
| Limited to 1 SDC Pump & 1 SDC Loop | 104 ft WR | 9,559 / 71,500 | +5.6 | +9.5 |
| Top of the Hot Leg - Enter Mid-Loop Ops | 103 ft 1 in WR | 9,420 / 70,500 | +5.5 | +9.4 |
| Centerline of RCS Hotleg | 101 ft 4 in WR & NR | 4,380 / 32,800 | +2.6 | +4.4 |

- (1) WR. is Wide Range RCN-LI-752B, and NR. is Narrow Range RCN-LI-752A.
- (2) Values were determined as follows: gal = c.f. x 7.4805 gal/c.f. then rounding the product to nearest 100 gal.
- (3) HUT Δ level assumes 12,704 gallons/foot in tank.
RWT Δ level assumes 7,538 gallons/% in tank.

RCS Drain Operations

40OP-9ZZ16

Revision
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Appendix E Page 3 of 4

Volume to be drained = Initial Volume minus Final Volume.

Example: Draining the RCS from 50% Pzr level to Mid-Loop condition using gallons:

$$I_{vol} - F_{vol} = Vol_{drained}: \quad 106,100 - 32,800 = 73,300 \text{ gallons drained.}$$

D HUT level: 73,300 divided by 12,704 gal/foot = + 5.8 ft. increase in HUT level.

D RWT level: 73,300 divided by 7,538 gal/% = + 9.7% level increase in RWT level.

Using the previous example another way to determine the HUT/RWT level increase is to use the starting RCS inventory at 50% Pzr level, 8.4 ft. for the HUT or 14.1% for the RWT then subtract the final RCS inventory value at midloop, 2.6 ft. for the HUT or 4.4% for the RWT, or 8.4 ft. minus 2.6 ft. = 5.8 ft. level increase in HUT and 14.1% minus 4.4 = 9.7% level increase in RWT level. These level increases are in addition to existing tank levels.

Volume to be drained may be determined several hours prior to actual drain. Under these circumstances, normal plant operations such as VCT divert/makeup may cause a change in assumed initial conditions. The result is an unexpected volume change. Document assumed initial and final levels below:

| Assumed Conditions | |
|---------------------|--------------|
| Initial Pzr. Level: | Final RWLIS: |

RCS Drain Operations

400P-9ZZ16

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Appendix E Page 4 of 4

Significant Plant Elevations

| RWLIS Level Indication (Note 1) | Plant Reference Point | Significance |
|---------------------------------|------------------------------------|--|
| 149 ft. | | Pressurizer Manway |
| 141 ft. | | Versa-Vent Removal |
| 141 ft | | RCE-V007 - RVHV Vent Valve |
| 131 ft. 5 in. W.R. | 50% Pzr Level | |
| 117 ft. W.R. | 10% Pzr Level | Enter PARTIAL DRAIN condition. Required to monitor and record RCS level indication. |
| 114 ft. 1 in. | ICI Seal Table | |
| 114 ft. W.R. | Top Rx Vessel Flange | Enter Lowered Inventory |
| 113 ft. 6 in. W.R. | | Normal level when entering Mode 6 |
| <111 ft. W.R. | | Enter REDUCED INVENTORY CONDITION |
| <107 ft. W.R. | | May continue to operate both SDC loops, but are limited to 1 SDC pump per loop. |
| <104 ft. W.R. | 104 ft is top of RCP bowl | Limited to 1 SDC pump and loop. |
| 103 ft. 1 in. W.R. | (103 ft. 1 in. down to 102 ft.) | Maintain SDC flow rate between 3780 - 4600 gpm. |
| 103 ft. 1 in. W.R. | Top of Hot Leg | SG tubes begin to drain. ENTER MID-LOOP |
| 102 ft. 11 in. | | Theoretical level to remove SG Primary Manways |
| 102 ft. 4 in. N.R. | Hot Leg Lip | Elevation at which RCS fluid will start spilling over into the SG bowls from the Hot Leg. |
| 102 ft. N.R. | (102 ft. down to 101 ft. 6 in.) | Maintain SDC flow rate between 3780 - 4150 gpm. |
| 102 ft. N.R. | Cold Leg Lip | Elevation at which RCS fluid will start spilling over into the SG bowls from the cold leg. |
| 101 ft. 10 in. N.R. | | Optimum level for Steam Generator nozzle dam installation. |
| 101 ft, 6 in. N.R. | 2 in. above RCS Hot Leg Centerline | Minimum Level for MID-LOOP Operations. |
| 99 ft. 7 in. N.R./W.R. | Bottom of Hot Leg | Bottom range of Control Room RWLIS indication. |

Note 1 - From 117 ft. 8 3/8 in. to 102 ft. 11in., use Wide Range indicator RCN-LI-752B.
From 102 ft. 11in. to 99 ft. 7 in., use Narrow Range indicator RCN-LI-752A.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 10/06/2011 | | New JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

EXAMINEE HANDOUT

INITIAL CONDITIONS:

- The plant is in mode 5.
- Pressurizer pressure is 50 PSIA.
- Pressurizer temperature is 150 °F.
- RCN-LI-103 indicates 30%.
- RCA-LI-110X indicates 42%.
- RCB-LI-110Y indicates 38%.
- Preparations are being made to lower RCS level.

INITIATING CUE:

- The CRS directs you to determine the following per 40OP-9ZZ16 (RCS Drain Operations):
 1. ACTUAL PRZR level based on current indications
 2. Using appendix E, calculate the expected change in RWT level if the RCS were drained from actual level to the top of the Reactor Vessel Flange level.

Provide your answers in the spaces below:

1. Actual pressurizer level per:

- RCN-LI-103 _____
- RCA-LI-110X _____
- RCB-LI-110Y _____

2. Expected change in RWT level _____ %

RCS Drain Operations

400P-9ZZ16

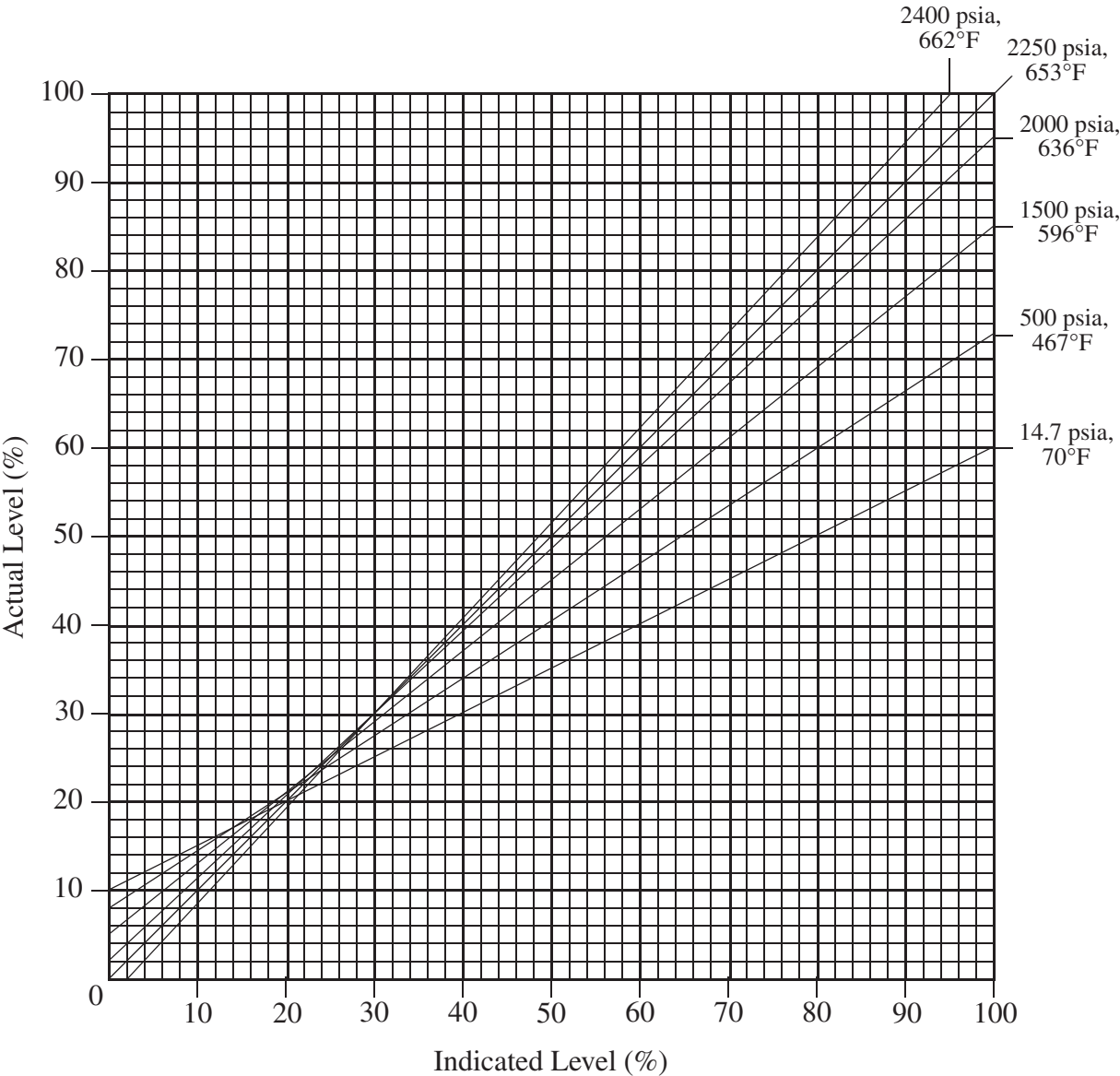
Revision
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Appendix B Page 1 of 1

Appendix B - Pressurizer Indicated Vs. Actual Level For RCA-LI-110X And RCB-LI-110Y

Pressurizer Indicated Vs. Actual Level for RCA-LI-110X and RCB-LI-110Y

Pressurizer Indicated vs. actual level
for deviation from normal operating
to cold pressurizer conditions.



RCS Drain Operations

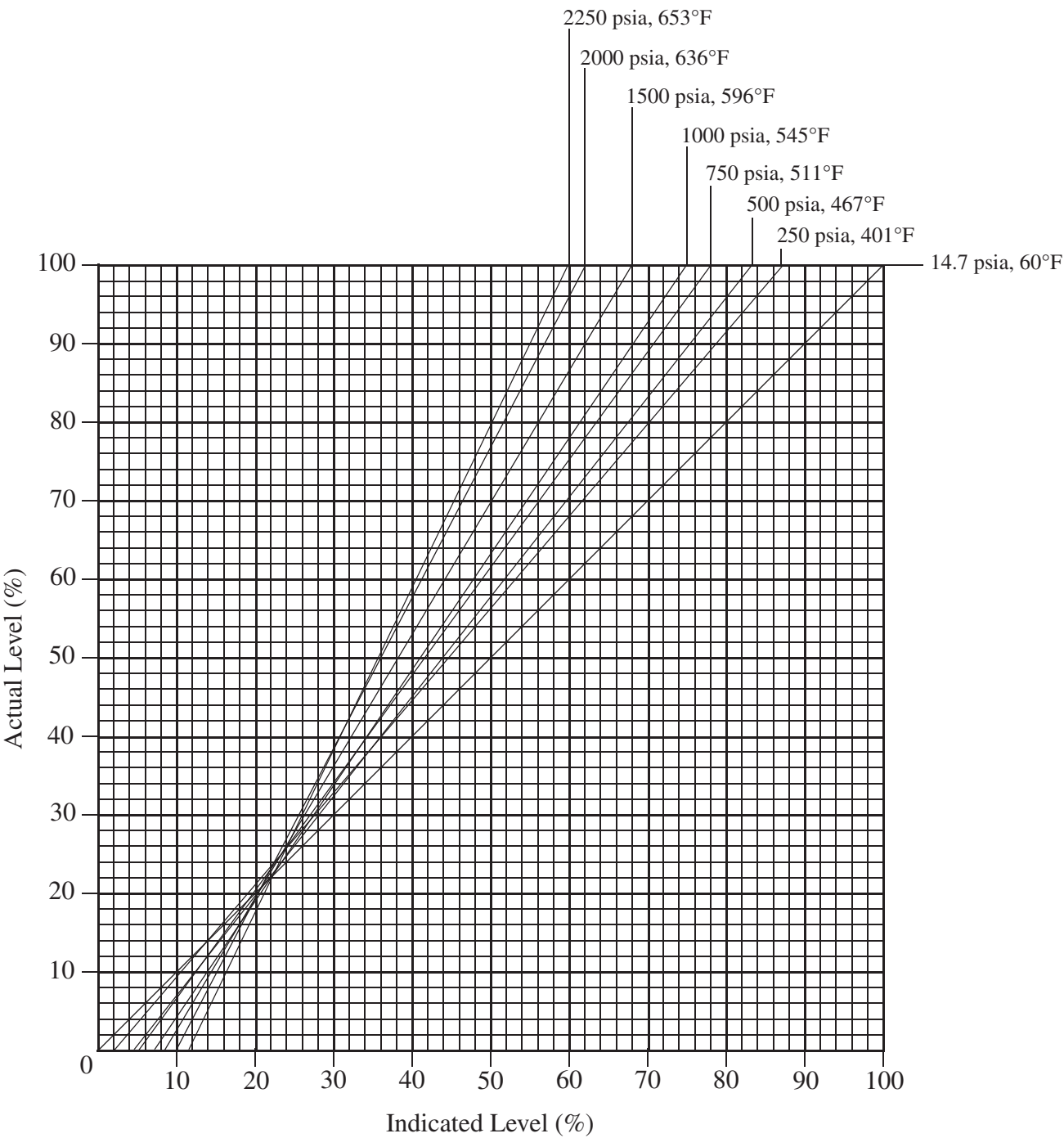
400P-9ZZ16

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Appendix C Page 1 of 1

Appendix C - Pressurizer Indicated Vs. Actual Level For RCN-LI-103

Pressurizer Indicated Vs. Actual Level for RCN-LI-103



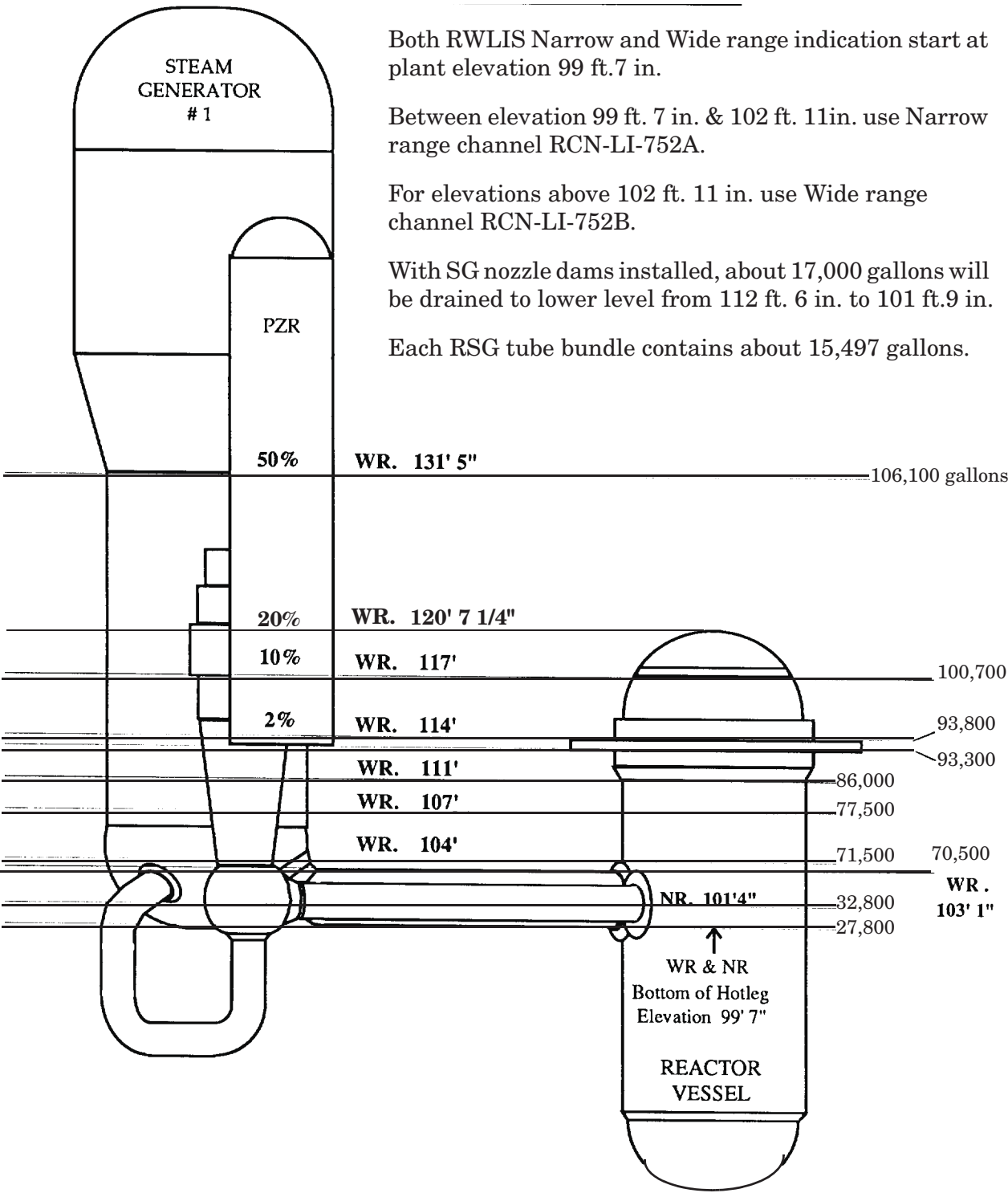
RCS Drain Operations

400P-9ZZ16

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Appendix E Page 1 of 4

Appendix E - Determination of Volume to be Drained



RCS Drain Operations

40OP-9ZZ16

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Appendix E Page 2 of 4

Determination Of Volume To Be Drained

| REFERENCE | (1) RWLIS INDICATION | (2) RCS INVENTORY FOR GIVEN ELEVATION cubic ft / gallons | (3) HUT LEVEL GAIN - ft | (3) RWT LEVEL GAIN - % |
|--|-------------------------|---|-------------------------------|------------------------------|
| 50% PZR Level | 131 ft 5 in WR | 14,183 / 106,100 | +8.4 | +14.1 |
| 10% PZR Level | 117 ft WR | 13,463 / 100,700 | +7.9 | +13.4 |
| Top of Rx Vessel Flange 2% PZR Level | 114 ft WR | 12,533 / 93,800 | +7.4 | +12.4 |
| Refueling Water Level | 113 ft 6 in WR | 12,473 / 93,300 | +7.3 | +12.4 |
| Enter Reduced Inventory | 111 ft WR | 11,499 / 86,000 | +6.8 | +11.4 |
| Limited to 1 SDC Pump / Loop | 107 ft WR | 10,365 / 77,500 | +6.1 | +10.3 |
| Limited to 1 SDC Pump & 1 SDC Loop | 104 ft WR | 9,559 / 71,500 | +5.6 | +9.5 |
| Top of the Hot Leg - Enter Mid-Loop Ops | 103 ft 1 in WR | 9,420 / 70,500 | +5.5 | +9.4 |
| Centerline of RCS Hotleg | 101 ft 4 in WR & NR | 4,380 / 32,800 | +2.6 | +4.4 |

- (1) WR. is Wide Range RCN-LI-752B, and NR. is Narrow Range RCN-LI-752A.
- (2) Values were determined as follows: gal = c.f. x 7.4805 gal/c.f. then rounding the product to nearest 100 gal.
- (3) HUT Δ level assumes 12,704 gallons/foot in tank.
RWT Δ level assumes 7,538 gallons/% in tank.

RCS Drain Operations

40OP-9ZZ16

Revision
72

Appendix E Page 3 of 4

Volume to be drained = Initial Volume minus Final Volume.

Example: Draining the RCS from 50% Pzr level to Mid-Loop condition using gallons:

$$I_{vol} - F_{vol} = Vol_{drained}: \quad 106,100 - 32,800 = 73,300 \text{ gallons drained.}$$

D HUT level: 73,300 divided by 12,704 gal/foot = + 5.8 ft. increase in HUT level.

D RWT level: 73,300 divided by 7,538 gal/% = + 9.7% level increase in RWT level.

Using the previous example another way to determine the HUT/RWT level increase is to use the starting RCS inventory at 50% Pzr level, 8.4 ft. for the HUT or 14.1% for the RWT then subtract the final RCS inventory value at midloop, 2.6 ft. for the HUT or 4.4% for the RWT, or 8.4 ft. minus 2.6 ft. = 5.8 ft. level increase in HUT and 14.1% minus 4.4 = 9.7% level increase in RWT level. These level increases are in addition to existing tank levels.

Volume to be drained may be determined several hours prior to actual drain. Under these circumstances, normal plant operations such as VCT divert/makeup may cause a change in assumed initial conditions. The result is an unexpected volume change. Document assumed initial and final levels below:

| Assumed Conditions | |
|---------------------|--------------|
| Initial Pzr. Level: | Final RWLIS: |

RCS Drain Operations

400P-9ZZ16

Revision
72

Appendix E Page 4 of 4

Significant Plant Elevations

| RWLIS Level Indication (Note 1) | Plant Reference Point | Significance |
|---------------------------------|------------------------------------|--|
| 149 ft. | | Pressurizer Manway |
| 141 ft. | | Versa-Vent Removal |
| 141 ft | | RCE-V007 - RVHV Vent Valve |
| 131 ft. 5 in. W.R. | 50% Pzr Level | |
| 117 ft. W.R. | 10% Pzr Level | Enter PARTIAL DRAIN condition. Required to monitor and record RCS level indication. |
| 114 ft. 1 in. | ICI Seal Table | |
| 114 ft. W.R. | Top Rx Vessel Flange | Enter Lowered Inventory |
| 113 ft. 6 in. W.R. | | Normal level when entering Mode 6 |
| <111 ft. W.R. | | Enter REDUCED INVENTORY CONDITION |
| <107 ft. W.R. | | May continue to operate both SDC loops, but are limited to 1 SDC pump per loop. |
| <104 ft. W.R. | 104 ft is top of RCP bowl | Limited to 1 SDC pump and loop. |
| 103 ft. 1 in. W.R. | (103 ft. 1 in. down to 102 ft.) | Maintain SDC flow rate between 3780 - 4600 gpm. |
| 103 ft. 1 in. W.R. | Top of Hot Leg | SG tubes begin to drain. ENTER MID-LOOP |
| 102 ft. 11 in. | | Theoretical level to remove SG Primary Manways |
| 102 ft. 4 in. N.R. | Hot Leg Lip | Elevation at which RCS fluid will start spilling over into the SG bowls from the Hot Leg. |
| 102 ft. N.R. | (102 ft. down to 101 ft. 6 in.) | Maintain SDC flow rate between 3780 - 4150 gpm. |
| 102 ft. N.R. | Cold Leg Lip | Elevation at which RCS fluid will start spilling over into the SG bowls from the cold leg. |
| 101 ft. 10 in. N.R. | | Optimum level for Steam Generator nozzle dam installation. |
| 101 ft, 6 in. N.R. | 2 in. above RCS Hot Leg Centerline | Minimum Level for MID-LOOP Operations. |
| 99 ft. 7 in. N.R./W.R. | Bottom of Hot Leg | Bottom range of Control Room RWLIS indication. |

Note 1 - From 117 ft. 8 3/8 in. to 102 ft. 11in., use Wide Range indicator RCN-LI-752B.
From 102 ft. 11in. to 99 ft. 7 in., use Narrow Range indicator RCN-LI-752A.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|-------------|------------------|------------|-------|-----|--|
| TASK: | 1290310301 Perform a Tech Review of a Permit | | | | | | |
| TASK STANDARD: | Upon completion of this JPM the examinee identifies 3 non typo errors found during a permit Tech Review. | | | | | | |
| K/A: | 2.2.13 | K/A RATING: | RO: | 4.1 | SRO: | 4.3 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | | VALIDATION TIME: | 20 minutes | | | |
| REFERENCES: | 40DP-9OP29, Permit and Tagging Process, Various Plant Drawings | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 10/04/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. SPECIAL TOOLS/EQUIPMENT:

- A computer available for access to procedures and plant drawings.



A-3
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

Unit 1 is 100% power

The 'A' High Pressure Safety Injection (HPSI) Pump (SIA-P02) has a severe seal leak on the pump. The CRS has directed that a permit be hung to isolate and drain the 'A' HPSI pump.

Permit 12-0003 was generated manually due to the Site Work Management System (SWMS) being down.

The CRS has addressed Tech Specs.

INITIATING CUE:

The CRS has directed you to perform a Tech Review of Permit 12-0003 and identify any errors (Non-clerical – not typos) on the permit.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. | Reviews Permit to determine scope of work to be performed. | | Examinee reviews Permit and determines work scope to be repair seal leak on 1-M-SIA-P02. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. * | Identifies one (1) error on the permit with Tag 2. | | Examinee determines the following inaccuracy/inadequacy. <ul style="list-style-type: none">• Tag 2 is the wrong circuit breaker (breaker is for the “A” LPSI pump) The order of identification of the errors in steps 2, 3, and 4 of this JPM is not critical. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



A-3
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 3. * | Identifies one (1) error on the permit with Tag 5. | | <p>Examinee determines the following inaccuracy/inadequacy.</p> <p>Tag 5 has the wrong position (CLOSED) for the breaker for the Recirc Valve SIA-UV-666. The breaker position should be OPEN</p> <p>The order of identification of the errors in steps 2, 3, and 4 of this JPM is not critical.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. * | Identifies one (1) error on the permit with Tag 9. | | <p>Examinee determines the following inaccuracy/inadequacy.</p> <ul style="list-style-type: none">Tag 9 has the wrong valve number. It identifies the drain valve as SIA-V550 (which is the drain valve for SIA-P01) and it could be SIA-V980, 955 or 956. <p>The order of identification of the errors in steps 2, 3, and 4 of this JPM is not critical.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT

FOR 2012 NRC EXAM ONLY

Tag Assignment Sheet

Unit No: 1 Permit No: 12-0003 Page 1 of 1

| Tag No. | Equipment ID. | Tag Color | TAG PLACEMENT | | | | TAG REMOVAL | | | |
|---------|--|-----------|---------------|--------------------|-----------|---------------|---------------|------------------|-------------|--|
| | | | Hang Order | Component Position | Placed By | Verified By | Restore Order | Restore Position | Restored By | |
| 1 | 1J-SIA-HS001 Handswitch for SIA-P02 (HPSI A pump) | Yellow | 1 | N/A | | | | | | |
| 2 | 1E-PBA-S03F, 4.16KV Breaker for 1-M-SIA-P01 | Red | 3 | RACKED OUT | | Wrong Breaker | | | | |
| 3 | 1P-SIA-V470 SIA-P02 Suction Valve | Red | 6 | CLOSED | | | | | | |
| 4 | 1P-SIA-UV-666, SIA-P02 Recirc Valve | Red | 7 | DO NOT OPERATE | | | | | | |
| 5 | 1E-PHA-M3507, 480VAC Breaker to SIA-UV666 (SIA-P02 Recirc Valve) | Red | 4 | CLOSED | | | | | | |
| 6 | 1J-SIA-HS-666, Handswitch for SIA-UV666 (SIA-P02 Recirc Valve) | Yellow | 2 | N/A | | | | | | |
| 7 | 1P-SIA-V476, SIA-P02 Discharge Valve | Red | 5 | CLOSED | | | | | | |
| 8 | 1P-SIA-V1024 SIA-P02 Vent Valve | Yellow | 9 | N/A | | | | | | |
| 9 | 1P-SIA-V550 SIA-P01 Drain Valve | Yellow | 8 | N/A | | Wrong Valve | | | | |

* Special instructions on yellow tag

ANSWER KEY



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



A-3
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

EXAMINEE HANDOUT

INITIAL CONDITIONS:

Unit 1 is 100% power

The 'A' High Pressure Safety Injection (HPSI) Pump (SIA-P02) has a severe seal leak on the pump. The CRS has directed that a permit be hung to isolate and drain the 'A' HPSI pump.

Permit 12-0003 was generated manually due to the Site Work Management System (SWMS) being down.

The CRS has addressed Tech Specs.

INITIATING CUE:

The CRS has directed you to perform a Tech Review of Permit 12-0003 and identify any errors (Non-clerical – not typos) on the permit.

Power Block Permit and Tagging

40DP-9OP29

Revision
45

Appendix B Page 2 of 3

Palo Verde

Nuclear Generating Station

Permit FormPage ¹ of ²

| | | | |
|---|---|---|---------------|
| Facility No. UNIT 1 | Permit No. 12-003 | System SI | |
| EQ I.D. 1MSIAP02 | EQ Description High Pressure Safety Injection Pump 'A' | | |
| Reason For Permit: Isolate the pump due to severe pump seal leakage | | | |
| Equip Conditions Required For Work De-energized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depressurized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Continuously Vented <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drained <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Purged <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Isolated <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No SWMS Search <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No TSCCR <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No TSCCR No. 3712771 | | Special Instructions 01-E-SIB-001 01-E-SIB-018 01-M-SIP-001 | |
| Prepared By: JOE TAGGER | Ext: 2648 | Date: 3/19/2012 | Time: 0650 |
| Tag Placement Authorized (responsible supervisor) | Ext: | Date: | Time: |
| EQ Conditions Established (operator) | Ext: | Date: | Time: |
| Tag Removal Authorized: (responsible supervisor) | Ext: | Date: | Time: |
| Permit Cancelled: (responsible supervisor) | Ext: | Date: | Time: |
| Requestor/Ext. (Print) | Work Document | Signature/Date/Time | |
| Operations Unit 1 Shift Manager X82-1206 | N/A | Tech. Rev: | |
| | | Authorized: | |
| | | Accepted: | |
| | | Released: | |

FOR 2012 NRC EXAM ONLY

Tag Assignment Sheet

Unit No: 1 Permit No: 12-0003 Page 1 of 1

| Tag No. | Equipment ID. | Tag Color | TAG PLACEMENT | | | | TAG REMOVAL | | |
|---------|--|-----------|---------------|--------------------|-----------|-------------|---------------|------------------|-------------|
| | | | Hang Order | Component Position | Placed By | Verified By | Restore Order | Restore Position | Restored By |
| 1 | 1J-SIA-HS001 Handswitch for SIA-P02 (HPSI A pump) | Yellow | 1 | N/A | | | | | |
| 2 | 1E-PBA-S03F, 4.16kV VAC Breaker for 1-M-SIA-P01 | Red | 3 | RACKED OUT | | | | | |
| 3 | 1P-SIA-V470 SIA-P02 Suction Valve | Red | 6 | CLOSED | | | | | |
| 4 | 1P-SIA-UV-666, SIA-P02 Recirc Valve | Red | 7 | DO NOT OPERATE | | | | | |
| 5 | 1E-PHA-M3507, 480VAC Breaker to SIA-UV666 (SIA-P02 Recirc Valve) | Red | 4 | CLOSED | | | | | |
| 6 | 1J-SIA-HS-666, Handswitch for SIA-UV666 (SIA-P02 Recirc Valve) | Yellow | 2 | N/A | | | | | |
| 7 | 1P-SIA-V476, SIA-P02 Discharge Valve | Red | 5 | CLOSED | | | | | |
| 8 | 1P-SIA-V981 SIA-P02 Seal Cavity Vent Valve | Yellow | 9 | N/A | | | | | |
| 9 | 1P-SIA-V550 SIA-P01 Drain Valve | Yellow | 8 | N/A | | | | | |

CANDIDATE



A-4
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|------------------|------------|-----|-------|-----|--|
| TASK: | Determine proper REP task, determine RCA entry requirements | | | | | | |
| TASK STANDARD: | Upon completion of this JPM, the examinee has determined the proper task, the requirements for a pre-job brief, the RP coverage required, dress-out and dosimetry requirements, required EPD settings and that no PVNGS RP administrative limit will be exceeded. | | | | | | |
| K/A: | 2.3.7 | K/A RATING: | RO: | 3.5 | SRO: | 3.6 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | NGW01, Initial Radiation Worker Practices | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Phil Capehart Date: 06/07/2005

Revised By: Alan Malley Date: 10/12/2010

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. SPECIAL TOOLS/EQUIPMENT:

- A copy of the Emergency Response REP 9-9999-0.
- RP Procedures available.



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**PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam**

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIATING CUE:

- You have been directed to align SDC after control room fire.
- The OSC has been manned and RP has mandated the use of the Emergency Response REP, 9-9999-0.
- Your current yearly exposure is 984 mrem.
- The radiation level where the task is to be performed is 36 mrem/hr.
- The time to complete this task will be 30 minutes.

INITIATING CUE:

Your tasks are to locate the Emergency Response REP 9-9999-0 and determine:

1. the proper task for this evolution.
2. if a RP Pre-Job Brief is required prior to entering the RCA?
3. RP coverage during job performance.
4. dress-out requirements and dosimetry.
5. required EPD settings.
6. determine if any PVNGS Administrative RP limits will be exceeded.



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PVNGS JOB PERFORMANCE MEASURE
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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. * | Examinee reviews REP and survey and determines task he can enter on. | | Examinee determines entry on TASK1 is required. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 2. * | Examinee determines if RP pre-job Brief is required for entry into the RCA. | | Determines must perform RP pre-job brief . |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 3. * | Examinee determines RP coverage requirements during job performance. | | RP coverage is: <ul style="list-style-type: none">• Intermittent |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 4. * | Examinee determines dress-out requirements and Dosimetry | | PC and respiratory protection equipment requirements per direction from the RPM / RPC / RAC or designee. Dosimetry – <ul style="list-style-type: none">• Record TLD• EPD |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 5. * | Determine the REP required EPD settings. | | Examinee determines EPD is required with alarm settings of : <ul style="list-style-type: none">• 500mRem dose and• 5,000 mRem/hr Dose Rate (as stated on the REP) |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 6. * | Determine if any PVNGS RP administrative limit has been exceeded. | | Examinee determines no PVNGS RP administrative limits have been exceeded. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:



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Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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ANSWER KEY

1. Determine proper task for this evolution.

Proper task is TASK 1.

2. Is a RP Pre-Job Brief required prior to entering the RCA?

Yes.

3. Determine RP coverage during job performance.

Intermittent.

4. Determine dress-out requirements and dosimetry.

PC and respiratory protection equipment requirements per direction from the RPM / RPC / RAC or designee.

Dosimetry – Record TLD and EPD. (May indicated as directed by RP per REP. If that is the answer follow up with “What are the dosimetry requirements for any RCA entry?”)

5. Determine required EPD settings.

Examinee determines EPD is required with Dose alarm settings of 500mRem and Dose Rate alarm setting of 5,000 mrem/hr.

(may list alarm warning at 400 mRem).

6. Determine if any PVNGS RP Administrative limit will be exceeded. Yes No
(circle the correct answer)

ANSWER KEY



ANSWER KEY

RADIATION EXPOSURE PERMIT

| | | | |
|---|---|-------------------------------------|-------------------------------|
| Task Number One | | REP No.: 9-9999 Rev.: 00 | |
| Task Description: LHRA - Emergency Plan implementation and Plant support tasks. INCLUDES: • Radiation exposure not to exceed PVNGS Administrative Hold Points. | | | |
| HRA Entry: YES | LHRA Entry: YES | Minimum Available Dose: 200 mRem | |
| Dosimeter Settings | | | |
| Dose (mRem) Warning: 400 Alarm: 500 | Rate (mRem/hr) Warning: 5000 Alarm: 5000 | Time (HH:MM) Alarm: 13:00 | Chirp Rate 0.1 mrem |
| Authorization List | | | |
| Required: NO | | Authorization Expires: NO | |
| Requirements | | | |
| Requirement Groups | Requirement Descriptions | | |
| ALARA Review | NO | | |
| PROTECTIVE AND MONITORING (PC, Respiratory, Dosimetry) | Other: - - Additional exposure monitoring equipment per direction from the RPM / RPC / RAC or designee. - PC and Respiratory protective equipment requirements per direction from the RPM / RPC / RAC or designee. Review and implement REP Standard Instructions [75RP-9RP02, App. P, attached] | | |
| RP COVERAGE | CONTINUOUS IN LHRA INTERMITTENT RPTs: Implement Radiological Controls Directions contained in associated ALARA Plan(s). | | |
| RP PRE-JOB BRIEFING | YES | | |
| Additional Instructions | | | |
| Prerequisites: <ul style="list-style-type: none">Review available radiological survey data with RP prior to entry.Complete radiation protection briefing and obtain RP authorization prior to each RCA entry as directed by RPM, RPC, or RAC.Entry to areas where no current radiological survey exists requires RP evaluation and authorization.LHRA entry requires RPM, RPC, RAC, or authorized designee approval. | | | |
| General: <ul style="list-style-type: none">Dosimetry requirements may be modified and EPD setpoints adjusted per RPM, RPC, RAC or authorized designee.The 10 CFR 20.1201(a) Occupational Dose Limits apply to non-emergency conditions. All reasonable efforts should be made to observe these limits during emergency conditions. | | | |
| RP Hold Points: | | | |
| Attachments | | | |
| N/A | | | |

ANSWER KEY



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PVNGS JOB PERFORMANCE MEASURE
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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|--------------------------------------|
| 0 | 06/08/05 | 6 | New Admin Task JPM |
| 1 | 7/11/05 | NRC | Revised to combine with JPM JP2 |
| 2 | 10/12/11 | 6 | Revised to latest JPM format and REP |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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PVNGS JOB PERFORMANCE MEASURE
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CANDIDATE

INITIATING CUE:

- You have been directed to align SDC after control room fire.
- The OSC has been manned and RP has mandated the use of the Emergency Response REP, 9-9999-0.
- Your current yearly exposure is 984 mrem.
- The radiation level where the task is to be performed is 36 mrem/hr.
- The time to complete this task will be 30 minutes.

INITIATING CUE:

Your tasks are to locate the Emergency Response REP 9-9999-0 and determine:

1. the proper task for this evolution.
2. if a RP Pre-Job Brief is required prior to entering the RCA?
3. RP coverage during job performance.
4. dress-out requirements and dosimetry.
5. required EPD settings.
6. determine if any PVNGS Administrative RP limits will be exceeded.

**USE THE ANSWER SHEET ON THE NEXT PAGE TO
DOCUMENT YOUR ANSWERS.**

CANDIDATE



A-4
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

CANDIDATE

- 1. Determine the proper task for this evolution.**

- 2. Is a RP Pre-Job Brief required prior to entering the RCA?**

- 3. Determine RP coverage during job performance.**

- 4. Determine dress-out requirements and dosimetry.**

- 5. Determine required EPD settings.**

- 6. Determine if any PVNGS RP Administrative limit will be exceeded. Yes/No (circle the correct answer)**

CANDIDATE



PVNGS

RADIATION EXPOSURE PERMIT

| | | | |
|--|-------------------------|-----------------------|--------------------------|
| REP Title | | REP Number | |
| EMERGENCY RESPONSE | | 9-9999 Rev. 00 | |
| Comments: JOB SCOPE: Emergency response. | | | |
| Locations | | | |
| Buildings | Elevations | Rooms | |
| All buildings with RCAs | ALL | N/A | |
| Radiological Conditions | | | Unit |
| LHRA Work Area Dose Rates as communicated in Formal Pre-job briefing and recorded in RP Logbook. | LHRA(s) | N/A | |
| Pre-job or Historical survey(s) attached. | N/A | N/A | |
| Review current work area survey(s). | Prior to entering RCA | N/A | |
| Tasks | | | |
| (1) LHRA - Emergency Plan implementation and Plant support tasks. | | | |
| (2) LHRA - Emergency Plan implementation and Plant support tasks as authorized by RPM or RPC. | | | |
| (3) VHRA - Life-saving actions and Plant protective measures as explicitly authorized by Site Emergency Coordinator. | | | |
| (4) RA - Drill Support. | | | |
| Global Instructions | | | |
| Prerequisites: | | | |
| General: | | | |
| RP Hold Points: | | | |
| Attachments | | | |
| ALARA Plan 9-9999 Rev 00.pdf | | | |
| Classification / Estimates | | | |
| 1.16 Task: REACTOR OPERATION + SURVEIL | | | |
| REP Type: SREP, JHES Cat. 1 | | REP Status: ACTIVE | Begin Date: 7/31/2009 |
| Estimated Dose: 100 mrem | Estimated Hours: 735.00 | Actual Dose: | Actual Hours: |
| Prepared By: GYGER, JEFFREY M | | Leader: | |
| Approvals | | | |
| Approver Title | Name | Date | |
| Department Leader | MCDONNELL, JAMES P | 08/28/2009 | |
| Section Leader | WAGNER, MARTHA M | 08/28/2009 | |
| Technician | GYGER, JEFFREY M | 08/28/2009 | |



RADIATION EXPOSURE PERMIT

| | | | |
|---|---|----------------------------------|-------------------|
| Task Number One | | REP No.: 9-9999 Rev.: 00 | |
| Task Description: LHRA - Emergency Plan implementation and Plant support tasks. INCLUDES: • Radiation exposure not to exceed PVNGS Administrative Hold Points. | | | |
| HRA Entry: YES | LHRA Entry: YES | Minimum Available Dose: 200 mRem | |
| Dosimeter Settings | | | |
| Dose (mRem) Warning: 400 | Rate (mRem/hr) Warning: 5000 | Time (HH:MM) | Chirp Rate |
| Alarm: 500 | Alarm: 5000 | Alarm: 13:00 | 0.1 mrem |
| Authorization List | | | |
| Required: NO | | Authorization Expires: NO | |
| Requirements | | | |
| Requirement Groups | Requirement Descriptions | | |
| ALARA Review | NO | | |
| PROTECTIVE AND MONITORING (PC, Respiratory, Dosimetry) | Other: - -- Additional exposure monitoring equipment per direction from the RPM / RPC / RAC or designee. -- PC and Respiratory protective equipment requirements per direction from the RPM / RPC / RAC or designee. Review and implement REP Standard Instructions [75RP-9RP02, App. P, attached] | | |
| RP COVERAGE | CONTINUOUS IN LHRA INTERMITTENT RPTs: Implement Radiological Controls Directions contained in associated ALARA Plan(s). | | |
| RP PRE-JOB BRIEFING | YES | | |
| Additional Instructions | | | |
| Prerequisites: <ul style="list-style-type: none">• Review available radiological survey data with RP prior to entry.• Complete radiation protection briefing and obtain RP authorization prior to each RCA entry as directed by RPM, RPC, or RAC.• Entry to areas where no current radiological survey exists requires RP evaluation and authorization.• LHRA entry requires RPM, RPC, RAC, or authorized designee approval. | | | |
| General: <ul style="list-style-type: none">• Dosimetry requirements may be modified and EPD setpoints adjusted per RPM, RPC, RAC or authorized designee.• The 10 CFR 20.1201(a) Occupational Dose Limits apply to non-emergency conditions. All reasonable efforts should be made to observe these limits during emergency conditions. | | | |
| RP Hold Points: | | | |
| Attachments | | | |
| N/A | | | |



RADIATION EXPOSURE PERMIT

| | | | |
|--|---|--------------------------------|------------|
| Task Number Two | | REP No.: 9-9999 Rev.: 00 | |
| Task Description: LHRA - Emergency Plan implementation and Plant support tasks as authorized by RPM or RPC. INCLUDES: • Potential to exceed PVNGS radiation exposure Administrative Hold Points anticipated. | | | |
| HRA Entry: YES | LHRA Entry: YES | Minimum Available Dose: 0 mRem | |
| Dosimeter Settings | | | |
| Dose (mRem) | Rate (mRem/hr) | Time (HH:MM) | Chirp Rate |
| Warning: 800 | Warning: 5000 | | |
| Alarm: 1000 | Alarm: 5000 | Alarm: 13:00 | 10 mrem |
| Authorization List | | | |
| Required: NO | | Authorization Expires: NO | |
| Requirements | | | |
| Requirement Groups | Requirement Descriptions | | |
| ALARA Review | YES | | |
| PROTECTIVE AND MONITORING (PC, Respiratory, Dosimetry) | Other: - -- Additional exposure monitoring equipment per direction from the RPM / RPC / RAC or designee. -- PC and Respiratory protective equipment requirements per direction from the RPM / RPC / RAC or designee. -- Administration of Potassium Iodide (KI) for projected Thyroid CDE doses in excess of 25 REM as authorized by Emergency Coordinator. Review and implement REP Standard Instructions [75RP-9RP02, App. P, attached] | | |
| RP COVERAGE | CONTINUOUS IN LHRA INTERMITTENT RPTs: Implement Radiological Controls Directions contained in associated ALARA Plan(s). | | |
| RP PRE-JOB BRIEFING | YES | | |
| Additional Instructions | | | |
| Prerequisites: <ul style="list-style-type: none">• Review available radiological survey data with RP prior to entry.• Complete radiation protection briefing and obtain RP authorization prior to each RCA entry as directed by RPM, RPC, or RAC.• An Emergency Classification of "Notification of Unusual Event" (NUE) or an Emergency requiring immediate attention or higher has been declared.• RPM or RPC authorization required prior to entry on this task.• Entry to areas where no current radiological survey exists requires RP evaluation and authorization. | | | |
| General: <ul style="list-style-type: none">• Dosimetry requirements may be modified and EPD setpoints adjusted per RPM, RPC, RAC or authorized designee.• The 10 CFR 20.1201(a) Occupational Dose Limits apply to non-emergency conditions. All reasonable efforts should be made to observe these limits during emergency conditions.• The RPM or RPC may authorize personnel radiation exposure within the Occupational Dose limits specified in 10 CFR 20.1201(a). | | | |
| RP Hold Points: | | | |
| Attachments | | | |
| N/A | | | |



RADIATION EXPOSURE PERMIT

| | | | |
|--|---|--------------------------------|------------|
| Task Number Three | | REP No.: 9-9999 Rev.: 00 | |
| Task Description: VHRA - Life-saving actions and Plant protective measures as explicitly authorized by Site Emergency Coordinator. INCLUDES: • Potential to exceed 10CFR20 radiation exposure limits anticipated. | | | |
| HRA Entry: YES | LHRA Entry: YES | Minimum Available Dose: 0 mRem | |
| Dosimeter Settings | | | |
| Dose (mRem) | Rate (mRem/hr) | Time (HH:MM) | Chirp Rate |
| Warning: 20000 | Warning: 250000 | | |
| Alarm: 25000 | Alarm: 250000 | Alarm: 13:00 | 10 mrem |
| Authorization List | | | |
| Required: NO | | Authorization Expires: NO | |
| Requirements | | | |
| Requirement Groups | Requirement Descriptions | | |
| ALARA Review | YES | | |
| PROTECTIVE AND MONITORING (PC, Respiratory, Dosimetry) | Other: - -- Additional exposure monitoring equipment per direction from the RPM / RPC / RAC or designee. -- PC and Respiratory protective equipment requirements per direction from the RPM / RPC / RAC or designee. -- Administration of Potassium Iodide (KI) for projected Thyroid CDE doses in excess of 25 REM as authorized by Emergency Coordinator. Review and implement REP Standard Instructions [75RP-9RP02, App. P, attached] | | |
| RP COVERAGE | CONTINUOUS RPTs: Implement Radiological Controls Directions contained in associated ALARA Plan(s). | | |
| RP PRE-JOB BRIEFING | YES | | |
| Additional Instructions | | | |
| Prerequisites: <ul style="list-style-type: none">• Review available radiological survey data with RP prior to entry.• Complete radiation protection briefing and obtain RP authorization prior to each RCA entry as directed by RPM, RPC, or RAC.• An Emergency Classification of "Notification of Unusual Event" (NUE) or higher has been declared.• Emergency Coordinator has authorized entry on this task.• Entry to areas where no current radiological survey exists requires RP evaluation and authorization.• LHRA entry requires RPM, RPC, RAC or authorized designee approval. | | | |
| General: <ul style="list-style-type: none">• NOTE: Each emergency responder to obtain a pre-set fast response EPD [located in 140Æ auxiliary building RCA access control EPD racks, right hand column, labeled "Emergency use EPDs, REP 9-9999 Task 3"].• Dosimetry requirements may be modified and EPD setpoints adjusted per RPM, RPC, RAC, EC or authorized designee.• The 10 CFR 20.1201(a) Occupational Dose Limits apply to non-emergency conditions. All reasonable efforts should be made to observe these limits during emergency conditions.• The Emergency Coordinator, after consultation with Radiation Protection staff, must authorize any projected personnel radiation exposure in excess of the limits specified in 10 CFR 20.1201(a). | | | |
| RP Hold Points: | | | |
| Attachments | | | |
| N/A | | | |



RADIATION EXPOSURE PERMIT

| | | | |
|--|---|----------------------------------|------------|
| Task Number Four | | REP No.: 9-9999 Rev.: 00 | |
| Task Description: RA - Drill Support. INCLUDES: • Drill support entry, radiation exposure not to exceed EPD setpoints. | | | |
| HRA Entry: NO | LHRA Entry: NO | Minimum Available Dose: 15 mRem | |
| Dosimeter Settings | | | |
| Dose (mRem) Warning: 12 | Rate (mRem/hr) Warning: 75 | Time (HH:MM) | Chirp Rate |
| Alarm: 15 | Alarm: 75 | Alarm: 13:00 | 0.1 mrem |
| Authorization List | | | |
| Required: NO | | Authorization Expires: NO | |
| Requirements | | | |
| Requirement Groups | Requirement Descriptions | | |
| ALARA Review | YES | | |
| PROTECTIVE AND MONITORING (PC, Respiratory, Dosimetry) | Other: - PC and Respiratory protection equipment requirements per direction from RPM / RPC / RAC or designee. Review and implement REP Standard Instructions [75RP-9RP02, App. P, attached] | | |
| RP COVERAGE | INTERMITTENT RPTs: Implement Radiological Controls Directions contained in associated ALARA Plan(s). | | |
| RP PRE-JOB BRIEFING | YES | | |
| Additional Instructions | | | |
| Prerequisites: • Review available radiological survey data with RP prior to entry. • Entry to areas where no current radiological survey exists requires RP evaluation and authorization. | | | |
| General: | | | |
| RP Hold Points: • NO HRA, LHRA, or VHRA entries on this task. | | | |
| Attachments | | | |
| N/A | | | |

Radiation Exposure Permit

Standard Instructions

All RCA entrants shall comply with the following PVNGS REP Standard Instructions except where REP provides specific alternate direction:

Monitoring and Protective Equipment:

Dosimetry – EPD/TLD

Protective Clothing -

- RP Authorized Work at CA Boundaries – Lab Coat and Gloves
- CA entry – Full Set
- HCA / HPCA entry – Double Set
- Wet work – Wet set

General:

- Contact RP prior to each RCA entry.
- Review current radiological survey data for work area prior to entry.
- Notify RP prior to contaminated system opening, contaminated surface destroying activities, or insulation removal.
- Stand by in low dose "Cold Area" when not actively involved in job.
- To limit exposure to airborne radioactive material when working in High Contamination Areas, apply engineered controls as directed by RP. This typically involves misting work area surfaces and maintaining damp while working.
- Work at CA Boundaries (e.g. Removing Tools, Equipment or Materials from CAs) requires RP Authorization.
- Radiation Worker's PC requirements may be modified with RP Leader authorization.
- Personnel may enter a HCA / HPCA wearing a modified Double Set (consisting of a Full Set with outer shoe covers and gloves) to perform minor tasks with low probability of personnel contamination as determined and authorized by an RP Leader prior to each entry.
- Within contaminated areas, RP authorization required for body position other than standing.

RP personnel shall observe the following REP Standard Instructions in addition to the above:

- EPD dose rate setpoint may be adjusted as determined prudent by RP Leader based on review of work plan and radiological conditions. RP Leader to document all setpoint adjustments in RP electronic log.
- Ensure worker dosimetry is positioned appropriately to monitor highest whole body exposure (Ref. 75RP-9RP16).
- Task Specific TEDE /ALARA Screening required for: Work area conditions $>500,000$ dpm/100cm² ($\beta\gamma$), >500 dpm/100cm² (α), Contaminated system breach, Contaminated surface destroying activity or where a job/work area air sample yields >1.0 DAC (excluding Noble gas).
- RP Technicians entering an HPCA / HCA to perform RP monitoring tasks with low probability of personnel contamination may wear a modified Double Set consisting of a Full Set with outer shoe covers and gloves.
- RP Technicians, meeting the experience requirements of Section 4.5.2 of ANSI/ANS 3.1-1978, may relax RP Technician's Protective Clothing requirements for minor tasks with low probability of contamination.
- If individual is unable to self monitor (read dosimeter) due to any instance including but not limited to: telemetric dosimeter use, re-positioning of dosimetry by RP, multi-dosimeter use, or outer set of PCs being worn, then RP will assume exposure monitoring for that individual (Ref: 75RP-9RP16, 75RP-9RP29, 75DP-0RP02).

ALARA PLAN

Plan #: **9-9999**

Revision #: **00**

Title: **EMERGENCY RESPONSE**

Plan Type:

☒ **PRIMARY**

☐ **SUPPLEMENTAL**

(Preparer to ensure compatibility with Primary ALARA Plan)

WM / Supplement # :

Work Description :

Prepared by / date: Jeff Gyger 08-27-2009



Approved by / date: Martha Wagner 08-27-2009



CONTENTS:

Section One

- Radiological Controls Directions

Section Two

- Work Scope / Job progression
- Survey history / anticipated conditions
- Operating Experience / Lessons Learned

Section Three

- REP development Worksheet

ALARA PLAN

Plan #: 9-9999

Revision #: 00

Title: EMERGENCY RESPONSE

Section One

| REP Task Number | REP Task Description |
|-----------------|--|
| 1 | LHRA - Emergency Plan implementation and Plant support tasks. |
| 2 | LHRA - Emergency Plan implementation and Plant support tasks as authorized by RPM or RPC. |
| 3 | VHRA - Life-saving actions and Plant protective measures as explicitly authorized by Site Emergency Coordinator. |
| 4 | RA - Drill Support. |

Radiological Controls Directions

| Task | | | | | PREREQUISITE: |
|------|---|---|---|--|--|
| 1 | 2 | 3 | 4 | | |
| 1 | 2 | 3 | | | HRA Entry – RP Pre-job brief and RP authorization required as directed by RPM, RPC, or RAC. |
| 1 | 2 | 3 | | | LHRA / VHRA Entry – Formal RP Pre-job brief and RP authorization required as directed by RPM, RPC, or RAC. |
| | 2 | | | | Fast entry EPD's are set to Task-2 set points. |
| 1 | 2 | 3 | | | The EDE / TEDE ratio will be used to track internal exposure. |

| Task | | | | | GENERAL: |
|------|---|---|---|--|----------|
| 1 | 2 | 3 | 4 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ALARA PLAN

Plan #: 9-9999 Revision #: 00

Title: EMERGENCY RESPONSE

Section One

| Task | | | | | RP HOLD POINT: |
|------|---|---|---|--|----------------|
| 1 | 2 | 3 | 4 | | |
| | | | | | |
| | | | | | |
| | | | | | |

ALARA PLAN

Plan #: 9-9999

Revision #: 00

Title: EMERGENCY RESPONSE

Section Two

NOTE:

There are no REP requirements contained in this section. The following is provided as supplemental background information.

Operating Experience / Lessons Learned

FUEL BUILDING RADIOLOGICAL CONDITIONS AFTER LOCA

After a Loss of Coolant Accident (LOCA) a Recirculation Actuation Signal (RAS) will occur. Highly radioactive water will fill the suction lines to the Safety Injection pumps. Back-leakage from the suction lines past check valves to the Refueling Water Tank is assumed and this will cause radioactive material to build up in the Refueling Water Tank. The Refueling Water Tank is vented to the Fuel Building normal ventilation. The normal building ventilation exhaust is isolated after a Safety Injection Actuation Signal so the Refueling Water Tank radioactive material (airborne nobles gasses and iodines) will migrate into the Fuel Building and remain there.

After a design basis LOCA, the disposition to CRDR 97-Q-0265 indicates that the following tasks may need to be performed in the Fuel Building:

- Obtaining iodine and particulate samples from RU-145/146
- Restart of the spent fuel pool (PC) cooling pumps
- Alignment of EW to the spent fuel pool heat exchangers
- Makeup to the spent fuel pool
- Periodic checks of spent fuel pool temperature and level

Very high airborne levels may build up in the Fuel Building after a LOCA and continue to rise for several days after shutdown. Calculation 13-NC-CH-0314 rev 3 indicates 10,000 Rem/hr Thyroid CDE, 80 Rem/hr skin dose, and 7 Rem/hr TEDE are possible 100 hours after shutdown. Use of PCs, plastics, and SCBAs would be required for entries into the Fuel Building.

SPRAY POND VALVE OPERATION

Within 24 hours of a LOCA, Operations will need to open the Essential Spray Pond cross-tie valves. The valves are located at the Essential Spray Ponds. This job should be performed when the Essential Spray Ponds are upwind of the affected unit to minimize radiation exposure to Operations personnel.

ALARA PLAN

Plan #: 9-9999

Revision #: 00

Title: EMERGENCY RESPONSE

Section Three

REP development Worksheet

NOTE: Pre-job development information only. There are no REP requirements contained in this section.

ALARA Measures:

| | |
|---|--|
| <input type="checkbox"/> 1. Temporary Shielding | <input type="checkbox"/> 12. Special Anti-Cs (beta protection or other) |
| <input type="checkbox"/> 2. Component/System Flushing | <input type="checkbox"/> 13. Reduced PC/Anticipated PCE authorization |
| <input type="checkbox"/> 3. Remote monitoring | <input type="checkbox"/> 14. TEDE ALARA Screening/Evaluation |
| <input type="checkbox"/> 4. Remote radiation survey techniques | <input type="checkbox"/> 15. Pre-Job Decontamination |
| <input type="checkbox"/> 5. Robotic support | <input type="checkbox"/> 16. Contamination fixatives |
| <input type="checkbox"/> 6. Planning Walk down with Work Group | <input type="checkbox"/> 17. Wrap/Sleeve/Cover components |
| <input type="checkbox"/> 7. Relocate Component (low dose area) | <input type="checkbox"/> 18. Contamination containment tent/enclosure |
| <input type="checkbox"/> 8. Minimize Crew size | <input type="checkbox"/> 19. HEPA filtration (ventilation syst. or vacuum) |
| <input type="checkbox"/> 9. Mock-up practice | <input type="checkbox"/> 20. Other: _____ |
| <input type="checkbox"/> 10. Specialized Tooling [e.g., long-handled] | <input type="checkbox"/> 21. Other: _____ |
| <input type="checkbox"/> 11. Re-schedule to optimal ALARA window | <input type="checkbox"/> 22. Other: _____ |

Comments:

Job Estimate:

| REP Task | Activity Description | Location | Craft | # Persons | # Entries | Actual [hours] | Eff. mR/hr | Actual [mRem] |
|----------|---------------------------|-----------|-------|-----------|-----------|----------------|------------|---------------|
| All | 2009 Actual dose received | All areas | N/A | N/A | 126 | 682 | N/A | 0.000 |
| All | 2008 Actual dose received | All areas | N/A | N/A | 322 | 1,415 | N/A | 0.000 |
| All | 2007 Actual dose received | All areas | N/A | N/A | 227 | 873 | N/A | 0.001 |
| All | 2006 Actual dose received | All areas | N/A | N/A | 105 | 325 | N/A | 0.000 |
| All | 2005 Actual dose received | All areas | N/A | N/A | 119 | 391 | N/A | 0.000 |
| All | 2004 Actual dose received | All areas | N/A | N/A | 239 | 725 | N/A | 0.004 |
| | | | | | | | | |
| TOTAL | | | | | | Average's | 735 | / |
| | | | | | | | | |

Developmental survey(s): N/A

ALARA PLAN

Plan #: 9-9999

Revision #: 00

Title: EMERGENCY RESPONSE

Section Three

REP development Worksheet

NOTE: Pre-job development information only. There are no REP requirements contained in this section.

Estimate basis / assumptions: Historical averages from the last six years. Although little to no radiation exposure has been received over the last six years on this REP, 100 mRem is used in this estimate to allow minor surveillance activities.

Job-REP required (estimate >300 mRem) ? : ☐ YES ☒ NO

New REP # : _____

Assign to existing REP # : 9-9999 _____

Do identified ALARA Measures or Radiological Controls Directions necessitate a REP revision (new or upgraded; Protective, Surveillance, or Controls requirements to the existing REP/ALARA Plan) ? :

☐ YES ☒ NO ☐ N/A



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PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|------------------|------------|-----|-------|-----|--|
| TASK: | 1290020301, Conduct of Shift Operations | | | | | | |
| TASK STANDARD: | Determine Shift Manning Requirements by determining the TRO does not meet training requirements, the CO does not meet License maintenance time therefore the crew does not meet minimum manning and another reactor operator is required. | | | | | | |
| K/A: | 2.1.4 | K/A RATING: | RO: | 3.3 | SRO: | 3.8 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | SRO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | 40DP-90P02, Conduct of Shift Ops | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/12/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *



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1. SPECIAL TOOLS/EQUIPMENT:

- 40DP-9OP02 available. This JPM was written using Revision 56 of 40DP-9OP02



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PVNGS JOB PERFORMANCE MEASURE
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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INITIAL CONDITIONS:

- **You are the CRS for a crew that is scheduled to take the Unit 1 dayshift tomorrow April 1st (new quarter).**
- **Unit 1 is in Mode 1.**
- **STA position will be filled by a non-licensed STA**
- **Unit 2 is providing the Fire Team Advisor.**
- **The crew was in the 4th week of the previous training cycle.**
- **The training cycle completed 7 weeks ago, there was no evaluated scenario.**
- **The table below reflects your crew's status of Training and License Maintenance times.**

| Operator | Training | Shifts previous Quarter |
|-----------------|---|---|
| SM | Attended all classes Passed written exam | Every shift for the quarter in the SM position |
| CRS | Attended all classes Passed written exam | One (1) 12 hour shift as CRS Remaining shifts in RO positions |
| RO | Attended all training Passed written exam | Every shift in an RO positions |
| CO | Attended all classes Passed written exam | Short term disability One (1) 6 hour shift as RO One (1) 10 hour shift as CO Four (4) 12 hour shifts as RO |
| TRO | Attended all classes Did not take written exam | Every shift in an RO positions |

INITIATING CUE:

You are directed to determine:

- 1. The current status of the 5 licensed positions.**
- 2. If the crew meets the procedural requirements to assume the shift.**
- 3. If not, what position(s) need to be filled to meet these requirements?**



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 1. | Obtain 40DP-9OP02, Conduct of Shift Operations. | | Obtain 40DP-9OP02, Conduct of Shift Operations. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 2. * | 3.6.1.1/.2 of 40DP-9OP02 An Operator's training is current when all required material in an LOCT Training Cycle is completed. If any LOCT material is missed during a training cycle, make-up training shall be completed no later than 6 weeks from the end of the training cycle that the training was part of. | | Examinee determines that the TRO is not current in LOCT training due to not completing their training within 6 weeks of the end of the cycle. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 3. * | 3.6.2 of 40DP-9OP02 ACTIVE NRC Operators License exists when an operator has a valid license and has "actively performed" the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter. | | Examinee determines that the CRS meets the requirements of at least one 12 hour shift in the SRO position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. * | 3.6.2 of 40DP-9OP02 ACTIVE NRC Operators License exists when an operator has a valid license and has “actively performed” the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter. | | Examinee determines that the CO does not meet “Watchstanding Proficiency” requirements as they did not stand five (5) 12 hour shifts in the previous quarter. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. * | 3.1 of 40DP-9OP02 The minimum required shift crew manning per Unit is: <ul style="list-style-type: none">• 1 Shift Manager.• 1 Control Room Supervisor.• 2 Reactor/Control Operators. | | Examinee determines that at least one more Reactor Operator is required to meet minimum shift manning requirements. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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PVNGS JOB PERFORMANCE MEASURE
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ANSWER KEY

INITIAL CONDITIONS:

- You are the CRS for a crew that is scheduled to take the Unit 1 dayshift tomorrow April 1st (new quarter).
- Unit 1 is in Mode 1.
- STA position will be filled by a non-licensed STA
- Unit 2 is providing the Fire Team Advisor.
- The crew was in the 4th week of the training cycle.
- The training cycle completed 7 weeks ago, there was no evaluated scenario.
- The table below reflects your crew's status of Training, License Maintenance times and Medical requirements.

| Operator | Training | Shifts previous Quarter |
|----------|---|---|
| SM | Attended all classes Passed written exam | Every shift for the quarter in the SM position |
| CRS | Attended all classes Passed written exam | One (1) 12 hour shift as CRS Remaining shifts in RO positions |
| RO | Attended all training Passed written exam | Every shift in an RO positions |
| CO | Attended all classes Passed written exam | Short term disability 6 hour shift as RO 10 hour shift as CO Four (4) 12 hour shifts as RO |
| TRO | Attended all classes Did not take written exam | Every shift in an RO positions |

INITIATING CUE:

- You are directed to determine:
 1. The current status of the 5 licensed positions.
 2. If the crew meets the procedural requirements to assume the shift.
 3. If not, what positions need to be filled to meet these requirements?

Provide your answers on the attached sheet.



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ANSWER KEY

1. The current status of the 5 licensed positions.

| Operator | Qualified Training? | Qualified License Maintenance time? |
|----------|---------------------|-------------------------------------|
| SM | <u>YES</u> / NO | <u>YES</u> / NO |
| CRS | <u>YES</u> / NO | <u>YES</u> / NO |
| RO | <u>YES</u> / NO | <u>YES</u> / NO |
| CO | <u>YES</u> / NO | YES / <u>NO</u> |
| TRO | YES / <u>NO</u> | <u>YES</u> / NO |

2. Does the crew meet the procedural requirements to assume the shift.

YES / NO

3. If not, what position(s) need to be filled to meet these requirements?

**There is only one qualified reactor Operator for the shift.
At least one more Reactor Operator is required to meet
minimum shift requirements.**

ANSWER KEY



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|-----------------------------------|
| 000 | 10/12/2011 | | New JPM for 2012 NRC Initial Exam |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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Candidate Handout

INITIAL CONDITIONS:

- You are the CRS for a crew that is scheduled to take the Unit 1 dayshift tomorrow April 1st (new quarter).
- Unit 1 is in Mode 1.
- STA position will be filled by a non-licensed STA
- Unit 2 is providing the Fire Team Advisor.
- The crew was in the 4th week of the previous training cycle.
- The training cycle completed 7 weeks ago, there was no evaluated scenario.
- The table below reflects your crew's status of Training, License Maintenance times and Medical requirements.

| Operator | Training | Shifts previous Quarter |
|----------|---|---|
| SM | Attended all classes Passed written exam | Every shift for the quarter in the SM position |
| CRS | Attended all classes Passed written exam | One (1) 12 hour shift as CRS Remaining shifts in RO positions |
| RO | Attended all training Passed written exam | Every shift in an RO positions |
| CO | Attended all classes Passed written exam | Short term disability One (1) 6 hour shift as RO One (1) 10 hour shift as CO Four (4) 12 hour shifts as RO |
| TRO | Attended all classes Did not take written exam | Every shift in an RO positions |

INITIATING CUE:

- You are directed to determine:
 1. The current status of the 5 licensed positions.
 2. If the crew meets the procedural requirements to assume the shift.
 3. If not, what position(s) need to be filled to meet these requirements?

Provide your answers on the attached sheet.



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Candidate Handout

1. The current status of the 5 licensed positions.

| Operator | Qualified Training? | Qualified License Maintenance time? |
|----------|---------------------|-------------------------------------|
| SM | YES / NO | YES / NO |
| CRS | YES / NO | YES / NO |
| RO | YES / NO | YES / NO |
| CO | YES / NO | YES / NO |
| TRO | YES / NO | YES / NO |

2. Does the crew meet the procedural requirements to assume the shift.
YES / NO

3. If not, what positions need to be filled to meet these requirements?

Candidate Handout



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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|------------------|------------|-----|-------|-----|--|
| TASK: | 1270130401 Implement reactor coolant system draining operations | | | | | | |
| TASK STANDARD: | Upon completion of this JPM, the examinee will determine that the time required for shutdown based on EW temperature is met and that HPSI cold leg flow should be ~ 212 gpm. | | | | | | |
| K/A: | 2.1.20 | K/A RATING: | RO: | 4.6 | SRO: | 4.6 | |
| K/A: | 2.1.25 | K/A RATING: | RO: | 3.9 | SRO: | 4.2 | |
| APPLICABLE POSITION(S): | SRO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | 40OP-9ZZ16, RCS Drain Operations; Unit 3 Safety Analysis Operational Data Manual | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 09/08/2009

Revised By: Alan Malley Date: 07/07/2011

Technical Review Operations Approval

EP Review N/A Training Approval

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: Date:

Evaluator Name:

Time to complete: Minutes GRADE (Circle One) SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
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1. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9ZZ16, RCS Drain Operations available. This JPM was written using Revision 71 of 40OP-9ZZ16. This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.
- Unit 3 Safety Analysis Operational Data Manual available. This JPM was written using Revision 4 of the Unit 3 Safety Analysis Operational Data Manual. This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 3 was shutdown 91 hours ago.
- The Decay heat load is 15.5 MWs.
- The crew is preparing to drain the RCS for a Hot Mid-Loop.
- You are an extra SRO in Unit 3.
- It is anticipated that the crew will have to reduce Shutdown Cooling flow to 3780 gpm during Mid-Loop operations.

- RWT temperature as read on 1-J-CHN-TT-210 is 70 °F.
- EW Heat Exchanger temperature as read on 3-J-EWN-TT-083 and TT-084 is 86 °F.

INITIATING CUE:

The Control Room Supervisor has directed that you perform the following two tasks:

1. Perform prerequisite step 7.2.12 of 40OP-9ZZ16 (RCS Drain Operations) to determine if Essential Cooling Water temperature vs. Time Post Shutdown requirements of the Safety Analysis Operational Data portion of the Core Data Book is met before SDC flow is lowered to 3780 gpm.
2. Perform prerequisite step 7.2.13 of 40OP-9ZZ16 (RCS Drain Operations) to determine makeup flow rate required to prevent boiling using HPSI cold leg injection.

Provide your answers below:

1. Prerequisite step 7.2.12 is met / is not met.
(Circle one)
2. Required makeup flow to prevent boiling - _____ gpm per cold leg.



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. * | Step 7.2.12 of 40OP-9ZZ16: Essential Cooling Water temperature vs. Time Post Shutdown requirements of the Safety Analysis Operational Data portion of the Core Data Book are met before SDC flow is lowered to 3780 gpm. REFER TO Step 4.2 for additional information | | Examinee refers to the Safety Analysis Operation Data Manual to verify Essential Cooling Water temperature Vs Time Post Shutdown requirements are met. Examinee may refer to step 4.2 of 40OP-9ZZ16. Examinee determines that for an EW temperature of 86 °F the time for shutdown has to be 87 hours, therefore being 91 hours after shutdown does meet the requirements. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. * | <p>Step 7.2.13 of 40OP-9ZZ16:</p> <p>Makeup flow rate required to prevent boiling has been determined by one of the following:</p> <p>Hot Mid Loop (pre core offload)</p> <ul style="list-style-type: none">• This is applicable for HPSI makeup via the cold leg and should be N/Ad if this makeup path is not selected.• Decay heat load, in MW, has been determined. Target decay heat load is equal to or less than 16.0 MW.• Required HPSI makeup flow per loop has been determined from Appendix W - Makeup Flow to Prevent Boiling. (REFER TO Step 4.30 for additional discussion) | | <p>Examinee determines HPSI Cold leg injection flow should be ~ 212 gpm (+/- 10 gpm) per cold leg using Appendix W and the 70°F line for 15.5 MWs.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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Provide your answers below:

1. Prerequisite step 7.2.12 is met.
(Circle one)
2. Required makeup flow to prevent boiling – 212 gpm(+/- 10 gpm) per cold leg.

ANSWER KEY

TABLE 2.8.1

**Minimum Time to Reduced Flow SDC Operations
Following Reactor Shutdown To Maintain RCS Temperature
at or Below 135 Deg. F**

Note: Refer to Note 2.8.0 for information regarding the use of this table

| EW Inlet Temperature (Actual - °F) | EW Inlet Temperature (Indicated - °F) (1,2,3JEWN083/84) | Decay Heat / SDC capacity (MW) | Time After Shutdown (Hrs) |
|--|--|--------------------------------------|---------------------------------|
| 92 | 87 | 15.5 | 91 |
| 91 | 86 | 15.9 | 87 |
| 90 | 85 | 16.3 | 82 |
| 89 | 84 | 16.6 | 79 |
| 88 | 83 | 17.0 | 75 |
| 87 | 82 | 17.4 | 71 |

Source of Data: 13-MC-SI-231, Revision 4

ANSWER KEY

| | | | |
|---|--|-------------|------------------------|
| NUCLEAR ADMINISTRATIVE AND TECHNICAL MANUAL | | 40OP-9ZZ16 | Appendix W Page 1 of 1 |
| RCS Drain Operations | | Revision 71 | Page 314 of 335 |

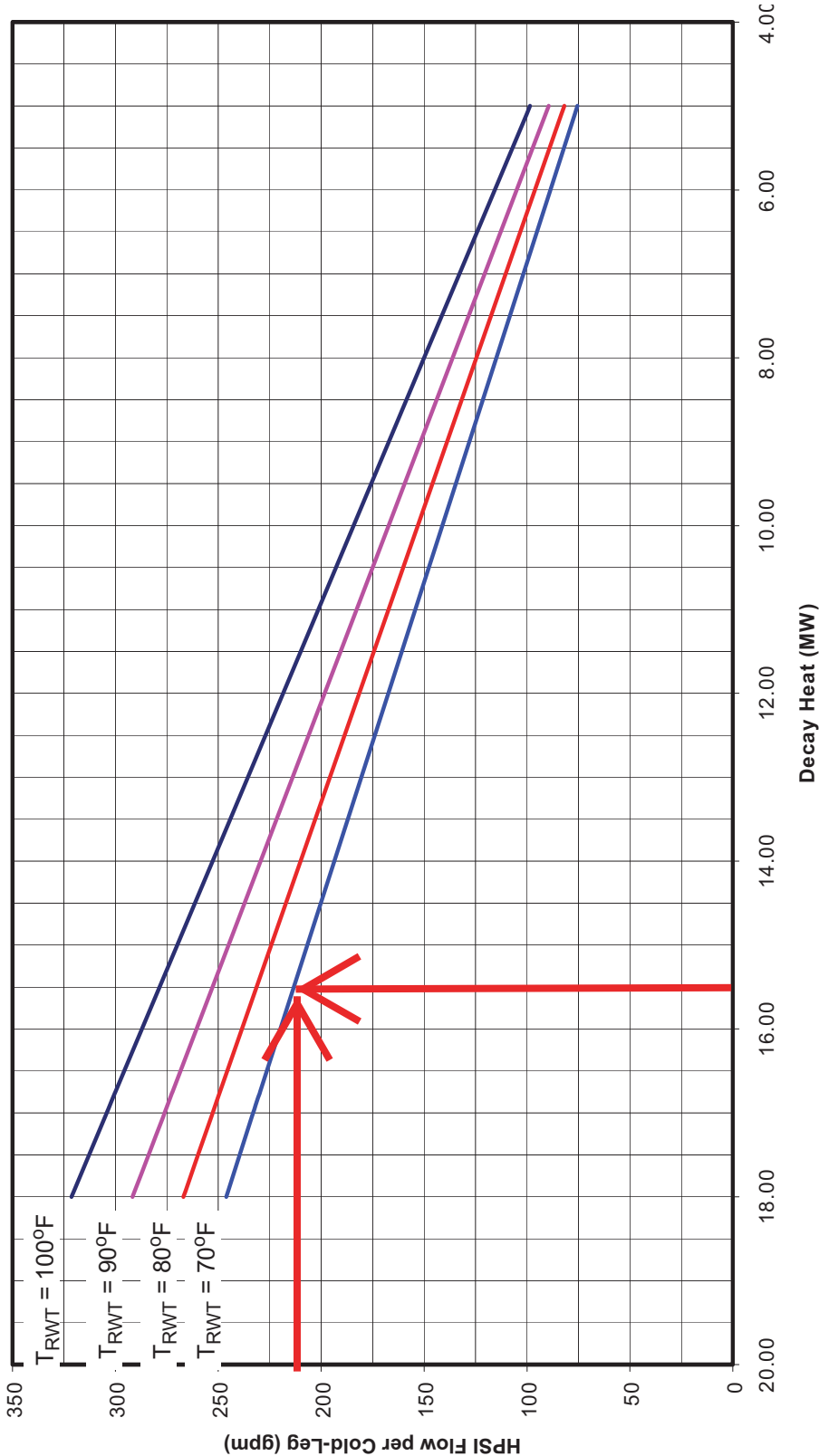
Appendix W - Makeup Flow to Prevent Boiling

1.0 General Information

ANSWER KEY

1.1 This table correlates decay heat to the required HPSI flow to EACH loop to prevent boiling in the RCS.

Minimum Flow Requirements to Prevent Core Boiling



ANSWER KEY



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|---|
| 000 | 07/07/2011 | 6 | Converted from a NRC Initial License Exam JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Unit 3 was shutdown 91 hours ago.
- The Decay heat load is 15.5 MWs.
- The crew is preparing to drain the RCS for a Hot Mid-Loop.
- You are an extra SRO in Unit 3.
- It is anticipated that the crew will have to reduce Shutdown Cooling flow to 3780 gpm during Mid-Loop operations.

- RWT temperature as read on 1-J-CHN-TT-210 is 70 °F.
- EW Heat Exchanger temperature as read on 3-J-EWN-TT-083 and TT-084 is 86 °F.

INITIATING CUE:

The Control Room Supervisor has directed that you perform the following two tasks:

1. Perform prerequisite step 7.2.12 of 40OP-9ZZ16 (RCS Drain Operations) to determine if Essential Cooling Water temperature vs. Time Post Shutdown requirements of the Safety Analysis Operational Data portion of the Core Data Book is met before SDC flow is lowered to 3780 gpm.
2. Perform prerequisite step 7.2.13 of 40OP-9ZZ16 (RCS Drain Operations) to determine makeup flow rate required to prevent boiling using HPSI cold leg injection.

Provide your answers below:

1. Prerequisite step 7.2.12 is met / is not met.
(Circle one)
2. Required makeup flow to prevent boiling - _____ gpm per cold leg.

RCS Drain Operations

400P-9ZZ16

Revision
72

4.0 PERSONAL INDOCTRINATION

- 4.1 Plant activities may preclude the performance of specific steps in the order presented. The Shift Manager may re-sequence or delay steps as necessary to accomplish the procedure objectives, except for those portions of the procedure requiring the securing of plant draining at specified plant elevations since these will be used to allow for entire RCS pressure equalization/level stabilization.
- 4.2 The analyses that supports SDC operation at reduced flow rate (3780 gpm) have been revised to reduce conservatism and permit more expedient entry into Mid-Loop.
- Table 2.8.1 has been added to the Safety Analysis Operational Data portion of the Core Data Book which defines the criteria necessary to reduce SDC flow. Supplements to Table 2.8.1 for specific unit and outage applications may be applicable and incorporated in the SAOD.
 - SAOD Table 2.8.1 is applicable anytime the plant is in mode 5 or mode 6 and it is required to reduce SDC flow. The table is independent of RCS level.
 - This table shows the required number of hours post shutdown, as a function of Essential Cooling Water temperature, after which a single train of SDC can provide sufficient cooling at reduced flow (i.e.: 3780 gpm), to maintain the RCS at or below 135°F in accordance with LCO 3.4.8, LCO 3.9.4, and LCO 3.9.5. Flow may be reduced to 3780 gpm to preclude vortexing at the SDC suction nozzle during Mid-Loop operations.
 - Normal SDC flow is defined by Tech Specs as 3780 to 5000 gpm (indicated). In most situations, SDC flow is maintained at or near 4,000 gpm. If Operations had 1 train SDC available and elected to reduce flow to 3780 shortly after shutdown, it is likely that RCS temperature will increase. Compensatory action is to increase SDC flow.
 - There are some situations where SDC flow could NOT be significantly increased. For example we have administrative controls preventing SDC flow greater than 4150 gpm while in mid-loop. The analyses supporting the data in the SAOD demonstrate that the SDC will provide sufficient cooling capacity thereby providing some assurance that the plant will be cooled in lieu of increasing flow.
 - By meeting the SAOD Essential Cooling Water temperature/time post shutdown requirements, there is assurance that the core will be maintained at refueling mode temperature (135°F) in the unlikely event that SDC flow is reduced and Operations does NOT have to ability to increase SDC flow to mitigate an increasing RCS temperature.

RCS Drain Operations

40OP-9ZZ16

Revision
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4.3 RWLIS Flow Compensation.

- The RWLIS level channels are capable of being flow compensated to obtain actual RCS level.
- Flow Compensation is used to offset/correct a channels level error induced when that channel's train of SDC is in operation.
- Additionally, SDC flow oscillates. Indicated RCS level will fluctuate as a result.
- Normally the Refueling Wtr. Lvl. Flow Compensation Selector Switch is placed in the "BOTH" position.
- The Refueling Wtr. Lvl. Flow Compensation Selector Switch may also be selected for the train of SDC Loop that is in operation.
- The "NONE" position is used when the RWLIS is secured.

4.4 RWLIS channel alarms.

- Selectable with the Refueling Water Level Alarm Selector Switch.
- This selects the alarm input from "Channel A", "Channel B", or "BOTH" depending on which RWLIS channels are in operation.
- Normally "BOTH" is selected.
- Upon receiving the alarm, the point ID should be checked to determine the channel causing the alarm.
- The fourth position, "NONE" is used when the system is secured.

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- 4.5 When RCS level can not be displayed in the Control Room by any available means, **level shall be monitored locally and recorded at least once every 15 minutes.**
1. Use the instructions, data sheet(s), and level correction curves found in Appendix D - Operating the Refueling Water Level Indicating System when local monitoring is required. (This requirement is N/A with no fuel in the Rx Vessel).
 2. Monitoring with gage glasses
 - RCS operations at MidLoop levels can be monitored using the Train "A" or "B" RWLIS local gage glass.
 - The SDC loop associated with the selected RWLIS local gage glass cannot be in operation.
 - When the RCS level is between the 101 ft. 4 in. and 102 ft. 9 in. elevation, the RWLIS local gage glass associated with the SDC Loop in operation will indicate off-scale low.
- 4.6 CETs, unheated HJTCs and SDCHX inlet and outlet temperature indicators are the only reliable RCS temperature indications with SDC in operation and the RCS loops not filled.
- 4.7 The SDCHX outlet valve and bypass valve can be throttled to reduce flow in an attempt to reduce cavitation. Do not start the standby SDC loop until the cause of cavitation has been determined, or both trains may become air bound.

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4.8 Operating only one train of SDC when drained/draining minimizes the possibility of air binding both SDC loops simultaneously, allowing faster recovery from a loss of shutdown cooling. The switches, indicators and their functions, for the RWLIS are listed below:

1. The following are all located on Control Board B02:
 - RCN-HS-752, Refueling Water Level Alarm Enable Selector Switch.
 - RCN-HS-752-1, Refueling Water Level Flow Compensation Selector Switch.
 - RCN-LI-752A Narrow Range Refueling Water Level.
 - RCN-LI-752B, Wide Range Refueling Water Level.
 - RCN-LR-752, Refueling Water Level Trend Recorder.
 - Window 2B10A, Refueling Water Level Lo alarm window.
 - Window 2B10B, Refueling Water Level Lo-Lo alarm window.
2. The RWLIS instrument tolerances are (\pm) one in. for narrow range and (\pm) seven in. for wide range.
3. Various inputs to the PMS computer will allow the operator to observe parameters associated with the RWLIS and are listed in the table below.

| RWLIS | Train "A" | Train "B" |
|--|-----------|-----------|
| Refueling Water Level NR in Feet | RCL-752A | RCL-753A |
| Refueling Water Level WR in Feet | RCL-752B | RCL-753B |
| Refueling Water Level Lo Alarm (no Train) | RCLS-752 | |
| Refueling Water Level Lo-Lo Alarm (no Train) | RCLSL-752 | |

4. Local Refueling Water Level Gage Glasses: RCN-LG-752/Train "A" and RCN-LG-753/Train "B" each consist of three vertically staggered level gauges covering a total span of 27 7/8 in.

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- 4.9 Two normal paths are available for draindown.
- 4.9.1 The selection of the normal drain path to be used should be evaluated based on the RCS boron concentration, RCS activity (both gaseous and degassed), the current RWT boron concentration and the effect that draining the RCS may have on the final RWT boron concentration when selected.
- 4.9.2 It is desirable to utilize the letdown purification filter, purification ion-exchanger, and pre-holdup ion exchanger when utilizing either of these drain paths.
- 4.10 The alternate drain path uses the six inch recirculation line on the outlet of the SDC Heat Exchanger and may be an option when the normal paths are not available and permitted by the Shift Manager. This drain path is also subject to the following considerations:
1. Draining will dilute the contents of the RWT by a small amount.
 2. Use of SIE-V298 to achieve low specified drain rates will require frequent monitoring and adjustments as necessary to establish the specified drain rate.
 3. Use of the alternate drain path will require two more Nuclear Operators in communication with the Control Room.
 4. There are times when shutdown purification may be in service while draining the RCS or adjusting level while in a pre-existing condition. If the SI system six inch full-flow recirc valve is used, then total flow is actually a summation of flow through the full-flow recirc, normal SI loop return flow and letdown flow.
Total = SIN-FI-300+SIA-FI-306 or SIB-FI-307+CHN-FI-202

Conversely, the drain path can be used without shutdown purification in service. In that configuration, total flow is a summation of flow through the full-flow recirc, normal SI loop return flow.
Total = SIN-FI-300+SIA-FI-306 or SIB-FI-307
- 4.11 A blank flange will be installed on the Pressurizer/RV Head Vent to the Containment downstream of RCA-HV-106. The vent path will be through the RCA-HV-106 tailpiece drain line into the radioactive drain funnel on the 120 ft. level by the SIT 1A. The tailpiece isolation valve, RCN-V203 will be fully opened to maximize the vent path.

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- 4.12 The Steam Generator U Tubes will not drain at the same rate as the rest of the system. The shape of the tubes forms a trap which inhibits or delays the draining process. RCS level while draining will tend to stall when the top of the hot leg is reached as individual tubes will be draining into the RCS. This process will take considerable time and when the majority of the SG tubes have dumped RCS level will again trend down until the desired RCS level is established. Some of the tubes that have not completely drained will let down over a period of several days. This water may accumulate in the bowl(s) of the Steam Generator. Due to this, close monitoring is necessary to prevent possibly overflowing of the open bowl areas.
- 4.13 Replacement Steam Generator Primary Manway Removal:
- 4.13.1 The steam generator primary manways can be released to maintenance after it has been confirmed that RCS level is sufficiently low to prevent spillage out the manway.
- 4.13.2 During drain, level reduction will stall at or above the top of the hot leg. Indicated level will stop going down, but the receiving tank level - typically the RWT - will continue to increase. This is the baseline point.
- 4.13.3 ERFDADS point SPDS0268 is available to monitor RWT level in gallons. When level stalls, log the value of SPDS0268.
- 4.13.4 A target VOLUME in the RWT is calculated as follows:
- $$\text{SPDS0268} + 28,000 \text{ gallons} = \text{Target Volume.}$$
- 28,000 is the calculated volume of both steam generator tube bundles and the steam generator bowls.
- 4.13.5 Once the Target Volume is achieved in the RWT, then level is sufficiently below the manway lips to have reasonable assurance that water will NOT spill out the manways when they are open. This level can be verified as long as two conditions exist.
- A visible level less than 102 ft. 11 in. in the hot leg.
 - RCS level is continuously lowering within the hot leg.
- 4.14 Frequent comparisons should be made during draindown to cross-check indicated RCS levels against volume changes in the HUT or RWT.
- 4.15 The RWLIS is calibrated at RCS temperature, level, boron concentration and containment temperatures other than those at which the system is operated. This introduces an inherent error. RWLIS_Spreadsheet.xls is available to determine this introduced error.

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- 4.16 Shift Technical Advisors maintain technical and operational custody over the RWLIS_Spreadsheet.xls program. The STAs are responsible to ensure that the correct version of RWLIS_Spreadsheet.xls is loaded on the Operations Personal Computer and that it is validated.
- 4.17 Hold points are provided to verify that pressure in the reactor vessel head area is trending towards equalization with the remainder of the RCS. A negative pressure in the reactor vessel head area will typically be reflected by the following conditions:
1. The RCS volume drained to the HUT or RWT (from Appendix E - Determination of Volume to be Drained) will not be correct. Less water will be shown to have drained than expected.
 2. The Refueling Water Level Indication System (RWLIS) will indicate a water level **lower** than what is expected to exist for the **actual** volume drained.
 3. Reactor Vessel Level Monitoring System (RVLMS) could indicate a higher water level than is indicated on RWLIS.
 4. A void is normally indicated by RVLMS when the ΔT between the heated and unheated thermocouples is equal to or greater than 200°F.
 5. Pressure equalization in the reactor vessel head area will be shown by a **decreasing** disparity between the above indications typified by:
 - RWLIS will indicate a level **rise** concurrent with a **lowering** level (increasing void size) as indicated by RVLMS.
 - Total RCS volume actually drained approaches the expected value calculated from Appendix E - Determination of Volume to be Drained. This is indicated by a rise in HUT/ RWT level.
 6. Destack activities performed while draining or while in a stable configuration can affect indicated RCS level. Removing ICI seal table plugs or opening other mechanical penetrations on the RV Head will allow air entry into the area under the head. The vacuum under the head will equalize with containment. RWLIS will react accordingly. RWLIS will show a level **increase**.

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- 4.18 VCT and RCS level indicators are only one indication as to the state of the RCS. Both the RWLIS and VCT level indicators must be compared to ensure that changes in VCT level are consistent with that of RCS levels and not attributed to temperature swings.
1. **Lowering** VCT level is an indication of **rising** level in the RCS.
 2. **Rising** VCT level is an indication of **lowering** level in the RCS.
 3. Abnormal decreases in VCT level, while steady state, that require frequent MAKE-UP additions to the VCT are indications that the RCS is being drained.
 4. **Rising** VCT level, while steady state, is an indication that water is being introduced into the RCS from another source which must be quickly identified and isolated.
 5. **Rising** VCT level MAY be a possible indication of air entrainment (vortexing) in the operating SDC loop and should be investigated.
- 4.19 When RCS levels are maintained above the hot leg, system pressure differences can cause shifting of RCS inventories between the Pressurizer and the RV Head area.
- 4.20 The introduction of several new style Heated Junction Thermocouples used in the QSPDS system is causing a false Rx void indication for the RVLMS display when in Mode 5. Due to their ability to produce a higher ΔT and with the RCS at reduced temperatures, the 200°F alarm setpoint can be exceeded but may not be representative of true Rx Vessel level. Appendix A - Adjusting (RVLMS) Heated Junction Thermocouples Heater Power Controllers provides this guidance. When the Restoration Section of this procedure is being performed the Heater Controller Setpoints will be returned to their normal settings.

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4.21 Definitions:

1. **Partially drained:** RCS level is less than 10% pressurizer level or less than 117 ft. elevation but greater than 114 ft.
2. **LOWERED INVENTORY:** exists anytime the RCS level is equal to or less than 114 ft. but greater than 111 ft.
3. **Reduced Inventory:** RCS level is equal to or less than 111 ft. elevation but greater than 103 ft. 1 in. with fuel in the Rx. Vessel.
4. **Mid-Loop:** RCS level is equal to or less than 103 ft. 1 in. elevation but equal to or greater than 101 ft. 6 in. with fuel in the Rx. Vessel.
5. **Vortexing:** The whirlpool effect on the water at the SDC pump suction connection at the RCS Hot Leg which is caused by low RCS levels in conjunction with high SDC system flow rates.
6. **Level Change:** Deliberate or inadvertent actions that results in a change in RCS inventory. Variations in level due to temperature changes are not considered a Level Change although they may result in the need for one.
7. **Bulk Temperature:** The actual temperature in the core. This is indicated at the CETs with no RCS flow or at SIA-TI-351X/SIB-TI-352X, SDC Hx. inlet temperature with SDC flow.

4.22 Prior to opening a path from the RCS cold leg to the Containment of equal to or greater than one square inch, the Pressurizer Manway must be removed as the hot leg vent path. Hot leg vent path requirements are discussed in Appendix P - RCS Level/Hot Side Venting Requirements vs. Days Post Shutdown.

- RCP seal housing removed **and** a blocking device installed between the RCP shaft and the thrust bearing is **not** considered a breach of the cold leg.

4.23 Appendix P - RCS Level/Hot Side Venting Requirements vs. Days Post Shutdown is used when the SG nozzle dams are installed with the reactor vessel head in place. Appendix P - RCS Level/Hot Side Venting Requirements vs. Days Post Shutdown shall be used to determine the maximum RCS water level possible for a given decay heat load while in the aforementioned configuration.

4.24 Appendix N - Monitoring RCS Boron Concentration During SG Decontamination is to be used to monitor the RCS boron concentration during Steam Generator decontamination with fuel in the Reactor Vessel.

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4.25 Level Anomaly:

A 108 ft. level plateau (Section 6.0) is added to this procedure as directed in CRDR 2695262 (CRAI 2730369). This CRDR evaluated a level anomaly that occurred at approximately 107 ft. 9 in. during 1R11. Indicated RCS level suddenly increased. While the indicated level suddenly increased, the historical dynamics of the RWLIS are such that the actual level is always greater than indicated level during a draindown with the reactor vessel head installed.

It is postulated that the anomaly occurred because the hydraulic line pressure balance was upset when level was sufficiently low enough to make a direction change from the horizontal portion of the pressurizer surge line into the vertical portion of the pressurizer surge line at approximately 107 ft. 9 in. The purpose of Section 6.0 is to minimize the possibility of this occurrence by stopping the drain and allowing level to stabilize before proceeding to a lower level.

While the goal of Section 6.0 is to minimize the possibility of occurrence, it should be noted that it is unlikely that it will always prevent occurrence. Be aware that this anomaly can occur at approximately 107 ft. 9 in. while draining.

4.26 Greylock Hubs: (CRDR 2742525)

While draining the RCS, indicated RCS level is lower than actual RCS level. The drain rate is greater than the ability of the 7/32 inch orifice in the reactor vessel head to pass air into the reactor vessel. Since the remainder of the RCS is at atmospheric pressure via the pressurizer manway, this keeps level in the reactor vessel higher than indicated level.

The greylock hubs can be opened to provide additional venting capacity under the RV head while draining.

An additional reactor level-equalizing valve RCE-V007 has been installed that should also improve the offset between the actual and indicated level (in addition to opening the greylock hubs).

When the greylock hubs are opened, additional vent space is created, allowing increased air to be vented into the reactor vessel. The air volume under the reactor vessel head equalizes to atmospheric pressure. This allows water trapped under the reactor vessel head to move into the RCS. The result is that indicated RCS level will rise. The magnitude of the level rise is dependent on the vacuum under the reactor vessel head. Typically, the lower the level before the greylock hubs are opened, the larger the magnitude of level rise. A level rise of up to 30 inches has been observed.

Opening the greylock hubs will be a procedural driven event. RCS drain will commence. Once Maintenance has reported that they are ready to open the greylock hubs, RCS drain will be suspended with level between 118 feet and 111 ft., 6 in. Only then will Maintenance be directed to open the greylock hubs.

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4.27 The following are concerns only when fuel is in the Rx Vessel.

1. If SDC is lost 24 hours after shutdown with the RCS at Mid-Loop level, boiling can occur in 10 minutes followed by core uncover in 45 minutes.

The above worst case condition assumes the RCS is at 135°F **bulk temperature** when SDC is lost, the SG Nozzle Dam's are installed, a Hot Leg Vent path does not exist, and no operator actions.

2. Anytime the cold leg is **not** intact with the reactor fueled and the reactor vessel head in place, the preferred pumped makeup path is Appendix S - Hot Leg Makeup Path Using HPSI Pump.
3. For cases with the cold leg intact, with the reactor fueled and the reactor vessel head in place, availability of a HPSI pump for RCS **cold leg** makeup is desired since it will add water at any pressure where SDC may be operated at, and it's suction cannot be aligned to the SDC system.
4. In the event all Vital AC power is lost when in Reduced Inventory, it is important that at least one RCS Gravity Make-up path has been both maintained and initiated with flow being regulated to keep the core covered/cooled.
5. Appendix F - Shiftly Verification tracks makeup paths when in Reduced Inventory. It shall be completed near the end of each shift and attached to the Shift Manager's Turnover Sheet.
6. Maintaining an operable Diesel Generator will ensure that the makeup paths chosen will be functional on a loss of off-site power. The train relationship between the selected makeup path and the operable Diesel Generator need not be maintained as procedures to provide power to both PBA-S03 and PBB-S04 buses from a single Diesel Generator are already in place in the Degraded Electrical procedure, 40AO-9ZZ12. If plant work will place the electrical system into a condition where PBA-S03 and PBB-S04 **cannot** be powered from a single Diesel Generator, then maintain one Diesel Generator operable and the other Diesel Generator available to provide power to its respective emergency bus. In addition, a single operable Diesel Generator and one or more Gas Turbine Generators may be used to provide power to the non-operable Diesel's vital bus.
7. CETs will be used in Mid-Loop condition to provide an indication of core conditions should a loss of SDC occur.

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4.28 Gravity Makeup

1. Gravity makeup must be available as a makeup path during a loss of all AC power. It does NOT prevent boiling in the core. When used, gravity makeup will only makeup for the amount of water boiled off.
2. Slug flow will occur should this path be needed with levels above the top of the hot leg. Pressure will build under the RV head forcing water out of the core into the pressurizer. When level has breached the hot leg, the head will be vented through the hot leg to the pressurizer. When pressure is less than the head pressure of the RWT, then water will flow from the RWT into the core.
3. Slug flow will occur several times until level has boiled down into the hot leg. Once in the hot leg, makeup must be throttled to maintain level 101 ft., 6 in. to 102 ft., 4 in. (RVLMS sensors six and five respectively) This maintains the vent path for steam to escape through the hot leg vent.
4. Using at least one string of RVLMS is the most effective method to control level during gravity makeup. 40EP-9EO11, Lower Mode Functional Recovery directs alternate indication when RVLMS is unavailable.
5. Gravity makeup, like the pumped makeup path, is a pre-staged alignment. 40EP-9EO11, Lower Mode Functional Recovery, directs when flow is initiated.

4.29 HPSI Cold Leg Makeup

1. HPSI cold leg makeup is our first choice to add water to the RCS on a loss of Shutdown Cooling.
2. When used with decay heat equal to or less than 16 Mw, HPSI makeup will provide sufficient flow to maintain the RCS subcooled.
3. When used with decay heat GREATER than 16 Mw, HPSI will **not** provide sufficient flow to prevent boiling. This will occur within approximately the first 87 hours after shutdown.
4. HPSI makeup is a pre-staged alignment. 40EP-9EO11, Lower Mode Functional Recovery, directs when flow is initiated.

4.30 Engineering calculations have determined the flow requirements to maintain the core subcooled during a loss of shutdown cooling. These calculations assume a maximum HPSI flow of 254 gpm per cold leg runout flow. (based on actual engineering design configuration calculations.)

1. RWT temperature is critical to permitting drain operations at 16 Mw decay heat.
2. Sufficient HPSI flow for 16 Mw is achieved with RWT temperature of 80°F or less.

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4.31 RCP SEAL REPLACEMENT ONLY:

1. Recent RETRAN analysis has shown that with RCS level equal to or greater than 10% (117 ft.) and SG tubes full, there is sufficient inventory available to mitigate a Loss of SDC as long as decay heat is less than 19.4 MW (48 hrs shutdown) and the pressurizer manway is removed.

2. The 16 MW limit may be N/Ad.

4.32 Use 40EP-9EO11, Lower Mode Functional Recovery, to respond to a Loss of Shutdown Cooling.

4.33 If a Safety Injection or Containment Spray pump fails to develop or maintain expected discharge pressure, flow and/or motor current, then along with system valve alignment, gas or vapor binding of the pump should be among the items considered when determining the reason for anomalous indications. [ref 2.3.7]

4.34 Safety Injection or Containment Spray pump indications such as pump amps, discharge pressure, and/or pump flow should be monitored during pump start and operation. Indications such as fluctuation of running current, less than expected running current, failure to develop discharge pressure and/or failure to develop expected flow can indicate pump gas binding, pump cavitation, an isolated suction source or pump suction vortexing. If anomalous indications are observed, then the CRS should be immediately notified and consideration should be given to stopping the pump and investigating the reason for the anomalous indications. [ref 2.3.7]

4.35 We use the shutdown risk assessment (SRA) as a planning tool to limit risk while performing maintenance. The SRA credits aligning two RCS makeup paths/sources prior to removing the pressurizer manway. Part of each of these alignments is ensuring that there is sufficient water available to provide adequate makeup for 4 hours. The volumes of water can be wholly in the RWT or apportioned between the RWT and the water in the refueling pool. If makeup is required, water will spill from the pressurizer manway or out the RV head/flange gap into the refueling pool. In order to recover water from the refueling pool, the manual isolation valves on the conical flanges must be opened. This will allow the water in the refueling pool to drain into the containment recirculation sumps for recovery by the safety injection pumps. The SRA allows the conical flange manual isolation valve to be closed as long as a contingency plan is established that will open the valves in a timely manner. The contingency plan needs to be in place before the makeup paths/sources are aligned or the pressurizer manway removed. (CRDR 3545489/PCR 3558471)

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4.36 (CRDR 3543758/PCR 3543759)

Normally, a single SDC pump (LPSI or CS) is in operation on the in-service SDC loop. RCS thermal conditions may dictate that a second pump be placed in operation on the in-service SDC loop. This configuration is permitted in 40OP-9SI01, Shutdown Cooling Initiation. When configured with two pumps, the upper flow limit is 8500 gpm. This presents some challenges when draining the RCS with “elevated” SDC flow.

- The RWLIS flow compensation curves in Appendix D - Operating the Refueling Water Level Indicating System are not calculated for SDC flow in excessive of 5000 gpm.
- RCS level comparisons will be out-of-tolerance with the specifications in the RWLIS Level Comparison Chart in Appendix D - Operating the Refueling Water Level Indicating System.

Little data currently exists showing RWLIS behavior with two pumps in service. Only a single data point has been collected. During 3R15, “B” train SDC was in service with the LPSI and CS pumps in operation. SDC flow was 8300 gpm; 10% pressurizer level. “Old” reactor vessel head and head vent system. The “B” train RWLIS (in-service SDC) wide range level indicated 112 feet; the “A” train RWLIS (idle train SDC) indicated 117 feet.

Generally, drain operations are suspended until the cause of deviations between level indication is identified and corrected. There are contingency actions already built into this procedure to accommodate situations where there are unexplained deviations between level indication. They consist of identifying the cause and then having the Unit Department Leader’s approval prior to draining.

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- 4.37 RCE-V007, Reactor Vessel Head Manual Vent to Containment and RCE-V212, Reactor Vessel Head Vent Isolation Valve.

During normal operations, these valves are locked closed in 40AC-0ZZ06, Locked Valve, Breaker and Component Control. They must be unlocked and opened in order to provide the maximum available vent under the RV head while removing water from the RCS.

Destack is performed in parallel with both 40OP-9ZZ23, Outage GOP and this procedure. It is possible that RCE-V007 and RCE-V212 are opened during destack before the steps in this procedure are performed. Depending on the progress of destack activities, access may not be possible to check physical positions of these valve. Destack activities will remove the RCGVS piping making it all that more important that RCE-V007 and RCE-V212 are opened.

“Credit” can be taken for opening RCE-V007 and RCE-V212 that take place in other procedures as follows:

- It is verified that the steps in the other procedure that opens RCE-V007 and RCE-V212, are complete.
- The entry for RCE-V007 and RCE-V212 in 40AC-0ZZ06, Locked Valve, Breaker and Component Control shows that the valves have been unlocked and opened.
- Plant conditions have not changed from when RCE-V007 and RCE-V212 were opened.

It should be noted that the provisions of this discussion do not supercede the authority of the SM/CRS to direct that RCE-V007 and RCE-V212 be physically checked.

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- ____ 7.2.10 Verify the Containment Equipment Hatch is in place and closed prior to entering Reduced Inventory Operations.
- ____ 7.2.11 The Mid-Loop Operations Coordinator is stationed and the requirements of 40DP-9ZZ30, Reduced Inventory Operations are met. This step does not need to be completed until just prior to lowering RCS level below 111 ft. as indicated by the RWLIS.
- ____ 7.2.12 Essential Cooling Water temperature vs. Time Post Shutdown requirements of the Safety Analysis Operational Data portion of the Core Data Book are met before SDC flow is lowered to 3780 gpm. REFER TO Step 4.2 for additional information
- ____ 7.2.13 Makeup flow rate required to prevent boiling has been determined by **one** of the following:

Hot Mid Loop (pre core offload)

Cold Mid Loop (post core reload)

____ This is applicable for HPSI makeup via the cold leg and should be N/Ad if this makeup path is not selected.

NOTE

RCP SEAL REPLACEMENT ONLY:

Recent RETRAN analysis has shown that with RCS level equal to or greater than 10% (117 ft.) and SG tubes full, there is sufficient inventory available to mitigate a Loss of SDC as long as decay heat is less than 19.4 MW (48 hrs shutdown) and the pressurizer manway is removed. The 16 MW limit may be N/Ad.

____ Decay heat load, in MW, has been determined. Target decay heat load is equal to or less than 16.0 MW.

____ Required HPSI makeup flow per loop has been determined from Appendix W - Makeup Flow to Prevent Boiling. (REFER TO Step 4.30 for additional discussion)

____ This is applicable for HPSI makeup via the cold leg and should be N/Ad if this makeup path is not selected

____ Determine hours after shutdown.

____ REFER TO 40EP-9EO10, Standard Appendices, Appendix 203 to determine required makeup flow.

____ Required HPSI makeup flow per loop has been determined from Appendix W - Makeup Flow to Prevent Boiling. (REFER TO Step 4.30 for additional discussion)

7.2.13.1 Log required makeup flow below.

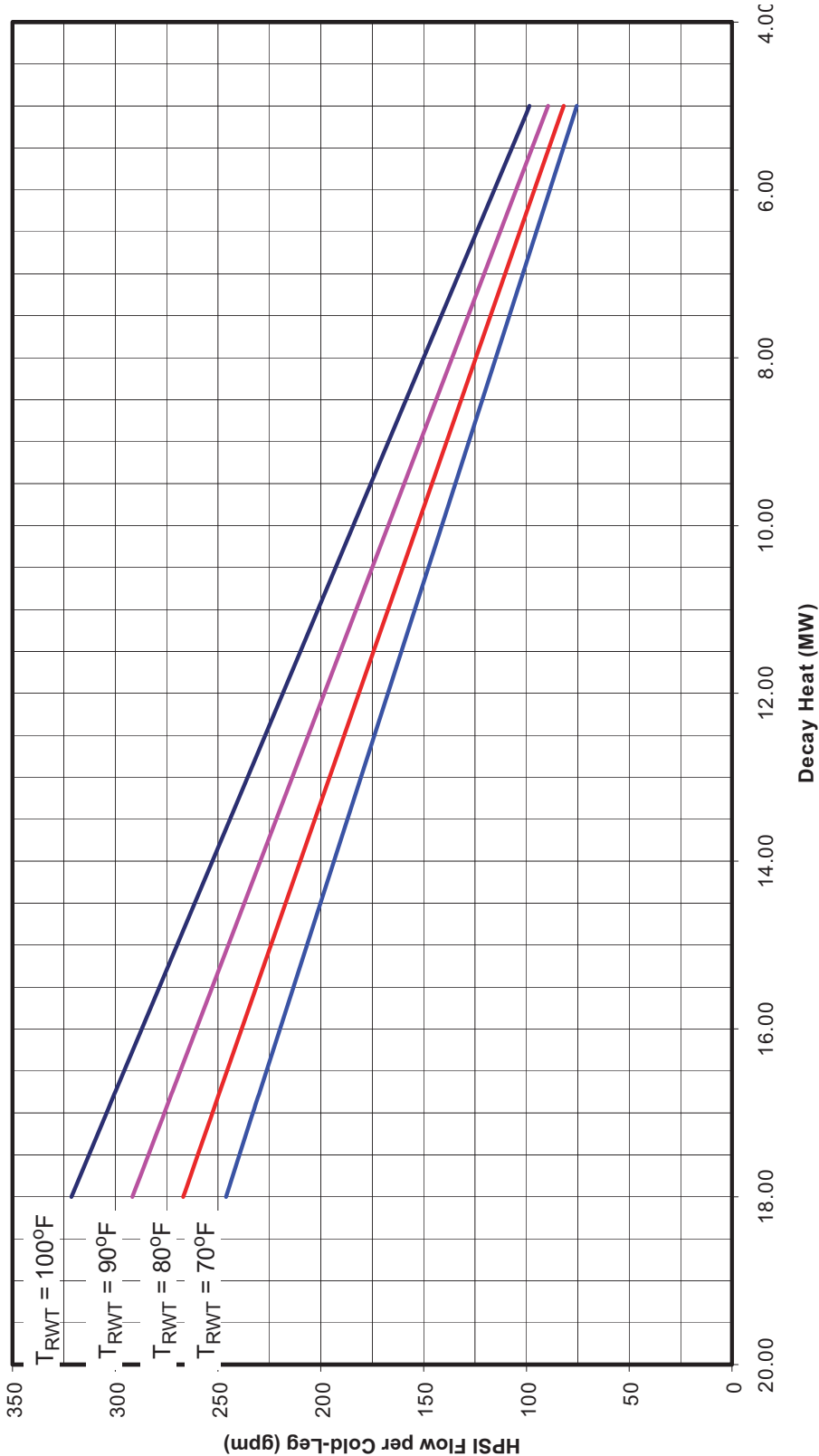
Req'd HPSI Makeup

_____ gpm.

Appendix W - Makeup Flow to Prevent Boiling

- 1.0 General Information
- 1.1 This table correlates decay heat to the required HPSI flow to EACH loop to prevent boiling in the RCS.

Minimum Flow Requirements to Prevent Core Boiling





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PVNGS JOB PERFORMANCE MEASURE

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|------------------|------------|-----|-------|-----|--|
| TASK: | 1290190102 Ensure Compliance with Tech Specs | | | | | | |
| TASK STANDARD: | Upon completion of this JPM, the examinee will have determined which LCO and action applied for each time. | | | | | | |
| K/A: | 2.2.22 | K/A RATING: | RO: | 3.4 | SRO: | 4.1 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | SRO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | Technical Specifications | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Jordan Johnston Date: 05/18/2007

Revised By: Alan Malley Date: 01/12/2012

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE

1. SIMULATOR SETUP:

Tech Specs available

Computer available



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PVNGS JOB PERFORMANCE MEASURE

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE**any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

Unit 1 is in Mode 1 and has had a series of events associated with the Main Steam Isolation Valves (MSIVs).

INITIATING CUE:

Your tasks are to:

- 1. evaluate MSIV status for the time line (attached) and determine what LCO(s) and action(s) should have been applied for each time and**
- 2. determine what is the latest time the plant is required to be in Mode 2 and still maintain compliance with Tech Specs.**

The following chart gives a chronological order of conditions that existed with Unit 1's MSIVs.

Fill out all LCO actions that are entered.

Use the table below to provide your answers.



A-7

PVNGS JOB PERFORMANCE MEASURE

| Time | MSIV number | Accumulator Train | Pressure | LCO and action entered |
|--|-------------|-------------------|----------|------------------------|
| Today at 1100 | 170 | A | 4950 | |
| | 170 | B | 5100 | |
| | 180 | A | 5200 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1200 | 170 | A | 4950 | |
| | 170 | B | 5100 | |
| | 180 | A | 4975 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1300 | 170 | A | 4950 | |
| | 170 | B | 4900 | |
| | 180 | A | 5100 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5150 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| T = _____ Latest time required to be in Mode 2 to still maintain compliance with Tech Specs. | | | | |



PVNGS JOB PERFORMANCE MEASURE

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*)denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



A-7

PVNGS JOB PERFORMANCE MEASURE

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. * | Examinee determines LCO and condition for Today at 1100. | | Examinee enters LCO 3.7.2 condition 'a'. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. * | Examinee determines LCO and condition for Today at 1200. | | Examinee enters LCO 3.7.2 condition 'c'. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 3. * | Examinee determines LCO and condition for Today at 1300. | | Examinee enters LCO 3.7.2 conditions 'd' and 'f'. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 4. * | Examinee determines latest time to enter Mode 2 | | Examinee determines T=2300 hours due to 4 hours (condition 'f') allowed for valve to be inoperable and then 6 hours per condition 'g'. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



A-7

PVNGS JOB PERFORMANCE MEASURE

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



A-7
PVNGS JOB PERFORMANCE MEASURE

ANSWER KEY

| Time | MSIV number | Accumulator Train | Pressure | LCO(s) and action(s) entered |
|--|-------------|-------------------|----------|--|
| Today at 1100 | 170 | A | 4950 | LCO 3.7.2 condition ‘a’ |
| | 170 | B | 5100 | |
| | 180 | A | 5200 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1200 | 170 | A | 4950 | LCO 3.7.2 condition ‘c’ Note: Examinee may also list LCO 3.7.2 condition ‘a’ since he will still be tracking time. This is not required for the JPM to be SAT. |
| | 170 | B | 5100 | |
| | 180 | A | 4975 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1300 | 170 | A | 4950 | LCO 3.7.2 conditions ‘d’ and ‘f’ |
| | 170 | B | 4900 | |
| | 180 | A | 5100 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5150 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| T = <u>2300</u> Latest time required to be in Mode 2 to still maintain compliance with Tech Specs. | | | | |

ANSWER KEY



A-7
PVNGS JOB PERFORMANCE MEASURE

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|--|
| 1 | 01/12/2012 | 6 | Reformatted and modified times and conditions. |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



A-7
PVNGS JOB PERFORMANCE MEASURE

CANDIDATE

INITIAL CONDITIONS:

Unit 1 is in Mode 1 and has had a series of events associated with the Main Steam Isolation Valves (MSIVs).

INITIATING CUE:

Your tasks are to:

- 1. evaluate MSIV status for the time line (attached) and determine what LCO(s) and action(s) should have been applied for each time and**
- 2. determine what is the latest time the plant is required to be in Mode 2 and still maintain compliance with Tech Specs.**

The following chart gives a chronological order of conditions that existed with Unit 1's MSIVs. Fill out all LCO actions that are entered.

Use the table below to provide your answers.

(CONTINUED ON NEXT PAGE)



A-7

PVNGS JOB PERFORMANCE MEASURE

| Time | MSIV number | Accumulator Train | Pressure | LCO and action entered |
|--|-------------|----------------------|----------|------------------------|
| Today at 1100 | 170 | A | 4950 | |
| | 170 | B | 5100 | |
| | 180 | A | 5200 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1200 | 170 | A | 4950 | |
| | 170 | B | 5100 | |
| | 180 | A | 4975 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5210 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| Today at 1300 | 170 | A | 4950 | |
| | 170 | B | 4950 | |
| | 180 | A | 5100 | |
| | 180 | B | 5300 | |
| | 171 | A | 5100 | |
| | 171 | B | 5100 | |
| | 181 | A | 5300 | |
| | 181 | B | 5250 | |
| T = _____ Latest time required to be in Mode 2 to still maintain compliance with Tech Specs. | | | | |

CANDIDATE



A-8
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|------------------|------------|-----|-------|-----|--|
| TASK: | 1290020301, Conduct On Shift Operations IAW Conduct of Shift Operations | | | | | | |
| TASK STANDARD: | Upon completion of the JPM, the examinee will have determined the required hold points that will be exceeded, the required approval needed to exceed the hold points, and which AO will perform the task. | | | | | | |
| K/A: | 2.3.4 | K/A RATING: | RO: | 3.2 | SRO: | 3.7 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | SRO | VALIDATION TIME: | 20 minutes | | | | |
| REFERENCES: | 75DP-9RP01, Radiation Exposure and Access Control | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | | OTHER | X | |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10-11-2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. SPECIAL TOOLS/EQUIPMENT:

1. 75DP-9RP01 This JPM was written using Revision 17 of 75DP-9RP01. This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.
2. Calculator
3. Pen and Paper



A-8
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



A-8
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INITIAL CONDITIONS:

You are the Outage SRO. You will be assigning a job to one AO from a work pool of three (listed below).

The job is to depressurize and drain piping associated with Main Spray valve 100F.

RP surveys show the AO will be in a 150 mr/hr field. The job will take 45 minutes.

Evaluate the information about each AO below and answer the questions below.

| 2011 Exposure (in mrem) | G. Norman RW Operator | A. Palmer Shift AO | F. Couples FIN Operator |
|--|---|---|---|
| Previous 4 years dose (2007-2010) | 8227 | 527 | 832 |
| 1st Quarter (2011) | 1446 Most exposure was from Spent resin operations | 103 | 414 |
| 2nd Quarter (2011) | 113 | 62 | 317 |
| 3rd Quarter (2011) | 122 | 24 | 188 |
| 4th Quarter (to date) | 65 | 1207 Most exposure was from RCP lineups at outage beginning | 982 Most exposure was from EDT sludge lancing support. |

INITIATING CUE:

Use the worksheet on the following page to document answers.

- List any hold point that may occur during this job (assuming each one performed the evolution).**
- List whose approval would be necessary for any hold points that would be exceeded. (Assume authorization for current dose levels have already been obtained.)**
- Determine which one of the above AOs will perform the task; provide justification for your selection.**



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. * | Examinee determines total dose received for the job. | | Examinee calculates that 112.5 mrem will be accumulated on this job. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. * | Examinee determines the hold points that will be exceeded for each operator. | | Examinee determines hold points exceeded are: G. Norman – would exceed 10 rem cumulative exposure in 5 years. A. Palmer – would exceed 1500 mrem for the calendar year. F. Couples – would exceed 2000 mrem for the calendar year. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 3. * | Examinee determines whose approval required | | Examinee determines the approval need for each operator is as follows: G. Norman – Vice President, Nuclear Operations A. Palmer – RP Dept. Leader F. Couples – RP Director |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. * | Examinee ascertains which Auxiliary Operator will perform the job based on ALARA criteria. | | Examinee determines A. Palmer, Shift AO has the lowest year to date exposure based on ALARA, lowest dose. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

ANSWER KEY

List any hold point that may occur during this job (assuming each one performed the evolution):

| | |
|----------------|---|
| Norman | <u>10 rem in 5 years (Step 3.11.2.2(d))</u> |
| Palmer | <u>1500 mrem for the calendar year (Step 3.11.2.2(a))</u> |
| Couples | <u>2000 mrem for the calendar year (Step 3.11.2.2(b))</u> |

List whose approval would be necessary for any hold points that would be exceeded:

| | |
|----------------|---|
| Norman | <u>V.P. Nuclear Operations (Step 3.11.2.2(d))</u> |
| Palmer | <u>RP Department Leader (Step 3.11.2.2(a))</u> |
| Couples | <u>RP Director (Step 3.11.2.2(b))</u> |

- **Determine which one of the above AOs will perform the task; provide justification for your selection.**

AO to perform work A. Palmer - ALARA due to lowest dose

ANSWER KEY



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|---|
| 003 | 10/11/2011 | 6 | Modified JPM from 2010 NRC Initial Exam |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



A-8
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

Examinee Handout

INITIAL CONDITIONS:

You are the Outage SRO. You will be assigning a job to one AO from a work pool of three (listed below).

The job is to depressurize and drain piping associated with Main Spray valve 100F.

RP surveys show the AO will be in a 150 mr/hr field. The job will take 45 minutes.

Evaluate the information about each AO below and answer the questions below.

| 2011 Exposure (in mrem) | G. Norman RW Operator | A. Palmer Shift AO | F. Couples FIN Operator |
|--------------------------------------|--|--|---|
| Previous 4 years dose (2007-2010) | 8227 | 527 | 832 |
| 1 st Quarter (2011) | 1446 Most exposure was from Spent resin operations | 103 | 414 |
| 2 nd Quarter (2011) | 113 | 62 | 317 |
| 3 rd Quarter (2011) | 122 | 24 | 188 |
| 4 th Quarter (to date) | 65 | 1207 Most exposure was from RCP lineups at outage beginning | 982 Most exposure was from EDT sludge lancing support. |

INITIATING CUE:

Use the worksheet on the following page to document answers.

- List any hold point that may occur during this job (assuming each one performed the evolution).
- List whose approval would be necessary for any hold points that would be exceeded. (Assume authorization for current dose levels have already been obtained.)
- Determine which one of the above AOs will perform the task; provide justification for your selection.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

Candidate Worksheet

| Exposure (in mrem) | G. Norman RW Operator | A. Palmer Shift AO | F. Couples FIN Operator |
|------------------------------------|--|--|--|
| Previous 4 years dose 2007-2010 | 8227 | 527 | 832 |
| 1 st Quarter (2011) | 1446 Most exposure was from Spent resin operations | 103 | 414 |
| 2 nd Quarter (2011) | 113 | 62 | 317 |
| 3 rd Quarter (2011) | 122 | 24 | 188 |
| 4 th Quarter (to date) | 65 | 1207 Most exposure was from RCP lineups at outage beginning | 982 Most exposure was from EDT sludge lancing support. |

List any hold point that may occur during this job (assuming each one performed the evolution):

G. Norman

A. Palmer

F. Couples

List whose approval would be necessary for any hold points that would be exceeded:

G. Norman

A. Palmer

F. Couples

Determine which one of the above AOs will perform the task; provide justification for your selection.

AO to perform work

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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam



A-9
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. This JPM can be performed in the simulator or as an Admin JPM.

2. SPECIAL TOOLS/EQUIPMENT:

- EP-0900 (rev 20, EP-0901 (rev 1), EP-0902 (rev 1), EP-0905 (rev 2). Form EP-0803 B (PAR Flowchart) available (Sample of Form in EP-0903, Appendix A)
- Form EP-0804 B (Release Evaluation Flowchart) available (Sample of Form in EP-0905, Section 5.1.4)
- Hot and Cold EAL charts
- A copy of form 541 is available (if not performed in the simulator). The current revision of the form is 541AA but other revisions may be used if it does not affect the information needed for completion of this JPM.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- You are the Unit 1 CRS.
- The plant is under a tornado warning from the National Weather Service.
- The crew has implemented 40AO-9ZZ21, Acts of Nature, and the applicable actions have been completed **OR** in progress.
- Site Security reports a tornado has touched down and caused structural damage to the Auxiliary Building with no injury to plant personnel.
- The SM was at the morning meeting in Unit 2 and is waiting until tornado has left immediate area before returning to the Unit.

INITIATING CUE:

- You are to perform the duties of the Emergency Coordinator until relieved.
- Assume the STA concurs with your E-Plan determination.

THIS IS A TIME CRITICAL JPM



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 1. | The examinee enters EP-0901, Classifications to classify the event. | | Examinee refers to the EAL charts to determine the classification. |
| | | | Start Time: _____ (Begins when examinee receives and acknowledges Initiating CUE) |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|-------------------------------------|-----|--|
| 2. * | Examinee determines classification. | | The examinee determines the classification is an ALERT based on EAL HA1.2. |
| | | | End Time: _____ Classification Time: _____ (this time must be < 15 minutes) Notification Start Time: _____ |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|--|---|
| 3. * | The examinee enters EP-0902 to make notifications. | <p><u>Inform Cue</u> (when the examinee calls for the Area 2 operator):</p> <p style="text-align: center;">I am the Area 2 operator</p> <p><u>Inform Cue:</u> After examinee hands the communicator form 541:</p> <p style="text-align: center;">This concludes this JPM.</p> <p><u>If requested Cue:</u> There are no radiation monitors in alert or high alarm.</p> | <p>The examinee completes form 541 and hands the form to the STSC communicator. The form must contain the following information:</p> <p>Fills out NAN Form EP-0541 as follows:</p> <ul style="list-style-type: none"> ○ Step 1 marked "This is a drill" box. ○ Step 2 – ALERT, date and time, Status code [HA1.2]. ○ Step 3 – ERFDADS data and Authenticator Code (Authenticator code is already filled in on the form). ○ Step 4 - No Radioactive release is in progress. ○ Step 5 -PAR is NONE. ○ Step 6 signed with time and date. <p>Evaluator Note: Critical portion of this step is to correctly identify an ALERT, status codes; NO release is occurring and no PAR with the correct date and time on the form.</p> <p>End Time: _____</p> <p>Notification Time: _____</p> <p>(this time must be less than 14 minutes to allow the communicator 1 minute to start notifications)</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:



A-9
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT

PALO VERDE NAN EMERGENCY MESSAGE FORM

1. (check one) ☒ This is a drill ☐ This is an actual event
2. This is Palo Verde Nuclear Generating Station Notification of a(n) (Check highest applicable classification level for event notifications)
(Check Event Termination for terminating event)

| | | | |
|--|---|--|--|
| <input type="checkbox"/> UNUSUAL EVENT | <input checked="" type="checkbox"/> ALERT | <input type="checkbox"/> SITE AREA EMERGENCY | <input type="checkbox"/> GENERAL EMERGENCY |
| Declared at <u>XXXX</u> on <u>XX / XX / XX</u> | | EAL: <u>HA1.2</u> | |
| <small>(time)</small> | | <small>(MM/DD/YY)</small> | |
| <small>(driving current classification only)</small> | | | |

 EVENT TERMINATION AT _____ (time) _____ (MM/DD/YY)

3. The wind speed is 22 MPH from 320 degrees
(35 foot elevation - 15 min avg) (35 foot elevation - 15 min avg)
- Authenticator Code Bravo Zulu
- This is _____
(name)
- ☐ STSC Comm. ☐ NAN Comm
(Check one)
4. ☒ There is NO radioactive release due to this event.
☐ A radioactive release is occurring which does NOT exceed federally approved limits due to this event.
☐ A radioactive release is occurring that exceeds federally approved limits due to this event.
5. The following action is recommended:
- ☒ There are NO PROTECTIVE ACTIONS required.
☐ Shelter 2-mile radius
☐ Evacuate 2-mile radius and 5-miles in sectors _____
☐ Evacuate 5-mile radius and 10-miles in sectors _____
☐ Recommend consideration of KI as a protective measure for: ☐ emergency workers ☐ general public
[check appropriate box(es)]
☐ Other _____
6. Approval _____
(EC/EOD signature) (time) (MM/DD/YY)
7. ☐ Independent review completed (If time permits while still meeting 15 minutes reporting requirement)
(Checked by EC/EOD qualified person)

[illegible]

| | | |
|-----------------|---|-----------------------------|
| ANSWER KEY | | |
| m ent are | HA1 - Natural or destructive phenomena affecting VITAL AREAS. | HA1 oper estal |
| d ly | 1.a. Seismic event greater than Operating Basis Earthquake (OBE) as indicated by ANY Force Balance Accelerometer reading greater than 0.10g. AND b. Earthquake confirmed by ANY of the following: • Earthquake felt in plant • National Earthquake Center • Control Room indication of degraded performance of systems required for the safe shutdown of the plant. OR 2. Tornado touching down or high winds reaching 100 mph resulting in VISIBLE DAMAGE to ANY POWER BLOCK structure OR Control Room indication of degraded performance of safety systems. OR 3. Internal flooding in ANY POWER BLOCK structure resulting in an electrical shock hazard that precludes access to operate or monitor safety equipment OR Control Room indication of degraded performance of those safety systems. OR 4. Vehicle crash resulting in VISIBLE DAMAGE to ANY POWER BLOCK structure OR Control Room indication of degraded performance of safety systems | 1. FI D st de |
| on | | |
| | | |
| n | HU1 - Natural or destructive phenomena | HU1 not |
| ANSWER KEY | | |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
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REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



A-9
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

EXAMINEE HANDOUT

INITIAL CONDITIONS:

- You are the Unit 1 CRS.
- The plant is under a tornado warning from the National Weather Service.
- The crew has implemented 40AO-9ZZ21, Acts of Nature, and the applicable actions have been completed OR in progress.
- Site Security reports a tornado has touched down and caused structural damage to the Auxiliary Building with no injury to plant personnel.
- The SM was at the morning meeting in Unit 2 and is waiting until tornado has left immediate area before returning to the Unit.

INITIATING CUE:

- You are to perform the duties of the Emergency Coordinator until relieved.
- Assume the STA concurs with your E-Plan determination.

THIS IS A TIME CRITICAL JPM

PALO VERDE NAN EMERGENCY MESSAGE FORM

1. (check one) ☐ This is a drill ☐ This is an actual event
2. This is Palo Verde Nuclear Generating Station Notification of a(n) (Check highest applicable classification level for event notifications)
(Check Event Termination for terminating event)

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

Declared at _____ on ____/____/____ EAL: _____
(time) (MM/DD/YY) (driving current classification only)

☐ EVENT TERMINATION AT ____/____/____
(time) (MM/DD/YY)

3. The wind speed is _____ MPH from _____ degrees
(35 foot elevation - 15 min avg) (35 foot elevation - 15 min avg)

Authenticator Code _____ Bravo Zulu

This is _____
(name)

☐ STSC Comm. ☐ NAN Comm
(Check one)

4. ☐ There is NO radioactive release due to this event.
☐ A radioactive release is occurring which does NOT exceed federally approved limits due to this event.
☐ A radioactive release is occurring that exceeds federally approved limits due to this event.

5. The following action is recommended:

- ☐ There are NO PROTECTIVE ACTIONS required.
☐ Shelter 2-mile radius
☐ Evacuate 2-mile radius and 5-miles in sectors _____
☐ Evacuate 5-mile radius and 10-miles in sectors _____
☐ Recommend consideration of KI as a protective measure for: ☐ emergency workers ☐ general public
[check appropriate box(es)]
☐ Other _____

6. Approval _____
(EC/EOD signature) (time) (MM/DD/YY)

7. ☐ Independent review completed (If time permits while still meeting 15 minutes reporting requirement)
(Checked by EC/EOD qualified person)

8.

| Responding Agency | Alternate Link | Time | Message Rec'd |
|-------------------|----------------|------|---------------|
| - | NAN Radio B/U | | |
| - | NAN Radio B/U | | |
| - | NAN Radio B/U | | |
| - | NAN Radio B/U | | |
| - | NAN Radio B/U | | |
| - | NAN Radio B/U | | |

Today's Date and
Time

METEOROLOGICAL DATA TOWER (RG)

Unit X

Mode 1

| | | 10 SECOND AVERAGE DATA | 15 MINUTE AVERAGE DATA | 1 HOUR AVERAGE DATA |
|-------------------------------------|---------|---------------------------|---------------------------|------------------------|
| WIND SPEED 200 FT LEVEL (WS200) | MI/HR | 23 | 23 | 17 |
| WIND SPEED 35 FT LEVEL (WS35) | MI/HR | 22 | 22 | 15 |
| WIND DIRECTION 200 FT LEVEL (WD200) | DEGREES | 319 | 320 | 320 |
| WIND DIRECTION 35 FT LEVEL (WD35) | DEGREES | 319 | 320 | 320 |
| STD DEVEIATION IN WIND DIRECTION | DEGREES | | 0.0 | |
| DELTA TEMPERATURE (ΔT) | °F | -0.99 | -0.99 | -0.99 |
| ATMOSPHERIC STABILITY CLASS (ASC) | | | D | |
| TEMPERATURE (T) | °F | 84.62 | 84.57 | 84.57 |
| DEW POINT (D) | °F | 80 | 80 | 80 |

Today's Date and
Time

METEOROLOGICAL DATA TOWER (RG)

Unit X

Mode 1

| | | 10 SECOND AVERAGE DATA | 15 MINUTE AVERAGE DATA | 1 HOUR AVERAGE DATA |
|-------------------------------------|---------|---------------------------|---------------------------|------------------------|
| WIND SPEED 200 FT LEVEL (WS200) | MI/HR | 23 | 23 | 17 |
| WIND SPEED 35 FT LEVEL (WS35) | MI/HR | 22 | 22 | 15 |
| WIND DIRECTION 200 FT LEVEL (WD200) | DEGREES | 319 | 320 | 320 |
| WIND DIRECTION 35 FT LEVEL (WD35) | DEGREES | 319 | 320 | 320 |
| STD DEVEIATION IN WIND DIRECTION | DEGREES | | 0.0 | |
| DELTA TEMPERATURE (ΔT) | °F | -0.99 | -0.99 | -0.99 |
| ATMOSPHERIC STABILITY CLASS (ASC) | | | D | |
| TEMPERATURE (T) | °F | 84.62 | 84.57 | 84.57 |
| DEW POINT (D) | °F | 80 | 80 | 80 |

| | | |
|--|---|---|
| Facility: <u>PVNGS</u> Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | | Date of Examination: <u>03/19/12</u> Operating Test No.: _____ |
| Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF) | | |
| System / JPM Title | Type Code* | Safety Function |
| a. Perform Containment Power Access Purge (3.8 029 A2.03) | D | 8 |
| b. Perform actions for a loss of letdown (3.1 004 A2.07) | N,A | 1 |
| c. Startup second MFP (3.4 039 A4.03) | N,A | 4S |
| d. Fill a SIT (3,3 006 A1.13) | N | 3 |
| e. Pump RDT with high temperature (3,5 007 A 2.05) | L,N | 5 |
| f. Reset inadvertent MSIS (3.2 013 A4.01) | L,D,A | 2 |
| g. Restore offsite power to PBA-S03 (powered from DG 'A') (3.6 062 A4.01) | D | 6 |
| h. Place CS B in service on SDC (3.4 005 A4.01) | L,D | 4P |
| In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| i. Align SDC valves during a Control Room Fire (4.2 067 AA2.16) | L,N,A,E,R | 4P |
| j. Operation of AFA-P01 from Remote Shutdown Panel (3.4 061 A3.01) | L,D,E,P | 4S |
| k. Align offsite power to PBB per Appendix C of 40AO-9ZZ19 (3.6 062 A2.06) | D,EN,E, A | 6 |
| @ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room. | | |
| * Type Codes | Criteria for RO / SRO-I / SRO-U | |
| (A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator | 4-6 / 4-6 / 2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / ≥ 1 (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$ | |

| | | |
|--|---|---|
| Facility: <u>PVNGS</u> Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | | Date of Examination: <u>03/19/12</u> Operating Test No.: _____ |
| Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF) | | |
| System / JPM Title | Type Code* | Safety Function |
| a. Perform Containment Power Access Purge (3.8 029 A2.03) | D | 8 |
| b. Perform actions for a loss of letdown (3.1 004 A2.07) | N,A | 1 |
| c. Fill a SIT (3.3 006 A1.13) | N | 3 |
| d. Pump RDT with high temperature (3.5 007 A2.05) | L,N | 5 |
| e. Reset inadvertent MSIS (3.2 013 A 4.01) | L,D,A | 2 |
| f. Restore offsite power to PBA-S03 (powered from DG 'A') (3.6 062 A 4.01) | D | 6 |
| g. ESD with no CIAS, CSAS with CIAS valves that fail to close (3.7 012 A 4.02) | L,N,A,EN | 7 |
| h. | | |
| In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| i. Align SDC valves during a Control Room Fire (4.2 067 AA2.16) | L,N,A,E,R | 4P |
| j. Operation of AFA-P01 from Remote Shutdown Panel (3.4 061 A3.01) | L,D,E,P | 4S |
| k. Align offsite power to PBB per Appendix C of 40AO-9ZZ19 (3.6 062 A2.06) | D,EN,E,A | 6 |
| @ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room. | | |
| * Type Codes | Criteria for RO / SRO-I / SRO-U | |
| (A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator | 4-6 / 4-6 / 2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / ≥ 1 (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$ | |

| | | |
|--|--|--------------------------------------|
| Facility: <u>PVNGS</u> | | Date of Examination: <u>03/19/12</u> |
| Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/> | | Operating Test No.: _____ |

| Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF) | | |
|--|------------|-----------------|
| System / JPM Title | Type Code* | Safety Function |
| a. Perform Containment Power Access Purge (3.8 029 A2.03) | D | 8 |
| b. Perform actions for a loss of letdown (3.1 004 A2.07) | N,A | 1 |
| c. ESD with no CIAS, CSAS with CIAS valves that fail to close (3.7 012 A 4.02) | L,N,A,EN | 7 |
| d. | | |
| e. | | |
| f. | | |
| g. | | |
| h. | | |

| | | |
|--|-----------|----|
| In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| i. Align SDC valves during a Control Room Fire (4.2 067 AA2.16) | L,N,A,E,R | 4P |
| j. Operation of AFA-P01 from Remote Shutdown Panel (3.4 061 A3.01) | L,D,E,P | 4S |
| k. | | |

| | | |
|--|--|--|
| @ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room. | | |
|--|--|--|

| * Type Codes | Criteria for RO / SRO-I / SRO-U |
|---|---|
| (A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator | 4-6 / 4-6 / 2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / ≥ 1 (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$ |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|---|------------------|------------|-------|------|-----|
| TASK: | 0500010601 Place containment refueling purge subsystem in service | | | | | | |
| TASK STANDARD: | Containment Power Access Purge Subsystem placed in service. | | | | | | |
| K/A: | 3.8 029 A2.03 | | K/A RATING: | RO: | 2.7 | SRO: | 3.1 |
| K/A: | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | RO | | VALIDATION TIME: | 10 minutes | | | |
| REFERENCES: | 40OP-9CP01, Containment Purge System | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | X | PLANT | | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: John Dedon Date: 09/09/2007

Revised By: Alan Malley Date: 11/17/2011

Technical Review Operations Approval

E-Plan Review Training Approval

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: Date:

Evaluator Name:

Time to complete: Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR #

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Planning organization for resolution.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. SIMULATOR SETUP:

- IC#: 108 (This JPM is designed to run with JS-2 for the 2012 NRC exam)
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| None | |
| | |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 40OP-9CP01 available with prerequisites signed off. This JPM was written using Revision 19 of 40OP-9CP01.

| |
|--|
| <p style="text-align: center;">If IC-108 is not available perform the following:</p> <ul style="list-style-type: none">• rfCH03 f:open - Opens IA supply to CP-UV-4A, IA-VB47• rfCH04 f:open - Opens IA supply to CP-UV-5B, IA-VB45• rfIP38 f:0.00 - Sets Containment pressure to 0.0 psig |
|--|



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam
TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- The Unit is at 50% power.
- Containment entry is to be made this shift.

INITIATING CUE:

- The CRS direct you to place the Containment Power Access Purge Subsystem in service per 40OP-9CP01, Containment Purge System, Section 6.0.
- An Auxiliary Operator has been briefed and is in the field.
- All prerequisites are complete.
- The CRS has authorized breaking the ZZ06 locks and the ZZ06 book has been filled out.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|---|--|
| 1. | Step 6.3.1: Ensure that the channel checks in 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test that are required to meet SR 3.3.8.1 for RU-37 and/or RU-38 are current. | INFORM CUE: Effluents Tech reports that 74ST-9SQ07 is current. | Examinee contacts Effluent Tech to determine if 74ST-9SQ07 is current. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|---|--|
| 2. * | Step 6.3.2: Unlock and open IAN-VB45, Air Supply to CPB-UV-5B and CP-HV-43 per 40AC-0ZZ06. | INFORM CUE: The Auxiliary Operator reports that IAN-VB45, Air Supply to CPB-UV-5B and CP-HV-43 has been unlocked and opened. | Examinee directs an Auxiliary Operator to unlock and open IAN-VB45, Air Supply to CPB-UV-5B and CP-HV-43 per 40AC-0ZZ06. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|--|
| 3. * | Step 6.3.3: Unlock and open IAN-VB47, Air Supply to CPA-UV-4A per 40AC-9ZZ06. | INFORM CUE: The Auxiliary Operator reports that IAN-VB47, Air Supply to CPA-UV-4A has been unlocked and opened. | Examinee directs an Auxiliary Operator to unlock and open IAN-VB47, Air Supply to CPA-UV-4A. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|---|--|
| 4. * | <p>Step 6.3.4:</p> <p>IF RU-34 is available,THEN place it in service as follows:</p> <ul style="list-style-type: none"> • Ensure CPB-V024 is open. (Isolation between Power Access Purge Duct and RU-34). • Ensure CPB-V023 is closed. (Isolation between Refueling Purge Duct and RU-34). | <p>INFORM CUE:</p> <p>The Auxiliary Operator reports that CPB-V024 (Isolation between Power Access Purge Duct and RU-34) has been opened and CPB-V023 (Isolation between Refueling Purge Duct and RU-34) has been closed.</p> | <p>Examinee directs an Auxiliary Operator to:</p> <ul style="list-style-type: none"> • open CPB-V024 (Isolation between Power Access Purge Duct and RU-34). • close CPB-V023 (Isolation between Refueling Purge Duct and RU-34). |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 5. | <p>Step 6.3.5:</p> <p>Ensure Containment Pressure is less than or equal to 0.03 psig (1" H₂O) or negative pressure damage may occur to ductwork when fan CPN-J02 starts.</p> | | <p>Examinee verifies containment pressure less than or equal to 0.03 psig.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

Note prior to step 6.3.6

NOTE

When starting the Containment Power Access Purge Supply and Exhaust Units, the "CNTMT PRG SYS TRBL" alarm, Annunciator Window 7A10B, alarms temporarily on "Component Low Differential Pressure" and clears in a few seconds.



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 6. * | Step 6.3.6: Place CPN-HS-1, Containment Purge Mode Selector Switch in the ACCESS PURGE position to start the Containment Power AccessPurge. | | Examinee places CPN-HS-1 in the ACCESS PURGE position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | | | |
|---|--|--|--|
| Note before step 6.3.7 NOTE After CPA-HS-4 and CPB-HS-5 are taken to open: 1. CPA-UV-4B, CPB-UV-5B and CPN-PV-43open. If containment pressure is less than or equal to 0.03 psig, CPA-UV-4A andCPB-UV-5A also open. If UV-4A/5A doesn't open, dual indication will be received on HS-4 and HS-5. 2. Dampers M03, M06 and M07 open. 3. Fans CPN-A02 and CPN-J02 start. | | | |
|---|--|--|--|

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 7. * | Step 6.3.7: Place CPA-HS-4, Containment Power Access Purge Isolation Valves CP-UV-4A/4B to the OPEN position. | | Examinee places CPA-HS-4 to the OPEN position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 8. | <p>Step 6.3.8:</p> <p>IF dual position indication is received on CPA-HS-4, THEN CPA-HS-4 must be taken to the open position again to open CP-UV-4A.</p> | | <p>If the examinee should receive dual indication on CPA-HS-4, the examinee takes CPA-HS-4 to the OPEN position again.</p> <p>Examiner Note: This is not an expected action.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 9. * | <p>Step 6.3.9:</p> <p>Place CPB-HS-5, Containment Power Access Purge Isolation Valves CP-UV-5A/5B to the OPEN position.</p> | | <p>Examinee places CPB-HS-5 to the OPEN position.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 10. | <p>Step 6.3.10:</p> <p>IF dual position indication is received on CPB-HS-5, THEN CPB-HS-5 must be taken to the open position again to open CP-UV-5A.</p> | | <p>If the examinee should receive dual indication on CPB-HS-5 the examinee takes CPB-HS-5 to the OPEN position again.</p> <p>Examiner Note: This is not an expected action.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

| | STEP | CUE | STANDARD |
|---|---|--|---|
| 11. | Step 6.3.11: Check that CPN-PV-43, Vent Valve is open by observing the red Valve Position Indicator on B07 is illuminated. | INFORM CUE: Another operator will complete the remainder of this procedure. | Examinee checks that CPN-PV-43 is open. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Planning organization for resolution.

NORMAL TERMINATION POINT



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|--|
| 001 | 12/04/2003 | 6 | Corrected setting for containment pressure in setup. |
| 002 | 08/09/2007 | 6 | Updated simulator commands |
| 003 | 01/12/2011 | 6 | Updated format and procedure revision |
| 004 | 11/17/2011 | 6 | Added IC for 2012 NRC exam. |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



S-1
PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

EXAMINEE HANDOUT

INITIAL CONDITIONS:

- The Unit is at 50% power.
- Containment entry is to be made this shift.

INITIATING CUE:

- The CRS direct you to place the Containment Power Access Purge Subsystem in service per 40OP-9CP01, Containment Purge System, Section 6.0.
- An Auxiliary Operator has been briefed and is in the field.
- All prerequisites are complete.
- The CRS has authorized breaking the ZZ06 locks and the ZZ06 book has been filled out.

CONTAINMENT PURGE SYSTEM

40OP-9CP01

Revision
19

- 6.1.8 Containment Pressure must be vented to less than or equal to 0.03 psig (1" H₂O) before Power Access Purge Subsystem may be started, or damage to supply fan ductwork may occur due to Excessive Positive Pressure from Containment.
- 6.1.9 The temperature at the outlet of the Power Access Purge AHU is controlled by TIC-12 which controls the Heating Element if the temperature drops below 90°F. TIC-28 controls the Chilled Water to the Air Cooling section if the temperature goes above 90°F. The set point for both CPN-TIC-212 and CPN-TIC-28 is 90°F.
- 6.1.10 This section of the procedure takes approximately one hour to complete.

6.2 Prerequisites

- 6.2.1 The Instrument and Service Air System is in service per 40OP-9IA01, Instrument Air System (IA).
- 6.2.2 The Normal Chilled Water System is in service per 40OP-9WC01, Normal Chilled Water System (WC).
- 6.2.3 Radioactive Effluent Release Permit has been approved per 774RM-9EF20, Gaseous Radioactive Release Permits and Offsite Dose Assessment or the requirements of step 6.1.2 are met if no Radioactive Effluent Release Permit is required.
- 6.2.4 Containment pressure has been lowered to less than or equal to 0.03 psig (1" H₂O), on Narrow Range Containment Pressure instrument HCP-351A and HCP-351B (HCP-351C and HCP-351D are stable or lowering, consistent with Section 5.0 of this procedure).
- 6.2.5 The Containment Purge Mode Selector Switch, CPN-HS-1 on B07 in the Control Room is in the STOP position.
- 6.2.6 Appendix A - Containment Purge Valve Verification List is complete.
- 6.2.7 Appendix B - Power Access Purge Electrical Verification List is complete.
- 6.2.8 REP has been issued if required.

6.3 Instructions

- 6.3.1 Ensure that the channel checks in 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test that are required to meet SR 3.3.8.1 for RU-37 and/or RU-38 are current.
- 6.3.2 Unlock and open IAN-VB45, Air Supply to CPB-UV-5B and CP-HV-43 per 40AC-0ZZ06.
- 6.3.3 Unlock and open IAN-VB47, Air Supply to CPA-UV-4A per 40AC-0ZZ06.

CONTAINMENT PURGE SYSTEM

400P-9CP01

Revision
19

6.3.4 **IF** RU-34 is available,
THEN place it in service as follows:

1. Ensure CPB-V024 is open. (Isolation between Power Access Purge Duct and RU-34).
2. Ensure CPB-V023 is closed. (Isolation between Refueling Purge Duct and RU-34).

6.3.5 Ensure Containment Pressure is less than or equal to 0.03 psig (1" H₂O) or negative pressure damage may occur to ductwork when fan CPN-J02 starts.

NOTE

When starting the Containment Power Access Purge Supply and Exhaust Units, the "CNTMT PRG SYS TRBL" alarm, Annunciator Window 7A10B, alarms temporarily on "Component Low Differential Pressure" and clears in a few seconds.

6.3.6 Place CPN-HS-1, Containment Purge Mode Selector Switch in the ACCESS PURGE position to start the Containment Power Access Purge.

NOTE

After CPA-HS-4 and CPB-HS-5 are taken to open:

- 1) CPA-UV-4B, CPB-UV-5B and CPN-PV-43 open. If containment pressure is less than or equal to 0.03 psig, CPA-UV-4A and CPB-UV-5A also open. If UV-4A/5A doesn't open, dual indication will be received on HS-4 and HS-5.
- 2) Dampers M03, M06 and M07 open.
- 3) Fans CPN-A02 and CPN-J02 start.

6.3.7 Place CPA-HS-4, Containment Power Access Purge Isolation Valves CP-UV-4A/4B to the OPEN position.

6.3.8 **IF** dual position indication is received on CPA-HS-4,
THEN CPA-HS-4 must be taken to the open position again to open CP-UV-4A.

CONTAINMENT PURGE SYSTEM

40OP-9CP01

Revision
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- _____ 6.3.9 Place CPB-HS-5, Containment Power Access Purge Isolation Valves CP-UV-5A/5B to the OPEN position.
- _____ 6.3.10 **IF** dual position indication is received on CPB-HS-5,
THEN CPB-HS-5 must be taken to the open position again to open CP-UV-5A.
- _____ 6.3.11 Check that CPN-PV-43, Vent Valve is open by observing the red Valve Position Indicator on B07 is illuminated.
- _____ 6.3.12 Log the time that the 8 inch Containment Purge Valves were opened on the release permit.
- 6.3.13 Notify **BOTH** of the following of the start time for the release:
 - _____ RMS/Effluents Technician
 - _____ Unit Radiation Protection
- _____ 6.3.14 **IF** the Containment Power Access Purge will continue beyond the shift,
THEN contact the RMS/Effluents Technician to ensure the Shiftly ST required by SR 3.3.8.1 is current per 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test.



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PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

| | | | | | | | | |
|--------------------------------|--|-----------|--|------------------|-------|------------|-------|-----|
| TASK: | 1250370201 Respond to a loss of letdown | | | | | | | |
| TASK STANDARD: | Action completed for a loss of letdown including placing Pzr level control in manual to close the letdown control valves, isolating letdown, stopping a charging pump, and aligning the standby backpressure control valve | | | | | | | |
| K/A: | 3.4 004 A2.07 | | | K/A RATING: | RO: | 3.4 | SRO: | 3.7 |
| K/A: | | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | | RO | | VALIDATION TIME: | | 15 minutes | | |
| REFERENCES: | 40AO-9ZZ05, Loss of Letdown | | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | | SIMULATOR | | X | PLANT | | OTHER | |

JPM TYPE

Time Critical? (Yes/No) *No* Alternative Path? (Yes/No) *Yes*
PRA/SRA related? (Yes/No) *No*

APPROVAL

Developed By: Alan Malley Date: 02-08-2012

Revised By: _____ Date: _____

Technical Review _____ Operations Approval _____

EP Review *N/A* Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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1. SIMULATOR SETUP:

- IC#: 108
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| | |
| | |

- SPECIAL INSTRUCTIONS:
 - Letdown is lost with CHN-PV-201Q selected and failed closed.
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: N/A Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40AO-9ZZ05 available. This JPM was written using Revision 22 40AO-9ZZ05.

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. **during** JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------|
| | | |
| | | |



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PVNGS JOB PERFORMANCE MEASURE
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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

The plant is at 50% power.

“LD HDR SYS TRBL” alarm is in.

INITIATING CUE:

The CRS directs you to perform the actions of 40AO-9ZZ05, Loss of Letdown.



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 1. | Step 1 of 40AO-9ZZ05 Section 3.0: Enter AOP Entry Time and Date: _____ | | The examinee enters the AOP Entry Time and Date. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|------------------------------|
| 2. | Step 2 of 40AO-9ZZ05 Section 3.0: IF the Pressurizer is solid, THEN perform the following: | | The examinee N/As this step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 3. * | Step 3 of 40AO-9ZZ05 Section 3.0: Place RCN-LIC-110, PLCS Master Controller, in "MAN" and close the selected Letdown Control Valve(s). | | The examinee Place RCN-LIC-110, PLCS Master Controller, in "MAN" and close the selected Letdown Control Valve(s). Examiner Note: Valve CHN-LV-110P is the selected valve. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 4. | Step 4 of 40AO-9ZZ05 Section 3.0: Check that letdown backpressure is less than setpoint. | | The examinee determines backpressure is NOT less than setpoint by looking at the Backpressure controller (CHN-PIC-201) and goes to the contingency step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 5. * | Step 4.1 of 40AO-9ZZ05 Section 3.0: IF letdown backpressure is greater than setpoint, THEN ensure at least ONE of the following is closed: <ul style="list-style-type: none"> • CHB-UV-515, Regen Hx Inlet Isol Valve • CHA-UV-516, Regen Hx Inlet Isol Valve • CHB-UV-523, Regen Hx Outlet Isol Valve | | The examinee closes one of the following valves: <ul style="list-style-type: none"> • CHB-UV-515, Regen Hx Inlet Isol Valve • CHA-UV-516, Regen Hx Inlet Isol Valve • CHB-UV-523, Regen Hx Outlet Isol Valve ALTERNATE PATH |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 6. * | Step 5 of 40AO-9ZZ05 Section 3.0: IF pressurizer level is 33% or more AND rising, THEN ensure no more than one Charging Pump is running. | | The examinee stops one of the charging pumps. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 7. | Step 6 of 40AO-9ZZ05 Section 3.0: IF BOTH of the following conditions exist: <ul style="list-style-type: none"> The unit is in Mode 1, 2 or 3 pressurizer level is 56% or more and rising THEN perform the following: <ul style="list-style-type: none"> a. Enter LCO 3.4.9, Pressurizer, Condition A. b. Initiate actions in reparation for a Unit shutdown within 6 hours. | | The examinee will N/A or circle this step since pressurizer level is < 56%. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|--|--|
| 8. | Step 7 of 40AO-9ZZ05 Section 3.0: Determine the cause of the loss of letdown (REFER TO Appendix E, Supplementary Information) by evaluating ANY of the following: <ul style="list-style-type: none"> • PLCS failures • NC flow to Letdown Heat • Exchanger • SIAS/CIAS • CVCS component failures • Loss of IA • Loss of power | If sent as the area operator to check CHE-PV-201Q, INFORM CUE: CHE-PV-201Q is closed and has an air leak on the air supply line. IF REQUESTED CUE (may be asked in step 10 of the JPM): The CRS desires to place the standby backpressure control valve in service | The examinee determines CHE-PV-201Q has failed closed. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|------------------------------|
| 9. | Step 8 of 40AO-9ZZ05 Section 3.0: IF RCS pressure is less than 1000 psia, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves. | | The examinee N/As this step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|-----|--|---|--|
| 10. | Step 9 of 40AO-9ZZ05 Section 3.0: IF the selected Letdown Control or Backpressure Control Valve(s) has failed, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves. | IF REQUESTED CUE: The CRS desires to place the standby backpressure control valve in service | The examinee signs this step and proceeds to Appendix F. |

SAT / UNSAT

Comments (required for UNSAT):

| | STEP | CUE | STANDARD |
|-----|---|-----|--|
| 11. | Step 1 of 40AO-9ZZ05 Appendix F: Enter Appendix Entry Time and Date: _____ | | The examinee enters the entry time and date. |

SAT / UNSAT

Comments (required for UNSAT):

| | STEP | CUE | STANDARD |
|-----|---|-----|------------------------------|
| 12. | Step 2 of 40AO-9ZZ05 Appendix F: IF CHN-LV-110Q, Letdown Control Valve, is failed, THEN perform the following to place CHN-LV-110P in service: | | The examinee N/As this step. |

SAT / UNSAT

Comments (required for UNSAT):



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| | STEP | CUE | STANDARD |
|---|---|-----|------------------------------|
| 13. | Step 3 of 40AO-9ZZ05 Appendix F: IF CHN-LV-110P, Letdown Control Valve, is isolated, AND RCS pressure is less than 1000 psia, THEN perform the following to place CHN-LV-110P in service: | | The examinee N/As this step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|------------------------------|
| 14 | Step 4 of 40AO-9ZZ05 Appendix F: IF CHN-LV-110P, Letdown Control Valve, is failed, THEN perform the following to place CHN-LV-110Q in service: | | The examinee N/As this step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|------------------------------|
| 15. | Step 5 of 40AO-9ZZ05 Appendix F: IF CHN-LV-110Q, Letdown Control Valve, is isolated, AND RCS pressure is less than 1000 psia, THEN perform the following to place CHN-LV-110Q in service: | | The examinee N/As this step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|--|--|
| 16. * | <p>Step 6.a of 40AO-9ZZ05 Appendix F:</p> <p>IF CHN-PV-201Q, Backpressure Control Valve, is failed, THEN perform the following to place CHN-PV-201P in service:</p> <p>Direct an operator to open CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve.</p> | <p>INFORM CUE:</p> <p>The area operator reports CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve is open.</p> | <p>The examinee directs an operator to open CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 17. * | <p>Step 6.b of 40AO-9ZZ05 Appendix F:</p> <p>Place the Backpressure Control Valve Selector to the “201P” position.</p> | | <p>The examinee places the Backpressure Control Valve Selector to the “201P” position.</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|--|--|
| 18. * | Step 6.c of 40AO-9ZZ05 Appendix F: Direct an operator to slowly open CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve. | INFORM CUE: The operator reports CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve has been slowly opened. Another operator will complete the remainder of this procedure. | The examinee directs an area operator to slowly open CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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CANDIDATE

INITIAL CONDITIONS:

The plant is at 50% power.

“LD HDR SYS TRBL” alarm is in.

INITIATING CUE:

The CRS directs you to perform the actions of 40AO-9ZZ05, Loss of Letdown.

CANDIDATE

LOSS OF LETDOWN

This procedure addresses abnormal conditions resulting in a loss of letdown flow.

Procedure guidance is provided to:

- Control pressurizer level within acceptable bands
- Identify and correct the cause of the loss of letdown flow
- Install jumpers allowing letdown restoration with failed instrumentation
- Restore letdown flow
- Allow continued operation without letdown
- Supplement a plant shutdown without letdown

| Procedure Usage Requirements | | Sections |
|------------------------------|---|----------|
| Continuous Use: | <ul style="list-style-type: none"> • Have a copy of the procedure or applicable pages within view or be in direct communication with an individual with a copy. • Review and understand the procedure or section of the procedure before performing any steps. • Read and understand each step prior to performing it; performing each step as written and in the sequence specified except when the procedure or approved process specifically allows it. • Use a placekeeping method. • Review the document at the completion of the task to verify that all appropriate steps are performed and documented. | All |

| Rev | Description | Page |
|-----|--|-------|
| 22 | PCR 3815053: Sect 3.0 step 5, bolded and capitalized the logic word “AND” . The existing level of detail for the action verb “ensure” is already adequate per 40DP-9AP15, step 5.1. Appendix A Step 15/15.1, removed excess “level of detail” with respect to the action verb “Start” (including deletion of the contingency action) consistent with guidance in 40DP-9AP15, EOP/AOP Writers Guide, step 5.1. | 5, 18 |

Functional Owner: AOP/EOP Team Leader

LOSS OF LETDOWN

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LOSS OF LETDOWN

1.0 ENTRY CONDITIONS

The Loss of Letdown procedure may be entered when **ANY** of the following conditions exist:

- CHN-FI-202, Letdown Flow, indicating zero
- “LD HDR SYS TRBL” alarm (3A10A)

2.0 EXIT CONDITIONS

The Loss of Letdown procedure may be exited when **ANY** of the following conditions exist:

- Charging and letdown are in service controlling pressurizer level
- Letdown is not required for controlling pressurizer level

IF the Reactor trips,

THEN PERFORM 40EP-9EO01, Standard Post Trip Actions.

LOSS OF LETDOWN

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3.0 INSTRUCTIONS/CONTINGENCY ACTIONS

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter AOP Entry Time and Date:

- ____ 2. **IF** the Pressurizer is solid,
THEN perform the following:

- a. Ensure Controlled Bleedoff is isolated on all **standby** RCP's.
- b. Place all Charging Pumps in "PULL TO LOCK".
- c. Close the RCP Seal Injection Flow Control Valves.
- d. Open CHE-PDV-240, Charging Line to Reactor Coolant Loop 2A Differential Pressure Control Valve.
- e. Place CHN-PIC-201, Letdown Backpressure Controller, in "MAN" and close both Letdown Backpressure Valves.
- f. Operate Charging Pumps to maintain pressurizer pressure within the desired band.

- c.1 Close CHB-HV-255, Seal Injection Supply Header Isolation Valve.

- ____ 3. Place RCN-LIC-110, PLCS Master Controller, in "MAN" and close the selected Letdown Control Valve(s).

LOSS OF LETDOWN

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INSTRUCTIONS

- ___ 4. Check that letdown backpressure is less than setpoint.
- ___ 5. **IF** pressurizer level is 33% or more **AND** rising,
THEN ensure no more than one Charging Pump is running.
- ___ 6. **IF BOTH** of the following conditions exist:
- The unit is in Mode 1, 2 or 3
 - pressurizer level is 56% or more and rising
- THEN** perform the following:
- a. Enter LCO 3.4.9, Pressurizer, Condition A.
 - b. Initiate actions in preparation for a Unit shutdown within 6 hours.

CONTINGENCY ACTIONS

- ___ 4.1 **IF** letdown backpressure is greater than setpoint,
THEN ensure at least **ONE** of the following is closed:
- CHB-UV-515, Regen Hx Inlet Isol Valve
 - CHA-UV-516, Regen Hx Inlet Isol Valve
 - CHB-UV-523, Regen Hx Outlet Isol Valve

LOSS OF LETDOWN

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INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 7. Determine the cause of the loss of letdown (REFER TO Appendix E, Supplementary Information) by evaluating **ANY** of the following:

- PLCS failures
- NC flow to Letdown Heat Exchanger
- SIAS/CIAS
- CVCS component failures
- Loss of IA
- Loss of power

- ___ 8. **IF** RCS pressure is less than 1000 psia,
AND it is desired to place the standby valve in service,
THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.

- ___ 9. **IF** the selected Letdown Control or Backpressure Control Valve(s) has failed,
AND it is desired to place the standby valve in service,
THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.

LOSS OF LETDOWN

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INSTRUCTIONSCONTINGENCY ACTIONS

___ 10. **IF ALL** of the following conditions exist:

- CHB-UV-515, Regen Hx Inlet Isolation, closed due to an **invalid** high temperature interlock
- CHN-TI-221, Regenerative Heat Exchanger Letdown Temperature, indication is available
- Letdown is desired

THEN direct maintenance to PERFORM 81DP-0DC17, Temporary Modification Control, to install a jumper across relay 63X-T221, points 19 and 20 in cabinet E-ZJB-C03.
(REFER TO drawing E-CHB-031)

___ 11. **IF** CHB-UV-523, Regen Hx Outlet Isolation is closed due to an **invalid** high temperature alarm, **AND** letdown is desired, **THEN** place CHB-HS-523, LETDOWN CTMT ISOL, to "OPEN".

___ 11.1 **IF** CHB-UV-523, Regen Hx Outlet Isolation is closed due to an **invalid** high temperature alarm, **AND** letdown is desired, **THEN** direct maintenance to PERFORM 81DP-0DC17, Temporary Modification Control, to install a jumper across Terminals 1 and 2 on TB 4 in cabinet E-ZAB-C02
(REFER TO drawing E-CHB-013).

LOSS OF LETDOWN

Page 8 of 46

INSTRUCTIONS

- ___ 12. **IF** the Pressurizer is solid,
AND RCS pressure is less than
500 psia,
THEN perform the following to
restore letdown:
- PERFORM Appendix B,
Restoration of Letdown During
Solid Plant Operations.
 - GO TO step 16.
- ___ 13. **IF** letdown can be restored,
THEN perform the following:
- PERFORM Appendix A,
Restoration of Letdown With A
Pressurizer Steam Bubble.
 - GO TO step 16.

CONTINGENCY ACTIONS

- ___ 12.1 **IF** letdown can **NOT** be restored,
THEN perform the following:
- PERFORM the appropriate
procedures to place the plant
in a condition where letdown
is **NOT** needed.
 - GO TO step 17.

LOSS OF LETDOWN

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INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 14. **IF** a plant shutdown or cooldown is needed,
THEN perform the following:

- a. Consider **ALL** of the following to assist in reducing and controlling pressurizer level less than 56%:

- Initiating the downpower with pressurizer level low in the operating band
- Maintaining Tavg at the lower end of the allowable Tavg-Tref band
- Maximizing CEA insertion while maintaining ASI within the allowable band
- Maximizing boration when the Charging Pumps are running
- Performing Appendix C, Extended Operations Without Letdown, if the downpower is delayed.

(continue)

LOSS OF LETDOWN

INSTRUCTIONSCONTINGENCY ACTIONS

___ 14. (continued)

- b. PERFORM **ANY** of the following procedures to shutdown or cooldown the plant:
- 40OP-9ZZ05, Power Operations
 - 40OP-9ZZ10, Mode 3 to Mode 5 Operations
 - 40OP-9ZZ24, SNOW Outage
 - A procedure as directed by the CRS/SM

___ 15. **IF** a plant shutdown or cooldown is **NOT** needed, **THEN** PERFORM Appendix C, Extended Operations Without Letdown.

___ 16. **IF** jumpers have been installed to allow restoration of letdown, **AND** the failure has been corrected, **THEN** direct maintenance to PERFORM 81DP-0DC17, Temporary Modification Control, to remove the jumpers.

LOSS OF LETDOWN

Page 11 of 46

INSTRUCTIONSCONTINGENCY ACTIONS

___ 17. **IF** jumpers are **NOT** installed,
AND ONE of the following
conditions exist:

- Charging and letdown are in
service controlling pressurizer
level
- Letdown is **NOT** required for
controlling pressurizer level

THEN GO TO the appropriate
procedure for current plant
conditions.

End of Section 3.0

LOSS OF LETDOWN

4.0 REFERENCES

- 01DP-0AP01, Procedure Process
- 40DP-0AP06, Abnormal Operating Procedure Writer's Guide
- O.D.E.R. 86-23, Loss of Seal Injection Flow
- Letter 255-00633 MKM/SBJ, Closure of Reactor Coolant Pump Controlled Bleedoff Valve, 22 Feb, 1995
- CRDR 080128, action 01, Provide information about the power supply for the NC flow switch. Action 03, Incorporate ICR 44502
- CRDR 950738, action 03, Incorporate direction for installation of jumpers for failure of NCN-FSL-613
- CRDR 330402.05 - Add a note addressing expected HP Cooler inlet temperature rise on loss of Seal Injection
- CRDR 180322 - Reduce backpressure prior to starting any additional charging pumps

End of Section 4.0

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. Ensure at least **ONE** of the following valves are closed:
- CHB-UV-515, Regenerative Heat Exchanger Inlet Isolation Valve
 - CHA-UV-516, Regenerative Heat Exchanger Inlet Isolation Valve
 - CHB-UV-523, Regenerative Heat Exchanger Outlet Isolation Valve
- ____ 3. Ensure the selected Letdown Control Valve(s) are closed.
- ____ 4. Ensure **BOTH** of the following ERFDADS points associated with Letdown are set to alarm at the appropriate setpoint:
- CHT221, Regen Hx Outlet Temperature, at a high alarm of 380°F
 - CHP201, Letdown Intermediate Press / Backpressure, at a low alarm of 205 psig

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

___ 5. Place CHN-PIC-201, Letdown Backpressure Controller in "MAN" and open the selected Letdown Backpressure Valve(s) to 60% output.

___ 6. **IF no** Charging Pumps are running,
THEN perform the following:

- a. Ensure controlled bleedoff is isolated on all **standby** RCP's prior to Seal 2 Outlet Temperature exceeding 250°F.
- b. Isolate RCP seal injection by closing **ONE** of the following:
 - Seal Injection Flow Control Valves
 - CHB-HV-255, Seal Injection Supply Header Isolation Valve
- c. Open CHE-PDV-240, Charging Line to Reactor Coolant Loop 2A Differential Pressure Control Valve.
- d. Start at least one Charging Pump.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 7. **WHEN** the selected Letdown Control Valve(s) is closed, **THEN** ensure **ALL** of the following isolation valves are open:

- CHB-UV-523, Regenerative Heat Exchanger Outlet Isolation Valve
- CHB-UV-515, Regenerative Heat Exchanger Inlet Isolation Valve
- CHA-UV-516, Regenerative Heat Exchanger Inlet Isolation Valve

- ___ 8. **IF ANY** isolation valve is open in override or manual, **THEN** ensure compliance with LCO 3.6.3, Containment Isolation Valves.

- ___ 9. **IF** letdown flow has been lost for 22 minutes or more, **AND** RCS temperature is greater than 130°F, **THEN** perform the following:

- a. Open CHN-HV-526, Letdown Control Valves Bypass Valve.
- b. **WHEN** flow has been maintained through CHN-HV-526 for at least four minutes, **THEN** close CHN-HV-526.

- ___ 7.1 **IF** CHB-UV-523 will **NOT** open, **AND** computer point CHTS224 is in alarm, **THEN** perform the following:

- a. Place CHN-TIC-223, Letdown Heat Exchanger Outlet Temperature Controller, in "MAN".
- b. Raise the controller output until NC flow from the Letdown Heat Exchanger clears the alarm.
- c. Open CHB-UV-523.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS**CAUTION**

Insufficient letdown backpressure will cause flashing in the letdown system.

- ___ 10. Slowly adjust the Letdown Control Valve(s) and Backpressure Control Valve(s) to establish **ALL** of the following:

- Letdown flow approximately 25 - 35 gpm
- Letdown backpressure 220 to 300 psig
- Regenerative Heat Exchange Letdown Temperature less than saturation temperature for the existing backpressure

- ___ 11. **WHEN** letdown flow is indicated, **THEN** maintain Letdown Heat Exchanger Outlet Temperature less than 135°F.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 12. **IF** a second charging pump will **NOT** be started,
THEN perform the following:
- Slowly adjust RCN-LIC-110 to establish **ALL** of the following:
 - The desired pressurizer level
 - Letdown Heat Exchanger temperature less than 135°F
 - GO TO step 20.
- ___ 13. **IF** a second charging pump will be started,
THEN ensure **ALL** of the following are in manual:
- RCN-LIC-110, PLCS Master Controller
 - CHN-PDIC-240, Charging Header Backpressure Control Valve
 - CHN-PIC-201, Letdown Backpressure Control

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam BubbleINSTRUCTIONSCONTINGENCY ACTIONS

NOTE

“LD HDR SYS TRBL” (3A10A) will alarm and remain locked in as long as PTID CHPS201, Letdown Heat Exchanger to LD Back Press Valve Press Hi - Lo is 308 psig or less. This alarm is used to diagnosis a letdown line break in the Aux Building and to ensure subcooling. This alarm will not be available once backpressure is reduced to less than 308 psig.

- ____ 14. Ensure CHN-PIC-201 is adjusted to maintain 220 - 300 psig and as close to 220 psig as possible.

NOTE

With one charging pump running, the nominal, steady-state regen heat exchanger outlet temperature is approximately 265° as indicated on CHN-TI-221. This temperature will decrease when the second charging pump is started. Subsequent manual increases in letdown flow rate may cause transient temperature increases up to 380°F or higher if not properly controlled.

- ____ 15. Start the second Charging Pump.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS**CAUTION**

Any increase in letdown flow rate may produce relatively large increases in intermediate letdown pressure as indicated by CHN-PIC-201. These pressure spikes may result in the lifting of CHN-PSV-345, Regen Hx to Letdown Hx Relief.

___ 16. Perform the following:

- a. Slowly adjust RCN-LIC-110 to establish **ALL** the following:
 - Appropriate letdown flow for two charging pumps
 - Letdown flow less than 150 gpm
 - Letdown Heat Exchanger temperature less than 135°F
- b. **IF** CHT221 reaches 380°F or more,
THEN reduce the letdown flow to drop temperature to less than 380°F.
- c. Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 17. **IF** a third charging pump will **NOT** be started,
THEN perform the following:
- a. Slowly adjust RCN-LIC-110 to establish **ALL** of the following:
 - The desired pressurizer level
 - Letdown flow less than 150 gpm
 - Letdown Heat Exchanger temperature less than 135°F
 - b. Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig.
 - c. GO TO step 20.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

Regen heat exchanger outlet temperature as indicated on CHN-TI-221 will decrease when the third charging pump is started. Subsequent manual increases in letdown flow rate may cause transient temperature to increase if not properly controlled.

- ____ 18. **IF** letdown flow is appropriate for the number of running Charging Pumps,
AND it is desired to start a third Charging Pump,
THEN start the third Charging Pump by taking the handswitch to the "START" position.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS**CAUTION**

Any increase in letdown flow rate may produce relatively large increases in intermediate letdown pressure as indicated by CHN-PIC-201. These pressure spikes may result in the lifting of CHN-PSV-345, Regen Hx to Letdown Hx Relief.

___ 19. Perform the following:

- a. Slowly adjust RCN-LIC-110 to establish **ALL** the following:
 - Appropriate letdown flow for three charging pumps
 - Letdown flow less than 150 gpm
 - Letdown Heat Exchanger temperature less than 135°F
- b. **IF** CHT221 reaches 380°F or more,
THEN reduce the letdown flow to drop temperature to less than 380°F.
- c. Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig.

LOSS OF LETDOWN

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

___ 20. **WHEN** pressurizer level is at the desired setpoint,
THEN transfer RCN-LIC-110 to **ONE** of the following:

- Remote Automatic
- Local Automatic

___ 21. Adjust CHN-PDIC-240 to 90-135 psid and place in "AUTO".

___ 22. Perform the following:

- a. Slowly adjust CHN-PIC-201 setpoint to 375 psig.
- b. Place CHN-PIC-201 in "AUTO".

___ 23. **IF** CHN-TIC-223, Letdown Hx Outlet Temperature Controller, is in "MANUAL",
AND plant conditions will allow,
THEN transfer CHN-TIC-223 to "AUTO" with a setpoint of 120°F.

___ 24. **IF** the Pressurizer Level Control System is automatically controlling pressurizer level,
THEN ensure **ALL** available Charging Pumps are green flagged for automatic control.

___ 20.1 Manually control pressurizer level at the desired setpoint.

t22.1 Manually control backpressure at the desired setpoint.

___ 23.1 **IF** plant conditions will **NOT** allow automatic operation of CHN-TIC-223,
THEN manually control Letdown Heat Exchanger Outlet Temperature less than 120°F.

___ 24.1 Manually operate the Charging Pumps.

LOSS OF LETDOWN

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Appendix A

Page 12 of 12

Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 25. **IF** RCP seal injection is in operation,
THEN ensure flow is 6.0 to 7.5 gpm.

----- **NOTE** -----

Adequate seal injection flow exists when seal injection flow is greater than controlled bleedoff flow.

- ___ 26. **IF** RCP seal injection is isolated,
AND seal injection is desired,
THEN PERFORM Appendix D,
Restoring RCP Seal Injection.
- ___ 27. **IF** jumpers were installed to allow letdown restoration,
AND ANY of the following conditions occur while letdown is in service:
- NC is lost
 - Regen Hx Letdown Temperature is 413°F or more
- THEN** ensure letdown is isolated.

- ___ 25.1 **IF** RCP seal injection is in operation,
AND flow can **NOT** be adjusted to 6.0 to 7.5 gpm,
THEN balance flows to ensure that seal injection flow is greater than bleedoff flow to all RCPs.

End of Appendix

LOSS OF LETDOWN

Appendix B, Restoration of Letdown During Solid Plant Operations

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. **IF** letdown was aligned from the RCS loop,
THEN GO TO step 5.

- ____ 3. **IF** letdown was being supplied from the shutdown cooling purification line,
THEN open both Backpressure Control Valves.

- ____ 4. **WHEN** letdown flow is indicated,
THEN perform the following:
- a. Ensure one Charging Pump is running.
 - b. Slowly close the Backpressure Control Valves to establish the desired RCS pressure.
 - c. Balance and transfer the Letdown Backpressure Controller to "AUTO".
 - d. GO TO step 12. of this Appendix.

- c.1 Manually operate the Backpressure Control Valves.

LOSS OF LETDOWN

Appendix B, Restoration of Letdown During Solid Plant Operations

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 5. **WHEN** the Letdown Control Valves are closed,
THEN open both Backpressure Control Valves.

- ___ 6. **WHEN** the Letdown Control Valves are closed,
THEN open **ALL** of the following:

- CHB-UV-523, Regenerative Heat Exchanger Outlet Isolation Valve
- CHB-UV-515, Regenerative Heat Exchanger Inlet Isolation Valve
- CHA-UV-516, Regenerative Heat Exchanger Inlet Isolation Valve

- ___ 7. **IF** letdown has been lost for greater than 22 minutes,
AND RCS temperature is greater than 130°F,
THEN perform the following:

- a. Open CHN-HV-526, Letdown Control Valves Bypass.
- b. **WHEN** flow has been maintained through CHN-HV-526 for at least four minutes,
THEN close CHN-HV-526.

- ___ 6.1 **IF** CHB-UV-523 will **NOT** open,
AND computer point CHTS224 is in alarm,
THEN perform the following:

- a. Place CHN-TIC-223, Letdown Heat Exchanger Outlet Temperature Controller, in "MAN".
- b. Raise the controller output until NC flow from the Letdown Heat Exchanger clears the alarm.
- c. Open CHB-UV-523.

LOSS OF LETDOWN

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Appendix B

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Appendix B, Restoration of Letdown During Solid Plant Operations

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 8. Open both Letdown Control Valves.
- ___ 9. **WHEN** letdown flow is indicated, **THEN** perform the following:
- a. Ensure one Charging Pump is running.
 - b. Slowly close the Backpressure Control Valves to establish the desired RCS pressure.
 - c. Balance and transfer the Letdown Backpressure Controller to "AUTO".
- ___ 10. **IF** jumpers were installed to allow letdown restoration, **AND ANY** of the following conditions occur while letdown is in service:
- NC is lost
 - Regen Hx Letdown Temperature is 413°F or more
- THEN** ensure letdown is isolated.
- c.1 Manually operate the Backpressure Control Valves.

LOSS OF LETDOWN

Appendix B, Restoration of Letdown During Solid Plant Operations

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 11. **IF** CHN-TIC-223, Letdown Hx Outlet Temperature Controller, is in "MAN",
AND plant conditions will allow,
THEN transfer CHN-TIC-223 to "AUTO" with a setpoint of 120°F.

- ___ 11.1 **IF** plant conditions will **NOT** allow automatic operation of CHN-TIC-223,
THEN manually control letdown heat exchanger outlet temperature less than 120°F.

- ___ 12. **IF** RCP seal injection is desired,
THEN PERFORM Appendix D, Restoring RCP Seal Injection.

End of Appendix

LOSS OF LETDOWN

Appendix C, Extended Operations Without Letdown

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. **WHEN** letdown can be restored,
THEN GO TO Appendix A,
Restoration of Letdown With A
Pressurizer Steam Bubble.

----- **NOTE** -----

Boron equalization should be minimized since it depletes RCS hydrogen. The reduction in RCS hydrogen concentration may require entry into chemistry actions levels that may cause the unit to be shutdown.

- ____ 3. **IF** boron equalization is in progress,
THEN stop boron equalization.
- ____ 4. Notify Chemistry that the plant will be operated with letdown flow isolated.

LOSS OF LETDOWN

Appendix C, Extended Operations Without Letdown

INSTRUCTIONSCONTINGENCY ACTIONS----- NOTE -----

RCP HP seal cooler inlet temperature is expected to rise to between 200°F and 220°F when seal injection is stopped. All other seal temperatures are expected to remain normal.

----- NOTE -----

Intentional entry into L.C.O. 3.4.9, Pressurizer, Condition A is prohibited.

5. **WHEN** the CRS determines seal injection and charging are to be stopped,
OR pressurizer level is 56% or more and rising,
THEN perform the following:
- a. **IF** the unit is in Mode 1, 2 or 3,
THEN ensure compliance with LCO 3.4.9, Pressurizer.
 - b. Ensure controlled bleedoff is isolated on all **standby** RCP's prior to Seal 2 Outlet Temperature exceeding 250°F.
 - d. Place all Charging Pumps in "PULL TO LOCK".

- c.1 Close CHB-HV-255, Seal Injection Supply Header Isolation Valve.

LOSS OF LETDOWN

Appendix C, Extended Operations Without LetdownINSTRUCTIONSCONTINGENCY ACTIONS

NOTE

RCP controlled bleedoff will lower pressurizer level approximately 10% in 55 minutes. This assumes three gpm bleedoff flow from each RCP.

- ___ 6. **IF** charging has been stopped,
AND ANY of the following
conditions exist:
- Pressurizer level is less than 53%
 - Seal injection is needed
- THEN** perform the following:
- a. Open CHN-PDV-240,
Charging Line to Reactor
Coolant Loop 2A Differential
Pressure Control Valve.
 - b. Start at least one Charging
Pump.
 - c. Adjust CHN-PDIC-240 to
90-135 psid and place in
"AUTO".
 - d. **IF** seal injection is needed,
THEN restore seal injection.
 - e. Operate charging as needed
to maintain pressurizer level
between 33 and 53%.

LOSS OF LETDOWN

Appendix C, Extended Operations Without Letdown

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 7. **IF** VCT level needs to be lowered,
THEN direct an operator to
perform the following:
- a. Open CHN-V117, VCT drain
to the EDT (Blending Room,
120' of the Auxiliary Bldg.).
 - b. **WHEN** the desired level is
reached,
THEN close CHN-V117.

End of Appendix

LOSS OF LETDOWN

Appendix D, Restoring RCP Seal Injection

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. Perform the following to restore RCP seal injection:

- a. Ensure the Seal Injection Flow Control Valves are closed.
- b. Ensure CHB-HV-255, Seal Injection Supply Header Isolation Valve, is open.
- c. Ensure CHN-UV-231P, Seal Injection HX Isolation Valve, is open.
- d. Adjust seal injection flow to establish 6.0 to 7.5 gpm by operating **ANY** of the following:
 - Seal Injection Flow Controllers
 - CHN-PDIC-240, Charging Line DP Controller

----- **NOTE** -----

Adequate seal injection flow exists when seal injection flow is greater than controlled bleedoff flow.

-
- d.1 **IF** RCP seal injection flow can **NOT** be adjusted to 6.0 to 7.5 gpm, **THEN** balance flows to ensure that seal injection flow is greater than bleedoff flow to all RCPs.

- ____ 3. Ensure the Seal Injection Flow Controllers are in "AUTO".

- ____ 3.1 Manually control seal injection flow.

LOSS OF LETDOWN

Appendix D, Restoring RCP Seal Injection

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

The desired setpoint on CHN-PDIC-240, Charging Line DP Controller, is 90 to 135 psid.

- ____ 4. **IF** CHN-PDIC-240, Charging Line DP Controller, is in “MAN”,
THEN balance and transfer CHN-PDIC-240, Charging Line DP Controller, to “AUTO”.
____ 0.1 Manually control CHN-PDIC-240.
- ____ 5. **IF BOTH** of the following conditions exist for **ANY** RCP:
- Seal injection flow is established
 - NC flow is greater than 450 gpm
- THEN** consider restoring controlled bleedoff.

End of Appendix

Appendix E, Supplementary Information

1.0 Pressurizer Level Control System Failures:

- If the PLCS is in automatic and a failure in the PLCS results in indicated pressurizer level being 15% or more above the setpoint, the normally running and standby Charging Pumps will stop, letdown flow will rise and letdown may isolate on high Regenerative Heat Exchanger Letdown Temperature.

2.0 Loss of Nuclear Cooling flow from the Letdown Heat Exchanger:

- CHB-UV-523, Regen Hx Outlet Isol Valve, will close when Letdown Heat Exchanger to Letdown Back Pressure Valve Temperature is 135°F or more, as sensed by CHN-TS-224-2.
- Low NC flow may result in closure of the Backpressure Control Valves due to temperature exceeding 148°F on the Letdown Heat Exchanger outlet as sensed by CHN-TT-224.

3.0 SIAS/CIAS:

- CHA-UV-516, Regen Hx Inlet Isol Valve will close on a SIAS/CIAS Train A actuation, CIAS A subgroup relay K204 failure or SIAS A subgroup relay K409 failure.
- CHB-UV-515, Regen Hx Inlet Isol Valve will close on a SIAS Train B actuation or SIAS B subgroup relay K409 failure.
- CHB-UV-523, Regen Hx Outlet Isol Valve will close on a CIAS Train B actuation or CIAS B subgroup relay K204 failure.

LOSS OF LETDOWN

Appendix E, Supplementary Information**4.0 CVCS Component Failures:**

- CHB-UV-515, Regen HX Inlet Isol Valve, is interlocked closed at 413°F Regen Heat Exchanger Letdown Temperature as sensed by CHB-TT-221.
- The Backpressure Control Valves are interlocked closed at 148°F Letdown Heat Exchanger Outlet Temperature as sensed by CHN-TT-224. Computer point CHTSH224 will indicate "NORM" if less than 148°F. The Backpressure Control Valves may be operated in "MANUAL" with CHN-TT-224 failed.
- CHN-PT-201, Letdown Hx to Letdown Backpressure Valves Pressure, failing low will close the Backpressure Valves.

5.0 Loss Of Instrument Air:

(Listed pressures are measured at the instrument air header pressure transmitter IAN-PIT-32.)

- NCN-TV-223, Letdown Hx Outlet Temperature Control Valve, fails closed at 90 psig, which will result in an auto closure of CHB-UV-523 due to a high letdown temperature condition.
- CHA-UV-516 and CHB-UV-515, Letdown to Regen Hx Isol Valves fail closed at approximately 38 psig.
- CHB-UV-523 Regen Hx Outlet Isol Valve fails closed at approximately 38 psig.
- CHN-LV-110 P/Q, Letdown Control Valves fail closed at approximately 25 psig.
- CHN-PV-201 P/Q Backpressure Control Valves fail closed at approximately 25 psig.

LOSS OF LETDOWN

Appendix E, Supplementary Information**6.0 Loss of NKN-D42:**

- Loss of power to the 63X relay in cabinet ZAB-C02 will cause CHB-UV-523, Regen Hx Outlet Isol Valve to close.
- All Charging Pumps stop. PLCS control circuit loses power deenergizing the Charging Pump Mode Selection circuit. Charging Pumps may be manually operated.

7.0 Loss Of NNN-D11:

- Pressurizer Level Controller RCN-LIC-110 fails to no output. No control is available in manual or auto. Letdown Valves CHN-LV-110P and CHN-LV-110Q close.

8.0 Loss Of NNN-D12:

- Letdown Backpressure Controller, CHN-PIC-201, fails to no output. Backpressure Control Valves CHN-PV-201P and CHN-PV-201Q close.
- CHN-TIC-223 fails to zero output closing NCN-TV-223. Loss of power to CHN-TSL-224 and CHN-TS-224-2 in cabinet ZJN-C01E will cause CHB-UV-523, Regen Hx Outlet Isol Valve, to close.

LOSS OF LETDOWN

Appendix E, Supplementary Information**9.0 Loss of PKA-M41/D21:**

- IAA-UV-2, Instrument Air Containment Isolation Valve, fails closed causing CHA-UV-516 and CHB-UV-515, Regen Hx Inlet Isol Valves, to close.
- CHA-UV-516, Regen Hx Inlet Isol Valve, fails closed on loss of power.
- Charging Pumps aligned to Train A buses must be operated locally and will have no automatic features or electrical protection.

10.0 Loss of PKB-M42/D22:

- CHB-UV-515, Regen Hx Inlet Isol Valve, fails closed on loss of power.
- CHB-UV-523, Regen Hx Outlet Isol Valve, fails closed on loss of power.
- Charging Pumps aligned to Train B buses must be locally operated and will have no automatic features or electrical protection.

11.0 Loss Of PNB-D26:

- Power is lost to CHB-TT-221 and CHB-TSHH-221-1 causing CHB-UV-515, Letdown to Regen Hx Isol Valve, to fail closed.

End of Appendix

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- _____ 1. Enter Appendix Entry Time and Date:

- _____ 2. **IF** CHN-LV-110Q, Letdown Control Valve, is failed,
THEN perform the following to place CHN-LV-110P in service:
- a. Direct an operator to open CHN-V341, CHN-LV-110P Inlet Valve.
 - b. Place the Letdown Control Valve Selector to the "110P" position.
 - c. Direct an operator to slowly open CHN-V342, CHN-LV-110P Outlet Valve.
 - d. **WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Letdown Control Valves.
 - e. Direct an operator to isolate CHN-LV-110Q by closing **BOTH** of the following:
 - CHN-V343,
CHN-LV-110Q Inlet Valve
 - CHN-V340,
CHN-LV-110Q Outlet Valve

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 3. **IF** CHN-LV-110P, Letdown Control Valve, is isolated,
AND RCS pressure is less than 1000 psia,
THEN perform the following to place CHN-LV-110P in service:
- a. Direct an operator to open CHN-V341, CHN-LV-110P Inlet Valve.
 - b. Place the Letdown Control Valve Selector to the "BOTH" position.
 - c. Direct an operator to slowly open CHN-V342, CHN-LV-110P Outlet Valve.
 - d. **WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Letdown Control Valves.

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 4. **IF** CHN-LV-110P, Letdown Control Valve, is failed,
THEN perform the following to place CHN-LV-110Q in service:
- a. Direct an operator to open CHN-V343, CHN-LV-110Q Inlet Valve.
 - b. Place the Letdown Control Valve Selector to the "110Q" position.
 - c. Direct an operator to slowly open CHN-V340, CHN-LV-110Q Outlet Valve.
 - d. **WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Letdown Control Valves.
 - e. Direct an operator to isolate CHN-LV-110P by closing **BOTH** of the following:
 - CHN-V341,
CHN-LV-110P Inlet Valve
 - CHN-V342,
CHN-LV-110P Outlet Valve

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 5. **IF** CHN-LV-110Q, Letdown Control Valve, is isolated,
AND RCS pressure is less than 1000 psia,
THEN perform the following to place CHN-LV-110Q in service:
- Direct an operator to open CHN-V343, CHN-LV-110Q Inlet Valve.
 - Place the Letdown Control Valve Selector to the "BOTH" position.
 - Direct an operator to slowly open CHN-V340, CHN-LV-110Q Outlet Valve.
 - WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Letdown Control Valves.

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 6. **IF** CHN-PV-201Q, Backpressure Control Valve, is failed,
THEN perform the following to place CHN-PV-201P in service:
- Direct an operator to open CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve.
 - Place the Backpressure Control Valve Selector to the "201P" position.
 - Direct an operator to slowly open CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve.
 - WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Backpressure Control Valves.
 - Direct an operator to isolate CHN-PV-201Q by closing **BOTH** of the following:
 - CHN-V347, Backpressure Control Valve CHN-PV-201Q Inlet Isol Valve
 - CHN-V349, Backpressure Control Valve CHN-PV-201Q Outlet Isol Valve

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 7. **IF** CHN-PV-201P, Backpressure Control Valve, is isolated,
AND RCS pressure is less than 1000 psia,
THEN perform the following to place CHN-PV-201P in service:
- Direct an operator to open CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve.
 - Place the Backpressure Control Valve Selector to the "BOTH" position.
 - Direct an operator to slowly open CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve.
 - WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Backpressure Control Valves.

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 8. **IF** CHN-PV-201P, Backpressure Control Valve, is failed,
THEN perform the following to place CHN-PV-201Q in service:
- a. Direct an operator to open CHN-V347, Backpressure Control Valve CHN-PV-201Q Inlet Isol Valve.
 - b. Place the Backpressure Control Valve Selector to the "201Q" position.
 - c. Direct an operator to slowly open CHN-V349, Backpressure Control Valve CHN-PV-201Q Outlet Isol Valve.
 - d. **WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Backpressure Control Valves.
 - e. Direct an operator to isolate CHN-PV-201P by closing **BOTH** of the following:
 - CHN-V348, Backpressure Control Valve CHN-PV-201P Inlet Isol Valve
 - CHN-V350, Backpressure Control Valve CHN-PV-201P Outlet Isol Valve

LOSS OF LETDOWN

Appendix F, Aligning Letdown Control And Backpressure Valves

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 9. **IF** CHN-PV-201Q, Backpressure Control Valve, is isolated,
AND RCS pressure is less than 1000 psia,
THEN perform the following to place CHN-PV-201Q in service:
- a. Direct an operator to open CHN-V347, Backpressure Control Valve CHN-PV-201Q Inlet Isol Valve.
 - b. Place the Backpressure Control Valve Selector to the "BOTH" position.
 - c. Direct an operator to slowly open CHN-V349, Backpressure Control Valve CHN-PV-201Q Outlet Isol Valve.
 - d. **WHEN** letdown flow is established,
THEN direct an operator to perform a local leak check on the Backpressure Control Valves.

End of Appendix



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PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|------------------|------------|-----|-------|-----|--|
| TASK: | L211045 Placing the second Feedwater pump on-line. | | | | | | |
| TASK STANDARD: | Second Feedwater pump has been tripped due to high vibrations. | | | | | | |
| K/A: | 3.4 039 A4.03 | K/A RATING: | RO: | 2.8 | SRO: | 2.8 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | 40OP-9FT02, FEEDWATER PUMP TURBINE B | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | X | PLANT | | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **Yes**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 02/16/2012

Revised By: _____ Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation.
PVAR # _____*

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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PVNGS JOB PERFORMANCE MEASURE
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1. SIMULATOR SETUP:

- IC#: 109 (This IC is setup to run JS-3 and JS-4 for the 2012 NRC exam).
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| | |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Run Scenario file “2012 NRC S3-S4” from the exam jump drive
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9FT02. This JPM was written using Revision 38 of 40OP-9FT02.
- MALFUNCTIONS, OVERRIDES, etc. **during** JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------------------|----------------------------|--|
| Following step 6 | Key 1 mfFW15B r:45 f:30 | MFWT B Hi Vibrations greater than 5 mils |
| | | |

IF IC-109 is not available, perform the following to setup for this JPM:

- Reset to IC-16
- Startup the B feedpump using section 4.3 of 40OP-9FT02 until feedpump speed is ~ 1000 rpm.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 1 is at 50% power.
- 40OP-9FT02, Main Feedwater Pump B has been completed thru section 4.3 in preparation of placing the B MFP in service.
- An Auxiliary Operator is stationed at the B MFP.

INITIATING CUE:

- The CRS directs you to place the second Feedpump (MFP B) on-line per Section 4.4 of 40OP-9FT02, Main Feedwater Pump B.



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PVNGS JOB PERFORMANCE MEASURE
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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

NOTE

The bias adjustment on SGN-FIC-1108, FWPT Speed Setpoint Controller, will add or subtract RPM from its input signal from the Master Controller.

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 1 | Step 4.4.1 Ensure BOTH of the following: ____ SGN-FIC-1108, FWPT Speed Setpoint Controller is in auto. ____ FWPT B bias is set with 100 RPM of FWPT A. | | Examinee verifies places SGN-FIC-1108 in auto. Examiner Note: Auto is “R” on the controller. Examinee adjusts FWPT B bias to within 100 RPM of FWPT A. |

SAT / UNSAT

Comments (required for UNSAT):

| | STEP | CUE | STANDARD |
|----|--|-----|--------------------------------------|
| 2. | Step 4.4.2 WHEN performing Step 4.4.3 through Step 4.4.5, THEN <u>ensure</u> proper steam generator levels are maintained. | | Examinee verifies current SG levels. |

SAT / UNSAT

Comments (required for UNSAT):



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| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 3. | Step 4.4.3 <u>Adjust</u> FTN-HS-54, Manual Speed Control, to match pump discharge pressure with the other FWPT discharge pressure. | | Examinee adjusts FTN-HS-54 potentiometer until FWPT B discharge pressure matches FWPT A discharge pressure. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. | Step 4.4.4 <u>Ensure</u> FWN-HV-32, FWPT Discharge Valve, for FWN-P01B is open. | | Examinee verifies open FWN-HV-32, FWPT B discharge valve. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| NOTE: | | | |
|---|--|--|--|
| Any of the following may be useful when placing the second feed pump in service. <ul style="list-style-type: none"> • DFWCS Auto/manual stations display. AM_STNS_C) • DFWCS Feedwater pump display. (FWP_C) • PMS page display “FEED PUMP PERFORMANCE” (PC-3) | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|-------------------------------------|
| 5. | Step 4.4.5 <u>Perform</u> ALL of the following to place FWPT Speed Setpoint Controllers in Auto: | | Examinee proceeds to sub steps 1-5. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

NOTE

Using this option may adversely affect Steam Generator levels if the controller is adjusted too fast.

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 6. | Step 4.4.5 1. Slowly <u>adjust</u> FTN-HS-54, Manual Speed Control, to match FWPT actual speed with the output as read on SGN-FIC-1108, FWPT Speed Setpoint Controller. (within 10 RPM of each other). | | Examinee adjusts FTN-HS 54 until FWPT B actual speed is within 10 RPM of the output on SGN-FIC-1108 |
| SAT / UNSAT Comments (required for UNSAT): | | | |

Examiner Note:

Direct the driver to activate Key 1, (Hi vibrations on MFP B)



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| | STEP | CUE | STANDARD |
|---|--|--|--|
| 7. * | Window 6A09C alarms “FWPT B HI VIB” | If requested cue: The CRS directs the examinee to address the ARP. | Examinee notes window 6A09C “FWPT B HI VIB” and addresses 40AL-9RK6A (B06 Alarm Response) ALTERNATE PATH |
| SAT / UNSAT Comments (required for UNSAT): | | | |

NOTE:

There have been problems with the vibration monitoring circuitry. Vibration levels are directed to be checked prior to initiating action in the level chart on the next page.

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 8. * | FIRST PRIORITY OPERATOR ACTION 1. Check FWPT B vibration on recorder MTN-YR-301, point 14, on board B07. 2. Check FWPT B vibration on computer point FTY18. | | Examinee verifies vibration readings on MTN-YR-301, point 14 and computer point FTY18. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|--|---|
| 9. | SECOND PRIORITY OPERATOR ACTION 1. Direct a Technician from the Vibration Group to take local readings on the bearing. | When requested cue: CRS will ensure that the Vibration Group is contacted. | Examinee takes action to ensure that the Vibration Group is informed of the need to take local FWPT bearing readings. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|---|---|
| 10. * | SECOND PRIORITY OPERATOR ACTION 2. Direct a Nuclear Operator to locally check if the turbine is vibrating more than normal. 5 mils vibration will cause an obvious high level of vibration to the FWPT. | When requested cue: AO reports a much higher than normal level of vibrations at FWPT B. | Examinee sends AO to FWPT B to validate vibration readings. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|---|--|
| 11. * | SECOND PRIORITY OPERATOR ACTION 2. IF the 5 mils is confirmed and sustained, THEN trip the FWPT and initiate a RPCB. | When Requested Cue: CRS concurs with tripping FWPT B. This JPM is complete. | Examinee trips FWPT B using FTN-HS-52, (Feedwater Pump Turbine B Manual Trip). |
| | | | Examiner Note: At 50% power RPCB system is disabled |
| | | | |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 02/16/2012 | New JPM | |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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PVNGS JOB PERFORMANCE MEASURE
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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Unit 1 is at 50% power.
- 40OP-9FT02, Main Feedwater Pump B has been completed thru section 4.3 in preparation of placing the B MFP in service.
- Auxiliary Operator is stationed at the B MFP.

INITIATING CUE:

- The CRS directs you to place the second Feedpump (MFP B) on-line per Section 4.4 of 40OP-9FT02, Main Feedwater Pump B.

FEEDWATER PUMP TURBINE B

400P-9FT02

Revision
38**4.4 Placing the Second Feedwater Pump On-Line****NOTE**

The bias adjustment on SGN-FIC-1108, FWPT Speed Setpoint Controller, will add or subtract RPM from its input signal from the Master Controller.

4.4.1 **Ensure BOTH** of the following:

- _____ SGN-FIC-1108, FWPT Speed Setpoint Controller, is in auto.
- _____ FWPT B bias is set within 100 RPM of FWPT A.

_____ 4.4.2 **WHEN** performing Step 4.4.3 through Step 4.4.5,
THEN ensure proper steam generator levels are maintained.

_____ 4.4.3 **Adjust** FTN-HS-54, Manual Speed Control, to match pump discharge pressure with the other FWPT discharge pressure.

_____ 4.4.4 **Ensure** FWN-HV-32, FWPT Discharge Valve, for FWN-P01B is open.

NOTE

Any of the following may be useful when placing the second feed pump in service.

- DFWCS Auto/manual stations display. (AM_STNS_C)
- DFWCS Feedwater pump display. (FWP_C)
- PMS page display "FEED PUMP PERFORMANCE" (PC-3).

_____ 4.4.5 **Perform ALL** of the following to place FWPT Speed Setpoint Controllers in Auto:

NOTE

Using this option may adversely affect Steam Generator levels if the controller is adjusted too fast.

- _____ 1. Slowly **adjust** FTN-HS-54, Manual Speed Control, to match FWPT actual speed with the output as read on SGN-FIC-1108, FWPT Speed Setpoint Controller.
(within 10 RPM of each other)
- _____ 2. **IF** it is desired to adjust the deviation meter with the bias,
THEN ensure FWPT speed is greater than 4155 RPM.

FEEDWATER PUMP TURBINE B

40OP-9FT02

Revision
38

----- **NOTE** -----

Step 4.4.5.3 may be performed in parallel with the rest of this section.

-
- _____ 3. Notify the FW Pump Engineer that FW Pump "B" is at minimum pump speed operation (shaft seal operation).
 - _____ 4. Adjust the bias on SGN-FIC-1108, FWPT Speed Setpoint Controller, until there is a zero deviation on FTN-SDI-102, Manual/Auto Control Deviation.
 - _____ 5. Place FTN-HS-100, Auto/Manual Selector Switch, in AUTO.
(Control of the FWPT will now be with Speed Setpoint Controllers.)
 - _____ 6. Balance FWPT A & B discharge pressures, flows, and differential pressures between Main Feedwater Pump Discharge Pressure and Main Steam Header Pressure using the bias on SGN-FIC-1107, FWPT Speed Setpoint Controller, and SGN-FIC-1108, FWPT Speed Setpoint Controller.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|------------------|------------|-----|-------|-----|--|
| TASK: | 0120020701 Fill a Safety Injection Tank | | | | | | |
| TASK STANDARD: | SIT 2B level increased by 5% NR. | | | | | | |
| K/A: | 3.3 006 A1.13 | K/A RATING: | RO: | 3.5 | SRO: | 3.7 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 20 minutes | | | | |
| REFERENCES: | 40OP-9SI03 | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | X | PLANT | | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 09/09/2011

Revised By: _____ Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

1. SIMULATOR SETUP:

NOTE: There are two different setups for this JPM dependent upon on which other JPM it is to be run with. Pay close attention to the IC and Scenario files to be used.

- IC#: 109 (This IC is setup to run S-3 and S-4 for the 2012 NRC exam.)
- IC#: 110 (This IC is setup to run S-4 and S-7 for the 2012 NRC exam.)

2. SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| None | |
| | |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

3. SPECIAL TOOLS/EQUIPMENT:

40OP-9SI03. This JPM was written using Revision 34 of 40OP-9SI03. \

4. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. **during** JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|---|--|
| 8 | Go to simulator diagram page SI1 and click on Components/Motor Operated valves (CRF)/SIBUV667/crMVSIO1SIBUV667_9 and adjust slowly as the operator directs. (It should end up ~ f:40) | When directed to throttle SIB-UV-667 to reach 1400 psig. |
| 11 | MRF SI05 f:5 | When directed to throttle open SIB-V400 |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Level in SIT 2B has been lowering over the last 24 hours.
- Maintenance has identified a leaking connection.
- Engineering is developing a trouble shooting game plan.
- HPSI pump “B” pre-start checks have been completed.
- SIE-V463, SIT Fill and Drain Line Containment Isolation is OPEN with a dedicated assigned at the valve to close the valve if required. (A manual SESS has been inserted).
- SIB-V219, Mini Flow Recirc Orifice Bypass Valve is OPEN.
- HPSI “B” has been declared Inoperable and unavailable.
- SIB-UV-667, HPSI “B” to the RWT isolation valve has been throttled 9 turns OPEN.
- The HPSI discharge header was vented during the previous shift.
- SIE-V220, SIT “2B” Fill & Drain Header Manual Isol Valve has been verified open.
- Manual HPSI B SESS alarm has been inserted
- 40OP-9SI03, section 6.3 (Filling the Safety Injection Tanks to Establish or Maintain Normal level has been completed thru step 6.3.5.25.

INITIATING CUE:

- The CRS directs you to start HPSI pump “B” and fill the 2B SIT by 5% Narrow range starting at step 6.3.5.26 of 40OP-9SI03 to maintain/restore normal level in SIT 2B.



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**PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM**

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

JPM START TIME:

NOTE

When HPSI Pump B is started, it will be recircing to the RWT.

CAUTION

HPSI pump operation between 85 and 225 gpm for greater than 1 hour will result in pump damage.

| | STEP | CUE | STANDARD |
|---|---|---|---|
| 1. * | Step 6.3.5.26 Start HPSI Pump B using SIB-HS-2, HPSI PUMP B P02. | If requested cue: The Auxiliary Operator reports everyone is clear of the HPSI pump. | Examinee starts HPSI Pump B using SIB-HS-2. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. | Step 6.3.5.27 Verify ALL of the following expected responses: <ul style="list-style-type: none">• Discharge pressure is indicated on SIN-PI-309, HPSI HEADER B TO RC LOOPS PRESSURE• Unit 1 Only - Motor run current less than 120 amps | | Examinee verifies discharge pressure (approximately 1600 psi) indicated on SIN-PI-309 and motor run amps <120. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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**PVNGS JOB PERFORMANCE MEASURE
 2012 NRC EXAM**

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 3. | Step 6.3.5.28 IF anomalous HPSI Pump indications are observed, THEN perform the following: a. Notify the CRS immediately. b. Consider stopping HPSI Pump B. c. Evaluate the reason for anomalous indications. | | Examinee verifies no anomalous HPSI Pump indications. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

NOTE

When a HPSI pump is first started, some seal leakage is expected for a short duration.

During normal HPSI pump operation, a dripping seal is normally acceptable, a steady stream is indication of seal damage.

| | STEP | CUE | STANDARD |
|---|---|--|---|
| 4. | Step 6.3.5.29 Inspect HPSI Pump B seals for leakage. | When Requested Cue: AO reports only a dripping seal with no indication of unusual leakage at HPSI pump “B”. | Examinee directs AO to inspect HPSI pump “B” seals for leakage. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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**PVNGS JOB PERFORMANCE MEASURE
 2012 NRC EXAM**

| | STEP | CUE | STANDARD |
|---|--|-----|--------------------|
| 5. | Step 6.3.5.30 IF leakage is discovered at the pump seals, THEN notify System Engineering. | | Examinee NAs step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 6. | Step 6.3.5.31 Verify that HAB-Z01, Aux. Bldg. HPSI Pump Room Ess. Air Control Unit, has started by ONE of the following methods: <ul style="list-style-type: none"> • SEAS window 12L blue light at ESB-UA-2F is not on when status display button on ESB-UA-2D is depressed • Local observation that HAB-Z01 is running. | If Requested Cue: AO verifies that HAB-Z01 is running. | Examinee verifies that HAB-Z01 is running by either SEAS window 12L or local indication. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|-----|--------------------|
| 7. | Step 6.3.5.32 IF HAB-Z01 Aux. Bldg. HPSI Pump Room Ess. Air Control Unit, did NOT start when HPSI Pump B started, THEN notify the SM/CRS. | | Examinee NAs step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 8. * | Step 6.3.5.33 Throttle manually SIB-UV-667, HPSI "B" to the RWT Isolation Valve, to adjust HPSI Pump B discharge pressure to 1400 psig indicated on SIN-PI-309, HPSI Pmp B Hdr Disch Press. | | Examinee directs AO to throttle closed on SIB-UV-667 until SIN-PI-309 indicates approximately 1400 psig. Examiner Note: Driver action required to throttle closed SIB-UV-667. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|----------------------------|
| 9. * | Step 6.3.5.34 Open SIA-UV-682 using SIA-HS-682, MISC DRAIN HEADER TO RWT VLV. | | Examinee opens SIA-UV-682. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|-------|--|---|---|
| 10. * | Step 6.3.5.35 Unlock SIB-V400, SIT Fill and Drain Isolation Valve HPSI Recirc, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. | When Requested Cue: SIB-V400 has been unlocked per 40AC-0ZZ06. | Examinee directs AO to unlock SIB-V400. |

SAT / UNSAT

Comments (required for UNSAT):

| | STEP | CUE | STANDARD |
|-------|---|---|--|
| 11. * | Step 6.3.5.36 Throttle open SIB-V400, SIT Fill and Drain Isolation Valve HPSI Recirc, slowly to control SIT fill rate. | When Requested Cue: AO throttles SIB-V400 as directed. | Examinee directs AO to throttle open SIB-V400. |

SAT / UNSAT

Comments (required for UNSAT):

NOTE

If a SIT Fill and Drain Manual Isolation Valve is closed to isolate an inoperable and open SIT Fill and Drain Air Operated Valve, opening the SIT Fill and Drain Manual Isolation Valve makes the associated SIT inoperable and LCO 3.5.1 or LCO 3.5.2 is applicable.



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| | STEP | CUE | STANDARD |
|---|---|---|--------------------|
| 12. | Step 6.3.5.37 IF the SIT Fill & Drain Manual Isolation Valve for the SIT to be filled is closed, THEN open the SIT Fill & Drain Manual Isolation Valve for the SIT to be filled: <ul style="list-style-type: none"> SIE-V220, SIT “2B” Fill & Drain Header Manual Isol Valve | If Requested Cue: SIE-V220 has been verified open. | Examinee NAs step. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|-------------------------------------|
| 13. | Step 6.3.5.38 IF the unit is in MODES 1 through 4, THEN record initial SIT level: | | Examinee records current SIT level. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | | | |
|--|--|--|--|
| Note: <ul style="list-style-type: none"> Annunciator window 2B11A, SIT LVL HI-LO, alarms on SIT hi level at 63% NR level. Annunciator window 2B11B, SIT LVL HI-HI/LO-LO, alarms on SIT hi-hi level at 69% NR level. | | | |
|--|--|--|--|



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| | STEP | CUE | STANDARD |
|---|---|-----|----------------------------|
| 14. * | Step 6.3.5.39 Open the SIT Fill & Drain Valve for the SIT to be filled: <ul style="list-style-type: none"> SIB-UV-621 using SIB-HS-621, SIT 2B FILL & DRAIN VLV | | Examinee OPENS SIB-UV-621. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | | CUE | STANDARD |
|---|---|-----------------------|---|--|
| 15. * | Step 6.3.5.40 Monitor level of the SIT being filled: | | After level has increased by 5%, Inform CUE: Another operator will complete the remaining actions. | Examinee monitors SIT 2B level increase using SIN-LI-313 (NR) and SIB-LI-311 (WR). |
| | SIN-LI-313 | R) SIT 2B LVL, LT-333 | | |
| | SIB-LI311 | L) SIT 2B LVL LT--321 | | |
| SAT / UNSAT Comments (required for UNSAT): | | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 09/30/11 | | New JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Level in SIT 2B has been lowering over the last 24 hours.
- Maintenance has identified a leaking connection.
- Engineering is developing a trouble shooting gameplan.
- HPSI pump “B” pre-start checks have been completed.
- SIE-V463, SIT Fill and Drain Line Containment Isolation is OPEN with a dedicated assigned at the valve to close the valve if required. (A manual SESS has been inserted).
- SIB-V219, Mini Flow Recirc Orifice Bypass Valve is OPEN.
- HPSI “B” has been declared Inoperable and unavailable.
- SIB-UV-667, HPSI “B” to the RWT isolation valve has been throttled 9 turns OPEN.
- The HPSI discharge header was vented during the previous shift.
- SIE-V220, SIT “2B” Fill & Drain Header Manual Isol Valve has been verified open.
- Manual HPSI B SESS alarm has been inserted
- 40OP-9SI03, section 6.3 (Filling the Safety Injection Tanks to Establish or Maintain Normal level has been completed thru step 6.3.5.25.

INITIATING CUE:

- The CRS directs you to start HPSI pump “B” and fill the 2B SIT by 5% Narrow range starting at step 6.3.5.26 of 40OP-9SI03 to maintain/restore normal level in SIT 2B.

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6.3 Filling the Safety Injection Tanks to Establish or Maintain Normal Level

6.3.1 Precautions

- 6.3.1.1 If a pump fails to develop or maintain expected discharge pressure, flow and/or motor current, then along with system valve alignment, gas or vapor binding of the pump should be among the items considered when determining the reason for anomalous indications.
- 6.3.1.2 Pump indications, such as pump amps, discharge pressure, and/or pump flow should be monitored upon pump start. Indications such as fluctuation of running current, less than expected running current, failure to develop discharge pressure, and/or failure to develop expected flow can indicate pump gas binding, pump cavitation, an isolated suction source, pump suction vortexing, etc..

6.3.2 Limitations

- 6.3.2.1 Maximum HPSI pump or motor bearing oil temperature is 180°F.
- 6.3.2.2 HPSI Motor Start Limitations:
- Frequent starting may result in serious damage to the motor on the HPSI pumps.
 - If the motor is shutdown for greater than 1 hour, only two consecutive starts may be attempted, allowing the motor to coast to rest between starts.
 - If the motor is shutdown for less than 1 hour, only one start may be attempted.
 - Any time the motor windings are energized constitutes a start.
 - If the above criteria have been met, an interval of 15 minutes with the motor running or 45 minutes with the motor shutdown must elapse prior to any additional starts.
- 6.3.2.3 Full load amps for the HPSI motor are as follows:

| Unit | Full Load Amperage |
|---------|--------------------|
| 1 | 120 amps |
| 2 and 3 | 115 amps |

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6.3.2.4 HPSI flow limits are as follows:

| Flow Rate | Time Limit |
|-------------------|------------------------------|
| < 85 gpm | Operation Prohibited |
| 85 gpm to 225 gpm | 1 Hour Maximum |
| > 225 gpm | Continuous Operation Allowed |
| ≥ 1130 gpm | No Operation Allowed |

6.3.3 Prerequisites

- A 6.3.3.1 Safety Injection Tanks (SIT) and Reactor Coolant System (RCS) configuration support filling of the SIT.

6.3.4 Initial Conditions

- A 6.3.4.1 Section 5.0, Prerequisites and Initial Conditions, is complete.
- A 6.3.4.2 The Refueling Water Tank (RWT) contains sufficient volume for Safety Injection Tank (SIT) filling. Filling one empty SIT lowers RWT level by 2%.
- N/A 6.3.4.3 If the SIT Fill and Drain Manual Isolation Valve for the SIT(s) to be filled has been closed, then preparations for a containment entry have been made for opening the SIT Fill and Drain Manual Isolation Valve(s) for the SIT(s) being filled:
- SIE-V210, SIT "2A" Fill & Drain Header Manual Isol Valve
 - SIE-V220, SIT "2B" Fill & Drain Header Manual Isol Valve
 - SIE-V230, SIT "1A" Fill & Drain Header Manual Isol Valve
 - SIE-V240, SIT "1B" Fill & Drain Header Manual Isol Valve
- A 6.3.4.4 Risk Management Action Level (RMAL) has been evaluated for HPSI B being inoperable and unavailable.

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A 6.3.4.5 If venting of the SITs is anticipated, then ALL of the following have been notified that nitrogen will be released into Containment as a result of venting SITs:

- A • Radiation Protection
- N/A • Containment Coordinator, if the Containment Coordinator position is filled
- N/A • All personnel in Containment, if personnel are in Containment

NOTE

— Venting the SITs with Power Access Purge in operation could cause the Power Access Purge supply dampers to close at 0.03 psig (1 inch water).

N/A 6.3.4.6 If the Containment Power Access Purge is in service, then the following has been performed:

- N/A a. Radiation Protection concurrence has been obtained to shutdown the Containment Power Access Purge.
- N/A b. The Containment Power Access Purge has been removed from service per 40OP-9CP01, Containment Purge System.

A 6.3.4.7 The SM/CRS has granted permission to manipulate components controlled by 40AC-0ZZ06, Locked Valve, Breaker and Component Control:

- SIE-V463, SIT Fill and Drain Line Isolation Valve
- SIB-V219, Mini Flow Recirc Orifice Bypass Valve
- SIB-UV-667, HPSI "B" to the RWT Isolation Valve
- SIB-V478, HPSI Discharge Isolation Valve
- SIB-V400, SIT Fill and Drain Isolation Valve HPSI Recirc



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34**6.3.5 Instructions**

- A 6.3.5.1 Notify Radiation Protection that a SIT will be filled to allow coordination of ZIP program walkdowns.
- B 6.3.5.2 **IF** the SIT is currently filled and pressurized **AND** requires level raised to maintain operability,
THEN GO TO Step 6.3.5.5.
- A 6.3.5.3 Ensure BOTH the Train A and Train B SI vent valves on the SIT(s) to be filled are closed:

| SIT | Initial | Train A Valve | Initial | Train B Valve |
|-----|----------|---------------|----------|---------------|
| 1A | | SIA-HS-607A | | SIB-HS-633A |
| 1B | <u>A</u> | SIA-HS-608A | <u>A</u> | SIB-HS-643A |
| 2A | | SIA-HS-605A | | SIB-HS-613A |
| 2B | | SIA-HS-606A | | SIB-HS-623A |

- A 6.3.5.4 Ensure BOTH Train A/Train B SIT vent valves are de-energized:
- A • SIT Vent Valves Power Supply, using keyswitch SIA-HS-17A, SIT VENT VALVES POWER SUPPLY
 - A • SIT Vent Valves Power Supply, using keyswitch SIB-HS-18A, SIT VENT VALVES POWER SUPPLY
- A 6.3.5.5 Ensure SIE-HV-661 is closed, using SIN-HS-661, COMBINED SIT & MISC DRN HDR TO RDT VLV.
- B 6.3.5.6 Ensure SIA-UV-682 is closed, using SIA-HS-682, MISC DRAIN HEADER TO RWT VLV.

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A Venting on the HPSI discharge header is not necessary if venting has been completed within the previous 24 hours as long as no work or other evolutions took place that could introduce air/voids into the system.

N/A 6.3.5.7 IF ANY of the following:

- N/A • The HPSI discharge header has NOT been vented in the past 24 hours.
- N/A • Work or evolutions have taken place that could introduce air/voids into the system.

THEN perform 40OP-9SI04, Safety Injection System Venting, section for Train B HPSI Header Venting for Pump Run, prior to starting HPSI Pump B.

A 6.3.5.8 Perform the following pre-start checks on HPSI Pump B:

- A a. Check D-Panel Breaker PHB-D3807, HPSI Pump 2 Motor Space Heater SIBP02H, closed.
- A b. Check the Motor Space Heater light is on at PHB-M3835, Space Htr Filament Xfmrs and Neon Lights Cubicle.
- A c. Ensure HPSI Pump and motor bearing oil levels are normal:

| Initial | Location |
|----------|----------------------------------|
| <u>B</u> | Outboard motor bearing oil level |
| <u>B</u> | Inboard motor bearing oil level |
| <u>B</u> | Inboard pump bearing oil level |
| <u>B</u> | Outboard pump bearing oil level |

- A d. Ensure SIB-V402, HPSI Suction Isolation Valve, is open. (52' HPSI B Room)



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A 6.3.5.9 Perform the following to vent HPSI Pump B seal cavity:
(40' HPSI B Room)

A a. Throttle open SIB-V982, HPSI Pump SIB-P02 Seal Cavity Vent Valve.

A b. **WHEN** a solid stream of water has been observed for 2 to 3 minutes, **THEN** close SIB-V982, HPSI Pump SIB-P02 Seal Cavity Vent Valve.

Signature [Signature] Date 4/4/xx
(Initial Performer)

B c. Throttle open SIB-V983, HPSI Pump SIB-P02 Seal Cavity Vent Valve.

A d. **WHEN** a solid stream of water has been observed for 2 to 3 minutes, **THEN** close SIB-V983, HPSI Pump SIB-P02 Seal Cavity Vent Valve.

Signature [Signature] Date 4/4/xx
(Initial Performer)

B 6.3.5.10 Perform an Independent Verification that SIB-V982, HPSI Pump SIB-P02 Seal Cavity Vent Valve, is closed.

Signature [Signature] Date 4/4/xx
(Independent Verifier)

B 6.3.5.11 Perform an Independent Verification that SIB-V983, HPSI Pump SIB-P02 Seal Cavity Vent Valve, is closed:

Signature [Signature] Date 4/4/xx
(Independent Verifier)

N/A 6.3.5.12 **IF** any air was observed while venting the seal cavity, **THEN** record the results of any air encountered during venting in the Access database located at V:\ECCS_Venting\SIVenting.mde or at \\fs-pv\common-v\ECCS_Venting.

N/A 6.3.5.13 **IF** the Access database is NOT available, **THEN** notify System Engineering of ALL of the following:

- N/A a. Location of where the air was found
- N/A b. Valve position while venting
- N/A c. Amount of time to get an air free vent

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6.3.5.14 IF a SIAS occurs during performance of this section,
THEN perform ALL of the following:

- a. Ensure the SIT fill and drain valves are closed.
- b. Close SIB-V219, Mini Flow Recirc Orifice Bypass Valve. (40' HPSI B Room)
- c. Open SIB-UV-667 using SIB-HS-667, HPSI PMP B TO RWT ISOL.
- d. Close SIE-V463, SIT Fill and Drain Line Isolation Valve. (SW East Penn Room)

6.3.5.15 IF the unit is in MODES 1 through 4,
THEN perform the following:

- a. Insert a manual Containment Isolation SESS alarm.

NOTE

The dedicated operator for closing SIE-V463 is required until SIE-V463 is closed in Step 6.3.5.62.

- b. Ensure a dedicated operator in continuous communication with the Control Room is assigned for closing SIE-V463 as required by 40DP-9OP19, Locked Valve, Breaker and Component Tracking.

6.3.5.16 Unlock SIE-V463, SIT Fill and Drain Line Containment Isolation Valve, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. (SW East Penn Room)

6.3.5.17 Open SIE-V463, SIT Fill and Drain Line Containment Isolation Valve.

6.3.5.18 Unlock SIB-V219, Mini Flow Recirc Orifice Bypass Valve, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. (40' HPSI B Room)

NOTE

Opening SIB-V219 renders HPSI B inoperable and unavailable.

6.3.5.19 Open SIB-V219, Mini Flow Recirc Orifice Bypass Valve.

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- A 6.3.5.20 **WHEN** SIB-V219 is open **AND** the unit is in MODES 1 through 4, **THEN** perform ALL of the following:
- A a. Notify the SM/CRS.
 - A b. Insert a manual HPSI B SESS alarm.
- A 6.3.5.21 Ensure SIB-UV-667, HPSI Pmp B to RWT Isol, is open.
- A 6.3.5.22 Unlock SIB-UV-667, HPSI "B" to the RWT Isolation Valve, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. (40' HPSI B Room)
- N 6.3.5.23 Throttle closed SIB-UV-667, HPSI "B" to the RWT Isolation Valve, to nine turns from open.
- N/A 6.3.5.24 **IF** a HPSI Loop Injection Valve is known to leak **AND** the SM/CRS directs, **THEN** perform the following:
- N/A a. Unlock SIB-V478, HPSI Discharge Isolation Valve, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. (52' HPSI B Room)
 - N/A b. Close SIB-V478, HPSI Discharge Isolation Valve.
 - N/A c. Insert a manual HPSI B SESS alarm.
 - N/A d. Notify the SM/CRS.
- N/A 6.3.5.25 **IF** the HPSI discharge header is required to be vented by Step 6.3.5.7, **THEN** ensure 40OP-9SI04, Safety Injection System Venting, section for Train B HPSI Header Venting for Pump Run, has been completed.

Safety Injection Tank Operations

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NOTE

- ___ When HPSI Pump B is started, it will be recircling to the RWT.

CAUTION

- ___ HPSI pump operation between 85 and 225 gpm for greater than 1 hour will result in pump damage.

___ 6.3.5.26 Start HPSI Pump B using SIB-HS-2, HPSI PUMP B P02.

___ 6.3.5.27 Verify ALL of the following expected responses:

- ___ • Discharge pressure is indicated on SIN-PI-309, HPSI HEADER B TO RC LOOPS PRESSURE
- ___ • **Unit 1 Only**
Motor run current less than 120 amps
- ___ • **Unit 2 and Unit 3 Only**
Motor run current less than 115 amps

___ 6.3.5.28 **IF** anomalous HPSI Pump indications are observed, **THEN** perform the following:

- ___ a. Notify the CRS immediately.
- ___ b. Consider stopping HPSI Pump B.
- ___ c. Evaluate the reason for anomalous indications.

NOTE

- ___ • When a HPSI pump is first started, some seal leakage is expected for a short duration.
- ___ • During normal HPSI pump operation, a dripping seal is normally acceptable, a steady stream is indication of seal damage.

___ 6.3.5.29 Inspect HPSI Pump B seals for leakage.

___ 6.3.5.30 **IF** leakage is discovered at the pump seals, **THEN** notify System Engineering.


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- ___ 6.3.5.31 Verify that HAB-Z01, Aux. Bldg. HPSI Pump Room Ess. Air Control Unit, has started by ONE of the following methods:
 - ___ • SEAS window 12L blue light at ESB-UA-2F is not on when status display button on ESB-UA-2D is depressed
 - ___ • Local observation that HAB-Z01 is running
- ___ 6.3.5.32 **IF** HAB-Z01 Aux. Bldg. HPSI Pump Room Ess. Air Control Unit, did NOT start when HPSI Pump B started, **THEN** notify the SM/CRS.
- ___ 6.3.5.33 Throttle manually SIB-UV-667, HPSI "B" to the RWT Isolation Valve, to adjust HPSI Pump B discharge pressure to 1400 psig indicated on SIN-PI-309, HPSI Pmp B Hdr Disch Press.
- ___ 6.3.5.34 Open SIA-UV-682 using SIA-HS-682, MISC DRAIN HEADER TO RWT VLV.
- ___ 6.3.5.35 Unlock SIB-V400, SIT Fill and Drain Isolation Valve HPSI Recirc, per 40AC-0ZZ06, Locked Valve, Breaker and Component Control. (40' HPSI B Room, west wall)
- ___ 6.3.5.36 Throttle open SIB-V400, SIT Fill and Drain Isolation Valve HPSI Recirc, slowly to control SIT fill rate.

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Revision
34**NOTE**

— If a SIT Fill and Drain Manual Isolation Valve is closed to isolate an inoperable and open SIT Fill and Drain Air Operated Valve, opening the SIT Fill and Drain Manual Isolation Valve makes the associated SIT inoperable and LCO 3.5.1 or LCO 3.5.2 is applicable.

- 6.3.5.37 **IF** the SIT Fill & Drain Manual Isolation Valve for the SIT to be filled is closed,
THEN open the SIT Fill & Drain Manual Isolation Valve for the SIT to be filled:

- • SIE-V210, SIT "2A" Fill & Drain Header Manual Isol Valve (100' CNMT SE and E of SIT 2A)
- • SIE-V220, SIT "2B" Fill & Drain Header Manual Isol Valve (100' CNMT SW and W of SIT 2B)
- • SIE-V230, SIT "1A" Fill & Drain Header Manual Isol Valve (100' CNMT NW and N of SIT 1A)
- • SIE-V240, SIT "1B" Fill & Drain Header Manual Isol Valve (100' CNMT NW and S of SIT 1B)

- 6.3.5.38 **IF** the unit is in MODES 1 through 4,
THEN record initial SIT level:

| SIT | Indicator | Level |
|-----|------------|-------|
| 2A | SIN-LT-312 | |
| 2B | SIN-LT-322 | |
| 1A | SIN-LT-332 | |
| 1B | SIN-LT-342 | |



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NOTE

- • Annunciator window 2B11A, SIT LVL HI-LO, alarms on SIT hi level at 63% NR level.
- • Annunciator window 2B11B, SIT LVL HI-HI/LO-LO, alarms on SIT hi-hi level at 69% NR level.

— 6.3.5.39 Open the SIT Fill & Drain Valve for the SIT to be filled:

- • SIB-UV-611 using SIB-HS-611, SIT 2A FILL & DRAIN VLV
- • SIB-UV-621 using SIB-HS-621, SIT 2B FILL & DRAIN VLV
- • SIB-UV-631 using SIB-HS-631, SIT-1A FILL & DRAIN VLV
- • SIB-UV-641 using SIB-HS-641, SIT 1B FILL & DRAIN VLV

— 6.3.5.40 Monitor level of the SIT being filled:

| Narrow Range SIT Level | |
|------------------------|-------------------------|
| SIN-LI-313 | L) SIT 2A LEVEL, LT-313 |
| | R) SIT 2B LEVEL, LT-323 |
| SIN-LI-333 | L) SIT 1A LEVEL LT-333 |
| | R) SIT 1B LEVEL LT-343 |

| Wide Range SIT Level | |
|----------------------|-------------------------|
| SIB-LI-311 | L) SIT 2A LEVEL, LT-311 |
| | R) SIT 2B LEVEL, LT-321 |
| SIA-LI-331 | L) SIT 1A LEVEL LT-331 |
| | R) SIT 1B LEVEL LT-341 |



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___ 6.3.5.41 IF SIT level indications are NOT tracking properly,
THEN perform the following:

___ a. Close the SIT Fill & Drain Valve opened in Step 6.3.5.39.

___ • SIB-UV-611 using SIB-HS-611, SIT 2A Fill & Drain Vlv

___ • SIB-UV-621 using SIB-HS-621, SIT 2B Fill & Drain Vlv

___ • SIB-UV-631 using SIB-HS-631, SIT-1A Fill & Drain Vlv

___ • SIB-UV-641 using SIB-HS-641, SIT 1B Fill & Drain Vlv

___ b. Notify the SM/CRS.



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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|-----------|------------------|-------|------------|-------|-----|
| TASK: | 1260010101 Respond to an alarm | | | | | | |
| TASK STANDARD: | RMWT water added to RDT | | | | | | |
| K/A: | 3.5 007 A2.05 | | K/A RATING: | RO: | 3.2 | SRO: | 3.6 |
| K/A: | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | | RO | VALIDATION TIME: | | 15 minutes | | |
| REFERENCES: | 40AL-9RK3A, Panel B03A Alarm Responses | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | | SIMULATOR | X | PLANT | | OTHER | |

JPM TYPE

Time Critical? *(Yes/No)* **No** Alternative Path? *(Yes/No)* **No**
PRA/SRA related? *(Yes/No)* **No**

APPROVAL

Developed By: Larry Burton Date: 09/30/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

1. SIMULATOR SETUP:

- IC#: 107 (This IC is designed to run JS-5 and JS-6 together for the 2012 NRC exam)
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|--------------------------|-------------|
| See Special Instructions | |
| | |

- SPECIAL INSTRUCTIONS:
 - After the IC is loaded, place the simulator in run and perform the following to bring the Reactor Drain Tank Hi Temperature alarm to the top of the alarm screen:
 - Go to the Panel Overview for B03
 - Click on alarm window B03A window 7A.
 - Override “ALARM_OFF” the Reactor Drain Tank Hi Temperature alarm.
 - Then override “No_override” for the Reactor Drain Tank Hi Temperature alarm.
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

This JPM was written using Revision 28 of 40AL-9RK3A.

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------|
| None | | |
| | | |



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- A pressurizer relief valve RCE-PSV-201 had been leaking past its seat.
- RCS pressure has been reduced to 2210 psia.
- Downstream temperatures from RCE-PSV-201 have stabilized.

INITIATING CUE:

- The CRS directs you to take action per 40AL-9RK3A, window 3A07A to clear alarm point CHTS268, Reactor Drain Tank Temperature Hi.



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|--|--|
| 1. | <p>First Priority Action (3A07A)</p> <ol style="list-style-type: none">1. Consider performing 40AO-9ZZ02, Excessive RCS Leakage, in conjunction with this procedure.2. Check the Reactor Drain Tank Temperature is greater than or equal to 140°F OR increasing by reading Temperature indicator CHN-TI-268 on panel B03.3. Monitor RDT pressure at CHN-PI-268 on B03.4. Monitor the pressurizer relief to RDT temperatures at RCN-TI-106, RCN-TI-107, RCN-TI-108 and RCN-TI-109 on B04 to determine if pressurizer relief leakage is the cause of the Hi Temperature.5. IF a valid alarm is received while shutdown cooling is in service, THEN refer to 40EP-9EO11, Lower Mode Function Recovery. | <p>If requested cue:</p> <p>The CRS will address 40AO-9ZZ02.</p> | <p>Examinee may refer to cue to verify that the Hi temperature and Pressure were due to a leaking Pressurizer PSV.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

NOTE

This alarm response will mitigate a high temperature condition in the RDT. It will also address RDT Hi-Lo Level and RDT Hi pressure conditions which results from hot water leakage into the RDT.



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| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 2. | Second Priority Action, step 1 Ensure GRA-UV-1 and GRB-UV-2, Containment Isolation Valves for the RDT/Gas Surge Header, are open. | | Examinee verifies GRA-UV-1 and GRB-UV-2 OPEN. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|----------------------------|
| 3. * | Second Priority Action, step 2 Open CHN-UV-540, RDT Vent to Gas Surge Tank, to establish a vent of the RDT. | | Examinee opens CHN-UV-540. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

NOTE before step 3:
The following steps may have to be done concurrently or alternately one or more times to control the temperature and level in the reactor drain tank.

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. * | Second Priority Action, step 3.1 <u>Start</u> CHN-P03A or CHN-P03B, RMW pump, from B03. | | Examinee starts either RMW pump CHN-P03A/B. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 5. * | Second Priority Action, step 3.2 Open CHN-UV-580, Makeup Supply Header to RDT Containment Isolation, from B03. | | Examinee opens CHN-UV-580, Makeup Supply Header to RDT Containment Isolation, from B03. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|---|
| 6. * | Second Priority Action, step 3.3 Direct an Auxiliary Operator to slowly OPEN CHN-V790, RMW header isolation, located on the 110 ft. of the aux. building letdown valve gallery. | Inform Cue: AO reports that CHN-V790 is open. | Examinee directs an Auxiliary Operator to slowly OPEN CHN-V790, RMW header isolation. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|---|------------------------------------|
| 7. | <p>Second Priority Action, step 3.4</p> <p>WHEN RDT temperature is less than 140 degrees, THEN close CHN-UV-580, Makeup Supply Header to RDT Containment Isolation.</p> | <p>Inform Cue:</p> <p>After RDT Temperature is less than 140 degrees:</p> <ul style="list-style-type: none">• The CRS directs you to stop filling the RDT at this time. <p>After the examinee closes CHN-UV-580:</p> <ul style="list-style-type: none">• Another operator will complete steps to reduce RDT level. | <p>Examinee closes CHN-UV-580.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- A pressurizer relief valve RCE-PSV-201 had been leaking past its seat.
- RCS pressure has been reduced to 2210 psia.
- Downstream temperatures from RCE-PSV-201 have stabilized.

INITIATING CUE:

- The CRS directs you to take action per 40AL-9RK3A, window 3A07A to clear alarm point CHTS268, Reactor Drain Tank Temperature Hi.

RESPONSE SECTION**GROUP A**

| PT ID | POSSIBLE CAUSE | SETPOINT |
|--------------|-----------------------------------|-----------------|
| CHTS268 | Reactor Drain Tank Temperature Hi | 140°F |

AUTO ACTION

- _____ 1. None

FIRST PRIORITY OPERATOR ACTION

- _____ 1. Consider performing 40AO-9ZZ02, Excessive RCS Leakage, in conjunction with this procedure.
- _____ 2. Check the Reactor Drain Tank Temperature is greater than or equal to 140°F **OR** increasing by reading Temperature indicator CHN-TI-268 on panel B03.
- _____ 3. Monitor RDT pressure at CHN-PI-268 on B03.
- _____ 4. Monitor the pressurizer relief to RDT temperatures at RCN-TI-106, RCN-TI-107, RCN-TI-108 and RCN-TI-109 on B04 to determine if pressurizer relief leakage is the cause of the Hi Temperature.
- _____ 5. **IF** a valid alarm is received while shutdown cooling is in service, **THEN** refer to 40EP-9EO11, Lower Mode Function Recovery.

SECOND PRIORITY OPERATOR ACTION**NOTE**

This alarm response will mitigate a high temperature condition in the RDT. It will also address RDT Hi-Lo Level and RDT Hi pressure conditions which result from hot water leakage into the RDT.

- _____ 1. Ensure GRA-UV-1 and GRB-UV-2, Containment Isolation Valves for the RDT/Gas Surge Header, are open.
- _____ 2. Open CHN-UV-540, RDT Vent to Gas Surge Tank, to establish a vent of the RDT.

(CONTINUED)

NOTE

The following steps may have to be done concurrently or alternately one or more times to control the temperature and level in the reactor drain tank.

- _____ 3. Perform the following steps to add Reactor Makeup Water to the RDT for cooling the contents of the RDT:
- _____ 3.1 Start CHN-P03A or CHN-P03B, RMW pump, from B03.
- _____ 3.2 Open CHN-UV-580, Makeup Supply Header to RDT Containment Isolation, from B03.
- _____ 3.3 Direct an Auxiliary Operator to slowly OPEN CHN-V790, RMW header isolation, located on the 110 ft. of the aux. building letdown valve gallery.
- _____ 3.4 **WHEN** RDT temperature is less than 140 degrees, **THEN** close CHN-UV-580, Makeup Supply Header to RDT Containment Isolation.
- _____ 4. Perform the following steps to pump the RDT to the CVCS HUT.
- _____ 4.1 **IF** RDT temperature has been reduced to less than 140 degrees, **THEN** refer to 40OP-9CH01, CVCS Normal Operations, to pump the RDT.
- _____ 4.2 Ensure the HUT is NOT being processed through the Reactor Drain Filter.
- _____ 4.3 Open CHA-UV-560, RDT outlet isolation valve, from B03.
- _____ 4.4 Open CHB-UV-561, RDT containment isolation valve, from B03.
- _____ 4.5 Open GAA-UV-2, LP N₂ supply to the RDT, from B07.
- _____ 4.6 Place CHE-UV-500, VCT inlet valve to the "VCT RESET" position from B03.
- _____ 4.7 Place CHE-UV-565, Preholdup IX divert valve to the "BYPASS" position.

(CONTINUED)

REAC DRN LOOP TRBL

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- _____ 4.8 The Shift Manager/CRS shall determine whether to use or bypass the gas stripper and direct the required line up.
- _____ 4.9 **WHEN** the gas stripper flowpath has been lined up, **THEN** ensure valve CHN-UV-567 is in the "HOLDUP TANK" position.

CAUTION

The seals to the reactor drain pumps will be damaged if fluid temperature at the pump inlet exceeds 200°F.

- _____ 4.10 **IF** RDT temperature is $\geq 200^{\circ}\text{F}$, **THEN** have an Auxiliary Operator monitor temperature at the suction of the reactor drain pumps with a portable temperature monitoring device to ensure temperature at the pump suction does not exceed 200 degrees.
- _____ 4.11 Start CHN-P04A **OR** CHN-P04B, Reactor Drain Pump.
- _____ 5. Control RDT level by stopping and starting of the selected reactor drain pump and by throttling CHN-V790, reactor makeup water to the RDT.
- _____ 6. Maintain RDT level between 52% and 75%.
- _____ 7. Maintain RDT pressure between 0.5 psig and 5 psig.
- _____ 8. **IF** at any time RDT pressure reaches 10 psig, **THEN** close CHN-UV-580, **AND** GO TO alarm response for window 3A07B, REAC DRAIN TK PRESS HI, of this procedure starting with Secondary Operator Actions, step 4.
- _____ 9. Determine the source(s) of leakage into the RDT. Possible sources of leakage include but are not limited to the following:
- Spray Control Valve Drains
 - Regen H-X Drain
 - Reactor Vessel O-Ring Drain
 - RCP Loop Drains
 - PASS Vents/Drains
 - Pressurizer Reliefs
 - RC Hot Leg Drains

(CONTINUED)

REAC DRN LOOP TRBL

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- _____ 10. Inform the Effluent Technician, Radiation Protection and Chemistry that the RDT is being pumped to the CVCS HUT.
- _____ 11. Direct Chemistry to sample the RDT for oxygen concentration.

NOTE

A possible GR auto-dilution (N₂) may result from high O₂ concentration in the gas collection header.

- _____ 12. **IF** Oxygen Concentration is $\geq 2\%$,
THEN direct a Nuclear Operator to ensure a waste gas compressor is running
AND sample for oxygen every 30 minutes.
- _____ 13. **WHEN** the following conditions are satisfied:
- The source of leakage into the RDT has been isolated.
 - RDT temperature is ≤ 130 degrees.
 - RDT Oxygen concentration is $< 2\%$.
- THEN** close CHN-UV-540, RDT Vent to Gas Surge Tank, and restore CVCS/RDT lineup as directed by Shift Manager/CRS per 40OP-9CH01, CVCS Normal Operations.

End of Response



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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|------------------|------------|-----|-------|-----|--|
| TASK: | 1250310201 Respond to an Inadvertent MSIS | | | | | | |
| TASK STANDARD: | Inadvertent MSIS reset | | | | | | |
| K/A: | 3.2 013 A4.01 | K/A RATING: | RO: | 4.5 | SRO: | 4.8 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 10 minutes | | | | |
| REFERENCES: | 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | X | PLANT | | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/27/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____*

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

- IC#: 107 (This IC is setup to run JS-5 and JS-6 together for the 2012 NRC exam)
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| None | |
| | |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: N/A Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40AO-9ZZ17 available. This JPM was written using Revision 16 of 40AO-9ZZ17.

If IC-107 is not available then perform the following to setup for this JPM:

- Imf cm SRRP01IRMSISAB_1 - MSIS relay failure
- Imf cm TRRX12SGALT1114_4 - SG 1 high level transmitter failure
- Override and OPEN Downcomer Isolation and MSIVs for SG 1
- Delete the two malfunctions entered above.



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 1 is at 2% power.
- An inadvertent MSIS has occurred due to a power supply failure.
- The CRS has implemented 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.
- The faulted power supply has been replaced.

INITIATING CUE:

- The CRS directs you to reset MSIS, in accordance with appendix B of 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.



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2012 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*)denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 1. | Step 1 of Appendix B: Enter Appendix Entry Time and Date: | | Examinee enters appendix entry time and date. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|-----------------------|
| 2. | Step 2 of Appendix B: Enter actuation(s) to be reset: | | Examinee writes MSIS. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

Notes before step 3:

- Overriding equipment disables automatic ESFAS operation of the equipment. Depending on plant conditions, this action may make the equipment inoperable.
- The HPSI, LPSI and CS pump minimum recirculation flow provides sufficient heat removal for only one hour of pump operation.



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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 3. | Step 3 of Appendix B: IF the PPS-ESFAS actuation was caused by failure to reset the SG or PZR Pressure variable setpoints during a controlled cooldown, THEN perform the following: | | Examinee NAs step based on cue provided. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. | Step 4 of Appendix B: Check the Bistable Trip Lamps at the PPS Remote Operators Module (B05) for the affected PPS-ESFAS actuation input parameters on all PPS Channels satisfy ONE of the following <ul style="list-style-type: none"> • NOT lit • Bypassed | | Examinee determines that the "A" train SG 1 level HI Bistable trip lamp is lit. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 5. * | Contingency Step 4.1. a. Reset the affected Bistable Trip Lamps at the PPS Remote Operators Module (B05). | | Examinee resets the “A” channel Bistable Trip Lamp on B05. Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 6. | Step 5 of appendix B Check the affected PPS-ESFAS actuation Initiation Relay lamps are illuminated at the PPS Remote Operators Module (B05) on all PPS Channels. | | Examinee determines that the “A” train MSIS initiation relay lamp is not lit. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 7. * | Contingency Step 5.2.a • Obtain the PPS Initiation Reset key for the affected Train. | | Examinee obtains the key for channel “A”. Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 8. * | Contingency Step 5.2.b <ul style="list-style-type: none"> Unlock the affected Initiation Path Reset Train (PPS Cabinets). | | Examinee unlocks the Initiation Path Reset Train on channel "A". Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 9. * | Contingency Step 5.2.c <ul style="list-style-type: none"> Reset the affected Initiation Path by depressing the appropriate Initiation Path Reset pushbutton (PPS Cabinets). | | Examinee resets the affected Initiation Path by depressing the appropriate (MSIS) Initiation Path Reset pushbutton (PPS Cabinets). Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 10. | Contingency Step 5.2.d <ul style="list-style-type: none"> Lock the Initiation Path Reset Train (PPS Cabinets). | | Examinee locks the Initiation Path Reset Train (PPS Cabinets). Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 11. | Contingency Step 5.2.e <ul style="list-style-type: none">Remove the PPS Initiation Reset key. | | Examinee removes the PPS Initiation Reset key. Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 12. | Contingency Step 5.2.f <ul style="list-style-type: none">Check the affected Initiation Signal lamps are illuminated for the affected PPS channels (On status panels above PPS Cabinets). | | Examinee checks the affected Initiation Signal lamps are illuminated for the affected PPS channels (On status panels above PPS Cabinets). Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 13. | Step 6 of appendix B. Check the actuated PPS-ESFAS leg 1-3 and leg 2-4 Actuation Signal lamps are illuminated for PPS Train A and Train B Actuation Signals (On status panels above PPS Cabinet A, SBAC01 and PPS Cabinet B, SBBC01). | | Examinee determines that the “A” train MSIS signal lamps are not illuminated. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|--|--|
| 14. * | Contingency Step 6.1. Perform the following for the affected Train(s): <ul style="list-style-type: none"> a. Press the LOCKOUT RESET pushbutton(s) for the affected PPS-ESFAS actuation(s) (Aux Relay Cabinets Bay 6 & 7). b. Check both red “ON” lamps are illuminated for the affected PPS-ESFAS actuation (Aux Relay Cabinets Bay 6 & 7). | Examiner Note: Pressing either pushbutton S64A or S74A will reset the MSIS LOCKOUT. Inform Cue: Another operator will complete this appendix. | Examinee performs the following: <ul style="list-style-type: none"> a. Presses the LOCKOUT RESET pushbutton(s) for the affected PPS-ESFAS actuation(s) (Aux Relay Cabinets Bay 6 & 7). b. Checks both red “ON” lamps are illuminated for the affected PPS-ESFAS actuation (Aux Relay Cabinets Bay 6 & 7). Alternate Path Step |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 10/27/2011 | | New JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Unit 1 is at 2% power.
- An inadvertent MSIS has occurred due to a power supply failure.
- The CRS has implemented 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.
- The faulted power supply has been replaced.

INITIATING CUE:

- The CRS directs you to reset MSIS, in accordance with appendix B of 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.

Appendix B, PPS-ESFAS Reset

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time
and Date:

- ____ 2. Enter actuation(s) to be
reset:

Appendix B, PPS-ESFAS Reset

INSTRUCTIONS

CONTINGENCY ACTIONS

NOTE

Overriding equipment disables automatic ESFAS operation of the equipment.
Depending on plant conditions, this action may make the equipment inoperable.

NOTE

The HPSI, LPSI and CS pump minimum recirculation flow provides sufficient heat removal for only one hour of pump operation.

- ___ 3. **IF** the PPS-ESFAS actuation was caused by failure to reset the SG or PZR Pressure variable setpoints during a controlled cooldown,
THEN perform the following:
- a. Direct I&C to clear the affected trip signals.
 - b. Evaluate the need to override and position PPS-ESFAS actuated equipment.
REFER TO the appropriate attachment in Appendix C, PPS-ESFAS Check, for a list of actuated equipment.
 - c. Override and position equipment as needed.
 - d. **WHEN** the trip signals are cleared,
THEN continue with this appendix.

Appendix B, PPS-ESFAS Reset

INSTRUCTIONS

- ___4. Check the Bistable Trip Lamps at the PPS Remote Operators Module (B05) for the affected PPS-ESFAS actuation input parameters on all PPS Channels satisfy **ONE** of the following.

- **NOT** lit
- Bypassed

CONTINGENCY ACTIONS

- ___ 4.1 Perform the following for any tripped input parameter:
- a. Reset the affected Bistable Trip Lamps at the PPS Remote Operators Module (B05).
 - b. **IF** the trip light will **NOT** reset, **AND ANY** parameter is tripped on two or more channels, **THEN GO TO** step 7.1 of this appendix.

Appendix B, PPS-ESFAS Reset

INSTRUCTIONS

- ___ 5. Check the affected PPS-ESFAS actuation Initiation Relay lamps are illuminated at the PPS Remote Operators Module (B05) on all PPS Channels.

CONTINGENCY ACTIONS

- ___ 5.1 **IF** the **AFAS 1 or 2** Initiation Relay lamps are **NOT** lit, **THEN GO TO** step 7.1 of this appendix.
- ___ 5.2 Perform the following for any de-energized PPS-ESFAS Initiation Path(s):
- a. Obtain the PPS Initiation Reset key for the affected Train.
 - b. Unlock the affected Initiation Path Reset Train (PPS Cabinets).
 - c. Reset the affected Initiation Path by depressing the appropriate Initiation Path Reset pushbutton (PPS Cabinets).
 - d. Lock the Initiation Path Reset Train (PPS Cabinets).
 - e. Remove the PPS Initiation Reset key.
 - f. Check the affected Initiation Signal lamps are illuminated for the affected PPS channels (On status panels above PPS Cabinets).
 - g. **IF** the Initiation Path will **NOT** reset, **THEN GO TO** step 7.1 of this appendix.

Appendix B, PPS-ESFAS Reset

INSTRUCTIONS

- ___ 6. Check the actuated PPS-ESFAS leg 1-3 and leg 2-4 Actuation Signal lamps are illuminated for PPS Train A and Train B Actuation Signals (On status panels above PPS Cabinet A, SBAC01 and PPS Cabinet B, SBBC01).

- ___ 7. **IF** the PPS-ESFAS actuation is reset,
THEN GO TO ONE of the following steps of this procedure as appropriate:

- Section 3.0, AFAS, step 10.
- Section 4.0, CIAS, step 9.
- Section 5.0, CSAS, step 20.
- Section 6.0, MSIS, step 13.
- Section 7.0, RAS, step 9.
- Section 8.0, SIAS OR SIAS/CIAS, step 16.

CONTINGENCY ACTIONS

- ___ 6.1 Perform the following for the affected Train(s):
- a. Press the LOCKOUT RESET pushbutton(s) for the affected PPS-ESFAS actuation(s) (Aux Relay Cabinets Bay 6 & 7).
 - b. Check both red "ON" lamps are illuminated for the affected PPS-ESFAS actuation (Aux Relay Cabinets Bay 6 & 7).

- ___ 7.1 **IF** the PPS-ESFAS actuation will **NOT** reset,
THEN perform the following:
- a. Evaluate the need to override and position PPS-ESFAS actuated equipment. REFER TO the appropriate attachment in Appendix C, PPS-ESFAS Check, for a list of actuated equipment.
 - b. Override and position equipment as needed.

End of Appendix



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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|------------------|------------|-----|-------|-----|--|
| TASK: | 0720010401 Perform manual PB switching operations | | | | | | |
| TASK STANDARD: | Offsite power has been paralleled to PBA-S03. | | | | | | |
| K/A: | 3.6-062-A4.07 | K/A RATING: | RO: | 3.1 | SRO: | 3.1 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | VALIDATION TIME: | 15 minutes | | | | |
| REFERENCES: | 40OP-9PB01 | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | X | PLANT | | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Jordan Johnston Date: 04/18/2008

Revised By: Alan Malley Date: 10/21/2011

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation.*
PVAR # _____

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

This JPM is setup to run with either JS-4 or JS-8. Therefore the ICs are for two different situations. Pay close attention to the setup based on which JPM is running in parallel with this JPM.

- A. IC#: If running with JS-8 use IC #112
If running with JS-4 use IC #110

- B. SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| None | |
| | |

- C. SPECIAL INSTRUCTIONS:

- None

- D. REQUIRED CONDITIONS:

- Diesels carrying the class buses
- One offsite power line now supplying the switchyard and down to NAN-X03

- E. SIMULATOR EVALUATION PRE-CHECK

- ☐ Correct IC
- ☐ Alarm Silence Off
- ☐ Procedures available, page checked, and clean
- ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- F. Copy of 40OP-9PB01 available. This JPM was written using Revision 24 of 40OP-9PB01.

3. JPM PERFORMANCE:

- G. MALFUNCTIONS, OVERRIDES, etc. during JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------|
| N/A | | |
| | | |



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- **You are the third RO in Unit 1.**
- **NBN-X03 tripped due to a faulty relay on the supply breaker.**
- **The relay has been repaired.**
- **NBN-X03 is now energized.**

INITIATING CUE:

- **The CRS directs you to parallel offsite power back onto PBA-S03 per section 14 of 40OP-9PB01.**



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|---|--|---|
| 1. | <p>Perform Prerequisites (section 14.2)</p> <ul style="list-style-type: none">• Diesel Generator A is supplying power to PBA-S03, isolated from offsite power.• Power is available from ESF Service Transformer NBN-X03.• Diesel Generator “B” is NOT paralleled with offsite power.• Breaker PBA-S03L is racked in and available for operation. | <p>If requested cue (as area operator):</p> <p>Breaker PBA-S03L is racked in and available for operation.</p> | <p>Examinee determines that all prerequisites are complete.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 2. | <p>Step 14.3.1 and 14.3.1.1:</p> <p>IF Diesel Generator A is in the emergency mode, THEN perform the following:</p> <ol style="list-style-type: none">1. Ensure DG B is NOT in override. | <p>If requested cue: The Area operator reports the Emergency Run lit is illuminated.</p> | <p>Examinee determines that DG A is not in override.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|--|--|--|
| 3. | Step 14.3.1.2: Ensure ALL of the following alarm conditions are reset at DGA-B01: <ul style="list-style-type: none"> • NEUTRAL OVERVOLTAGE • OVERCURRENT • NEG SEQ TRIP | If requested Cue (as area operator): “Neutral overvoltage, Overcurrent, and Negative Sequential Trip are all clear at the Diesel Generator panel” | Examinee checks that Neutral overvoltage, Overcurrent, and Negative Sequential Trip are all reset. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 4. | Step 14.3.1.3: IF ANY of the alarms are not reset, THEN ensure the alarms are reset per 40AL-9DG01, Diesel Generator A Alarm Responses. | | Examinee N/As step since there are no alarms. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|---|---|
| 5. | Step 14.3.1.4: Obtain Control Room Supervisor permission to override the emergency mode condition. | When Requested Cue: The CRS has given you permission to override Diesel Generator A. | Examinee obtains CRS permission to override DG A. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|---------------------------------|
| 6. * | Steps 14.3.1.5 and 14.3.1.6: <ul style="list-style-type: none">Take DGA-HS-1 to “Start”Check the white OVERRIDE light on. | | Examinee puts DG A in override. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 7. * | Step 14.3.2.1: Ensure PEA-SS-G01D, Diesel Generator A Speed Mode Select switch, is in the “DROOP” position. | | Examinee places PEA-SS-G01D in the “DROOP” position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|--------------------------------------|
| 8. * | Step 14.3.2.2: Place PBA-SS-S03L, synchronizing switch for normal supply breaker PBA-S03L, in the “ON” position. | | Examinee places PBA-SS-S03L to “ON”. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

Note before step 14.3.2.3

Increasing Diesel Generator speed will cause the synchroscope to move in the slow direction and decreasing Diesel Generator speed will cause the synchroscope to move in the fast direction.



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| | STEP | CUE | STANDARD |
|------|--|-----|---|
| 9. * | Step 14.3.2.3: Adjust DG A speed using PEA-SC-G01, Diesel Generator A Speed switch, to cause the synchroscope to move slowly in the Fast direction. | | Examinee adjusts DG A speed so the synchroscope is moving slowly in the Fast direction. |

SAT / UNSAT

Comments (required for UNSAT):

Note before step 14.3.2.4

Running Voltmeter MAN-EI-002R represents PBA-S03 Bus voltage. Incoming voltmeter MAN-EI-002I represents ESF Service Transformer voltage.

| | STEP | CUE | STANDARD |
|-------|--|-----|--|
| 10. * | Step 14.3.2.4: Match the DG voltage with the ESF Service Transformer voltage using PEA-EC-G01, DG A Voltage Switch. | | Examinee matches voltages between DG A and NBN-X03 (ESF Service Transformer) output. Examiner Note: The meters for this evolution are: MAN-EI-002R for DG (PBA-S03) MAN-EI-002I for NBN-X03. |

SAT / UNSAT

Comments (required for UNSAT):

Caution before Step 14.3.2.5

There is no sync-check protection on the normal supply breaker.



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| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 11. * | Step 14.3.2.5: WHEN the synchroscope needle is at the 12 o'clock position, THEN close PBA-S03L. | | Examinee closes PBA-S03L when the synchroscope is at the 12 o'clock position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 12. | Step 14.3.2.6: Place the synchronizing switch in the "OFF" position. | | Examinee places the synch switch in the "OFF" position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|----------|
| 13. | Step 14.3.2.7: Unit 1 only: If it is desired to continue to operate DG A, go to 40OP-9DG01. | INFORM CUE: The Diesel Generator will be shut down by another operator. | |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:



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Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- You are the third RO in Unit 1.
- NBN-X03 tripped due to a faulty relay on the supply breaker.
- The relay has been repaired.
- NBN-X03 is now energized.

INITIATING CUE:

- The CRS directs you to parallel offsite power back onto PBA-S03 per section 14 of 40OP-9PB01.

4.16 kV Class 1E Power (PB)

400P-9PB01

Revision
24**14.0 MANUAL TRANSFER OF PBA-S03 FROM DIESEL GENERATOR A TO NBN-X03****14.1 Personnel Indoctrination**

14.1.1 This section of the procedure transfers PBA-S03 from its emergency source of power to its normal source of power.

14.1.2 It should take approximately 10-15 minutes to transfer PBA-S03 from its emergency source of power, the emergency diesel generator, to its normal source of power NBN-X03.

14.2 Prerequisites

- ___ 14.2.1 Diesel Generator A is supplying power to PBA-S03, **isolated** from offsite power.
- ___ 14.2.2 Power is available from ESF Service Transformer NBN-X03.
- ___ 14.2.3 Diesel Generator “B” is **NOT** paralleled with offsite power.
- ___ 14.2.4 Breaker PBA-S03L is racked in and available for operation.

14.3 Instructions

- ___ 14.3.1 **IF** Diesel Generator A is in the emergency mode, **THEN** perform the following:
 - ___ 1. Ensure Diesel Generator “B” is **NOT** in OVERRIDE.
 - ___ 2. Ensure **ALL** of the following alarm conditions are reset at DGA-B01:
 - NEUTRAL OVERVOLTAGE
 - OVERCURRENT
 - NEG SEQ TRIP
 - ___ 3. **IF ANY** of the alarms are not reset, **THEN** ensure the alarms are reset per 40AL-9DG01, Diesel Generator A Alarm Responses.
 - ___ 4. Obtain Control Room Supervisor permission to override the emergency mode condition.
 - ___ 5. Take DGA-HS-1, Diesel Generator A START/STOP switch on B01, to the “START” position.
 - ___ 6. Check the white OVERRIDE light is illuminated.

4.16 kV Class 1E Power (PB)

40OP-9PB01

Revision
24

14.3.2 Parallel Diesel Generator A to offsite power as follows:

- _____ 1. Ensure PEA-SS-G01D, Diesel Generator A Speed Mode Select switch, is in the “DROOP” position.
- _____ 2. Place PBA-SS-S03L, synchronizing switch for normal supply breaker PBA-S03L, in the “ON” position.

----- **NOTE** -----

Increasing Diesel Generator speed will cause the synchroscope to move in the slow direction and decreasing Diesel Generator speed will cause the synchroscope to move in the fast direction.

- _____ 3. Adjust DG A speed using PEA-SC-G01, Diesel Generator A Speed switch, to cause the synchroscope to move slowly in the Fast direction.

----- **NOTE** -----

Running Voltmeter MAN-EI-002R represents PBA-S03 Bus voltage. Incoming voltmeter MAN-EI-002I represents ESF Service Transformer voltage.

- _____ 4. Match the Diesel Generator voltage with ESF Service Transformer voltage using PEA-EC-G01, Diesel Generator A Voltage switch.

CAUTION

There is no sync-check protection on the normal supply breaker.

- _____ 5. **WHEN** the synchroscope needle is at the 12 o'clock position, **THEN** close PBA-S03L.
- _____ 6. Place the synchronizing switch in the “OFF” position.
- _____ 7. **Unit 1 only**
IF it is desired to continue to operate Diesel Generator A to prevent possible BOP-ESFAS lockup,
THEN GO TO 40OP-9DG01, Emergency Diesel Generator A, section 6.0.
- _____ 8. **IF** it is desired to shutdown Diesel Generator A,
THEN GO TO 40OP-9DG01, Emergency Diesel Generator A, section 7.0 to unload and shutdown Diesel Generator A.



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2012 NRC EXAM

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|--|-------------|-----|------------------|------|------------|
| TASK: | 1240000401 Implement instructions and contingencies for Lower Mode Recovery procedure | | | | | | |
| TASK STANDARD: | Train B CS placed on SDC to the point of opening one injection valve. | | | | | | |
| K/A: | 3.4 005 A4.01 | | K/A RATING: | RO: | 3.6 | SRO: | 3.4 |
| K/A: | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | | | RO | | VALIDATION TIME: | | 15 minutes |
| REFERENCES: | 40EP-9EO10, Standard Appendices, Appendix 240 | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | | | SIMULATOR | X | PLANT | | OTHER |

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 11/01/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

1. SIMULATOR SETUP:

- IC#: 112 (This IC is setup to run JS-7 and JS-8 together for the 2012 NRC exam)
- Run scenario file: 2012 NRC JS-7 and 8

- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|-----------------------|-------------|
| | |

- SPECIAL INSTRUCTIONS:
 - Run scenario file “2012 NRC JS-7 and 8” from the exam jump drive.
 - Hang caution tags on LPSI pump “A”
 - Hang supplied equipment status tags on SIA-HV-683, SIB-UV-671 and SIB-HV-692
- REQUIRED CONDITIONS:
 - None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40EP-9EO10. This JPM was written using Revision 69 of 40EP-9EO10 (SA-240).

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------------------------|
| 4 | (K-1) Closes SIB-V104 | CS B Suction Isolation |
| 7 | (K-2) Opens SIB-V185 | Shutdown Cooling Return to CS |



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2012 NRC EXAM

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 1 was on SDC using LPSI pump “B”.
- LPSI pump “B” has tripped due to an 86 fault.
- LPSI Pump “A” is under clearance.
- The unit is in Mode 5 with RCS temperature is ~ 150°F.
- RCS pressure is ~ 195 psia.
- An AO has been briefed and is standing by in the field to operate components as needed.
- CS pump “B” is not aligned for SDC operations.

INITIATING CUE:

- The CRS directs you to place Containment Spray pump “B” on Shutdown Cooling per Standard Appendix 240.



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2012 NRC EXAM

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC EXAM

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 1. | <p>Step 1 of Appendix 240:</p> <p>Check ALL of the following:</p> <ul style="list-style-type: none">CS Pump B is NOT running to support another success pathRCS temperature is less than 185°F [185°F]RCS pressure is less than 210 [210 psia] <p>One SDC Pump Operation</p> <ul style="list-style-type: none">RCS level is 101 ft. 6 in. or more <p>Two SDC Pump Operation</p> <ul style="list-style-type: none">RCS level is 104 ft. 6 in. or more | | <p>Examinee verifies that RCS temperature and pressure are within limits.</p> <p>Examinee verifies that RCS level is 101 ft. 6 in. or more.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

| | STEP | CUE | STANDARD |
|---|---|--|--|
| 2. | <p>Step 2 of Appendix 240:</p> <p>Inform Radiation Protection and RMS Technician that Train B SDC is being placed in service.</p> | <p>When Requested Cue:</p> <p>RP and the effluent tech acknowledge that CS pump “B” will be used for SDC flow.</p> | <p>Examinee informs RP that CS pump “B” will be used for SDC flow.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 3. | <p>Step 3 of Appendix 240:</p> <p>Check that ALL of the following support systems are in-service:</p> <ul style="list-style-type: none"> • SP B • EW B • EC B | | Examinee verifies that the support systems are running. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|--|--|
| 4. * | <p>Step 4 of Appendix 240:</p> <p>IF CS Pump B is NOT aligned for standby SDC, THEN perform the following:</p> <p style="margin-left: 40px;">a. Direct an operator to close SIB-V104, “CS B SUCTION ISOLATION”. (CS “B” Room)</p> <p style="text-align: center;">(continued)</p> | <p>Inform CUE:</p> <p>Direct the driver to activate Key-1, wait 30 seconds then report as AO that SIB-104 (CS pump B Suction Isolation) is CLOSED.</p> | Examinee verifies CS pump B not running and directs an AO to close SIB-104 |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|---|--|
| 5. * | <p>Step 4.b of Appendix 240:</p> <p>Close ALL of the following valves:</p> <ul style="list-style-type: none"> • SIB-HV-692, LPSI Pump B Suction From RWT • SIB-UV-668, LPSI Pump B Recirc Valve • SIB-UV-665, Cntmt Spray Pump B Recirc • SIB-HV-658, SDCHX B Outlet to Reactor Coolant Loops 2A/2B • SIB-UV-671, Cntmt Spray B Discharge to Spray Header • SIB-HV-693, Cntmt Spray SDC Hx B Bypass • SIB-HV-695, LPSI Containment Spray from SDC Hx B Crosstie • SIB-UV-615, LPSI B Injection Valve • SIB-UV-625, LPSI B Injection Valve <p style="text-align: center;">(continued)</p> | <p>If Requested Cue:</p> <p>a. SIB-HV-692 is verified closed and de-energized.</p> <p>b. SIB-UV-671 is verified closed and de-energized.</p> | <p>Examinee closes:</p> <ul style="list-style-type: none"> • SIB-UV-665 • SIB-HV-658 • SIB-HV-693 • SIB-HV-615 • SIB-HV-625 |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 6. * | <p>Step 4.c of Appendix 240:</p> <p>Open ALL of the following valves:</p> <ul style="list-style-type: none"> • SIB-UV-652, Loop 2 to SDC/LPSI Pump B Suction Valve • SID-UV-654, Loop 2 to SDC LPSI Pump B Suction Valve • SIB-UV-656, Loop 2 to SDC LPSI Pump B Suction Valve • SIB-HV-690, SDC Loop B Warm-up Bypass Valve • SIB-HV-689, Cntmt Spray Pump B Discharge to SDCHX B Valve • SIB-HV-679, CS Pump B Discharge to SDCHX B • SIB-HV-694, LPSI/CS to SDCHX B Cross-tie Vlv • SIB-HV-696, SDCHX B Outlet to Reactor Coolant Loops 2A/2B Valve <p>(continued)</p> | | <p>Examinee OPENS:</p> <ul style="list-style-type: none"> • SIB-HV-690 • SIB-HV-689 <p>All other valves are verified OPEN.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 7. * | Step 4.d of Appendix 240: Throttle SIB-HV-307, LPSI to SDCHX B Bypass Valve, to 20% open. (continued) | | Examinee throttles SIB-HV-307 to ~ 20% open. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|---------------------------------------|
| 8. * | Step 4.e of Appendix 240: Direct an operator to open SIB-V185, "SHUTDOWN COOLING RETURN TO CS"(CS "B" Room) Check SIB-V185,"SHUTDOWN COOLING RETURN TO CS" is open using local valve stem position indication. | Inform CUE: Direct the driver to activate Key-2, wait 30 seconds then report as AO that SIB-V185 (SHUTDOWN COOLING RETURN TO CS) is OPEN. The operator has checked the local valve stem position and it indicates SIB-V185 is open. | Examinee directs AO to open SIB-V185. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 9. * | Step 5 of Appendix 240: WHEN SIB-V185, SHUTDOWN COOLING RETURN TO CS" is open, THEN start CS Pump B. | | Examinee starts CS pump "B" using SIB-HS-6. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|-----|---|
| 10. | Step 6 of Appendix 240: Check CS Pump running current is less than 95 amps. | | Examinee verifies CS pump current is less than 95 amps. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 11. | Step 7 of Appendix 240: IF the plant is in Mode 4, THEN throttle open SIB-HV-307 to establish a SDC flow of 4000 – 4750 gpm. | | Examinee NAs this step since the plant is NOT in Mode 4. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 12. | <p>Step 8 of Appendix 240:</p> <p>IF the plant is in Mode 5 or 6, THEN throttle open SIB-HV-307 to establish ONE of the following:</p> <p>One SDC Pump with RCS Lvl 101 ft. 6 in. – 102 ft.</p> <ul style="list-style-type: none">• 3780 – 4000 gpm <p>One SDC Pump with RCS Lvl 102 ft. – 103 ft. 1 in.</p> <ul style="list-style-type: none">• 3780 – 4600 gpm <p>One SDC Pump with RCS Lvl greater than 103 ft. 1 in.</p> <ul style="list-style-type: none">• 3780 – 4750 gpm <p>Two SDC Pumps with RCS Lvl greater than 104 ft. 6 in.</p> <ul style="list-style-type: none">• 3780 - 4750 gpm per loop | | <p>Examinee verifies that flow is between 3780 and 4750 gpm on SIB-FI-307 (B02).</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|--|---|---|
| 13. * | <p>Step 9 of Appendix 240:</p> <p>Perform the following to establish SDC flow:</p> <ul style="list-style-type: none">a. Adjust SIB-HV-307 as necessary to maintain the desired SDC flow.b. Throttle open SIB-UV-615 to between 5- 15%.c. Throttle closed SIB-HV-690d. Maintain the SDC Heat Exchanger heatup rate to 19°F/min or less.<ul style="list-style-type: none">• SIB-TT-352X on SIB-TR-352• ERFDADS point SIT352X | <p>Examiner Note:</p> <p>Once the examinee has established flow thru SIB-UV-615 and has commenced throttling SIB-HV-690 closed, then inform the examinee that another operator will complete Standard Appendix 240.</p> | <p>Examinee establishes and maintains a SDC flow of 3780 – 4750 gpm as indicated on SIB-FI-307.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 11/01/11 | 6 | New JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Unit 1 was on SDC using LPSI pump “B”.
- LPSI pump “B” has tripped due to an 86 fault.
- LPSI Pump “A” is under clearance.
- The unit is in Mode 5 with RCS temperature is ~ 150°F.
- RCS pressure is ~ 195 psia.
- An AO has been briefed and is standing by in the field to operate components as needed.
- CS pump “B” is not aligned for SDC operations.

INITIATING CUE:

- The CRS directs you to place Containment Spray pump “B” on Shutdown Cooling per Standard Appendix 240.

STANDARD APPENDICES

Appendix 240,
LM - Placing Train B CS on SDC

INSTRUCTIONS

____ 1. Check **ALL** of the following:

- CS Pump B is **NOT** running to support another success path
- RCS temperature is less than 185°F [185°F]
- RCS pressure is less than 210 [210 psia]

One SDC Pump Operation

- RCS level is 101 ft. 6 in. or more

Two SDC Pump Operation

- RCS level is 104 ft. 6 in. or more

____ 2. Inform Radiation Protection and RMS Technician that Train B SDC is being placed in service.

CONTINGENCY ACTIONS

____ 1.1 **IF ANY** of the following conditions exist:

- CS Pump is running in support of another success path
- RCS temperature is 185°F [185°F] or more
- RCS pressure 210 psia or more
- RCS level is **NOT** appropriate for the number of SDC Pumps that will be running

THEN inform the CRS to use another heat removal method.

STANDARD APPENDICES

INSTRUCTIONS

_____ 3. Check that **ALL** of the following support systems are inservice:

- SP B
- EW B
- EC B

CONTINGENCY ACTIONS

_____ 3.1 **IF** any of the support systems are **NOT** inservice, **AND** are available to support Train B SDC, **THEN** place the appropriate support system in service.

_____ 3.2 **IF** EW B is **NOT** available, **THEN** ensure that NC is cross tied to EW B for the SDC Hx that will be placed in service, REFER TO Appendix 244, LM - NC Cross Tie to EW Train B.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

- _____ 4. IF CS Pump B is **NOT** aligned for standby SDC,
THEN perform the following:

- a. Direct an operator to close SIB-V104, "CS B SUCTION ISOLATION". (CS "B" Room)
- b. Close **ALL** of the following valves:
 - SIB-HV-692, LPSI Pump B Suction From RWT Valve
 - SIB-UV-668, LPSI Pump B Recirc Valve
 - SIB-UV-665, Containment Spray Pump B Recirc Valve
 - SIB-HV-658, SDCHX B Outlet to Reactor Coolant Loops 2A/2B Valve
 - SIB-UV-671, Containment Spray B Discharge to Spray Header
 - SIB-HV-693, Containment Spray SDC Hx B Bypass Valve
 - SIB-HV-695, LPSI Containment Spray from SDC Hx B Crosstie Valve
 - SIB-UV-615, LPSI B Injection Valve
 - SIB-UV-625, LPSI B Injection Valve

(continue)

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

_____ 4. (continued)

c. Open **ALL** of the following valves:

- SIB-UV-652, Loop 2 to SDC/LPSI Pump B Suction Valve
- SID-UV-654, Loop 2 to SDC LPSI Pump B Suction Valve
- SIB-UV-656, Loop 2 to SDC LPSI Pump B Suction Valve
- SIB-HV-690, SDC Loop B Warm-up Bypass Valve
- SIB-HV-689, Containment Spray Pump B Discharge to SDCHX B Valve
- SIB-HV-679, CS Pump B Discharge to SDCHX B
- SIB-HV-694, LPSI/CS to SDCHX B Cross-tie Valve
- SIB-HV-696, SDCHX B Outlet to Reactor Coolant Loops 2A/2B Valve

d. Throttle SIB-HV-307, LPSI to SDCHX B Bypass Valve, to 20% open.

(continue)

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

____ 4. (Continued)

e. Direct an operator to perform **BOTH** of the following:

- 1) Open SIB-V185,
"SHUTDOWN
COOLING RETURN TO
CS" (CS "B" Room)
- 2) Check SIB-V185,
"SHUTDOWN
COOLING RETURN TO
CS" is open using local
valve stem position
indication.

____ 5. **WHEN** SIB-V185, "SHUTDOWN
COOLING RETURN TO CS" is
open,
THEN start CS Pump B.

____ 6. Check CS Pump running current
is less than 95 amps.

____ 6.1 Reduce SDC flow until CS Pump
running current is less than 95
amps without allowing SDC flow
to fall below **ANY** of the
following:

- Mode 4 - 4000 gpm
- Mode 5 - 3780 gpm
- Mode 6 - 3780 gpm

____ 6.2 **IF** CS Pump current can **NOT** be
reduced below 95 amps,
THEN inform the CRS to
consider another method of heat
removal.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

- _____ 7. **IF** the plant is in Mode 4,
THEN throttle open SIB-HV-307
to establish a SDC flow of
4000 – 4750 gpm.

- _____ 8. **IF** the plant is in Mode 5 or 6,
THEN throttle open SIB-HV-307
to establish **ONE** of the following:

**One SDC Pump with RCS Lvl
101 ft. 6 in. – 102 ft.**

- 3780 – 4000 gpm

**One SDC Pump with RCS Lvl
102 ft. – 103 ft. 1 in.**

- 3780 – 4600 gpm

**One SDC Pump with RCS Lvl
greater than 103 ft. 1 in.**

- 3780 – 4750 gpm

**Two SDC Pumps with RCS Lvl
greater than 104 ft. 6 in.**

- 3780 - 4750 gpm per loop

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

____ 9. Perform the following to establish SDC flow:

- a. Adjust SIB-HV-307 to maintain SDC flow.
- b. Throttle open SIB-UV-615 to between 5-15%.
- c. Throttle closed SIB-HV-690
- d. Maintain the SDC Heat Exchanger heatup rate to 19°F/min or less.
 - SIB-TT-352X on SIB-TR-352
 - ERFDADS point SIT352X
- e. **WHEN** the SDC Heat Exchanger heatup rate has stabilized,
THEN throttle open SIB-UV-625 to between 5-15%.
- f. Adjust SIB-HV-658 as necessary to control RCS temperature.

b.1 **IF** SIB-UV-615 is unavailable,
THEN throttle open SIB-UV-635 to 5-15%.

d.1 **IF** at any time the SDC Heat Exchanger heatup rate exceeds 19°F/min,
THEN reduce the flow through the SDC Heat Exchanger.

____ 10. Maintain the RCS cooldown rate for the current plant conditions.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

- _____ 11. Perform the following to close SIB-HV-690:
- a. Throttle the following valves incrementally to compensate for the closure of SIB-HV-690:
 - SIB-UV-615
 - SIB-UV-625
 - b. Throttle close SIB-HV-690.
 - c. **WHEN** SIB-HV-690 is closed, **THEN** perform the following:
 - 1) Hold SIB-HS-690 in the closed position for five seconds.
 - 2) Direct a second operator to hold SIB-HS-690 closed for an additional five seconds.
- _____ 12. Perform the following to fully open the LPSI Injection Valves:
- a. Throttle the following valves incrementally to maintain the desired SDC flow while fully opening the LPSI Injection Valves:
 - SIB-HV-307
 - SIB-HV-658
 - b. Throttle open the LPSI Injection Valves.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

- _____ 13. Adjust **BOTH** of the following valves to control RCS temperature and SDC flow rate:
- SIB-HV-658
 - SIB-HV-306
- _____ 14. **IF** the RWLIS is in service, **THEN** perform the following:
- a. **IF** SDC Loop B is the only SDC loop in service, **THEN** place the Refueling Water Level Flow Compensation Selector in the "CHANNEL B" position.
 - b. **IF** both SDC loops are in service, **THEN** place the Refueling Water Level Flow Compensation Selector in the "BOTH" position.
 - c. Place the Refueling Water Level Alarm Enable Selector in the "BOTH" position.
- _____ 15. Inform the CRS that CS Pump B is on SDC.

End of Appendix



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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|--|-------------|-----|-----------------------------|------|-------|
| TASK: | 1240060201 - Verify proper CIAS/CSAS actuation | | | | | | |
| TASK STANDARD: | Ensure that a CIAS/CSAS has actuated and that an isolation valve has closed for each required penetration. | | | | | | |
| K/A: | 3.7 012 A4.02 | | K/A RATING: | RO: | 3.3 | SRO: | 3.4 |
| K/A: | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | | | RO | | VALIDATION TIME: 10 minutes | | |
| REFERENCES: | 40EP9EO05, Excessive Steam Demand | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | | | SIMULATOR | X | PLANT | | OTHER |

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **Yes**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/27/2011

Revised By: N/A Date: _____

Technical Review _____ Operations Approval _____

EP Review N/A Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation.
PVAR # _____*

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

- IC#: 111
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

| COMMAND/COMMUNICATION | DESCRIPTION |
|--------------------------|----------------------------------|
| cm MVSW03WCBUV61_5 | WC-UV-61 fail to auto close |
| cm MVSW03WCAUV62_5 | WC-UV-62 fail to auto close |
| Scenario file -- no CSAS | Prevents CSAS actuation |
| Scenario file -- no SICI | Prevents CIAS and SIAS actuation |
| mf MS01A f:10 | SG 1 ESD -10% |

- SPECIAL INSTRUCTIONS:
 - None
- REQUIRED CONDITIONS:
 - Stop RCPs 1A and 2A.
 - Align AFB flow to SG 2.
 - Wait for sequencer to finish starting equipment.
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: N/A Date: _____
(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40EP-9EO05 available. This JPM was written using Revision 26 of 40EP-9EO05.

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

| STEP | COMMAND/COMMUNICATION | DESCRIPTION |
|------|-----------------------|-------------|
| | | |
| | | |



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 1 automatically tripped due to an ESD on SG 1.
- SPTAs have been completed.
- The CRS has implemented 40EP-9EO05, Excess Steam Demand.

INITIATING CUE:

- The CRS has directed you to verify plant conditions starting with step 23 of 40EP-9EO05, Excess Steam Demand.



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 1. * | Step 23 of 40EP-9EO05 IF containment pressure is 3 psig or more, THEN check CIAS is actuated. | If Requested Cue: The CRS concurs with manual CIAS actuation | Examinee determines that Containment pressure is > 3 psig and manually actuates CIAS. Alternate Path |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|--|---|
| 2. * | Step 24 of 40EP-9EO05 IF CIAS has actuated, THEN check that an isolation valve is closed for each containment penetration required to be closed. | If Requested Cue: The CRS concurs with closing WCB-UV-61 and WCA-UV-62. Examiner Note: Closing either valve will meet containment closure criteria. | Examinee checks SESS panels (B02) after CIAS actuation and determines that the Chill Water (WC) return header has not properly isolated and closes WCB-UV-62 and WCA-UV-61. Valves will stroke closed once they have been taken to close and picked up the Over-ride light. Alternate Path |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|-----|--|
| 3. | <p>Step 25 of 40EP-9EO05</p> <p>IF the following conditions exist:</p> <ul style="list-style-type: none"> • The Containment Spray Pump(s) are operating on the miniflow(s) • Containment pressure is not expected to exceed 8.5 psig within one hour of the CS Pump start <p>THEN stop the Containment Spray Pump(s).</p> | | Examinee leaves the CS pumps running because containment pressure is > 8.5 psig. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|--|
| 4. * | <p>Step 26 of 40EP-9EO05</p> <p>IF containment pressure is 8.5 psig or more, THEN check CSAS is actuated.</p> | <p>If Requested Cue:</p> <p>The CRS concurs with manual CSAS actuation</p> | <p>Examinee determines that Containment pressure is > 8.5 psig and manually actuates CSAS.</p> <p>Alternate Path</p> |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|--|--|---|
| 5. * | <p>Step 27 of 40EP-9EO05</p> <p>IF CSAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none">a. Ensure at least one Containment Spray header flow is greater than 4350 gpm.b. Ensure all RCPs are off.c. Ensure RCP controlled bleedoff flow is isolated.d. PERFORM Appendix 19, Containment Hydrogen Control to align the Hydrogen recombiners. | <p>Inform Cue: After the examinee closes the BO valves :</p> <p>Another operator will perform the remaining steps.</p> | <p>Examinee performs the following:</p> <ul style="list-style-type: none">a. Verifies that both CS header flows are > 4350 gpm.b. Stops RCPs 1B and 2B.c. Isolates controlled bleedoff by closing (B03)<ul style="list-style-type: none">○ RCN-HS-430○ RCN-HS-431○ RCN-HS-432○ RCN-HS-433 |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------|
| 000 | 10/27/2011 | | New JPM |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- Unit 1 automatically tripped due to an ESD on SG 1.
- SPTAs have been completed.
- The CRS has implemented 40EP-9EO05, Excess Steam Demand.

INITIATING CUE:

- The CRS has directed you to verify plant conditions starting with step 23 of 40EP-9EO05, Excess Steam Demand.

EXCESS STEAM DEMAND

INSTRUCTIONSCONTINGENCY ACTIONS

22. **IF** the break is inside Containment,
THEN place the Hydrogen Analyzers in
service.

- * 23. **IF** containment pressure is
3 psig or more,
THEN check CIAS is actuated.

23.1 Manually actuate CIAS.

CAUTION

High radiation levels may result in personnel exposure when attempting local
manual valve operation.

- * 24. **IF** CIAS has actuated,
THEN check that an isolation valve is
closed for each containment
penetration required to be closed.

24.1 Ensure that an isolation valve is closed
for each containment penetration
required to be closed.

- * 25. **IF** the following conditions exist:

- The Containment Spray Pump(s)
are operating on the miniflow(s)
- Containment pressure is not
expected to exceed 8.5 psig within
one hour of the CS Pump start

THEN stop the Containment Spray
Pump(s).

- * 26. **IF** containment pressure is
8.5 psig or more,
THEN check CSAS is actuated.

26.1 Manually actuate CSAS.

EXCESS STEAM DEMAND

INSTRUCTIONSCONTINGENCY ACTIONS

- * 27. **IF** CSAS has actuated,
THEN perform the following:
- Ensure at least one Containment Spray header flow is greater than 4350 gpm.
 - Ensure all RCPs are off.
 - Ensure RCP controlled bleedoff flow is isolated.
 - PERFORM Appendix 19, Containment Hydrogen Control to align the Hydrogen recombiners.
- * 28. **IF** SIAS has actuated,
THEN perform the following:
- Energize SIAS Load Shed Panels. REFER TO Appendix 21, List of SIAS Load Shed Panels.
 - PERFORM Appendix 17, Restoration of Containment Cooling.



P-1

PVNGS JOB PERFORMANCE MEASURE

1. SPECIAL TOOLS/EQUIPMENT:

- A copy of 40AO-9ZZ19, Control Room Fire, Appendix W (up to Step 7) available.
This JPM was written using Revision 26 of 40AO-9ZZ19.



P-1
PVNGS JOB PERFORMANCE MEASURE

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- **A Control Room fire has occurred.**
- **The CRS has entered 40AO-9ZZ19, Control Room Fire.**
- **The plant is being cooled down to SDC conditions.**

INITIATING CUE:

- **The CRS directs you to perform Appendix W, Placing SDC Train B in Service. The vent hoses have been installed per Attachment W-2.**



P-1

PVNGS JOB PERFORMANCE MEASURE

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



P-1
PVNGS JOB PERFORMANCE MEASURE

JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 1. | Step 1 of Appendix W: Enter Appendix Entry Time and Date: | | Examinee enters current date and time. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|--|----------|
| 2. | Step 2 of Appendix W: Ensure vent hoses have been installed per Attachment W-2, Periodic Venting of SDC Train B. | IF REQUESTED CUE: Vent hoses have been installed per Attachment W-2 | |
| SAT / UNSAT Comments (required for UNSAT): | | | |



P-1
PVNGS JOB PERFORMANCE MEASURE

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 3. * | Step 3 of Appendix W: Close SIB-HV-689, CS B Discharge. (PHB-M3804) | If Requested Cue (before valve operation): Red light is ON, Green light is OFF. INFORM CUE (after handswitch operation): Red light is OFF, Green light is ON | Examinee uses the handswitch on breaker PHB-M3804 to close SIB-HV-689. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|---|---|
| 4. | Step 4 of Appendix W: Close SIB-HV-695, LPSI-CS From SDHX B X-Tie. (PHB-M3810) | If Requested Cue (before valve operation): Red light is ON, Green light is OFF. INFORM CUE (after handswitch operation): Red light is ON, Green light is OFF | Examinee attempts to close SIB-HV-695 from the breaker handswitch. Valve does not close so examinee goes to contingency step 4.1. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



P-1
PVNGS JOB PERFORMANCE MEASURE

| | STEP | CUE | STANDARD |
|---|---|---|--|
| 5. * | Step 4.1 of Appendix W: Manually close SIB-HV-695 (SDC Hx Valve Gallery) | Inform Cue (after examinee simulates closing valve): The handwheel has been rotated in the clockwise direction and has stopped moving as expected. The stem is down. | Examinee engages clutch on SIB-HV-695 and turns handwheel in the counter-clockwise direction. ALTERNATE PATH |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 6. * | Step 5 of Appendix W: Close SIB-UV-668, LPSI Pump B Recirc. (PHB-M3609) | If Requested Cue (before valve operation): Red light is ON, Green light is OFF. INFORM CUE (after handswitch operation): Red light is OFF, Green light is ON | Examinee uses the handswitch on breaker PHB-M3609 to close SIB-UV-668. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



P-1
PVNGS JOB PERFORMANCE MEASURE

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 7. * | Step 6 of Appendix W: Close SIB-HV-692, LPSI Pump Suction from RWT. (PHB-M3805) | If Requested Cue (before valve operation): Red light is ON, Green light is OFF. INFORM CUE (after handswitch operation): Red light is OFF, Green light is ON | Examinee uses the handswitch on breaker PHB-M3805 to close SIB-HV-692. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|---|--|
| 8. * | Step 7 of Appendix W: Close SIB-HV-658, SDHX B Outlet to RC Loops 2A/2B Valve. (PHB-M3412) | If Requested Cue (before valve operation): Red light is ON, Green light is OFF. INFORM CUE (after handswitch operation): Red light is OFF, Green light is ON INFORM CUE (after completion of this step): Another operator will complete this appendix. | Examinee uses the handswitch on breaker PHB-M3412 to close SIB-HV-658. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



P-1
PVNGS JOB PERFORMANCE MEASURE

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



P-1
PVNGS JOB PERFORMANCE MEASURE

RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|-----------------|
| 0 | 09/30/2012 | 6 | Record created. |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



P-1
PVNGS JOB PERFORMANCE MEASURE

EXAMINEE HANDOUT

INITIAL CONDITIONS:

- A Control Room fire has occurred.
- The CRS has entered 40AO-9ZZ19, Control Room Fire.
- The plant is being cooled down to SDC conditions.

INITIATING CUE:

- The CRS directs you to perform Appendix W, Placing SDC Train B in Service. The vent hoses have been installed per Attachment W-2.

Examinee Handout



CONTROL ROOM FIRE

Appendix W, Placing SDC Train B in Service

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. Ensure vent hoses have been installed per Attachment W-2, Periodic Venting of SDC Train B.

- ____ 3. Close SIB-HV-689, CS B Discharge. (PHB-M3804)

- ____ 3.1 Manually close SIB-HV-689. (CS Pump Room B)

- ____ 4. Close SIB-HV-695, LPSI-CS From SDHX B X-Tie. (PHB-M3810)

- ____ 4.1 Manually close SIB-HV-695 (SDC Hx Valve Gallery)

- ____ 5. Close SIB-UV-668, LPSI Pump B Recirc. (PHB-M3609)

- ____ 5.1 Manually close SIB-UV-668. (LPSI B Pump Room)

- ____ 6. Close SIB-HV-692, LPSI Pump Suction from RWT. (PHB-M3805)

- ____ 6.1 Manually close SIB-UV-692. (LPSI B Pump Room)

- ____ 7. Close SIB-HV-658, SDHX B Outlet to RC Loops 2A/2B Valve. (PHB-M3412)

- ____ 7.1 Manually close SIB-HV-658. (SDHX B Room)

- ____ 8. Ensure that **BOTH** of the following LPSI Injection Valves are closed:

- SIB-UV-615 (PHB-M3606)
- SIB-UV-625 (PHB-M3621)

CONTROL ROOM FIRE

Appendix W, Placing SDC Train B in Service

INSTRUCTIONSCONTINGENCY ACTIONS

___ 9. Open SIB-UV-652, SDC Suction Valve. (PHB-M3604)

___ 9.1 Manually open SIB-UV-652. (90' CTMT outside 2A RCP Room)

___ 10. Unlock and close PKD-B44, Power Supply Disconnect for SID-UV-654. (Battery Room D)

___ 11. Open SID-UV-654, Loop 2 to Shutdown Cooling LPSI Pump Suction Valve, using the local keyswitch. (Battery Room D)

___ 11.1 Manually open SID-UV-654. (90' CTMT East)

___ 12. Open SIB-UV-656, RC Loop 2 SDC-LPSI Pump Suction Valve. (PHB-M3605)

___ 12.1 Manually open SIB-UV-656 (East Pen Room)

___ 13. Open SIB-HV-690, RC Loop B Warmup Bypass Valve. (PHB-M3806)

___ 13.1 Manually open SIB-HV-690 (East Pen Room)

___ 14. Open SIB-HV-694, LPSI-CS to SDHX B X-Tie Valve. (PHB-M3414)

___ 14.1 Manually open SIB-HV-694 (SDC Valve Gallery)

___ 15. Open SIB-HV-696, SDHX B Outlet to RC Loops 2A/2B Valve. (PHB-M3415)

___ 15.1 Manually open SIB-HV-696 (SDC Valve Gallery)

CONTROL ROOM FIRE

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Appendix W

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Appendix W, Placing SDC Train B in Service

INSTRUCTIONSCONTINGENCY ACTIONS

___ 16. Throttle SIB-HV-307, LPSI-SDHX B Bypass Valve to approximately 20% open.
(PHB-M3803)

___ 16.1 Manually throttle SIB-HV-307 to approximately 20% open.
(LPSI B Pump Room)

___ 17. Inform the CRS that LPSI B is ready to be started.

___ 18. **WHEN** LPSI B is running, **THEN** throttle SIB-HV-307, to establish a flowrate of 4000 - 5000 gpm as indicated by a d/p of 2.5 - 3.3 psid on the temporary flow instrument. (PHB-M3803)

___ 18.1 **WHEN** LPSI B is running, **THEN** manually throttle SIB-HV-307 to establish a flowrate of 4000 - 5000 gpm as indicated by a d/p of 2.5 - 3.3 psid on the temporary flow instrument.
(LPSI B Pump Room)

___ 19. Perform the following to begin heating up the SDC Loop:

a. Throttle open SIB-UV-615, LPSI Header to RC Loop 2A to begin the heatup.
(PHB-M3606)

a.1 Manually open SIB-UV-615.
(88' East Wrap)

b. **WHEN** the SDC Loop heatup rate has stabilized, **THEN** throttle open SIB-UV-625, LPSI Header to RC Loop 2B to continue the heatup.
(PHB-M3621)

b.1 **WHEN** the SDC Loop heatup rate has stabilized, **THEN** manually open SIB-UV-625.
(88' East Wrap)

CONTROL ROOM FIRE

Appendix W, Placing SDC Train B in Service

INSTRUCTIONSCONTINGENCY ACTIONS

___ 20. **IF** the heatup rate on the SDHX exceeds 19°F/min,
THEN adjust warmup flow through the SDC Loop to reduce the heatup rate.

___ 21. Maintain **ALL** of the following while SDC is in service:

- SDC flowrate
- Desired RCS cooldown rate
- A SDHX heatup rate less than 19°F/min

___ 22. Incrementally adjust **ALL** of the following valves to stop the warm up bypass flow:

- SIB-UV-615 (PHB-M3606)
- SIB-UV-625 (PHB-M3621)
- SIB-HV-690 (PHB-M3806)

CONTROL ROOM FIRE

Appendix W, Placing SDC Train B in Service

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 23. **WHEN** closed indication for SIB-HV-690 is received,
THEN perform the following:
- Hold the handswitch in the closed position for five seconds. (PHB-M3806)
 - Direct a second operator to hold the handswitch closed for an additional five seconds.
- ___ 24. Incrementally adjust **ALL** of the following valves to fully open the loop injection valves:
- SIB-UV-615 (PHB-M3606)
 - SIB-UV-625 (PHB-M3621)
 - SIB-HV-307 (PHB-M3803)
- ___ 25. Adjust SIB-HV-658 (PHB-M3412) and SIB-HV-307 (PHB-M3803) as needed to maintain **BOTH** of the following:
- SDC flowrate 4000 - 5000 gpm as indicated by a d/p of 2.5 - 3.3 psid on the temporary flow instrument
 - Desired RCS cooldown rate

CONTROL ROOM FIRE

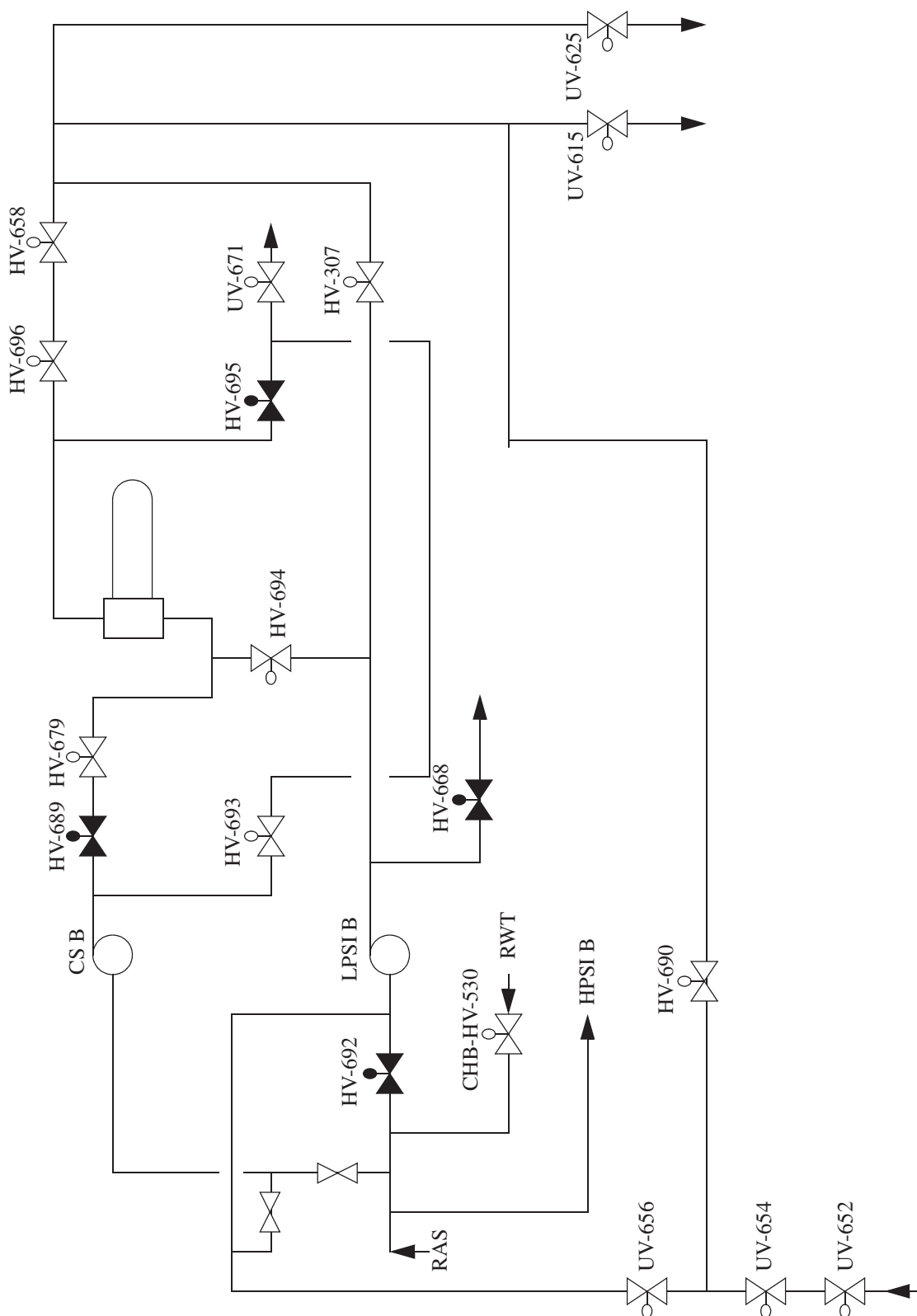
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Appendix W

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Attachment W-1, SDC-B Simplified Drawing

Page 1 of 1



CONTROL ROOM FIRE

Attachment W-2, Periodic Venting of SDC Train B [Ref. Step 4.13] Page 1 of 5

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

Implement this Appendix, as necessary, per the following criteria:

- As soon as possible after lowering SDCHX inlet temperature below 190°F.
 - Once per shift when heating up or cooling down.
 - Once every three days while at steady state condition (no change in temperature or pressure) after three successive gas free vents have occurred at steady state.
-

___ 1. Remove pipe cap from the following vent valves:

- SIB-V886 (Upper Level in the East Penetration Room)
- SIB-V870 (Upper Level in the East Penetration Room)
- SIB-V019 (CS Pump B Room)
- **Unit-1 Only**
SIB-V1029 (Upper level of the East Penetration Room)

CONTROL ROOM FIRE

Attachment W-2, Periodic Venting of SDC Train B

Page 2 of 5

INSTRUCTIONSCONTINGENCY ACTIONS

___ 2. Install a hose adaptor on the following vent valves:

- SIB-V886
- SIB-V870
- SIB-V019
- **Unit-1 Only**
SIB-V1029

___ 3. Connect hoses as follows:

a. Connect one hose end to hose adaptor of the following valves:

- SIB-V886
- SIB-V870
- SIB-V019
- **Unit-1 Only**
SIB-V1029

b. Connect other hose end to **ONE** of the following:

- Floor drain
- As directed by
Radiation Protection

CONTROL ROOM FIRE

Attachment W-2, Periodic Venting of SDC Train B [

Page 3 of 5

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 4. Ensure SDC temperature is less than 190°F.
(SIB-TI-352X at RSP).
- ___ 5. Inform Radiation Protection that SDC header B is to be vented.
- ___ 6. Perform the following to vent through SIB-V886:
- a. Open SIB-V886 1/4 to 1/2 turn.
 - b. Check no air is present, during the vent.
 - c. Maintain SIB-V886 open for 2 to 3 minutes after a solid stream of water is observed.
 - d. Close SIB-V886.

b.1 Open SIB-886 to 2 turns.

CONTROL ROOM FIRE

Attachment W-2, Periodic Venting of SDC Train B

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INSTRUCTIONSCONTINGENCY ACTIONS

___ 7. Perform the following to vent through SIB-V870

- a. Unlock SIB-V870 per 40AC-0ZZ06, Locked Valve, Breaker and Component Control.
- b. Open SIB-V870 1/4 to 1/2 turn.
- c. Check no air is present, during the vent.
- d. Maintain SIB-V870 open for 2 to 3 minutes after a solid stream of water is observed.
- e. Close SIB-V870.

c.1 Open SIB-V870 to 2 turns.

___ 8. Perform the following to vent through SIB-V019

- a. Open SIB-V019 1/4 to 1/2 turn.
- b. Check no air is present, during the vent.
- c. Maintain SIB-V019 open for 2 to 3 minutes after a solid stream of water is observed.
- d. Close SIB-V019.

b.1 Open SIB-V019 to 2 turns.

CONTROL ROOM FIRE

Attachment W-2, Periodic Venting of SDC Train B

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INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 9. **Unit-1 Only**
Perform the following to vent through SIB-V1029
- a. Open SIB-V1029 1/4 to 1/2 turn.
 - b. Check no air is present, during the vent.
 - c. Maintain SIB-V1029 open for 2 to 3 minutes after a solid stream of water is observed.
 - d. Close SIB-V1029.
- b.1 Open SIB-V1029 to 2 turns.
- ___ 10. Verify the following valves closed using independent verification per 02DP-0ZZ01, Verification of Plant Activities:
- a. SIB-V886
 - b. SIB-V870
 - c. SIB-V019
 - d. **Unit-1 Only**
SIB-V1029
- ___ 11. Inform the Shift Manager/CRS that venting of the SDC header B is complete.

End of Appendix



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PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|--|-------------|------------------|------------|-------|-----|--|
| TASK: | 1240023901 Perform operation of AFA-P01 at the Remote Shutdown Panel | | | | | | |
| TASK STANDARD: | Feeding the Steam Generators with AFA-P01 from the Remote Shutdown Panel | | | | | | |
| K/A: | 3.4-061-A3.01 | K/A RATING: | RO: | 4.2 | SRO: | 4.2 | |
| K/A: | | K/A RATING: | RO: | | SRO: | | |
| APPLICABLE POSITION(S): | RO | | VALIDATION TIME: | 20 minutes | | | |
| REFERENCES: | 40AO-9ZZ18, Shutdown Outside Control Room, Appendix E | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | PLANT | X | OTHER | | |

JPM TYPE

Time Critical? (Yes/No) **No**
PRA/SRA related? (Yes/No) **Yes**

Alternative Path? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 10/02/2007

Revised By: Alan Malley Date: 08/24/2011

Technical Review Operations Approval

EP Review **N/A** Training Approval

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: Date:

Evaluator Name:

Time to complete: Minutes GRADE (Circle One) SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation.
PVAR #*

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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PVNGS JOB PERFORMANCE MEASURE
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1. SPECIAL TOOLS/EQUIPMENT:

- A copy of Appendix E of 40AO-9ZZ18. This JPM was written using Revision 11 of 40AO-9ZZ18.
- If locks are broken on doors for the RSP, replacement locking devices (obtained from Shift Manager) will be needed to relock the RSP after each JPM.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- The CRS has entered 40AO-9ZZ18, Shutdown Outside Control Room.

INITIATING CUE:

- The CRS directs you to perform Appendix E, Auxiliary Feed Pump Operations, to start and feed the Steam Generators using AFA-P01 (Train 'A' Auxiliary Feedwater Pump) from the Remote Shutdown Panel.



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PVNGS JOB PERFORMANCE MEASURE
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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|-------------------------------|
| 1. | Step 1 of Appendix E: Enter Appendix Entry Time and Date: _____ | | Examinee enters date and time |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|-----|--|
| 2. | Step 2 of Appendix E: IF AFB-P01 will be used, THEN perform the following:..... | | Examinee NAs this step since initiating cue directed use of AFA-P01. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| |
|--|
| Note prior to step 3: AFA-HS-52A, Turbine Driven AFW Pump Speed Control Transfer, switch position must be changed as rapidly as possible to minimize the chances of an overspeed trip. |
|--|



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|---|--|--|---|
| 3. | Step 3.a of Appendix E: IF AFA-P01 will be used, THEN perform the following: Adjust AFA-SK-52B, Auxiliary Feedwater Pump A Speed to minimum. | Inform Cue: After the examinee simulates turning the speed potentiometer counter-clockwise provide the following cue: The potentiometer has stopped moving and reads “0”. | Examinee simulates turning the speed potentiometer in the counter-clockwise direction until the dial is at minimum. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|---|--|--|
| 4. * | Step 3.b of Appendix E: Place AFA-HS-52A, Speed Control Transfer, to the “REMOTE SHUTDOWN” position. | Inform Cue: After the examinee simulates turning the speed control transfer handswitch to the “REMOTE SHUTDOWN” position provide the following cue: The handswitch is pointing to the left. | Examinee simulates turning the speed control transfer switch left to the “REMOTE SHUTDOWN” position. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|--|---|--|--|
| 5. * | <p>Step 3.c of Appendix E:</p> <p>Open ONE of the following Steam Supply Valves:</p> <ul style="list-style-type: none"> • SGA-UV-134 • SGA-UV-138 | <p>If Requested Cue:</p> <p>The CRS states you can use either valve.</p> <p>Inform Cue:</p> <p>After the examinee simulates turning handswitch for either SGA-UV-134 or SGA-UV-138 provide the following cue for the appropriate valves:</p> <p>The indication for SGA-UV-134A or 138A (as appropriate) red light is on.</p> <p>Thirty (30) seconds later the red light for SGA-UV-134 or 138 (as appropriate) came on and both Green lights are off.</p> <p>Speed is approximately 1000 rpm.</p> | <p>Examinee simulates opening either SGA-UV-134 or SGA-UV-138.</p> <p>EXAMINER NOTE:</p> <p>The indication is as follows:</p> <p>When the SGA-UV-134 (or 138) handswitch is taken to open the top lights (#1) for 134A (138A) will go from green to red. After ~ 30 seconds the bottom lights (#2) for 134 (138) will go from green to red.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>(#1)</p> <div style="border: 1px solid black; padding: 5px; width: 60px;">Green 134A</div> </div> <div style="text-align: center;"> <p>(#1)</p> <div style="border: 1px solid black; padding: 5px; width: 60px;">Red 134A</div> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> <p>(#2)</p> <div style="border: 1px solid black; padding: 5px; width: 60px;">Green 134</div> </div> <div style="text-align: center;"> <p></p> <div style="border: 1px solid black; padding: 5px; width: 60px;">134</div> </div> <div style="text-align: center;"> <p>(#2)</p> <div style="border: 1px solid black; padding: 5px; width: 60px;">Red 134</div> </div> </div> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|--|--|--|---|
| 6. * | <p>Step 3.d of Appendix E:</p> <p><u>Adjust</u> turbine speed using AFA-SK-52B to ONE of the following:</p> <p>Unit 1 & 3 only –</p> <ul style="list-style-type: none"> 3590-3600 rpm <p>Unit 2 only</p> <ul style="list-style-type: none"> 3560-3570 rpm | <p>Inform Cue:</p> <p>As the examinee goes to increase on the speed potentiometer:</p> <p>Unit 1 and 3 Cue:</p> <ul style="list-style-type: none"> Speed is 3600 rpm <p>Unit 2 Cue:</p> <ul style="list-style-type: none"> Speed is 3560 rpm | <p>The examinee adjusts the potentiometer to raise speed to 3590-3600 rpm in Unit 1 and 3 or 3560-3570 in Unit 2.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

| | STEP | CUE | STANDARD |
|--|---|---|---|
| 7. * | <p>Step 3.e of Appendix E:</p> <p>Open BOTH of the following AFW Pump A to Steam Generator Downstream Valves:</p> <ul style="list-style-type: none"> AFA-UV-37 AFC-UV-36 | <p>Inform Cue:</p> <p>When the examinee takes the handswitches for AFA-UV-37 and AFC-UV-36 to open provide the following cue:</p> <p>The red lights for AFA-UV-37 and AFC-UV-36 are on and the green lights are off.</p> | <p>Examinee simulates placing the handswitches for AFA-UV-37 and AFC-UV-36.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|---|---|---|
| 8. * | <p>Step 3.f of Appendix E:</p> <p><u>Maintain</u> steam generator levels 35-80% WR with ANY of the following AFA Pump A to Steam Generator Upstream Valves::</p> <ul style="list-style-type: none">• AFA-HV-32• AFC-HV-33 | <p>Inform Cue:</p> <p>When examinee looks at SG level transmitters:</p> <p>Steam Generator Wide Range Levels are 30% WR.</p> <p>If requested Cue:</p> <p>The as found position of AFA-HV-32 and AFC-HV-33 are as indicated on the panel.</p> <p>Inform Cue:</p> <p>When the examinee simulates jogging open AFA-UV-32 and AFC-HV-33 provide the following cue:</p> <p>AFA-UV-32 and AFC-HV-33 red and green lights are on.</p> <p>Inform Cue:</p> <p>When examine looks at AF flow:</p> <p>Flow is 350 gpm.</p> <p>Inform Cue:</p> <p>After feed is established provide the following cue:</p> <p>Another operator will finish Appendix E.</p> | <p>Examine determines SG WR level and throttles open both SG Upstream valves.</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|--|
| 02 | 03/28/07 | 6 | Updated initiating cue to include that FWPT and Main Turbine shafts have stopped turning. Editorial updates. |
| 03 | 12/02/09 | 6 | Updated to new format and removed non-critical steps at the end of the JPM. |
| 04 | 08/24/2011 | 6 | Updated to new format. |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- The CRS has entered 40AO-9ZZ18, Shutdown Outside Control Room.

INITIATING CUE:

- The CRS directs you to perform Appendix E, Auxiliary Feed Pump Operations, to start and feed the Steam Generators using AFA-P01 (Train 'A' Auxiliary Feedwater Pump) from the Remote Shutdown Panel.

SHUTDOWN OUTSIDE CONTROL ROOM

The purpose of this procedure is to provide the necessary instructions to bring the plant to Cold Shutdown if the Control Room has been determined uninhabitable by the Control Room Supervisor for any reason other than fire. Instructions are provided for immediate actions to be taken by personnel while evacuating the Control Room as assigned by the Control Room Supervisor, and the subsequent actions to be taken upon establishing control at the Remote Shutdown Panel (RSP). Instructions are also given for reestablishing control of the plant from the Main Control Room when conditions allow Control Room habitation.

| | | |
|-----------------|---|-----|
| Continuous Use: | <ul style="list-style-type: none"> • Have a copy of the procedure or applicable pages within view or be in direct communication with an individual with a copy. • Review and understand the procedure or section of the procedure before performing any steps. • Read and understand each step prior to performing it; performing each step as written and in the sequence specified except when the procedure or approved process specifically allows it. • Use a placekeeping method. • Review the document at the completion of the task to verify that all appropriate steps are performed and documented. | All |
|-----------------|---|-----|

REV

DESCRIPTION

| | | |
|----|---|------------------|
| 11 | 1) Added caution to Appendix E steps 3 and 4 to clarify substep actions and prevent a potential turbine driven AFW pump trip when switching control to "Remote Shutdown" or "Cont Room" positions. Also, added reference for adverse CRDR 3732225. [Pri-3 PCR 3775316] | 41, 43 27 |
|----|---|------------------|

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| 3.0 INSTRUCTIONS / CONTINGENCY ACTIONS..... | 4 |
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SHUTDOWN OUTSIDE CONTROL ROOM

1.0 ENTRY CONDITIONS

This procedure may be entered when the CRS has determined that the Control Room is uninhabitable for any reason other than fire.

2.0 EXIT CONDITIONS

This procedure may be exited when control of the plant has been re-established from the Control Room.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 1. Enter AOP Entry Time and Date:

----- **NOTE** -----

40EP-9EO01, Standard Post Trip Actions are **NOT** performed when the Control Room is evacuated.

----- **NOTE** -----

Steps 2 through 6 are expected to be performed in the Control Room.

___ 2. Perform the following:

- a. Trip the reactor.
- b. Check that power is lowering.
- c. Check that all full strength CEAs are inserted.
- d. Enter the time of the trip.

___ 3. Stop one RCP in each loop.

___ 3.1 Direct an operator to trip one RCP in each loop at the switchgear.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

- ___ 4. Check that the Main Turbine is tripped.
- ___ 5. **IF** time permits,
THEN place PLCS in Local Auto with the setpoint at 50%.
- ___ 6. **IF** time permits,
THEN place **BOTH** of the following switches in the "BOTH" position:
- CHN-HS-110-1, Letdown Control Valve Selector
 - CHN-HS-201, Backpressure Control Valve Select
- ___ 7. Exit the Control Room and continue in this procedure from the Remote Shutdown Panel.
- ___ 8. Direct all available Operations personnel from the affected unit to report to the Remote Shutdown Panel.

CONTINGENCY ACTIONS

- ___ 4.1 Manually trip the turbine from the Control Room.
- ___ 4.2 **IF** the turbine could **NOT** be tripped from the Control Room,
THEN direct an operator to trip the turbine locally.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 9. **IF ANY** of the following conditions exist:

- Reactor power is **NOT** lowering
- Any full strength CEA is **NOT** fully inserted

THEN direct an operator to PERFORM Appendix A, Aligning Charging Pump Suction to the RWT.

___ 10. Direct an operator to PERFORM Appendix B, Turbine Building Actions.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

----- **NOTE** -----

Phone line "N-12" on the green phone at the Remote Shutdown Panel is powered from an uninterruptable power supply and is recommended for unit to unit communications.

- ___ 11. **IF** the Emergency Coordinator position is **NOT** manned,
OR the Emergency Coordinator position was manned in the STSC due to a previous E-Plan classification,
THEN inform an unaffected unit Shift Manager of affected unit status and request activation of the unaffected unit's STSC to classify the event.
- ___ 12. **IF** the Emergency Coordinator position is manned in the TSC due to a previous E-Plan classification,
THEN inform the Emergency Coordinator in the TSC to classify the event.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 13. Perform the following:

- a. Direct Chemistry to
PERFORM 74DP-9ZZ05,
Abnormal Occurrence
Checklist for reactor trip.
- b. Direct an operator to open
BOTH of the following Hot Leg
Sample CTMT Isolation
Valves:
 - SSA-UV-203
(SSA-J04 120 ft. West
Electrical Penetration
Room)
 - SSB-UV-200
(SSB-J04 100 ft. East
Penetration Room)

___ 14. Check that pressurizer level
meets **BOTH** of the following:

- 10 - 65%
- Trending as expected
33 - 53%

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

- ___ 15. Check that pressurizer pressure meets **ALL** of the following:
- 1837 - 2285 psia
 - Trending as expected
2225 - 2275 psia
 - Within the P/T Limits. REFER TO Appendix C, RCS Pressure Temperature Limits
- ___ 16. **IF** at least one RCP is running, **THEN** check **BOTH** of the following:
- Loop ΔT is less than 10°F
 - The RCS is subcooled. REFER TO Appendix C, RCS Pressure Temperature Limits

CONTINGENCY ACTIONS

- ___ 15.1 Control Pressurizer Heaters and Auxiliary Spray and restore pressurizer pressure to **BOTH** of the following:
- Trending as expected
2225 - 2275 psia
 - Within the P/T Limits. REFER TO Appendix C, RCS Pressure Temperature Limits.

----- **NOTE** -----

Natural circulation flow should occur within 5 - 15 minutes after the RCPs were tripped.

- ___ 16.1 **IF** no RCPs are running, **THEN** check natural circulation flow in at least one loop by **ALL** of the following:
- Loop ΔT is less than 65°F
 - Hot and cold leg temperatures are constant or lowering
 - The RCS is subcooled. REFER TO Appendix C, RCS Pressure Temperature Limits
 - Pressurizer level is **NOT** rising at a rate greater than can be explained by charging flow

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

___ 17. Check that **ALL** of the following conditions exist:

- Tc is 560 - 570°F
- Steam generator levels are 35 - 80% WR
- Steam generator pressures are 1140 - 1200 psia

___ 18. **IF** steaming to atmosphere, **THEN** inform Radiation Protection and the RMS Technician.

___ 19. Check that **ALL** of the following electrical buses are energized:

- At least one class 4.16 kV bus
- At least one non-class 13.8 kV bus (Appendix B)
- At least one non-class 4.16 kV bus (Appendix B)

CONTINGENCY ACTIONS

___ 17.1 **IF** SBCS or FWCS are **NOT** controlling in automatic, **THEN** perform the following:

- a. Initiate MSIS.
- b. PERFORM Appendix D, ADV Operation to operate the ADVs.
- c. Feed the Steam Generators with **ONE** of the following: (REFER TO Appendix E, Auxiliary Feed Pumps Operation)
 - AFB-P01
 - AFA-P01

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___20. Check that at least **ONE** of the following trains of PK and PN on the same train as the energized class 4.16 kV bus:

- PKA-M41, PKC-M43 and PNA-D25
- PKB-M42, PKD-M44 and PNB-D26

___21. Perform the following:

a. Contact an unaffected unit and request **ALL** of the following information from SPDS for the affected unit:

- RVUH level
- CTMT temperature
- CTMT pressure

b. Check that **ALL** of the following are met:

- RVUH level is 100%
- CTMT temp is less than 117°F
- CTMT pressure is less than 2.5 psig

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

___ 22. Contact the RMS Technician and request assistance in determining **BOTH** of the following:

- No containment area or atmosphere radiation monitor alarms or unexplained rise in activity
- No steam plant activity radiation monitor alarms or unexplained rise in activity

___ 23. Determine if a plant cooldown is needed by considering **BOTH** of the following:

- Plant status
- Auxiliary system availability

CONTINGENCY ACTIONS

___ 22.1 **IF** the RMS Tech is **NOT** available, **THEN** contact an unaffected unit and request assistance in determining **BOTH** of the following from SPDS:

- No containment area or atmosphere radiation monitor alarms or unexplained rise in activity
- No steam plant activity radiation monitor alarms or unexplained rise in activity

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___24. **IF** the plant is to be maintained in Hot Standby from the RSP,
THEN perform the following:
- a. Direct Chemistry to sample the RCS for boron at least once every hour.
 - b. PERFORM 72ST-9RX14, Shutdown Margin - Modes 3, 4, and 5 to ensure adequate Shutdown Margin.
 - c. Direct an operator to PERFORM Appendix F, Secondary Plant Shutdown.
 - d. Direct an operator to PERFORM Appendix G, Stopping Cooling Tower Fans.
 - e. Maintain the plant in Hot Standby.
- ___25. **IF** a plant cooldown is needed,
THEN GO TO step 28.
- ___26. **WHEN** the Control Room can be re-entered,
THEN GO TO step 27.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___27. **WHEN** the Control Room can be re-entered,
THEN perform the following:
- Direct one Reactor Operator to remain at the RSP until control has been regained from the Control Room.
 - PERFORM SPTAs from the Control Room.
 - IF** the ADVs are being used,
THEN PERFORM Appendix D, ADV Operation to transfer control of the ADVs to the Control Room.
 - IF** AFA-P01 is being used,
THEN PERFORM Appendix E, Auxiliary Feed Pumps Operation to transfer control of the pump to the Control Room.
 - WHEN BOTH** of the following conditions exist:
 - The SPTAs have been completed
 - Control of the plant has been established from the Control Room**THEN** GO TO the appropriate procedure for current plant conditions.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 28. Perform the following:
- Review Appendix H, Cooldown Precautions and Limitations.
 - Direct an operator to PERFORM Appendix G, Stopping Cooling Tower Fans.
- ___ 29. Direct an operator(s) to PERFORM Appendix A, Aligning Charging Pump Suction to the RWT.
- ___ 30. Ensure that Steam Generator feed is being supplied by **ONE** of the following:
(REFER TO Appendix E, Auxiliary Feed Pumps Operation)
- AFB-P01
 - AFA-P01
- ___ 31. **IF** the Main Feed Pumps are running,
THEN direct an operator to trip the Main Feed Pumps locally.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 32. Perform the following:
- a. PERFORM Appendix D, ADV Operation to establish control of RCS temperature with the ADVs.
 - b. Initiate a MSIS.
- ___ 33. Direct an operator to PERFORM Appendix F, Secondary Plant Shutdown.
- ___ 34. Perform the following:
- a. Ensure compliance with LCO 3.4.3, RCS Pressure/ Temperature Limits.
 - b. Record RCS temp in Appendix I, RCS Cooldown Log every 15 minutes.
 - c. Establish a cooldown rate of approximately 60°F per hour using ADVs.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

___ 35. **IF** any RCPs are running,
THEN depressurize to maintain
PZR pressure within the P/T
Limits REFER TO Appendix C,
RCS Pressure Temperature
Limits.

___ 36. Direct an operator to rack out PZR
heater breakers on NGN-L11 and
NGN-L12 as needed to control
PZR pressure.

CONTINGENCY ACTIONS

- ___ 35.1 **IF** performing a natural circulation
cooldown,
THEN perform the following:
- a. Maintain RCS pressure as high
as possible within the
P/T Limits. REFER TO
Appendix C, RCS Pressure
Temperature Limits.
 - b. Monitor for the formation of
voids during the cooldown.
REFER TO Appendix J, RCS
Void Indications/Recovery.
 - c. Cooldown to 350 to 300°F and
hold for 50 hours to allow the
reactor vessel head to cool.

SHUTDOWN OUTSIDE CONTROL ROOM

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 37. **WHEN** RCS cold leg temperature is 485°F or more,
AND the Low Pressurizer Pressure Trip setpoint needs to be lowered,
THEN ensure the current RCS pressure is greater than the RCS pressure below based on RCS Tcold prior to resetting the setpoint.

| RCS Cold Leg Temp | RCS Pressure (psia) | RCS Cold Leg Temp | RCS Pressure (psia) | RCS Cold Leg Temp | RCS Pressure (psia) |
|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
| 485 | 1135 | 520 | 1355 | 555 | 1630 |
| 490 | 1165 | 525 | 1390 | 560 | 1675 |
| 495 | 1195 | 530 | 1430 | 565 | 1720 |
| 500 | 1225 | 535 | 1465 | 570 | 1770 |
| 505 | 1255 | 540 | 1505 | 575 | 1820 |
| 510 | 1285 | 545 | 1545 | | |
| 515 | 1320 | 550 | 1590 | | |

- ___ 38. **WHEN** the conditions of step 37. have been satisfied,
THEN reset all four PPS channel Low Pressurizer Pressure Trip setpoints

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___39. **IF ALL** of the following conditions exist:

- PZR pressure is less than 1000 psia
- Letdown is in service
- CHN-HS-110-1, Letdown Control Valve Selector is in "BOTH"

THEN perform the following to place the standby Letdown Control Valve in service:

- a. Direct an operator to open **ONE** of the following Letdown Control Valve Inlet Valves:

CHN-LV-110P

- CHN-V341

CHN-LV-110Q

- CHN-V343

- b. Direct an operator to slowly open **ONE** of the following Letdown Control Valve Outlet Valves:

CHN-LV-110P

- CHN-V342

CHN-LV-110Q

- CHN-V340

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___40. **WHEN** PZR pressure is less than 1000 psia,
THEN PERFORM Appendix K, Charging Pump Pulsation Dampeners.
- ___41. **WHEN** PZR pressure is between 1000 and 750 psia,
THEN perform the following:
- a. Depressurize the SITs to between 300 and 330 psig.
 - b. Direct an operator to PERFORM Appendix L, SIT Isolation Valves, to energize the SIT Isolation Valves.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___42. **IF ALL** of the following conditions exist:

- PZR pressure is 750 psia
- Letdown is in service
- CHN-HS-201, Backpressure Control Valve Select is in "BOTH"

THEN perform the following to place the standby Backpressure Control Valve in service:

- a. Direct an operator to open **ONE** of the following Backpressure Control Valve Inlet Valves:

CHN-LV-201P

- CHN-V348

CHN-LV-201Q

- CHN-V347

- b. Direct an operator to slowly open **ONE** of the following Backpressure Control Valve Outlet Valves:

CHN-LV-201P

- CHN-V350

CHN-LV-201Q

- CHN-V349

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 43. **WHEN** pressurizer pressure is less than 400 psia,
THEN perform the following:
- Direct the operator performing Appendix L, SIT Isolation Valves to isolate the SITs.
 - Bypass the low pressurizer pressure trips.
- ___ 44. Start **ANY** of the following at the appropriate breaker as needed to support SDC:
- Spray Pond Pump A (PBA-S03C)
 - Spray Pond Pump B (PBB-S04C)
 - Essential Cooling Water Pump A. (PBA-S03M)
 - Essential Cooling Water Pump B. (PBB-S04M)
 - Essential Chiller A (PBA-S03G)
 - Essential Chiller B (PBB-S04G)

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___45. **WHEN** temp is less than 350°F,
AND pressure is less than 385
psia,
THEN PERFORM ONE of the
following:

- Appendix M, Placing SDC
Train A in Service
- Appendix N, Placing SDC
Train B in Service

___46. **WHEN** temperature is less than
300°F,
THEN stop all of the RCPs.

___47. Direct an operator to rackout **ALL**
of the following RCP breakers:

- NAN-S01M
- NAN-S01L
- NAN-S02L
- NAN-S02M

___48. Lower Pressurizer pressure to 250
psia.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___49. **WHEN ANY** cold leg temperature is less than or equal to 221°F, **THEN** ensure that **ALL** of the following Shutdown Cooling Suction Valves are open for LTOP protection:

- SIA-UV-651(PHA-M3503)
- SIC-UV-653 (PKC-B43)
- SIB-UV-652 (PHB-M3604)
- SID-UV-654 (PKD-B44)

___50. Shutdown Aux Feedwater.

___51. Direct an operator to open **BOTH** of the following breakers:

- PHA-M3511, SIA-UV-672
- PHB-M3612, SIB-UV-671

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 52. Perform the following to lower pressurizer pressure to 150 psia:
- a. Fully open the Letdown Backpressure Control Valves.
 - b. Turn off Pressurizer Heaters.
 - c. Ensure no more than one Charging Pump running.
 - d. Lower pressure using Auxiliary Spray.
 - e. Stabilize pressure at 150 psia using Pressurizer Heaters.
- ___ 53. Stabilize RCS temperature at 190°F.
- ___ 54. **WHEN** the Control Room can be re-entered,
THEN continue in this procedure.
- ___ 55. Direct one Reactor Operator to remain at the Remote Shutdown Panel until control has been regained from the Control Room.

3.0 INSTRUCTIONS / CONTINGENCY ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

___56. Direct other Control Room staff to ensure control of **ALL** of the following from the Control Room:

- Shutdown Cooling
- Pressurizer Heaters and Spray Valves
- Charging and Letdown
- Any operating secondary systems

___57. **WHEN** control of the plant has been established from the Control Room,
THEN GO TO the appropriate procedure for current plant conditions.

End of Section 3.0

SHUTDOWN OUTSIDE CONTROL ROOM

4.0 REFERENCES

- 01DP-0AP01, Procedure Process.
- 40DP-0AP06, Abnormal Operating Procedure Writer's Guide.
- 4XAO-XZZ27, Shutdown Outside Control Room.
- RCTS 014245, Action 01, Verify Shutdown Margin by sampling the RCS boron concentration every hour.
- RCTS 031193, Action 01, Develop procedures to address achieving cold shutdown from the Remote Shutdown Panel using either safety train.
- RCTS 033164, Action 01, Change procedure in order to prevent exceeding the maximum shutdown cooling warmup rate.
- RCTS 034561, Action 01, Shift charging pump suction to the RWT.
- RCTS 034892, Action 01, Issue Shutdown Outside Control Room procedure.
- RCTS 043021, Action 45, Address manual ADV operation.
- Study 13-MS-B047, CHARGING PUMP NPSH
- Adverse CRDR 3732225, Auxiliary Feedwater Turbine Trip Upon Transfer To Remote Shutdown Panel During 2R16. (PCR 3775316)

Appendix A, Aligning Charging Pump Suction to the RWT

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

NOTE

If a PC Cleanup Pump is recirculating the RWT contents, no more than two Charging Pumps may be operating when the suction is transferred from the VCT to the RWT via the CHE-HV-536 pathway.

- ____ 2. **IF** this appendix is being performed to emergency borate the core,
THEN perform the following at MCC NHN-M72:
- a. Open CHE-HV-536, RWT Gravity Feed Line to Chrg Pump Suction Valve.
(NHN-M7209)
 - b. **IF** a PC Cleanup Pump is recirculating the RWT contents
THEN ensure no more than two Charging Pumps are running.
 - c. Close CHN-UV-501, VCT Outlet.
(NHN-M7208)
- (continue)

Appendix A, Aligning Charging Pump Suction to the RWT

INSTRUCTIONS

CONTINGENCY ACTIONS

___2. (continued)

d. **IF** a PC Cleanup Pump is recirculating the RWT contents **THEN** perform the following:

- 1) Stop the Fuel Pool Cleanup Pump that is taking a suction from the RWT.
- 2) Close **ONE** of the following as appropriate:
 - PCN-V043, PCN-P02A
Discharge Isolation Valve
 - PCN-V059, PCN-P02B
Discharge Isolation Valve

Appendix A, Aligning Charging Pump Suction to the RWT

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___3. Perform the following to divert letdown to the HUT:
- a. Ensure **BOTH** of the following breakers are open:
- NHN-M1309,
CHN-P02A, Boric Acid
Make-up Pump A
 - NHN-M1020,
CHN-P02B, Boric Acid
Make-up Pump B
- b. Close CHN-V195, RMW to VCT. (Miracle Room)
- c. Open CHN-V655, Gas Stripper Manual Bypass Valve. (Crud Tank Room Entry)
- d. Close CHN-V496, Inlet to Gas Stripper Divert Valve. (Gas Stripper Entry)

(continue)

Appendix A, Aligning Charging Pump Suction to the RWT

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 3. (continued)

e. Perform the following to position CHE-UV-500, Letdown To VCT/PRE-Holdup IOX Selector, to divert to the HUT (Miracle Room):

- 1) Open DS22-06 on ZAN-C01.
- 2) Close the local instrument air isolation adjacent to CHE-UV-500.
- 3) Throttle open the petcock on the filter regulator to bleed off IA pressure.
- 4) Close the filter petcock.
- 5) **IF** depressurizing the air supply using the petcock was not successful, **THEN** perform the following:
 - i Locate a fitting between the IA regulator and the CHE-UV-500 actuator.
 - ii Depressurize the air supply at the fitting.
 - iii **WHEN** the air supply is depressurized, **THEN** ensure the fitting is tightened.
- 6) Unlock and rotate the handwheel for CHE-UV-500 in the clockwise direction until the stem indicator shows "FULL CLOSED".

Appendix A, Aligning Charging Pump Suction to the RWT

INSTRUCTIONS

CONTINGENCY ACTIONS

NOTE

VCT level can be monitored on CHN-LI-227 in the Crud Tank Room entry or at the Remote Shutdown Panel.

- ___4. **IF** this appendix is being performed for a plant cooldown, **THEN** perform the following at MCC NHN-M72:
- a. Open CHE-HV-536, RWT Gravity Feed Line to Chrg Pump Suction Valve. (NHN-M7209)
 - b. **WHEN** VCT level is 20 - 25%, **THEN** close CHN-UV-501, VCT Outlet. (NHN-M7208)

End of Appendix

Appendix B, Turbine Building Actions

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1. Enter Appendix Entry Time and Date:

- ___ 2. Perform the following:

- a. Check that voltage is indicated on **ALL** of the following buses:

- NAN-S01
- NAN-S02
- NBN-S01
- NBN-S02

- b. Inform the CRS at the Remote Shutdown Panel of the status of the buses.

- ___ 3. Check that **BOTH** of the following breakers are open:

- NAN-S01A
- NAN-S02A

- ___ 3.1 Inform the CRS.

Appendix B, Turbine Building Actions

INSTRUCTIONS

___4. Check that **ALL** of the following valves are closed:

- Turbine Stop Valves
- Turbine Control Valves
- Turbine Combined Intercept Valves

___5. Ensure the Generator Field Shorting Breaker is closed.

___6. Check that **ALL** of the following pumps start:

- Motor Suction Pump
- Turning Gear Oil Pump
- Lift Oil Pumps

___7. Ensure that LON-TIC-32, Main Lube Oil Temperature Controller is adjusted to maintain lube oil temperature between 80°F and 102°F.

CONTINGENCY ACTIONS

___ 4.1 Inform the CRS.

___ 6.1 **IF ANY** of the following pumps are **NOT** running:

- Motor Suction Pump (LON-HS-51B)
- Turning Gear Oil Pump (LON-HS-62B)

THEN start the pump(s) using the test button(s) on top of the Main Lube Oil Reservoir.

Appendix B, Turbine Building Actions

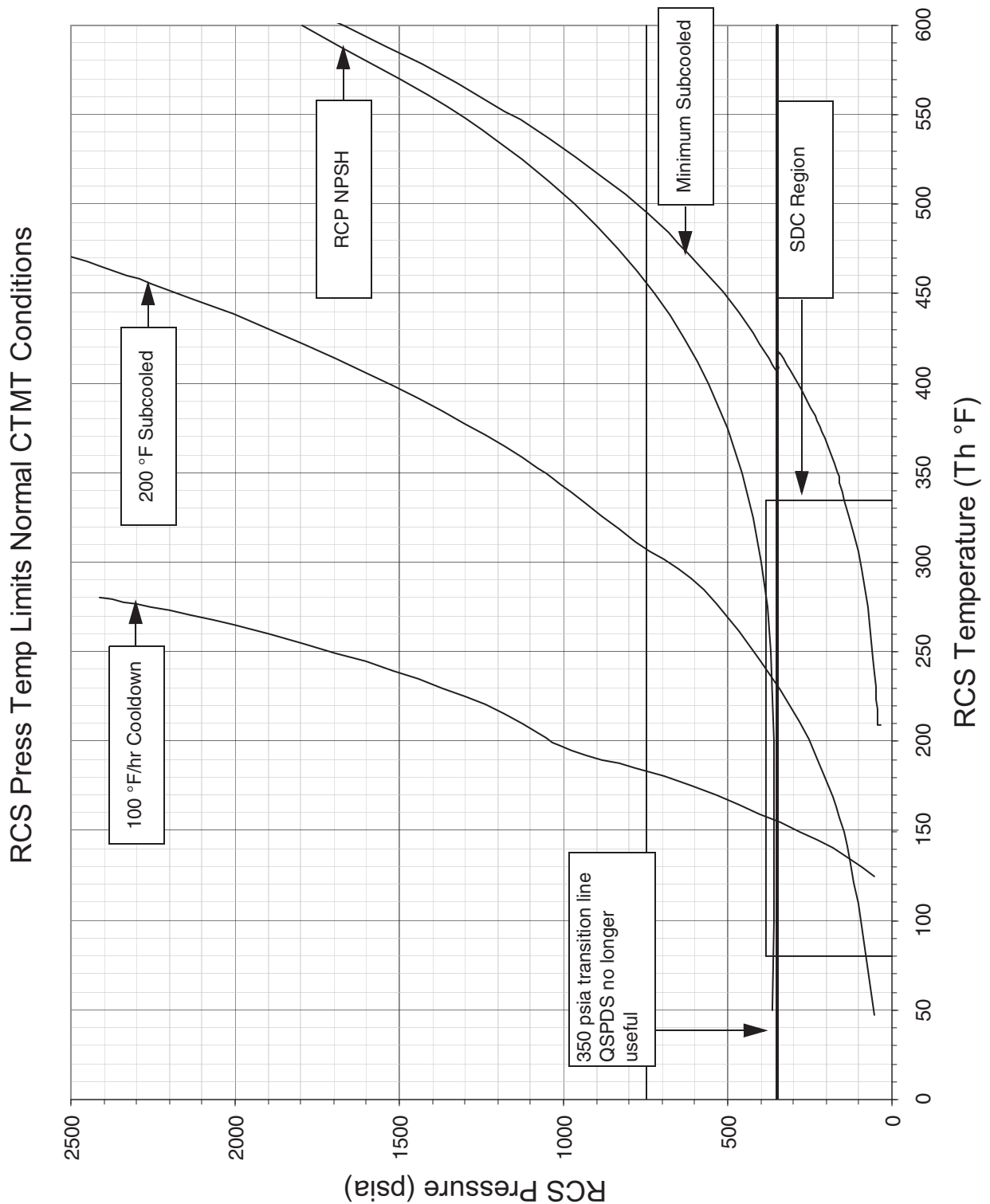
INSTRUCTIONS

CONTINGENCY ACTIONS

- ___8. **WHEN** the Main Turbine stops rolling,
THEN ensure the Turbine goes on the Turning Gear.
- ___9. Contact the CRS at the RSP for further instructions.

End of Appendix

Appendix C, RCS Pressure Temperature Limits



Appendix D, ADV Operation

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. Ensure that the output of the ADV Controller(s) that will be used is at minimum:

- SGA-HIC-179B
- SGA-HIC-184B
- SGB-HIC-178B
- SGB-HIC-185B

- ____ 3. **IF** SGA-HV-179 will be operated, **THEN** place **BOTH** of the following switches to "OPEN PERM":

- SGA-HS-179C
- SGC-HS-179D

- ____ 4. **IF** SGA-HV-184 will be operated, **THEN** place **BOTH** of the following switches to "OPEN PERM":

- SGA-HS-184C
- SGC-HS-184D

Appendix D, ADV Operation

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 5. **IF** SGB-HV-178 will be operated,
THEN place **BOTH** of the
following switches to "OPEN
PERM":

- SGB-HS-178C
- SGD-HS-178D

- ___ 6. **IF** SGB-HV-185 will be operated,
THEN place **BOTH** of the
following switches to "OPEN
PERM":

- SGB-HS-185C
- SGD-HS-185D

- ___ 7. Perform the following for the
ADV(s) to be operated:

- a. Press the "LOCAL" pushbutton
on the ADV Controller(s).
- b. Adjust the position demand to
at least 30%.
- c. **WHEN** the ADV opens,
THEN adjust valve position as
needed to control RCS heat
removal rate.

Appendix D, ADV OperationINSTRUCTIONSCONTINGENCY ACTIONS

- ___8. **IF** control of the ADVs is to be transferred to the Control Room, **THEN** perform the following for the ADV(s) being used:
- a. Direct the Control Room Operator to match the controller setpoint with indicated position.
 - b. Press the "CONTROL ROOM" pushbutton on the controller at the RSP.
 - c. Inform the Control Room Operator that control of the ADV has been transferred.

End of Appendix

Appendix E, Auxiliary Feed Pumps Operation

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. **IF** AFB-P01 will be used,
THEN perform the following:

- a. Direct an operator to start AFB-P01 locally at PBB-S04S.
- b. Open **BOTH** of the following AFW Pump B to Steam Generator Downstream Valves:
 - AFB-UV-34
 - AFB-UV-35
- c. Maintain steam generator levels 35 - 80% WR with **ANY** of the following AFW Pump B to Steam Generator Upstream Valves:
 - AFB-HV-30
 - AFB-HV-31

Appendix E, Auxiliary Feed Pumps OperationINSTRUCTIONSCONTINGENCY ACTIONS**CAUTION**

AFA-HS-52A, Turbine Driven AFW Pump Speed Control Transfer, switch position must be changed as rapidly as possible to minimize the chances of an overspeed trip.

- ___ 3. **IF** AFA-P01 will be used,
THEN perform the following:
- a. Adjust AFA-SK-52B, Auxiliary Feedwater Pump A Speed to minimum.
 - b. Place AFA-HS-52A, Speed Control Transfer, to the "REMOTE SHUTDOWN" position.
 - c. Open **ONE** of the following Steam Supply Valves:
 - SGA-UV-134
 - SGA-UV-138

(continue)

Appendix E, Auxiliary Feed Pumps Operation

INSTRUCTIONS

CONTINGENCY ACTIONS

___3. (continued)

- d. Adjust turbine speed using AFA-SK-52B to **ONE** of the following:

Unit 1 & 3 only -

- 3590 - 3600 rpm.

Unit 2 only -

- 3560 - 3570 rpm.

- e. Open **BOTH** of the following AFW Pump A to Steam Generator Downstream Valves:

- AFA-UV-37
- AFC-UV-36

- f. Maintain steam generator levels 35 - 80% WR with **ANY** of the following AFW Pump A to Steam Generator Upstream Valves:

- AFA-HV-32
- AFC-HV-33

Appendix E, Auxiliary Feed Pumps OperationINSTRUCTIONSCONTINGENCY ACTIONS**CAUTION**

AFA-HS-52A, Turbine Driven AFW Pump Speed Control Transfer, switch position must be changed as rapidly as possible to minimize the chances of an overspeed trip.

- ___4. **IF** control of AFA-P01 will be transferred to the Control Room, **THEN** perform the following:

- a. Set AFA-SK-52B, Remote Shutdown Panel speed control to minimum.
- b. Ensure that AFA-SK-52A, Control Room speed control is set to minimum.
- c. Place AFA-HS-52A to the "CONT ROOM" position.
- d. Adjust turbine speed using AFA-SK-52A to **ONE** of the following:

Unit 1 & 3 only -

- 3590 - 3600 rpm

Unit 2 only -

- 3560 - 3570 rpm

End of Appendix

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. **IF ANY** of the Main Feedwater Pumps are tripped,
THEN perform the following:

- a. **WHEN** the MFPT(s) stop turning,
THEN ensure that the MFWPT(s) go on the turning gear.
- b. Inform the CRS that the cooldown rate should be watched while opening drain valves.
- c. Open **BOTH** of the following disconnect switches in Aux Relay Cabinet ZTN-C02 for **ANY** tripped MFPT(s):

MFPT A

- DS-20-02, FTN-HV-1
- DS-20-03, FTN-HV-9

MFPT B

- DS-22-02, FTN-HV-2
- DS-22-03, FTN-HV-10

(continue)

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

___2. (continued)

- d. Open **ALL** of the following breakers for **ANY** tripped MFPT(s):

MFPT A

- NHN-M0213,
FTN-HV-3
- NHN-M0204,
FTN-HV-5
- NHN-M0205,
FTN-HV-7
- NHN-M0206,
FTN-HV-11
- NHN-M0207,
FTN-HV-13

MFPT B

- NHN-M2106,
FTN-HV-4
- NHN-M2102,
FTN-HV-6
- NHN-M2103,
FTN-HV-8
- NHN-M2104,
FTN-HV-12
- NHN-M2105,
FTN-HV-14

(continue)

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

___2. (continued)

- e. Open **ALL** of the following
drain valves for **ANY** tripped
MFPT(s):

MFPT A

- FTN-HV-3
- FTN-HV-5
- FTN-HV-7
- FTN-HV-11
- FTN-HV-13

MFPT B

- FTN-HV-4
- FTN-HV-6
- FTN-HV-8
- FTN-HV-12
- FTN-HV-14

- f. Open the casing drain valve for
ANY tripped MFPT(s):

MFPT A

- FTN-v016

MFPT B

- FTN-V012

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 3. Ensure that no more than one of the following Condensate Pumps is running:

CDN-P01A

- NBN-S01D

CDN-P01B

- NBN-S01E

CDN-P01C

- NBN-S02D

- ___ 4. Stop **BOTH** of the Heater Drain Pumps at the associated breakers:

EDN-P01A

- NBN-S02E

EDN-P01B

- NBN-S01F

- ___ 5. Check MTN-HV-327C, MSR Blanketing Steam Feed Valve closed at NHN-M0710.
(TB 140 ft North of MTLO Room)

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 6. Check **ALL** of the following valves closed at NHN-M22:
(TB 140 ft North of MTLO Room)

- MTN-HV-327D, MSR
Blanketing Steam Feed Valve
at NHN-M2206
- MTN-UV-328B, MSR
Reheating Steam Source
Valve at NHN-M2207
- MTN-UV-330B, MSR
Reheating Steam High Load
Valve at NHN-M2212

- ___ 7. Check **ALL** of the following valves closed at NHN-M09:
(TB 140 ft Southeast Corner)

- MTN-HV-327G, MSR
Blanketing Steam Feed Valve
at NHN-M0907
- MTN-HV-327H, MSR
Blanketing Steam Feed Valve
at NHN-M0908
- MTN-UV-328D, MSR
Reheating Steam Source
Valve at NHN-M0921
- MTN-UV-330D, MSR
Reheating Steam High Load
Valve at NHN-M0922

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

- ___8. Check **ALL** of the following valves closed at NHN-M23:
(TB 140 ft Northeast Corner)

- MTN-HV-327F, MSR
Blanketing Steam Feed Valve
at NHN-M2310
- MTN-HV-327E, MSR
Blanketing Steam Feed Valve
at NHN-M2311
- MTN-HV-327A, MSR
Blanketing Steam Feed Valve
at NHN-M2318
- MTN-UV-328C, MSR
Reheating Steam Source
Valve at NHN-M2334
- MTN-UV-330C, MSR
Reheating Steam High Load
Valve at NHN-M2335

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

___9. Check **ALL** of the following valves
closed at NHN-M05:
(TB 140 ft North Wall)

- MTN-HV-327B, MSR
Blanketing Steam Feed Valve
at NHN-M0511
- MTN-UV-330A, MSR
Reheating Steam High Load
Valve at NHN-M0521
- MTN-UV-328A, MSR
Reheating Steam Source
Valve at NHN-M0522

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 10. Check **ALL** of the following valves
open at NHN-M05:
(TB 140 ft North Wall)

- MTN-HV-247, Turbine Control
Valve Pipe Drain Valve at
NHN-M0505
- MTN-HV-315, MSR Reheating
Steam Source Valve at NHN-
M0506
- MTN-HV-251, MSR Reheating
Steam Source Valve at NHN-
M0507
- MTN-HV-248, Turbine Control
Valve Pipe Drain Valve at
NHN-M0508
- MTN-HV-242, Turbine Stop
Valve Before Seat Drain Valve
at NHN-M0512
- MTN-HV-244, Turbine Stop
Valve Before Seat Drain Valve
at NHN-M0513
- MTN-HV-246, Turbine Stop
Valve After Seat Drain Valve at
NHN-M0514
- MTN-HV-253, HP Turbine to
MSR Upstream Crossover
Pipe Drain Valve at
NHN-M0524

(continue)

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

___10. (continued)

- MTN-HV-255, HP Turbine to MSR Upstream Crossover Pipe Drain Valve at NHN-M0526
- MTN-HV-256, HP Turbine to MSR Upstream Crossover Pipe Drain Valve at NHN-M0527
- MTN-HV-388A, MSR Second Stage Reheating Steam Line Drain Valve at NHN-M0531
- MTN-UV-389A, MSR First Stage Reheating Steam Line Drain Valve at NHN-M0532
- EDN-PV-29, MSR Reheating Steam Source Valve at NHN-M0533

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 11. Check **ALL** of the following valves
open at NHN-M23:
(TB 140 ft Northeast Corner)

- MTN-HV-254, HP Turbine to
MSR Upstream Crossover
Pipe Drain Valve at
NHN-M2303
- MTN-UV-380, HP Turbine to
MSR Downstream Crossover
Pipe Drain Valve at NHN-
M2304
- MTN-UV-321, HP Turbine to
MSR Downstream Crossover
Pipe Drain Valve at NHN-
M2305
- MTN-HV-388C, MSR Second
Stage Reheating Steam Line
Drain Valve at
NHN-M2307
- MTN-UV-389C, MSR First
Stage Reheating Steam Line
Drain Valve at NHN-M2313
- MTN-HV-374, MSR Reheating
Steam Source Valve at NHN-
M2316
- MTN-HV-375, MSR Reheating
Steam Source Valve at NHN-
M2317
- EDN-PV-33, MSR Reheating
Steam Source Valve at NHN-
M2329

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 12. Check **ALL** of the following valves
open at NHN-M09:
(TB 140 ft Southeast Corner)

- MTN-HV-388D, MSR Second
Stage Reheating Steam Line
Drain Valve at
NHN-M0905
- MTN-UV-389D, MSR First
Stage Reheating Steam Line
Drain Valve at NHN-M0906
- MTN-HV-259, HP Turbine to
MSR Upstream Crossover
Pipe Drain Valve at
NHN-M0910
- MTN-HV-376, MSR Reheating
Steam Source Valve at NHN-
M0923

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 13. Check **ALL** of the following valves open at NHN-M24:
(TB 140 ft South Wall)

- MTN-HV-258, HP Turbine to MSR Upstream Crossover Pipe Drain Valve at NHN-M2405
- MTN-UV-322, HP Turbine to MSR Downstream Crossover Pipe Drain Valve at NHN-M2408
- MTN-HV-377, MSR Reheating Steam Source Valve at NHN-M2409
- MTN-UV-381, HP Turbine to MSR Downstream Crossover Pipe Drain Valve at NHN-M2410
- EDN-PV-34, MSR Reheating Steam Source Valve at NHN-M2430
- EDN-PV-36, MSR Reheating Steam Source Valve at NHN-M2431

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 14. Check **ALL** of the following valves open at NHN-M22:
(TB 140 ft North of MTLO Room)

- MTN-HV-316, MSR Reheating Steam Source Valve at NHN-M2202
- MTN-HV-252, MSR Reheating Steam Source Valve at NHN-M2203
- MTN-HV-260, HP Turbine to MSR Upstream Crossover Pipe Drain Valve at NHN-M2211

Appendix F, Secondary Plant ShutdownINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 15. Check **ALL** of the following valves open at NHN-M07:
(TB 140 ft North of MTLO Room)

- MTN-HV-249, Turbine Control Valve Pipe Drain Valve at NHN-M0706
- MTN-HV-257, HP Turbine to MSR Upstream Crossover Pipe Drain Valve at NHN-M0709
- MTN-HV-243, Turbine Stop Valve Before Seat Drain Valve at NHN-M0713
- MTN-HV-245, Turbine Stop Valve Before Seat Drain Valve at NHN-M0714
- MTN-HV-388B, MSR Second Stage Reheating Steam Line Drain Valve at NHN-M0715
- MTN-UV-389B, MSR First Stage Reheating Steam Line Drain Valve at NHN-M0716
- EDN-PV-30, MSR Reheating Steam Source Valve at NHN-M0721

Appendix F, Secondary Plant Shutdown

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 16. Perform the following to maintain condenser vacuum:
- a. Open GSN-HV-14, Auxiliary Steam to Gland Seal Regulator Valve.
 - b. Close GSN-HV-5, Main Steam to Gland Seal Regulator Valve.

End of Appendix

Appendix G, Stopping Cooling Tower Fans

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

NOTE

To ensure the site environmental license is not violated, anytime a Circulating Water pump is operating, a sufficient number of Cooling Tower Fans must remain operating on each inservice Cooling Tower to prevent spillage on the ground.

- ____ 2. **IF** Circulating Water Pumps are still in operation,
THEN ensure an adequate number of Cooling Tower Fans are operating on each inservice Cooling Tower to prevent spillage on the ground.

- ____ 3. **WHEN** directed by the CRS,
THEN stop fans at the associated breakers in the correct sequence.
REFER TO Attachment G-1, Cooling Tower Fan Stop Sequence.

SHUTDOWN OUTSIDE CONTROL ROOM

Attachment G-1, Cooling Tower Fan Stop Sequence**Page 1 of 1**

Fans should be stopped in a sequence that first stops the center fan followed by all fans in the inner ring and then the fans in the outer ring in pairs or threesomes.

Cooling Tower #1:

- a. Fan E
 - b. Fans L, C & I
 - c.
 - 1. Fans O & H
 - 2. Fans P & F
 - 3. Fans A & G
 - 4. Fans B & D
 - 5. Fans K & M
 - 6. Fans J & N
- OR
- 1. Fans O, K & G
 - 2. Fans P, J & D
 - 3. Fans A, H & M
 - 4. Fans B, F & N

Cooling Towers #2 & #3:

- a. Fan N
 - b. Fans G, A & P
 - c.
 - 1. Fans B & H
 - 2. Fans C & O
 - 3. Fans F & M
 - 4. Fans D & L
 - 5. Fans E & J
 - 6. Fans I & K
- OR
- 1. Fans B, E & M
 - 2. Fans C, I & L
 - 3. Fans F, H & J
 - 4. Fans D, O & K

End of Appendix

Appendix H, Cooldown Precautions and Limitations

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1. Enter Appendix Entry Time and Date:

- ___ 2. Ensure compliance with LCO 3.4.3, RCS Pressure/ Temperature Limits.
- ___ 3. Ensure compliance with TLCO 3.4.102 for pressurizer cooldown rate.

----- **NOTE** -----

Pressurizer level channels RCA-LI-110X and RCB-LI-110Y are calibrated for hot operating conditions. Actual level is lower than indicated level for lower pressurizer temperatures.

- ___ 4. Determine actual pressurizer level during the cooldown by using current pressurizer pressure and the graph in Attachment H-1, Actual Pressurizer Level Determination.

Appendix H, Cooldown Precautions and Limitations

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 5. Comply with **ANY** of the following LCOs as applicable:
- LCO 3.4.5, RCS Loops - Mode 3
 - LCO 3.4.6, RCS Loops - Mode 4
 - LCO 3.4.7, RCS Loops - Mode 5, Loops Filled
 - LCO 3.4.8, RCS Loops - Mode 5, Loops Not Filled
- ___ 6. Perform the following:
- a. Direct Chemistry to sample the RCS for boron at least once per hour.
 - b. Ensure compliance with LCO 3.1.1, Shutdown Margin (SDM) Reactor Trip Breakers Open

Appendix H, Cooldown Precautions and Limitations

INSTRUCTIONS

CONTINGENCY ACTIONS

NOTE

TSR 3.4.102.2 requires determination of spray water temperature differential for each cycle of auxiliary spray operation. Direct indication of pressurizer temperature and spray water temperature is not available at the Remote Shutdown Panel.

- ___ 7. Perform the following:
- Log **BOTH** of the following in Appendix I, RCS Cooldown Log for each cycle of Auxiliary Spray:
 - RWT temperature. (Local indication)
 - PZR temperature.
(Sat temp for current PZR press)
 - Direct Engineering to evaluate Pressurizer spray nozzle usage prior to the next startup.
- ___ 8. Ensure that LTOPs are placed in service with **ANY** cold leg temperature less than or equal to 221°F to comply with LCO 3.4.13, Low Temperature Overpressure (LTOP) Protection Systems.

Appendix H, Cooldown Precautions and Limitations

INSTRUCTIONS

CONTINGENCY ACTIONS

NOTE

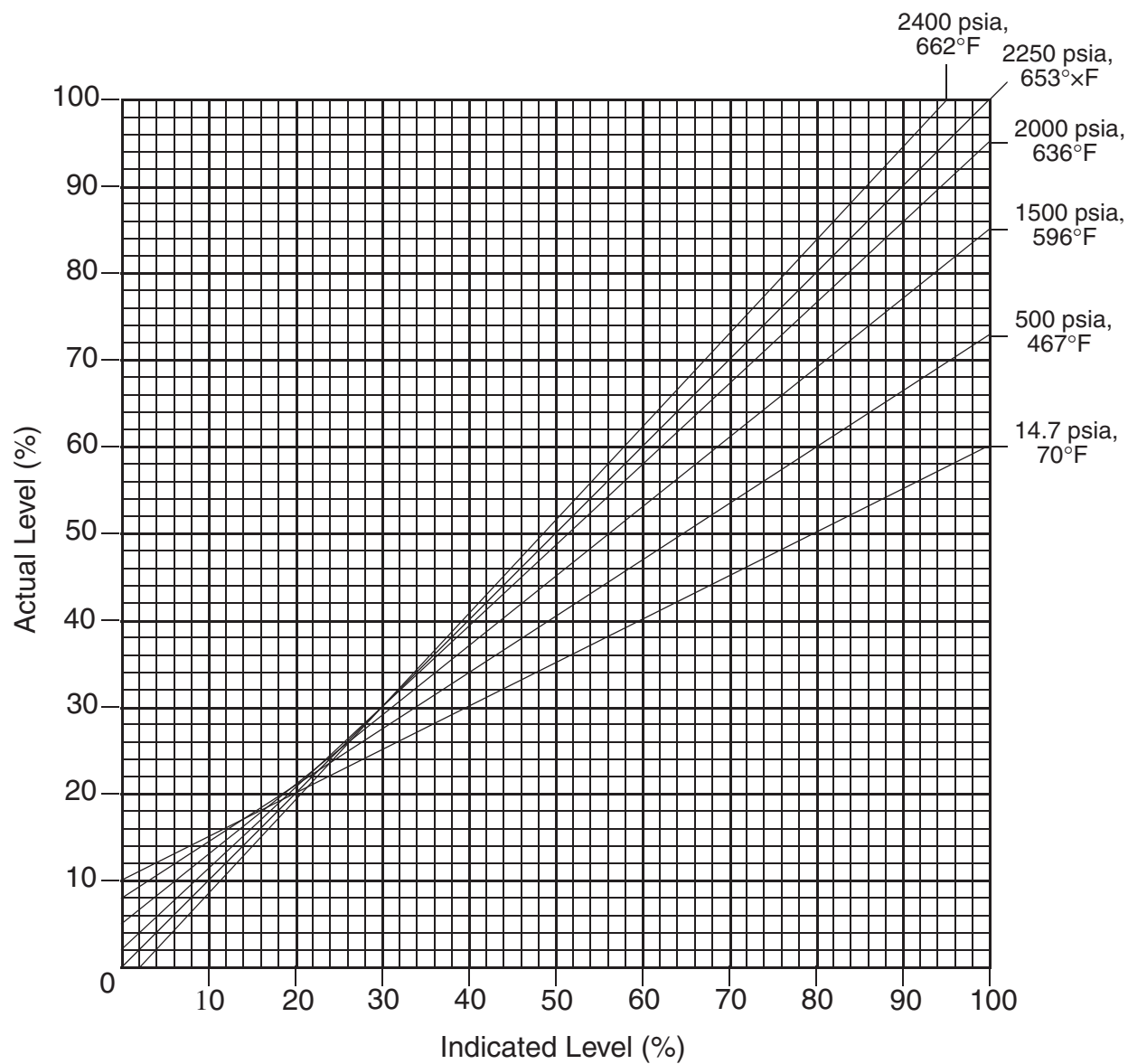
The following steps apply to a natural circulation cooldown.

- ___ 9. Maintain adequate subcooling in the RCS to minimize the possibility of void formations.
- ___ 10. Allow 5 to 15 minutes for plant response time during natural circulation cooldown.
- ___ 11. Monitor for void formation during depressurization. REFER TO Appendix J, RCS Void Indications/Recovery.

Attachment H-1, Actual Pressurizer Level Determination

Page 1 of 1

Pressurizer Indicated vs. actual level
for deviation from normal operating
to cold pressurizer conditions.



End of Appendix

Appendix I, RCS Cooldown Log

[illegible]

SHUTDOWN OUTSIDE CONTROL ROOM

Appendix I, RCS Cooldown Log

| PZR AUX SPRAY CYCLE LOG | | | | |
|-------------------------|------|---|--|---------|
| CYCLE NUMBER | TIME | RWT TEMPERATURE (From local indication.) | PZR TEMPERATURE (Sat temperature for current PZR pressure.) | INITIAL |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |

End of Appendix

Appendix J, RCS Void Indications/Recovery

INSTRUCTIONS

CONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

NOTE

During RCS depressurization while in a natural circulation cooldown, the reactor vessel upper head region can become stagnant due to negligible flow through that region. The only cooling in the upper head region is the result of heat loss to ambient and heat conducted down through the reactor vessel and internal structures. If RCS pressure decreases below the saturation pressure corresponding to the water temperature in the upper head region, condensable voids will form.

-
- ____ 2. Monitor for indications of possible RCS voiding as indicated by **ANY** of the following:

- Pressurizer level rise significantly greater than expected while operating auxiliary spray
- Pressurizer level lowering while operating Charging or HPSI Pumps
- Letdown flow unexpectedly greater than charging flow

Appendix J, RCS Void Indications/Recovery

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___3. **IF** voiding is indicated,
THEN perform the following:
- Stop the depressurization.
 - Stop the cooldown.
 - Raise and lower RCS pressure within the P/T Limits (REFER TO Appendix C, RCS Pressure Temperature Limits) using **ANY** of the following methods:
 - Pressurizer heaters and spray. REFER TO Appendix I, RCS Cooldown Log
 - Available Charging pumps
 - Monitor for void elimination. REFER TO step 2.
- ___4. **WHEN** voids have been eliminated,
THEN resume the cooldown/depressurization.

End of Appendix

Appendix K, Charging Pump Pulsation Dampeners

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1. Enter Appendix Entry Time and Date:

- ___ 2. **IF** it is desired to adjust the pulsation dampener for CHA-P01, **THEN** direct an operator to perform the following:
 - a. Ensure that Charging Pump A is **NOT** running.
 - b. Rack out PGA-L31C4, Charging Pump 1.
 - c. PERFORM 40OP-9CH13, Charging Pump Pulsation Dampener Operation to adjust CHA-P01 pulsation dampener to 500 psig.
- ___ 3. **WHEN** the pulsation dampener is charged to 500 psig, **THEN** rack in PGA-L31C4.

Appendix K, Charging Pump Pulsation Dampeners

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___4. **IF** it is desired to adjust the pulsation dampener for CHB-P01, **THEN** direct an operator to perform the following:
- a. Ensure that Charging Pump B is **NOT** running.
 - b. Rack out PGB-L32C4, Charging Pump 2.
 - c. PERFORM 40OP-9CH13, Charging Pump Pulsation Dampener Operation to adjust CHB-P01 pulsation dampener to 500 psig.
 - d. **WHEN** the pulsation dampener is charged to 500 psig, **THEN** rack in PGB-L32C4.

Appendix K, Charging Pump Pulsation Dampeners

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___5. **IF** it is desired to adjust the pulsation dampener for CHE-P01, **THEN** direct an operator to perform the following:
- Ensure that Charging Pump E is **NOT** running.
 - Rack out **ONE** of the following as appropriate:
 - PGA-L35C3, Charging Pump 3
 - PGB-L36C2, Charging Pump 3
 - PERFORM 40OP-9CH13, Charging Pump Pulsation Dampener Operation to adjust CHE-P01 pulsation dampener to 500 psig.
 - WHEN** the pulsation dampener is charged to 500 psig, **THEN** rack in **ONE** of the following as appropriate:
 - PGA-L35C3, Charging Pump 3
 - PGB-L36C2, Charging Pump 3

End of Appendix

Appendix L, SIT Isolation ValvesINSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time and Date:

- ____ 2. Obtain keys for operating SIT Isolation Valves from FPN-E02, Emergency Equipment Cabinet. (100 ft B Switchgear Room, NW corner)

Appendix L, SIT Isolation Valves

INSTRUCTIONS

CONTINGENCY ACTIONS

___3. Unlock and close **ALL** of the following breakers:

- PHA-M3316, Safety Injection
Tank 3 Isol Vlv
J-SIA-UV-634
- PHA-M3316A, Back-up
Breaker for M3316
- PHA-M3318, Safety Injection
Tank 4 Isol Vlv
J-SIA-UV-644
- PHA-M3334, Back-up Breaker
for M3318
- PHB-M3619, Safety Injection
Tank 1 Isol Vlv
J-SIB-UV-614
- PHB-M3641A, Back-up
Breaker for M3619
- PHB-M3618, Safety Injection
Tank 2 Isol Vlv
J-SIB-UV-624
- PHB-M3641, Back-up Breaker
for M3618

Appendix L, SIT Isolation ValvesINSTRUCTIONSCONTINGENCY ACTIONS

___4. **WHEN** directed by the CRS,
THEN close **ALL** of the following
valves using the local
handswitches on the breakers:

- SIA-UV-634, Safety Injection
Tank 3 Isol Vlv
(PHA-M3316)
- SIA-UV-644, Safety Injection
Tank 4 Isol Vlv
(PHA-M3318)
- SIB-UV-614, Safety Injection
Tank 1 Isol Vlv
(PHB-M3619)
- SIB-UV-624, Safety Injection
Tank 2 Isol Vlv
(PHB-M3618)

Appendix L, SIT Isolation Valves

INSTRUCTIONS

CONTINGENCY ACTIONS

___5. Open **ALL** of the following:

- PHA-M3316, Safety Injection
Tank 3 Isol Vlv
J-SIA-UV-634
- PHA-M3316A, Back-up
Breaker for M3316
- PHA-M3318, Safety Injection
Tank 4 Isol Vlv
J-SIA-UV-644
- PHA-M3334, Back-up Breaker
for M3318
- PHB-M3619, Safety Injection
Tank 1 Isol Vlv
J-SIB-UV-614
- PHB-M3641A, Back-up
Breaker for M3619
- PHB-M3618, Safety Injection
Tank 2 Isol Vlv
J-SIB-UV-624
- PHB-M3641, Back-up Breaker
for M3618

End of Appendix

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1. Enter Appendix Entry Time and Date:

- ___ 2. Inform Chemistry that the SDC Loop will be ready for sampling in approximately one half hour.
- ___ 3. Ensure that at least one of the following SDC Suction Valves is closed:
 - SIA-UV-651 (PHA-M3503)
 - SIC-UV-653 (PKC-B43)
- ___ 4. Ensure that **BOTH** of the following LPSI Injection Valves are closed:
 - SIA-UV-635 (PHA-M3321)
 - SIA-UV-645 (PHA-M3319)
- ___ 5. Open SIA-HV-688, CS-SDHX A Bypass. (PHA-M3313)
- ___ 6. Close SIA-HV-684, CS A Discharge. (PHA-M3705)

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 7. Ensure that CHA-HV-531, RWT to SI Train A Suction Valve is open.
(Aux Bldg 51 ft)

- ___ 8. Close SIA-HV-687, LPSI-CS
From SDHX A X-Tie.
(PHA-M3711)

- ___ 9. Ensure that SIA-HV-683, LPSI
Pump Suction from RWT is open.
(PHA-M3706)

- ___ 10. Ensure that SIA-UV-669, LPSI
Pump A Recirc Valve is open.
(PHA-M3510)

- ___ 11. Ensure that SIA-UV-660, Train A
Pumps Combined Recirc to RWT
Valve is open. (PKA-D2111)

- ___ 12. Open SIA-UV-655, RC Loop 1
SDC-LPSI Pump Suction Valve.
(PHA-M3504)

- ___ 13. Open SIA-UV-691, RC Loop A
Warmup Bypass Valve.
(PHA-M3707)

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 14. Open SIA-HV-685, LPSI-CS to SDHX A X-Tie Valve.
(PHA-M3311)
- ___ 15. Open SIA-HV-686, SDHX A Outlet to RC Loops 1A/1B Valve.
(PHA-M3312)
- ___ 16. Request that an operator be stationed at SIA-HV-306, LPSI-SDHX A Bypass Valve to monitor the position of the valve.
- ___ 17. Throttle SIA-HV-306 approximately 20% open.
(PHA-M3709)
- ___ 18. Vent the SDC suction line from **ONE** of the following locations until the header is free of air:
- SIA-V909 (lower level of the West Penetration room)
 - SIA-V876 (upper level of the West Penetration room)
- ___ 19. Ensure Appendix O, LPSI Pump Pre-Start Checklist has been completed.

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

___20. Vent the LPSI pump A seal cavity using SIA-V977.

___21. Perform an Independent Verification on SIA-V977 being closed per 02DP-0ZZ01, Verification of Plant Activities.

___22. Perform the following:

- a. Start LPSI pump A using the local handswitch.
(PBA-S03F)
- b. Check the following expected indication:
 - **Unit 1 Only** - Motor run current is less than 100 amps.
 - **Units 2 & 3 Only** - Motor run current is less than 95 amps.

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

----- **NOTE** -----

When the pump is first started, some leakage is expected for a short duration.

----- **NOTE** -----

During normal pump operation, a dripping seal is normally acceptable, a steady stream is indication of seal damage.
(SDOC #N001-1101-00052)

____ 23. **WHEN** LPSI A has been started,
THEN direct an Auxiliary Operator
to check the pump seal leakoff
drain line for leakage.

____ 24. **IF** leakage is discovered at the
pump seal leakoff drain line,
THEN notify Mechanical/System
Engineering of the pump seal
leakage.

____ 25. Check that LPSI pump A room fan
HAA-Z02 has started by local
observation that HAA-Z02 is
running.

____ 26. **IF** fan HAA-Z02 did not start when
the LPSI pump started,
THEN inform the Shift Manager/
CRS.

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 27. Throttle SIA-HV-657, SDCHX A Outlet to RC Loops 1A/1B Valve to establish a LPSI flow rate determined by the table below. (PHA-M3310)

| MODE 4 | MODE 5 OR 6 |
|-------------------|-------------------|
| 4,000 - 4,750 gpm | 3,780 - 4,750 gpm |

- ___ 28. Direct Chemistry to sample the SDC Loop at the SDHX A Outlet.

- ___ 29. **WHEN** the boron concentration of the SDC Loop is greater than the RCS boron concentration, **THEN** perform the following:

- Close SIA-HV-657. (PHA-M3310)
- Throttle SIA-HV-306 to establish a LPSI flow rate of between 800 and 1200 gpm. (PHA-M3709)
- Stop the LPSI Pump.
- Roll the UC fuses for LPSI A to OFF.

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 30. **WHEN** LPSI pump A has been shutdown for 5 minutes,
THEN check that LPSI Pump A fan HAA-Z02 has automatically stopped by local observation.
- ___ 31. **IF** fan HAA-Z02 did not stop approximately 5 minutes after the LPSI pump was shutdown,
THEN inform the Shift Manager/CRS.
- ___ 32. Close SIA-UV-669. (PHA-M3510)
- ___ 33. Close SIA-HV-683. (PHA-M3706)
- ___ 34. Open SIA-UV-651. (PHA-M3503)
- ___ 35. Unlock and close PKC-B43, Power Supply Disconnect for SIC-UV-653. (Battery Room C)
- ___ 36. Open SIA-UV-653, Loop 1 to Shutdown Cooling LPSI Pump Suction Valve, using the local keyswitch. (PKC-B43)

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

___37. Perform the following:

- a. Roll the UC fuses for LPSI Pump A to ON.
- b. Start LPSI pump A using the local handswitch.
(PBA-S03F)
- c. Check the following expected indication:
 - **Unit 1 Only** - Motor run current is less than 100 amps.
 - **Units 2 & 3 Only** - Motor run current is less than 95 amps.

___38. Throttle SIA-HV-306, to establish a LPSI flow rate determined by the table below. (PHA-M3709)

| MODE 4 | MODE 5 OR 6 |
|-------------------|-------------------|
| 4,000 - 4,750 gpm | 3,780 - 4,750 gpm |

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 39. Perform the following to begin heating up the SDC Loop:
- Throttle open SIA-UV-635, LPSI Header to RC Loop 1A to begin the heatup. (PHA-M3321)
 - WHEN** the SDC Loop heatup rate has stabilized, **THEN** throttle open SIA-UV-645, LPSI Header to RC Loop 1B to continue the heatup. (PHA-M3319)
- ___ 40. **IF** at any time the heatup rate on the SDC Heat Exchanger exceeds 19°F/min, **THEN** reduce the flow through the SDC Heat Exchanger.
- ___ 41. Maintain **ALL** of the following while SDC is in service:
- SDC flow rate for the current mode
 - Desired RCS cooldown rate.
 - A SDC Heat Exchanger heatup rate less than 19°F/min

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 42. Incrementally adjust **ALL** of the following valves to stop the warm up bypass flow:

- SIA-UV-635 (PHA-M3321)
- SIA-UV-645 (PHA-M3319)
- SIA-HV-691 (PHA-M3707)

___ 43. **WHEN** closed indication for SIA-HV-691 is received, **THEN** perform the following:

- a. Hold the handswitch in the closed position for five seconds. (PHA-M3707)
- b. Direct a second operator to hold the handswitch closed for an additional five seconds.

___ 44. Incrementally adjust **ALL** of the following valves to fully open the loop injection valves:

- SIA-UV-635 (PHA-M3321)
- SIA-UV-645 (PHA-M3319)
- SIA-HV-306 (PHA-M3709)

Appendix M, Placing SDC Train A in Service

INSTRUCTIONS

___45. Adjust SIA-HV-657 (PHA-M3310) and SIA-HV-306 (PHA-M3709) as necessary to maintain **BOTH** of the following:

- SDC flow rate for the current mode
- RCS cooldown rate

CONTINGENCY ACTIONS

End of Appendix

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1. Enter Appendix Entry Time and Date:

- ___ 2. Inform Chemistry that the SDC Loop will be ready for sampling in approximately one half hour.
- ___ 3. Ensure that at least one of the following SDC Suction Valves is closed:
 - SIB-UV-652 (PHB-M3604)
 - SID-UV-654 (PKD-B44)
- ___ 4. Ensure that **BOTH** of the following LPSI Injection Valves are closed:
 - SIB-UV-615 (PHB-M3606)
 - SIB-UV-625 (PHB-M3621)
- ___ 5. Open SIB-HV-693, CS-SDHX B Bypass. (PHB-M3413)
- ___ 6. Close SIB-HV-689, CS B Discharge. (PHB-M3804)

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 7. Ensure that CHB-HV-530, RWT to SI Train B Suction Valve is open.
(Aux Building 51 ft)

- ___ 8. Close SIB-HV-695, LPSI-CS
From SDHX B X-Tie.
(PHB-M3810)

- ___ 9. Ensure that SIB-HV-692, LPSI
Pump Suction from RWT is open.
(PHB-M3805)

- ___ 10. Ensure that SIB-UV-668, LPSI
Pump B Recirc Valve is open.
(PHB-M3609)

- ___ 11. Ensure that SIB-UV-659, Train B
Pumps Combined Recirc to RWT
Valve is open. (Remote Shutdown
Panel)

- ___ 12. Open SIB-UV-656, RC Loop 2
SDC-LPSI Pump Suction Valve.
(PHB-M3605)

- ___ 13. Open SIB-UV-690, RC Loop B
Warmup Bypass Valve.
(PHB-M3806)

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 14. Open SIB-UV-694, LPSI-CS to SDHX B X-Tie Valve.
(PHB-M3414)
- ___ 15. Open SIB-UV-696, SDHX B Outlet to RC Loops 2A/2B Valve.
(PHB-M3415)
- ___ 16. Request that an operator be stationed at SIB-HV-307, LPSI-SDHX B Bypass Valve to monitor the position of the valve.
- ___ 17. Throttle SIB-HV-307 to approximately 20% open.
(PHB-M3803)
- ___ 18. Vent the SDC suction line from **ONE** of the following locations until the header is free of air:
- SIB-V886 (Lower level of the East Penetration room)
 - SIB-V870 (Upper level of the East Penetration room)
 - **Unit-1 Only**
SIB-V1029 (Upper level of the East Penetration Room)

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 19. Ensure Appendix O, LPSI Pump Pre-Start Checklist has been completed.
- ___ 20. Vent the LPSI pump B seal cavity using SIB-V979.
- ___ 21. Perform an Independent Verification on SIB-V979 being closed per 02DP-0ZZ01, Verification of Plant Activities.
- ___ 22. Perform the following:
- Start LPSI pump B using the local handswitch. (PBB-S04F)
 - Check the following expected indication:
 - **Unit 1 Only** - Motor run current is less than 100 amps.
 - **Units 2 & 3 Only** - Motor run current is less than 95 amps.

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

----- NOTE -----

When the pump is first started, some leakage is expected for a short duration.

----- NOTE -----

During normal pump operation, a dripping seal is normally acceptable, a steady stream is indication of seal damage.
(SDOC #N001-1101-00052)

____ 23. **WHEN** LPSI B has been started,
THEN direct an Auxiliary Operator
to check the pump seal leakoff
drain line for leakage.

____ 24. **IF** leakage is discovered at the
pump seal leakoff drain line,
THEN notify Mechanical/System
Engineering of the pump seal
leakage.

____ 25. Check that LPSI pump B room fan
HAB-Z02 has started by local
observation that HAB-Z02 is
running.

____ 26. **IF** fan HAB-Z02 did not start when
the LPSI pump started,
THEN inform the Shift Manager/
CRS.

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___27. Throttle SIB-HV-658, SDCHX B Outlet to RC Loops 2A/2B Valve to establish a LPSI flow rate determined by the table below. (PHB-M3412)

| MODE 4 | MODE 5 OR 6 |
|-------------------|-------------------|
| 4,000 - 4,750 gpm | 3,780 - 4,750 gpm |

- ___28. Direct Chemistry to sample the SDC Loop at the SDHX B Outlet.

- ___29. **WHEN** the boron concentration of the SDC Loop is greater than the RCS boron concentration, **THEN** perform the following:

- Close SIB-HV-658. (PHB-M3412)
- Throttle SIB-HV-307 to establish a LPSI flow rate of between 800 and 1200 gpm. (PHB-M3803)
- Stop the LPSI Pump.
- Roll the UC fuses for LPSI B to "OFF".

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 30. **WHEN** LPSI pump B has been shutdown for 5 minutes,
THEN check that LPSI Pump B fan HAB-Z02 has automatically stopped by local observation.
- ___ 31. **IF** fan HAB-Z02 did not stop approximately 5 minutes after the LPSI pump was shutdown,
THEN inform the Shift Manager/CRS.
- ___ 32. Close SIB-UV-668. (PHB-M3609)
- ___ 33. Close SIB-HV-692. (PHB-M3805)
- ___ 34. Open SIB-UV-652. (PHB-M3604)
- ___ 35. Unlock and close PKD-B44, Power Supply Disconnect for SID-UV-654. (Battery Room D)
- ___ 36. Open SID-UV-654, Loop 2 to Shutdown Cooling LPSI Pump Suction Valve, using the local keyswitch. (Battery Room D)

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

___37. Perform the following:

- a. Roll the UC fuses for LPSI Pump B to "ON".
- b. Start LPSI pump B using the local handswitch. (PBB-S04F)
- c. Check the following expected indication:
 - **Unit 1 Only** - Motor run current is less than 100 amps.
 - **Units 2 & 3 Only** - Motor run current is less than 95 amps.

___38. Throttle SIB-HV-307, to establish a LPSI flow rate determined by the table below. (PHB-M3803)

| MODE 4 | MODE 5 OR 6 |
|-------------------|-------------------|
| 4,000 - 4,750 gpm | 3,780 - 4,750 gpm |

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 39. Perform the following to begin heating up the SDC Loop:
- Throttle open SIB-UV-615, LPSI Header to RC Loop 2A to begin the heatup. (PHB-M3606)
 - WHEN** the SDC Loop heatup rate has stabilized, **THEN** throttle open SIB-UV-625, LPSI Header to RC Loop 2B to continue the heatup. (PHB-M3621)
- ___ 40. **IF** at any time the heatup rate on the SDC Heat Exchanger exceeds 19°F/min, **THEN** reduce the flow through the SDC Heat Exchanger.
- ___ 41. Maintain **ALL** of the following while SDC is in service:
- SDC flow rate for the current mode
 - Desired RCS cooldown rate
 - A SDC Heat Exchanger heatup rate less than 19°F/min

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

CONTINGENCY ACTIONS

___ 42. Incrementally adjust **ALL** of the following valves to stop the warm up bypass flow:

- SIB-UV-615 (PHB-M3606)
- SIB-UV-625 (PHB-M3621)
- SIB-HV-690 (PHB-M3806)

___ 43. **WHEN** closed indication for SIB-HV-690 is received, **THEN** perform the following:

- a. Hold the handswitch in the closed position for five seconds. (PHB-M3806)
- b. Direct a second operator to hold the handswitch closed for an additional five seconds.

___ 44. Incrementally adjust **ALL** of the following valves to fully open the loop injection valves:

- SIB-UV-615 (PHB-M3606)
- SIB-UV-625 (PHB-M3621)
- SIB-HV-307 (PHB-M3803)

Appendix N, Placing SDC Train B in Service

INSTRUCTIONS

___45. Adjust SIB-HV-658 (PHB-M3412) and SIB-HV-307 (PHB-M3803) as necessary to maintain **BOTH** of the following:

- SDC flow rate for the current mode
- RCS cooldown rate

CONTINGENCY ACTIONS

End of Appendix

Appendix O, LPSI Pump Pre-Start Checklist

____ 1. Enter Appendix Entry Time and Date:

____ 2. LPSI A or B Pre-Start Checklist

NOTE

The motor bearing oil levels increase during operation. When oil level is to the top of the sightglass, a level cannot be seen. A slight brown color difference indicates the sight glass is full.

2.1 Ensure the LPSI Pump motor bearing oil levels are at their normal level: (Add oil if the oil levels are below normal.)

____ Upper bearing oil level is normal

____ Lower bearing oil level is normal

NOTE

The oil in the LPSI Pump radial bearing (coupling) sightglass will be drawn into the bearing during pump operation. When the pump is shutdown the oil will drain back into the sightglass.

____ 2.2 Ensure the LPSI Pump radial bearing oil level is between the top scribe mark and 1/8 of an inch below the bottom scribe mark on the sightglass.
(Sightglass is located behind the coupling guard screen)

2.3 For LPSI A ensure the Motor Space Heater has been energized by checking the following:

____ 2.3.1 Breaker PHA-D3706 is closed.

____ 2.3.2 Motor Space Heater light is lit on PHA-M3709A

SHUTDOWN OUTSIDE CONTROL ROOM

2.4 For LPSI B ensure the Motor Space Heater has been energized by checking the following:

____ 2.4.1 Breaker PHB-D3806 is closed.

____ 2.4.2 Motor Space Heater light is lit on PHB-M3834

____ 2.5 **IF** the space heater has not been on,
THEN evaluate for any conditions that might result in condensation forming on the motor windings before starting the pump. (high humidity, water around the pump)

End of Appendix



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

JPM BASIS INFORMATION

| | | | | | | | |
|--------------------------------|---|--|------------------|------------|-----|-------|-----|
| TASK: | 1250440201 Respond to a control room fire | | | | | | |
| TASK STANDARD: | 40AO-9ZZ19 Appendix C Step 8 completed within 15 minutes, Step 7.1 completed within 30 minutes, and step 11 completed within 60 minutes. DG B is stopped. | | | | | | |
| K/A: | 3.6 062 A2.06 | | K/A RATING: | RO: | 3.4 | SRO: | 3.9 |
| K/A: | | | K/A RATING: | RO: | | SRO: | |
| APPLICABLE POSITION(S): | RO | | VALIDATION TIME: | 20 minutes | | | |
| REFERENCES: | 40AO-9ZZ19, Control Room Fire | | | | | | |
| SUGGESTED TESTING ENVIRONMENT: | SIMULATOR | | | PLANT | X | OTHER | |

JPM TYPE

Time Critical? (Yes/No) **Yes** Alternative Path? (Yes/No) **Yes**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 02/16/2011

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

E-Plan Review _____ Training Approval _____
(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *



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PVNGS JOB PERFORMANCE MEASURE
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1. SPECIAL TOOLS/EQUIPMENT:

- 40AO-9ZZ19, Control Room Fire, Appendix C available. This JPM was written using Revision 26 of 40AO-9ZZ19.



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PVNGS JOB PERFORMANCE MEASURE
2012 NRC Exam

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.

INITIAL CONDITIONS:

- **The Control Room has been evacuated due to a fire.**
- **The CRS has entered 40AO-9ZZ19, Control Room Fire.**
- **PBB-S04 is energized from offsite power.**
- **DG 'B' is running with no Spray Pond pump.**

INITIATING CUE:

- **The CRS directs you to perform Appendix C, PBB-S04 Energized from Offsite Power.**

THIS JPM IS TIME CRITICAL



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PVNGS JOB PERFORMANCE MEASURE
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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

| | STEP | CUE | STANDARD |
|---|--|-----|---|
| 1. | Step 1 of Appendix C: Enter Appendix Entry Time AND Date: _____ | | Examinee enters Entry time and date. START TIME: _____ |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | | | |
|--|--|--|--|
| <p style="text-align: center;">Notes before step 2: NOTE The telephone number for the B Train Remote Shutdown Panel is: Unit 1 - 1235 Unit 2 - 2235 Unit 3 – 3235 NOTE Actions directed by this appendix are time critical and must be performed as quickly as possible to ensure that effects of the fire do not prevent safe shutdown of the unit. NOTE Portable lanterns should be used when performing actions in response to a fire. This will ensure that lighting is available if the emergency lighting system is degraded.</p> | | | |
|--|--|--|--|

| | STEP | CUE | STANDARD |
|---|--|---|--|
| 2. | Step 2 of Appendix C: Obtain a portable lantern from the Emergency Equipment Cabinet, FPN-C02. (B Switchgear Room, Northwest corner) | INFORM CUE: You have obtained the portable lantern from the Equipment Cabinet. | Examinee proceeds to the Emergency Equipment Cabinet. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|--|--|---|---|
| 3. * | <p>Step 3 of Appendix C:</p> <p>On PHB-M32, place ALL of the following Control Room Circuits Disconnect Switches in “LOCAL”:</p> <p>(Switchgear Room B)</p> <ul style="list-style-type: none"> • PHB-M3209, Battery Charger D PKD-H14 • PHB-M3205, Control Room Circuits Disconnect Switches (4 switches) | <p>INFORM CUE (as examinee simulates turning each disconnect):</p> <p>Indicate that the disconnect switch is pointing to LOCAL.</p> | <p>Examinee places the following disconnects in “LOCAL”.</p> <p>_____ PHB-M3209, Battery Charger D PKD-H14</p> <p>_____ PHB-M3205, Control Room Circuits Disconnect Switches (4 switches)</p> |
| <p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p> | | | |

| | STEP | CUE | STANDARD |
|--|--|---|---|
| 4. * | <p>Step 4 of Appendix C:</p> <p>Place all of the disconnect switches on DGB-C01, DG Disconnect Cabinet in “LOCAL”. (5 switches)</p> <p>(Switchgear Room B)</p> | <p>INFORM CUE (as examinee simulates turning each disconnect):</p> <p>Indicate that the disconnect switch is pointing to LOCAL.</p> | <p>Examinee simulates placing all 5 disconnect switches to “LOCAL”.</p> |
| <p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p> | | | |

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PVNGS JOB PERFORMANCE MEASURE
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| | STEP | CUE | STANDARD |
|--|---|---|--|
| 5. * | <p>Step 5 of Appendix C:</p> <p>Ensure the disconnect switches for ALL of the following breakers on PBB-S04 are in “LOCAL”:</p> <ul style="list-style-type: none"> PBB-S04S, Aux Feed Water Pump AFB-P01 PBB-S04N, 4160 - 480 LC PGB-L36 PBB-S04M, Essential Cooling Water Pump EWB-P01 PBB-S04L, ESF Service Transformer NBN-X03 PBB-S04K, ESF Service Transformer NBN-X04 PBB-S04J, 4160 - 480 LC PGB-L32 PBB-S04H, 4160 - 480 LC PGB-L34 PBB-S04G, Essential Chiller ECB-E01 PBB-S04F, LP Safety Injection Pump SIB-P01 PBB-S04C, Essential Spray Pond Pump SPB-P01 PBB-S04B, Diesel Generator PEB-G02 | <p>INFORM CUE (as examinee simulates turning each disconnect): Indicate that the disconnect switch is pointing to LOCAL.</p> <hr/> <p>Examiner Note: The following breakers are the only ones not manipulated:</p> <ul style="list-style-type: none"> PBB-S04P – Spare PBB-S04D – Containment Spray Pump B PBB-S04E – High Pressure Safety Injection Pump B | <p>Examinee simulates placing the disconnect on each of the following breakers to “LOCAL”:</p> <p>_____ PBB-S04S</p> <p>_____ PBB-S04N</p> <p>_____ PBB-S04M</p> <p>_____ PBB-S04L</p> <p>_____ PBB-S04K</p> <p>_____ PBB-S04J</p> <p>_____ PBB-S04H</p> <p>_____ PBB-S04G</p> <p>_____ PBB-S04F</p> <p>_____ PBB-S04C</p> <p>_____ PBB-S04B</p> |
| <p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|------|---|--|---|
| 6. * | Step 6 of Appendix C: Place ALL of the following disconnect switches in "LOCAL": <ul style="list-style-type: none"> • CS-2/B2 on PGB-L36B1 • CS-1/B2 on PGB-L34B1 • CS-2/C4 on PGB-L32C1 • CS-1/B2 on PGB-L32B1 | INFORM CUE (as examinee simulates turning each disconnect): Indicate that the disconnect switch is pointing to LOCAL. | Examinee places all the following disconnects in "LOCAL": _____ CS-2/B2 on PGB-L36B1 _____ CS-1/B2 on PGB-L34B1 _____ CS-2/C4 on PGB-L32C1 _____ CS-1/B2 on PGB-L32B1 |

SAT / UNSAT

Comments (required for UNSAT):

| | STEP | CUE | STANDARD |
|----|--|---|---|
| 7. | Step 7 of Appendix C: Check that breaker PGB-L32C4, Charging Pump 2 CHB-P01, is closed. | INFORM CUE: The breaker for CHB-P01 indicator says "OPEN". IF REQUESTED CUE: The springs indicate charged. | Examinee checks PGB-L32C4 breaker position indication. ALTERNATE PATH |

SAT / UNSAT

Comments (required for UNSAT):



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| | STEP | CUE | STANDARD |
|---|--|---|--|
| 8. * | <p>Step 7.1 of Appendix C:</p> <p>IF breaker PGB-L32C4, Charging Pump 2 CHB-P01, is open, THEN PERFORM the following:</p> <ol style="list-style-type: none"> Ensure charging pump suction is aligned to the RWT per Step 6 of Appendix G, Upper Auxiliary Building Actions. Close breaker PGB-L32C4, Charging Pump 2 CHB-P01. | <p>When Requested cue:</p> <p>The Charging pump suction has been aligned to the RWT per Step 6 of Appendix G, Upper Auxiliary Building Actions.</p> <p>Inform Cue (after examinee simulates closing PGB-L32C4):</p> <p>The breaker position indication says “CLOSED”.</p> | <p>Examiner Note: Log the time the Charging Pump breaker is simulated closed.</p> <p>Examinee performs the following:</p> <ol style="list-style-type: none"> Contacts the CRS at the Remote Shutdown panel (or the Aux Bldg AO) to determine if charging pump suction is aligned to the RWT. Closes breaker PGB-L32C4 for Charging Pump B <p>(Time Critical)</p> <p>Time: _____ There should be less than 30 minutes from the time in step one to when the charging pump breaker is closed.</p> <p>ALTERNATE PATH</p> |
| <p>SAT / UNSAT Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|--|---|---|---|
| 9. * | <p>Step 8 of Appendix C:</p> <p>Ensure that ALL of the following breakers are closed:</p> <ul style="list-style-type: none"> PBB-S04S, Aux Feed Water Pump AFB-P01 PBB-S04N, 4160 - 480V LC PGB-L36 PBB-S04M, Essential Cooling Water Pump, EWB-P01 PBB-S04J, 4160 - 480V LC PGB-L32 PBB-S04H, 4160 - 480V LC PGB-L34 PBB-S04G, Essential Chiller ECB-E01 PBB-S04C, Essential Spray Pond Pump SPB-P01 | <p>Inform Cue as each breaker is closed (use only cues for indications stated by examinee that he/she is observing):</p> <p>Red light is on/ green light is off.</p> <p>Amps pegged high and are now steady at __*(See below)__ amps.</p> <p>Breaker made a closing sound.</p> <p>*AMP reading are as follows:</p> <ul style="list-style-type: none"> PBB-S04S – 70 amps PBB-S04N – 15 amps PBB-S04M – 80 amps PBB-S04J – 15 amps PBB-S04H – 15 amps PBB-S04G – 0 amps (after ~ 45 seconds it will read ~ 23 amps) PBB-S04C – 80 amps | <p>Examiner Note: Log the time each breaker is simulated closed.</p> <p>Examinee simulates closing the following breakers:</p> <p>_____ PBB-S04S, Aux Feed Water Pump AFB-P01</p> <p>_____ PBB-S04N, 4160 - 480V LC PGB-L36</p> <p>_____ PBB-S04M, Essential Cooling Water Pump, EWB-P01</p> <p>_____ PBB-S04J, 4160 - 480V LC PGB-L32</p> <p>_____ PBB-S04H, 4160 - 480V LC PGB-L34</p> <p>_____ PBB-S04G, Essential Chiller ECB-E01</p> <p>_____ PBB-S04C, Essential Spray Pond Pump SPB-P01</p> <p>(Time Critical)</p> <p>_____ There should be less than 15 minutes from step 1 until PBB-S04C is closed.</p> <p>_____ There should be less than 45 minutes from step 1 until PBB-S04S is closed.</p> <p>_____ There should be less than 40 minutes from step 1 until PBB-S04G is closed.</p> |
| <p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p> | | | |



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| | STEP | CUE | STANDARD |
|---|--|--|---------------------------------------|
| 10. | Step 9 of Appendix C: Inform the CRS that ALL of the following are running: <ul style="list-style-type: none"> • Charging Pump B • Aux Feed Pump B • Spray Pond Pump B • Essential Cooling Water Pump B • Essential Chiller B | Inform Cue: The CRS has been informed that the following are running: <ul style="list-style-type: none"> • Charging Pump B • Aux Feed Pump B • Spray Pond Pump B • Essential Cooling Water Pump B • Essential Chiller B | Examinee simulates informing the CRS. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

| | STEP | CUE | STANDARD |
|---|--|--|--|
| 11. * | Step 10 of Appendix C: IF Diesel Generator B is running, THEN perform the following: (DG Control Panel) <ol style="list-style-type: none"> Press DGB-HS-30, Emergency Stop. IF a loss of Offsite Power occurs, THEN PERFORM ONE of the following as appropriate: <ul style="list-style-type: none"> • Appendix D, PBB-S04 Energized from DG B • Appendix E, PBB-S04 De-energized. | Inform Cue: DG B is running and a LOP has not occurred. After examinee pushing Emergency Stop button(use only cues for indications stated by examinee that he/she is observing): <ul style="list-style-type: none"> • The DG is slowing. • Use pen to indicate RPMs are lowering. • DG run alarm is off. • Etc. | Examinee simulates pushing DGB-HS-30 to stop Diesel Generator B. |
| SAT / UNSAT Comments (required for UNSAT): | | | |



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| | STEP | CUE | STANDARD |
|---|---|---|---|
| 12. * | Step 11 of Appendix C: Ensure that DGB-V064, Jacket Water Standpipe Make-up Header Isolation valve, is closed. (DG B Room) | Inform Cue: The valve has turned clockwise and has stopped moving as expected. | Examiner Note: Log the time the valve is simulated closed. Examinee simulates closing DGB-V064. (Time Critical) _____ There should be less than 60 minutes from step 1 until DGB-V064 is closed. |
| SAT / UNSAT Comments (required for UNSAT): | | | |

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Planning organization for resolution.

NORMAL TERMINATION POINT



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RECORD OF REVISIONS

| REVISION NUMBER | REVISION DATE | REASON REVISED | COMMENTS |
|--------------------|------------------|-------------------|----------------|
| 0 | 02/17/2011 | 6 | Record created |
| | | | |
| | | | |
| | | | |
| | | | |

REASON REVISED

Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)



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EXAMINEE HANDOUT

INITIAL CONDITIONS:

- The Control Room has been evacuated due to a fire.
- The CRS has entered 40AO-9ZZ19, Control Room Fire.
- PBB-S04 is energized from offsite power.
- DG 'B' is running with no Spray Pond pump.

INITIATING CUE:

- The CRS directs you to perform Appendix C, PBB-S04 Energized from Offsite Power.

THIS JPM IS TIME CRITICAL

CONTROL ROOM FIRE

Appendix C, PBB-S04 Energized from Offsite Power

INSTRUCTIONSCONTINGENCY ACTIONS

- ____ 1. Enter Appendix Entry Time
and Date:

----- **NOTE** -----

The telephone number for the B Train Remote Shutdown Panel is:

Unit 1 - 1235

Unit 2 - 2235

Unit 3 - 3235

----- **NOTE** -----

Actions directed by this appendix are time critical and must be performed as quickly as possible to ensure that effects of the fire do not prevent safe shutdown of the unit.

----- **NOTE** -----

Portable lanterns should be used when performing actions in response to a fire. This will ensure that lighting is available if the emergency lighting system is degraded.

- ____ 2. Obtain a portable lantern from the
Emergency Equipment Cabinet,
FPN-C02. (B Switchgear Room,
Northwest corner)

CONTROL ROOM FIRE

Appendix C, PBB-S04 Energized from Offsite PowerINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 3. On PHB-M32, place **ALL** of the following Control Room Circuits Disconnect Switches in "LOCAL": (Switchgear Room B)
- PHB-M3209, Battery Charger D PKD-H14
 - PHB-M3205, Control Room Circuits Disconnect Switches (4 switches)
- ___ 4. Place all of the disconnect switches on DGB-C01, DG Disconnect Cabinet in "LOCAL". (5 switches) (Switchgear Room B)

CONTROL ROOM FIRE

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Appendix C

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Appendix C, PBB-S04 Energized from Offsite Power

INSTRUCTIONSCONTINGENCY ACTIONS

- ___ 5. Ensure the disconnect switches for **ALL** of the following breakers on PBB-S04 are in "LOCAL":

- PBB-S04S, Aux Feed Water Pump AFB-P01
- PBB-S04N, 4160 - 480 LC PGB-L36
- PBB-S04M, Essential Cooling Water Pump EWB-P01
- PBB-S04L, ESF Service Transformer NBN-X03
- PBB-S04K, ESF Service Transformer NBN-X04
- PBB-S04J, 4160 - 480 LC PGB-L32
- PBB-S04H, 4160 - 480 LC PGB-L34
- PBB-S04G, Essential Chiller ECB-E01
- PBB-S04F, LP Safety Injection Pump SIB-P01
- PBB-S04C, Essential Spray Pond Pump SPB-P01
- PBB-S04B, Diesel Generator PEB-G02

CONTROL ROOM FIRE

Appendix C, PBB-S04 Energized from Offsite Power

INSTRUCTIONSCONTINGENCY ACTIONS

___ 6. Place **ALL** of the following disconnect switches in "LOCAL":

- CS-2/B2 on PGB-L36B1
- CS-1/B2 on PGB-L34B1
- CS-2/C4 on PGB-L32C1
- CS-1/B2 on PGB-L32B1

___ 7. Check that breaker PGB-L32C4, Charging Pump 2 CHB-P01, is closed.

___ 7.1 **IF** breaker PGB-L32C4, Charging Pump 2 CHB-P01, is open,
THEN PERFORM the following:

- a. Ensure charging pump suction is aligned to the RWT per Step 6 of Appendix G, Upper Auxiliary Building Actions.
- b. Close breaker PGB-L32C4, Charging Pump 2 CHB-P01. [Ref. Step 4.13]

CONTROL ROOM FIRE

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Appendix C

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Appendix C, PBB-S04 Energized from Offsite Power

INSTRUCTIONSCONTINGENCY ACTIONS

___ 8. Ensure that **ALL** of the following breakers are closed:

- PBB-S04S, Aux Feed Water Pump AFB-P01
- PBB-S04N, 4160 - 480V LC PGB-L36
- PBB-S04M, Essential Cooling Water Pump, EWB-P01
- PBB-S04J, 4160 - 480V LC PGB-L32
- PBB-S04H, 4160 - 480V LC PGB-L34
- PBB-S04G, Essential Chiller ECB-E01
- PBB-S04C, Essential Spray Pond Pump SPB-P01

___ 9. Inform the CRS that **ALL** of the following are running:

- Charging Pump B
- Aux Feed Pump B
- Spray Pond Pump B
- Essential Cooling Water Pump B
- Essential Chiller B

CONTROL ROOM FIRE

Appendix C, PBB-S04 Energized from Offsite PowerINSTRUCTIONSCONTINGENCY ACTIONS

- ___ 10. **IF** Diesel Generator B is running,
THEN perform the following:
(DG Control Panel)
- a. Press DGB-HS-30,
Emergency Stop.
- b. **IF** a loss of Offsite Power
occurs,
THEN PERFORM ONE of
the following as appropriate:
- Appendix D, PBB-S04
Energized from DG B
 - Appendix E, PBB-S04
De-energized.
- ___ 11. Ensure that DGB-V064, Jacket
Water Standpipe Make-up Header
Isolation Valve, is closed.
(DG B Room)

End of Appendix

Facility: PVNGS Scenario No.: 1 Op-Test No: 2012

Examiners: _____ Operators: _____

Initial Conditions: (100% power, MOC).

Turnover: Unit 1 is at 100% power (250 EFPD). Auxiliary Feedwater Pump 'A' and Containment Spray 'A' are tagged out.

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|--|----------------------|---|
| 1 | None | N CO/SRO | Shift Turbine Cooling water pumps. |
| 2 | cmTRCV05CHNLT227_4 | C RO/SRO | Volume Control Tank level transmitter, CHN-LT-227 fails low causing a boration. Crew takes action to return CCP suction to the Volume Control Tank. |
| 3 | mfRM01A | I CO/SRO | Control Room monitor, RU-29, fails high. Crew will bypass CREFAS "A". |
| 4 | cmCPCC06EWAP01_5 (In setup) | C RO/SRO (TS) | Essential Cooling water pump "A" fails to auto start on CREFAS actuation. RO will start EW pump "A". |
| 5 | mfTH06A f:0.02 | C ALL (TS) | Steam Generator 1 Tube Leak 40AO-9ZZ02, Excessive RCS Leakrate |
| 6 | mfED16C | C CO/SRO (T/S) | Loss of Class DC power PKC-M43. 40AO-9ZZ13, Loss of Class Instrument or Control Power |
| 7 | mfTH06A f:50 | M ALL | Steam Generator 1 Tube Leak degrades to a Rupture. 40EP-9EO04, Steam Generator Tube Rupture |
| 8 | cmCPSI01SIAP02_5 (In setup) | C RO/SRO | HPSI pump "A" fails to auto start on SIAS/CIAS actuation |
| 9 | mfRX01 f:0 | I CO/SRO | Tave fails low, Requires manual control of Main Feedwater flow. |
| | | | CRITICAL TASK – Reset MSIS during cooldown to prevent unmonitored release to public. |
| End point | Faulted SG is isolated per Standard Appendix 113, SG 1 Isolation | | Faulted SG is isolated CRITICAL TASK –Isolate faulted SG within 70 minutes of initiation of SGTR. |

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

Turnover

Plant conditions:

Unit 1 is at 100% power.

The core is presently at 250 EFPD.

Risk Management Action Level is ORANGE.

Train B is protected equipment.

AF 'B' and AF 'N' are protected.

CS 'B' is protected.

PC is NOT recircing the RWT.

Unit 2 is supplying the Aux Steam cross-tie header.

Vibration shop reported that in a review of data they found some unusual readings with Turbine Cooling Water pump "A". A vibration technician and AO have been briefed and are standing by for a TCW pump shift. Appendix "D" of 40OP-9TC01 has been completed.

Equipment out of service:

Auxiliary Feedpump 'A' (AFA-P01) is tagged out due to a noisy bearing. LCO 3.7.5 conditions 'a' and 'b' have been entered. Expected to return to service in 7 hours.

CS 'A' is tagged out for scheduled maintenance. LCO 3.6.6 condition 'a' has been entered. Expected to return to service in 12 hours.

Planned shift activities:

Remove the "A" Turbine Cooling Water pump from service. The pre-start checklist has been completed and the area operator is standing by.

Scenario 1 Overview

| | |
|---------|---|
| Event 1 | CO shift Turbine Cooling Water Pumps from A running to B running. |
| Event 2 | Low failure of the Volume Control Tank level transmitter CHN-LT-227. This causes the charging pump suction to automatically shift from the Volume Control Tank to the Refueling Water Tank (resulting in boration of the RCS). The operator is directed by the alarm response to hold open the VCT outlet valve and hold closed the valve from the Refueling Water Tank while an auxiliary operator opens the breakers to the valves. The crew may also reduce turbine load depending on how long the boration goes before the valves are repositioned. |
| Event 3 | RU-29 (Control Room intake ventilation radiation monitor) fails high causing a Control Room Essential Filtration Actuation Signal (CREFAS). The crew should determine the rad monitor has failed high (confirmed by the Effluent Technician) and bypass RU-29 on the BOP-ESFAS panel behind the control boards. |
| Event 4 | EW 'A' pump fails to auto start on the previous CREFAS signal. The CRS should address Tech Specs and declare EW 'A' inoperable as well as various other cascading Tech Specs. |
| Event 5 | Steam Generator #1 Tube leak. The CRS should respond by entering Abnormal operating procedure 40AO-9ZZ02 and addressing Tech Specs. The crew should address charging pumps and letdown. The RO will perform a leakrate determination and the CO will minimize the release to environment. |
| Event 6 | Loss of PKC-M43 (125 VDC Motor Control Center). The CRS should respond by entering Abnormal operating procedure 40AO-9ZZ13. The CO should place CEDMCS in standby and place CEAC 2 inop codes in the Core Protection Calculators. |
| Event 7 | SG Tube leak degrades. The CRS should direct starting all available charging pumps, isolating letdown and tripping the reactor since pressurizer level continues to decrease. The crew performs the Standard Post Trip Actions. After the SPTAs are complete, the CRS should enter 40EP-9EO04, SGTR and initiate and cooldown and depressurization of the RCS. Once below 540 °F, the crew should isolate the affected SG. |
| Event 8 | When the Safety Injection Actuation Signal actuates, the Train 'A' High Pressure Safety Injection pump will fail to auto start. The RO should recognize this and manually start the pump. |
| Event 9 | After the trip, the Tave from the Reactor Reg System will fail low. This will require action by the CO to establish feed to the Steam Generators. |

Op-Test No.: _____ Scenario No.: 1 Event No.: 1 Event Description: Shift of the Turbine Cooling Water pumps

| Time | Position | Applicant's Actions or Behavior |
|-------|----------|---|
| T = 0 | CRS | Directs the CO to shift Turbine Cooling Water Pumps per 40OP-9TC01 – Turbine Cooling Water. |
| | CO | <p>Informs the Auxiliary Operator (AO) in the Turbine Building that he will be shifting TC Pumps. (Step 4.3.3.1)</p> <p>Starts the standby pump (TCN-P01B) by placing handswitch, TCN-HS-22, in the "START" position (B07). (Step 4.3.3.2)</p> <p>Directs the AO to close the casing vent valve for TCN-P01B (TCN-HCV-531). (Step 4.3.3.3)</p> <p>Observes amps and light indication. (Step 4.3.3.4)</p> <p>Directs the AO to close the discharge valve for TCN-P01A (TCN-HCV-25). (Step 4.3.3.5)</p> <p>When the AO reports the discharge valve for TCN-P01A is closed, the CO stops the TC 'A' pump using TCN-HS-21 (B07). (Step 4.3.3.6)</p> <p>Directs the AO to open the discharge valve for TCN-P01A (TCN-HCV-25). (Step 4.3.3.8)</p> <p>Directs the AO to visually inspect TC pump A to ensure no rotation then Open the casing vent valve (TCN-528). (Steps 4.3.3.9 and 4.3.3.10)</p> <p>Informs the AO in the Turbine Building that the pump shifting operation is complete. (Step 4.3.3.11)</p> |

Examiner Note: May proceed to the next event after the examinee informs the operator to open the discharge valve for TCN-P01 (TCN-HV-25).

| | | |
|--|-----------------|---|
| Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 2 </u> | | |
| Event Description: <u>Volume Control Tank level transmitter CHN-LT-227 fails low</u> | | |
| Time | Position | Applicant's Actions or Behavior |
| T = 7 | Crew | The crew receives alarms on B03 (Windows 9A – VCT TRBL and 8B - VCT LVL LO-LO). |
| | RO | Address the alarm response procedure (40AL-9RK3A – Panel B03A Alarm Responses). |
| Examiner Note: CHN-LT-227 is not indicated on the control boards but can be seen on the plant computer. | | |
| | RO | <p>Addresses the alarm response procedure (40AL-9RK3A) for window 8B</p> <p>Verifies that the AUTO ACTIONS (Steps 1-4) have occurred (B03):</p> <ul style="list-style-type: none"> • Boric acid makeup to charging pumps valve, CHN-UV-514 opens. (Loss of power to CHN-UV-514 will open CHE-HV-536). • Volume Control Tank Outlet valve, CHN-UV-501 closes. • Boric acid makeup pump recirc valve, CHN-UV-510 closes. • One Boric acid makeup pump, CHN-P02A or CHN-P02B starts. <p>Checks the VCT level Lo-Lo alarm by reading level indicator CHN-LI-226 (B03). (Step 1 of first priority actions)</p> <p>If the CRS directs, the RO goes to single charging pump operation per 40OP-9CH01, CVCS Normal Operations. This would entail the following:</p> <ul style="list-style-type: none"> • Manually lowering letdown flow to 20 to 30 gpm using RCN-LIC-110, Level Setpoint Controller (B04). (Step 4.4.3.9.1) • Place the normally running charging pump (CH 'B') in the Pull-to-Lock position (B03). (Step 4.4.3.9.2) • Restore one of the following (Step 4.4.3.9.3): <ul style="list-style-type: none"> o Restore Pzr level control to AUTO o Balance charging and letdown flow to stabilize level in the VCT. <p style="text-align: right;">(Continued on next page)</p> |

| | | |
|---|-------------------|--|
| | | If level indicator CHN-LI-226 indicates normal VCT level (i.e., greater than 15% level), then perform the following to maintain charging pump suction aligned to the VCT: (Step 3 of first priority actions) |
| Examiner Note: The RO may hand off the Alarm Response Procedure to the CO to read as he holds the valves. | | |
| | RO (Continued) | <ul style="list-style-type: none"> • Holds open CHN-UV-501, Volume Control Tank Outlet valve (B03). (Step 3.1 of first priority actions) |
| Examiner Note: IF the operator's hand slips and CHN-UV-501 starts going closed, the operator should release the handswitch for CHN-UV-514 or a low suction pressure trip will occur on the charging pumps. | | |
| | RO (Continued) | <ul style="list-style-type: none"> • Holds closed CHN-UV-514, Boric Acid Makeup to Charging Pumps Valve (B03). (Step 3.2 of first priority actions) <p>(If at any time, CHN-UV-501 begins to stroke closed or indicates intermediate position. then release CHN-HS-514 and check that CHN-UV-514 opens.)</p> <ul style="list-style-type: none"> • Directs an AO to open the following breakers (in the following order): (Step 1 of second priority actions) <ul style="list-style-type: none"> o CHE-HV-536 breaker, NHN-M7209 o CHN-UV-501 breaker, NHN-M7208 o CHN-UV-514 breaker, NHN-M1528 • Stations an operator(s) in the vicinity of the MCCs to close the following breakers when directed by the Control Room Operator. (Step 1.5 of second priority actions) |
| Examiner Note: May proceed to the next event after the breakers for the 3 valves are opened by the auxiliary operator and the CRS performs a brief. | | |

Appendix D Required Operator Actions [Form ES-D-2](#)

| Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>3 and 4</u> | | |
|--|----------|--|
| Event Description: <u>(3) Control Room Radiation Monitor (RU-29) fails high causing a CREFAS</u> <u>(4) Essential Cooling Water Pump A fails to auto tart</u> | | |
| Time | Position | Applicant's Actions or Behavior |
| T = 23 | Crew | The crew receives alarms on B05A (Windows 4A – CREFAS A, 4B – CREFAS B, and 4C – HI CR RAD CH TRIP) and on the RMS panel for RU-29. |
| | CO | <p>The CO addresses the alarm response procedures (41AL-1RK5A – Panel B05A Alarm Responses and 74RM-9EF41- (RMS Alarm Responses).</p> <p>74RM-9EF41 Response:</p> <ul style="list-style-type: none"> • High alarm initiates a CREFAS. • Notify RP. • Notify Radiation Monitoring Technician (Effluent Tech). • Monitor RU-29 or RU-30 for increasing trends. • Monitor RU-143 and RU-145 readings and trends. <p>41AL-1RK5A Response (Window 4A- CREFAS B:</p> <ul style="list-style-type: none"> • Checks the auto actions for a CREFAS (SP pump, EW pump, Essential Chiller and Control Room Essential Ventilation should all start). |
| | RO | <p>Addresses the alarm response for the blue SEAS light (B02) and determines the EW 'A' pump did not auto start.</p> <p>Addresses the alarm response (41AL-1ES2A- Safety Equipment Status System Panel Alarm Responses) for the SESS panel and starts the EW 'A' pump (B02).</p> <p>41AL-1RK5A Response (Window 4A- CREFAS B):</p> <p>If a CREFAS occurs and no SIAS and no LOP, then within 30 minutes stop the Control Bldg Normal Sply Fan A01 and ESF Swgr Room Norm Sply Fan A03 (B02).</p> |

| | | |
|---|------|---|
| | Crew | When called the Effluent Tech states that RU-29 has failed high due to a sudden increase in the output and requests that the control room place RU-29 in bypass. |
| | CRS | <p>Addresses Tech Specs and determines the EW 'A' pump is inoperable and enters LCO 3.7.7 condition 'a'. This will cause numerous other LCOs to be entered due to cascading Tech Specs. Other tech specs entered are LCO 3.5.3, 3.6.6, 3.7.7, 3.7.5, 3.7.12, and TLCO 3.5.201 (however, these may not be addressed immediately).</p> <p>Addresses Tech Spec (LCO 3.3.9) for RU-29 failing and determines only one Control Room Radiation monitor is required.</p> <p>Directs the CO to bypass RU-29 on the BOP-ESFAS panel per 40OP-9SA01.</p> <p>May elect to quarantine rather than start EW pump "A".</p> |
| | CO | <p>Bypasses RU-29 (CREFAS A) on the BOP-ESFAS Cabinet (back of control panels) per 40OP-9SA01.</p> <ul style="list-style-type: none"> • Performs a lamp test on the affected BOP ESFAS cabinet(s). (Step 4.6.3.4) • Ensures all lamps are lit. (Step 4.6.3.4) • Steps 4.6.3.5-4.6.3.10 are N/A. • Places a check mark in the column provided for the module(s) /relays/trip circuit(s) to be placed in Bypass. (Step 4.6.3.11) • Place Bypass key in key slot for the selected Module and turns the key clockwise approximately 1/4 turn or until the Bypass light comes on. (Step 4.6.3.12) |
| Examiner Note: May proceed to the next event when RU-29 is bypassed at the BOP-ESFAS cabinet and the CRS performs a brief. | | |

Appendix D Required Operator Actions [Form ES-D-2](#)

| Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 5 </u> | | |
|--|--------------------|--|
| Event Description: <u> Steam Generator #1 Tube Leak </u> _____ | | |
| Time | Position | Applicant's Actions or Behavior |
| T = 34 | Crew | The crew receives alarms on RU-142, Main Steam Line N16 Monitors. |
| | CO | The CO addresses the RMS Alarm Response procedure 74RM-9EF41 . <ul style="list-style-type: none"> The CO determines that RU-142, channels 1 and 2 have the highest readings therefore SG #1 is affected. Monitors RU-4, RU-139, RU-141, and RU-143 for increases. Reports the leak rate and rate of change when requested by the CRS. |
| | CRS | Enters 40AO-9ZZ02 , Excessive RCS Leakrate (Section 5.0) and performs the following: <ul style="list-style-type: none"> Enter AOP Entry Time and Date. (Step 1) If pressurizer level is lowering and additional makeup is required, then ensure all available charging pumps are running. (Step 2) If all available charging pumps are running and pressurizer level is lowering, then isolate letdown. (Step 3) |
| Examiner Note: The leak rate should be ~ 1 gpm so additional makeup or isolation of letdown is not required at this time. | | |
| | CRS (continued) | <ul style="list-style-type: none"> Ensure compliance with LCO 3.4.14 and 3.4.18 (enters condition 'b' of LCO 3.4.14 and condition 'b' of LCO 3.4.18). (Step 6) Directs Chemistry to perform the Abnormal Occurrence checklist for a SGTL. (Step 7) Notifies RP that an RCS leak exists. (Step 8) |
| (Continued on next page) | | |

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| | CRS (continued) | <ul style="list-style-type: none"> Obtains the leakrate and rate of change of leakrate from RMS. (Step 9) Refers to Appendix F, Steam Generator Tube Leak Guidelines to determine operator actions and determines a shutdown is required. (Step 10) Directs the RO to perform Appendix B, ERFDADS Leak Rate Determination. (Step 11) Commences performance of 40OP-9ZZ05, Power Operations to perform a plant shutdown. (Step 12) |
| Examiner Note: Since there is no time requirement for the shutdown, there is no need to wait for a down power prior to going to the next event. | | |
| | CRS (continued) | <ul style="list-style-type: none"> Directs the CO to perform Appendix C, Minimize Release to the environment. (Step 13) |
| | RO | <p>Performs Appendix B ERFDADS Leak Rate determination.</p> <ul style="list-style-type: none"> Checks that TC is constant ($\pm 1^{\circ}\text{F}$). (Step 2) Checks that pressurizer pressure is stable between 2235 and 2265 psia. (Step 3) Ensures Chemistry is not drawing samples. (Step 4) Ensures Letdown is aligned to the VCT or isolated. (Step 5) Ensures Charging pump suction is aligned to the VCT. (Step 6) <p>(The following actions occur on B03):</p> <ul style="list-style-type: none"> Places 210X, Reactor Makeup Water to VCT controller, in "MANUAL" with a zero output. (Step 7) Places 210Y, Boric Acid Makeup to VCT controller, in "MANUAL" with a zero output. (Step 8) Places CHN-HS-527, Makeup to Charging Pumps Valve in "CLOSED". (Step 9) WHEN CHN-UV-527 indicates closed, THEN places CHN-HS-210, Makeup Mode Select Switch, in "MANUAL". (Step 10) Monitors the leakrate on ERFDADS and allows the trend to run for 15 minutes or until VCT level has lowered to 15%. (Step 15) |

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| | CO | <p>CO performs Appendix C to minimize Release to the environment:</p> <ul style="list-style-type: none"> • Ensures ARN-HS-19, Post Filter Mode Select Switch is in the "THRU FILTER MODE" (B07). (Step 2) • Selects "OFF" on the switches for Steam bypass valves SGN-PV-1007 and 1008 (B06). (Step 4) • Directs an operator to perform Attachment C-1, Condensate Cross-Tie Isolation. (Step 5) • Throttles CDN-HV-275, Demineralizer Water Feed to Condensate Service Header Valve to maintain 50-100 psig on CDN-PI-201 (B05). (Step 6) • Directs an operator to close CDN-V099 "CONDENSATE SERVICE HDR SUPPLY REG VALVE CDN-PV-200 OUTLET ISOL VALVE". (Step 7) • Ensures that both of the Condensate Pump Overboard Valves (CDN-HV 29 and 30) are closed (B05). (Step 8) |
| <p>Examiner Note: May proceed to the next event after the crew determines the leak rate and a need to shutdown. The minimize release to environment actions by the CO will also be performed in the SGTR procedure.</p> | | |

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Event Description: Loss of Channel C 125 VDC power (PKC-M43)

| Time | Position | Applicant's Actions or Behavior |
|--|----------|--|
| T= 56 | Crew | <p>Receives numerous alarms on Panels B04 and B05. Also receive alarms on B01.</p> <p>Identifies a loss of PKC-M43 by indications on B05 (loss of instrument and lights on B05 and/or ADV permissive lights on B06).</p> |
| | CRS | <p>Enters 40AO-9ZZ13, Loss of Class Instrument or Control Power AOP Section 7.0 and performs the following:</p> <ul style="list-style-type: none"> • Enters LCO 3.0.3 due to failure to meet Tech Spec LCO 3.1.5 Condition B. (Note before Step 2) • Checks that PNC-D27 is energized. Goes to contingency step and performs Section 8.0. (Step 2) • Directs an operator to place CEDMCS in STANDBY. (Step 2) • Directs an operator to perform 72ST-9RX03, DNBR /LHR /AZTILT/ASI With COLSS out Of Service within 15 minutes. (Step 3) • Directs an operator to set the CEAC 2 INOP code in ALL operable CPCs. (Step 4) • Determines the effect of the de-energized buses using Appendix E. (Step 6) • Directs an operator to place PPS Channel C bistables in bypass. (Step 7) • Ensures compliance with Tech Specs (LCO 3.0.3 will be the most limiting – all others are listed in Appendix F). (Step 8) |
| | CO | <ul style="list-style-type: none"> • Places CEDMCS in Standby when directed (B04). (Step 2) • Performs 72ST-9RX03 when directed. (Step 3) • Sets CEAC 2 INOP codes in A, B, and D CPCs (B05). (Step 4) • Bypasses all parameters on Channel C PPS (behind control boards). (Step 7) |
| <p>Examiner Note: May proceed to the next event after the crew bypasses all parameters on Channel C PPS or sooner if needed. Placing the parameters in bypass is not critical to the remainder of the scenario.</p> | | |

Op-Test No.: _____ Scenario No.: 1 Event No.: 7, 8, and 9Event Description: Steam Generator Tube leak degrades (Trip Initiator)

| Time | Position | Applicant's Actions or Behavior |
|--|----------|---|
| T = 70 | Crew | Notifies Pzr Level and RCS pressure are lowering. |
| | CRS | <ul style="list-style-type: none"> • Directs RO to start additional charging pumps and isolate letdown. (per AOP directions) • Due to pressurizer level continuing to lower, directs a manual reactor trip and possibly a SIAS/CIAS based on trend. • Directs the crew to perform the Standard Post Trip Actions. |
| Standard Post Trip Actions | | |
| | CRS | <p>The CRS enters the Standard Post Trip Actions.</p> <ol style="list-style-type: none"> 1. Open the place keeper and enter the EOP Entry Time. 2. Determine that Reactivity Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that reactor power is dropping. b. Check that start-up rate is negative. c. Check that ALL full strength CEAs are inserted. <ul style="list-style-type: none"> • Crew cannot verify CEA positions due to loss of PKC, directs RO to borate the RCS using Standard Appendix 103. |
| Examiner Note: Due to the loss of PKC-M43, 2 of the 3 CEA position indications are not available so the crew should borate the RCS. | | |
| | RO | <p>Borates the RCS using Standard Appendix 103 – RCS Makeup / Emergency Boration(B03) as follows:</p> <ol style="list-style-type: none"> 1. Set the boric acid makeup flow rate on CHN-FIC-210Y, Boric Acid Makeup to VCT Flow Control, to 40 gpm or less. 2. Set the "Target" makeup volume (gallons) on CHN-FQIS-210Y, Boric Acid Makeup Totalized Flow Control, to a minimum of 5000 gallons. 3. Place CHN-HS-210, Makeup Mode Select Switch, in "BORATE". |

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| | RO | <ol style="list-style-type: none"> 4. Check one Boric Acid Makeup Pump is running. 5. Ensure CHN-UV-527, Makeup to CHRG PMPS (VCT Bypass), is open. 6. IF the left pushbutton on CHN-FQIS-210Y indicates “End”, THEN press the “End” pushbutton. 7. IF the left pushbutton on CHN-FQIS-210Y indicates “Reset”, THEN press the “Reset” pushbutton. 8. Press the “Start” pushbutton on CHN-FQIS-210Y. 9. Check for BOTH of the following: <ol style="list-style-type: none"> a. CHN-FIC-210X indicates no Reactor Makeup Water flow. (CHN-FV-210X closed) b. Proper flow indicated on CHN-FIC-210Y. 10. Adjust the boric acid makeup setpoint on CHN-FIC-210Y to greater than or equal to 44 gpm. |
| | CRS (Continued) | <ol style="list-style-type: none"> 3. Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that the Main Turbine is tripped. b. Check that the Main Generator output breakers are open. c. Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered 4. Determine that RCS Inventory Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> • 10 - 65% • Trending as expected to 33 - 53% <p style="text-align: center;">(Continued on next page)</p> |

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| | | <ol style="list-style-type: none"> 5. Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following: <ul style="list-style-type: none"> • Pressurizer pressure is 1837 - 2285 psia • Pressurizer pressure is trending as expected to 2225 - 2275 psia • RCS is 24°F or more subcooled 6. Determine that Core Heat Removal acceptance criteria are met by ALL of the following: <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled • 7. Determine that RCS Heat Removal acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45 - 60% NR b. Check that Tc is 560 - 570°F. c. Check that steam generator pressure is 1140 - 1200 psia. |
| <p>Examiner Note: Due to the low failure of Tave, the CO will have to either take manual control of the downcomer valves or use Auxiliary Feedwater to feed the SGs.(B02)</p> | | |
| | | <ol style="list-style-type: none"> 8. Determine that Containment Isolation acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that Containment pressure is less than 2.5 psig. b. REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> • No valid containment area radiation monitor alarms or unexplained rise in activity • No valid steam plant activity monitor alarms or unexplained rise in activity 9. Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that containment temperature is less than 117°F. b. Check that containment pressure is less than 2.5 psig. 10. IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event. Diagnoses a SGTR |

| SGTR Procedure | | |
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| | CRS | <p>Diagnoses a SGTR and goes to 40EP-9EO04, SGTR and performs the following:</p> <ul style="list-style-type: none"> • Directs the CO to ensure the Steam Generator Sample Valves are open. (Step 1.b) • Directs Chemistry to perform the Abnormal Occurrence Checklist. (Step 1.c) • Directs the SM to classify the event. (Step 2) • Checks a SIAS is actuated if pressurizer pressure drops to the SIAS setpoint. (Step 4) • If SIAS has actuated, directs RO to check that HPSI and LPSI pumps have started and that safety injection flow is adequate. (Step 5) |
| | RO | Starts the HPSI 'A' pump if not done during the SPTAs (B02). (per SES alarm response or Step 5 of SGTR) |
| Examiner Note: If RO has not started the HPSI 'A' pump, the CRS should direct him to start the pump at this time. | | |
| | CRS (continued) | <ul style="list-style-type: none"> • May direct the RO to shift charging pump suction to the RWT per Standard Appendix 10. (Step 6) |
| | RO | <p>Shifts Charging pump suction to the RWT using Appendix 10 as follows if directed: (Appendix 10)</p> <ul style="list-style-type: none"> • Ensures CHB-HV-530 is open (B02). (Step 1.a) • Places the appropriate Charging Pump in Pull-to-Lock (B03). (Step 1.b) • Directs an Auxiliary Operator to perform Attachment 10-A for the appropriate charging pump. (Step 1.c) |
| | CRS | <ul style="list-style-type: none"> • Directs the RO to stop one RCP in each loop if pressurizer pressure remains below the SIAS setpoint (this may have been done in the SPTAs). (Step 7) • Directs the RO to perform Appendix 16, RCP Trip Criteria. (Step 8) |
| | RO | <ul style="list-style-type: none"> • Stops 1 RCP in each loop and monitors running RCPs using Appendix 16. |

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| | CRS | <ul style="list-style-type: none"> • Directs CO to go to “THRU FILTER MODE” and take SBCS 1007 and 1008 to OFF (may have been done in AOP earlier). (Step 9) • Directs the CO to commence a cooldown to a T-hot of less than 540°F using the SBCS. (Step 9.c) |
| | CO | <ul style="list-style-type: none"> • Commences a cooldown to a T-hot of less than 540°F using the SBCS (B06). <p>Resets the MSIS setpoints as the SGs depressurize (may be done by RO combination of both operators).</p> |
| | CRS | <ul style="list-style-type: none"> • Directs the CO or RO to perform Appendix 5, RCS and Pressurizer Cooldown Log. (Step 9.d) • Directs the RO to depressurize the RCS to less than 1135 psia, approximately equal to the SG with the tube leak and within the P/T limits. (Step 12) |
| | RO | Depressurizes the RCS using Main Spray (B04) or Aux Spray (B03). (Step 12) |
| | CRS | <ul style="list-style-type: none"> • Directs the RO or CO to reset the MSIS setpoints. (Step 13) |
| | RO or CO | <ul style="list-style-type: none"> • Resets the MSIS setpoints as the SGs depressurize (may be done by CO or combination of both operators). |
| CRITICAL TASK: Reset the MSIS during the cooldown to prevent an unmonitored release to the public. | | |
| | CRS | <ul style="list-style-type: none"> • Determines the most affected SG is SG#1. (Step 14) • When T-hot is less than 540°F, directs the CO to isolate SG#1 using Appendix 113, Steam Generator 1 Isolation. (Step 15) |
| | CO | <p>Opens SG sample valves as directed (B07).</p> <p>Commences a cooldown to T-hot of less than 540°F using the SBCS (B06).</p> |

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| | CO | <p>When T-hot is less than 540°F performs Appendix 113 to isolate SG#1 as follows: (This step addresses critical task below)</p> <ul style="list-style-type: none"> • Checks both ADVs closed on SG#1 (B06): (Step 1) <ul style="list-style-type: none"> o ADV-184 o ADV-178 • Closes both SG 1MSIVs using the fast close pushbuttons (B06): (Step 2) <ul style="list-style-type: none"> o SGE-UV-170 o SGE-UV-180 • Ensures SGE-UV-169, SG1 MSIV Bypass Valve is closed (B06): (Step 3) • Closes both SG 1 Economizer FWIVs using the fast close pushbuttons (B06): (Step 4) <ul style="list-style-type: none"> o SGA-UV-174 o SGB-UV-132 • Closes both SG 1 Downcomer Isolation Valves (B06): (Step 5) <ul style="list-style-type: none"> o SGA-UV-172 o SGB-UV-130 • Closes both SG 1 Blowdown Containment Isolation Valves (B07): (Step 6) <ul style="list-style-type: none"> o SGA-UV-500P o SGB-UV-500Q • Closes BOTH of the following steam trap isolation valves (B06): (Step 7) <ul style="list-style-type: none"> o SGA-UV-1133 o SGB-UV-1135A/1135B |
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| | CO | <ul style="list-style-type: none"> • Checks the SG Safety Valves on closed (B06). (Step 8) • Ensures BOTH Aux Feed Pump A Steam Supply Valves are closed (B06): (Step 9) <ul style="list-style-type: none"> ○ SGA-UV-134 SG 1 Steam Supply to Aux Feed Pump A ○ SGA-UV-134A SG1 Steam Supply to Aux Feed Pump A Bypass • Ensures BOTH Auxiliary Feedwater Isolation Valves are closed (B06): (Step 10) <ul style="list-style-type: none"> ○ AFB-UV-34 Aux Feedwater to SG1 Downstream Valve AFC-UV-36 Aux Feedwater to SG 1 Downstream Valve |
| CRITICAL TASK: Isolate the ruptured SG within 70 minutes of initiation of the SGTR. | | |
| Scenario termination: The scenario may be terminated when the ruptured SG is isolated. | | |

Facility: PVNGS Scenario No.: 2 Op-Test No: 2012

Examiners: _____ Operators: _____

Initial Conditions: (100% power, MOC).

Turnover: Unit 1 is at 100% power (250 EFPD). AFA-P01 and Containment Spray 'A' are tagged out.

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|---|---------------------|---|
| 1 | None | N CO/SRO | Shift from Hydraulic Fluid Pump B to Pump A per section 6.7 of 40OP-9C001, Electro-Hydraulic Control System. |
| 2 | mfNI02C f:0 | I CO/SRO | Control Channel 2 fails low (50% Power indicated). Crew selects channel 1 at the RRS system panel. 40AO-9ZZ16, RRS Malfunctions |
| 3 | mfTH01A f:0.01 | C RO/SRO (TS) | Small RCS leak. Crew takes action per section 3 of ~16 gpm 40AO-9ZZ02, Excessive RCS Leakrate |
| 4 | mfAN_1A03D1 doeED_ZLS037271DS_W1 doRP_ZLSAAC02ALOP1_W1 | C CO/SRO (TS) | LOP relay failure. Crew responds using 41AL-1RK1A (1A03D) Crew determines that a LOP should not have occurred and takes action to bypass the appropriate relays per 40OP-9SA01 |
| 5 | IOR dims_ZDSGEUV170 | R -RO C - CO/SRO | An MSIV goes closed. Crew responds per 40AL-9RK6A and begins a down power to less than 65% power. |
| 6 | cmCPTP01CENP01B_6 | C CO/SRO | Stator Cooling Pump 'B' trips with standby pump failing to auto start. |
| 7 | mfTH01A f:3 | M ALL | LOCA RCS leak degrades requiring a reactor trip. 40EP-9EO03, Loss of Coolant Accident |
| 8 | Scenario file no SI/CI | C RO/SRO | SIAS/CIAS/MSIS fail to automatically initiate. CRITICAL TASK – Initiate SI flow when the SIAS setpoint has been exceeded prior to completing Step 4 of the LOCA procedure. |
| 9 | cmCPRH05SIBP03_6 | C RO/SRO | CS pump "B" trips on an 86 lockout CRITICAL TASK –Initiate CS flow when the CSAS setpoint has been exceeded prior to completing step 3 of CTPC-2 of the Functional Recovery Procedure. • 40EP-9EO09, Functional Recovery Procedure |
| End point | Scenario may be ended once SIAS and CSAS flow have been established using LPSI. | | |

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

Turnover

Plant conditions:

Unit 1 is at 100% power.

The core is presently at 250 EFPD.

Risk Management Action Level is ORANGE.

Train B is protected equipment.

AF 'B' and AF 'N' are protected.

CS 'B' is protected.

PC is NOT recircing the RWT.

Unit 2 is supplying the Aux Steam cross-tie header.

Equipment out of service:

Auxiliary Feedpump 'A' (AFA-P01) is tagged out due to a noisy bearing. LCO 3.7.5 conditions 'a' and 'b' have been entered. Expected to return to service in 7 hours.

CS 'A' is tagged out for scheduled maintenance. LCO 3.6.6 condition 'a' has been entered. Expected to return to service in 12 hours.

Planned shift activities:

The crew needs to shift EHC pumps from B to A to support vibration readings. The vibration tech is standing by.

Scenario 2 Overview

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| Event 1 | The CO shifts the Electro Hydraulic Control (CO) pumps from B running to A running. |
| Event 2 | One detector on Control Channel #2 fails low (resulting in an indication of 50% power). The CRS should enter 40AO-9ZZ16 to address the failure. The CO will select the unaffected channel on the Reactor Reg Test Panel behind the control boards. The CO will also address the alarm on the Digital Feedwater Control System (DFWCS) and place Control channel #2 in maintenance and remove the A-TUN lockout on the DFWCS. |
| Event 3 | A small RCS leak (~ 16 gpm) occurs. The CRS should enter 40AO-9ZZ02 to address the leak. The RO will perform a leakrate calculation. |
| Event 4 | A Loss of Power (LOP) undervoltage relay fails on the class Train A 4160 kV bus. The crew addresses the alarm response procedure and Tech Specs. The CO should place the LOP/LS relay in bypass on the BOP-ESFAS panel behind the control boards. |
| Event 5 | A Main Steam Isolation Valve fails closed. The CO addresses the alarm response procedure which directs a down power to 65%. The RO will borate and the CO will reduce turbine load. |
| Event 6 | Stator Cooling Water Pump 'B' trips with a failure of the 'A' pump to auto start. The CO should address the alarm response and start the 'A' pump within 70 seconds or a turbine trip will occur. |
| Event 7 | The RCS leak degrades causing a LOCA. The crew performs the Standard Post Trip Actions (SPTAs). |
| Event 8 | After the LOCA, a failure of PPS to initiate a Safety Injection Actuation Signal, Containment Isolation Actuation Signal and Main Steam Isolation Signal occurs. The crew should recognize the signals did not occur and manually initiate these actuations. |
| Event 9 | After the crew enters the LOCA procedure, Containment Spray B will trip (CS 'A' is tagged out). This will cause a loss of safety function CTPC. The CRS should transition the Functional Recovery Procedure and align a LPSI pump to supply Containment Spray. |

Op-Test No.: _____ Scenario No.: 2 Event No.: 1 Event Description: Shift from Hydraulic Fluid (EHC) Pump B to A running

| Time | Position | Applicant's Actions or Behavior |
|--|----------|---|
| T=0 | CRS | Directs the CO to shift from Hydraulic Fluid Pump B to Pump A per 40OP-9CO01 (Electro-Hydraulic Control System). |
| | CO | <p>Informs the Auxiliary Operator in the Turbine Building that he will be shifting Hydraulic Fluid (EHC) pumps.</p> <p>Starts Hydraulic Fluid Pump A by momentarily placing handswitch CON-HS-4, HYDRAULIC FLUID PUMP A P01A, to START (B06). (Step 6.7.2.1)</p> <p>Checks ALL the following for Hydraulic Fluid Pump A: (Step 6.7.2.2)</p> <ul style="list-style-type: none"> • The red START light at handswitch CON-HS-4, HYDRAULIC FLUID PUMP A P01A, is on • Motor amps are less than 219 amps • Pump discharge pressure is between 1500 psig and 1750 psig, indicated locally on CON-PI-007, "A" CO Pump Local Disch Press Indicator <p>Performs the following for Hydraulic Fluid Pump B: (Step 6.7.2.3)</p> <ul style="list-style-type: none"> • Stops Hydraulic Fluid Pump B by momentarily placing handswitch CON-HS-5, HYDRAULIC FLUID PUMP B P01B, to STOP. • Checks the green STOP light is on at handswitch CON-HS-5, HYDRAULIC FLUID PUMP B P01B. |
| The examiner may go to the next event after the Hydraulic Fluid Pump B is stopped. | | |

Op-Test No.: _____ Scenario No.: 2 Event No.: 2 Event Description: Control Channel 2 fails low (50% power indicated)

| Time | Position | Applicant's Actions or Behavior |
|------|----------|--|
| T= 8 | Crew | The crew receives alarms on B03 and B05. (Windows 3A10B – AMI (Automatic Motion Inhibit) and 6A6A - DFWCS TRBL) |
| | RO/CO | <p>Address the alarm response procedure (40AL-9RK4A- Panel B04A Alarm Responses).</p> <ul style="list-style-type: none"> • Verifies a mismatch in Control Power readings (channel 2 reads 50%) • Verifies that the Reactor Regulating system is not in test. • With CRS concurrence switches CEDMCS out of Auto Sequential (AS) • Verifies pressurizer level is stable. |
| | CRS | <p>Enters 40AO-9ZZ16, RRS Malfunctions (section 5).</p> <ul style="list-style-type: none"> • Ensures that CEDMCS is NOT in Auto Sequential. (Step 1) • Directs the CO to determine the failed channel. (Step 2) • Refers to Appendix B to determine the impact of the failure. (Step 3) <ul style="list-style-type: none"> ○ AMI on 5% deviation ○ DFWCS uses a canned value of 60% power • Directs the CO to select the unaffected instrument at the RRS Test Panel. (Step 4) • Verifies that Tavg/Tref mismatch is 3°F or less. (Step 5) • Directs the CO to place CEDMCS back in "AS". (Step 6) |

| | | |
|---|----|--|
| | CO | <ul style="list-style-type: none"> • Determines that Control Channel 2 is reading 50% indicating a failed detector. • Selects channel 1 at the RRS Test Panel by performing the following from 40OP-9SF08 (Operation of the Reactor Regulation System): <ul style="list-style-type: none"> ○ Select any mode other than Auto Sequential at CEDMCS (already performed in 40AO-9ZZ16) (Step 6.2.1) ○ Press the TEST PROBE pushbutton (Step 6.2.2) ○ Check that DVM voltage indicates zero volts. (Step 6.2.4). ○ IF DVM voltage is NOT indicating zero volts, THEN perform the following (Step 6.2.5): <ul style="list-style-type: none"> ❖ Notify the SM/CRS. ❖ Notify I&C. ❖ WHEN the SM/CRS directs, THEN continue performing this section. ○ Press the DVM pushbutton that corresponds to the ϕN to be selected: (Step 6.2.6) ○ Record voltage indicated on the DVM for the selected ϕN in the table below: (Step 6.2.7) ○ Place the ϕN INPUT selector switch to the selected input: <ul style="list-style-type: none"> ❖ ϕN1 (Reactor Power 1) • Verifies that the Tavg/Tref mismatch is 3°F or less. • Places CEDMCS in the desired mode of operation as directed. <p>Addresses alarm response procedure (40AL-9RK6A Panel B06A Alarm Responses.) window 6A due to Reactor Power 8% deviation and places Control Channel 2 in Maintenance.</p> <ul style="list-style-type: none"> • Determine which transmitter is faulty. • Place the faulty transmitter in the maintenance mode. • Remove the Atune Lockout. |
| The examiner may go to the next event after CEDMCS is place in Automatic and Control Channel 2 is placed in maintenance on the DFWCS. | | |

Appendix D Required Operator Actions [Form ES-D-2](#)

Op-Test No.: _____ Scenario No.: 2 Event No.: 3

Event Description: Small RCS leak (~16 gpm)

| Time | Position | Applicant's Actions or Behavior |
|---|--------------------|--|
| T= 14 | Crew | Crew observes a slight lowering of trends on pressurizer level and pressure. Crew receives alarms on RU-1, Containment Monitor. |
| | CO | The CO addresses the Alarm Response procedure for RMS 74RM-9EF41 – Radiation Monitoring System Alarm Responses . <ul style="list-style-type: none"> • Notifies RP of the alarm. • Notifies Radiation Monitoring Technician (Effluent Tech). |
| | CRS | Enters 40AO-9ZZ02 , Excessive RCS Leakrate (Section 3.0) and performs the following: <ul style="list-style-type: none"> • Enter AOP Entry Time and Date. (Step 1) • If pressurizer level is lowering and additional makeup is required, then ensure all available charging pumps are running. (Step 2) • If all available charging pumps are running and pressurizer level is lowering, then isolate letdown. (Step 3) |
| Examiner Note: The leak rate is ~ 16 gpm so no additional makeup or isolation of letdown is required at this time. | | |
| | CRS (continued) | <ul style="list-style-type: none"> • Directs the SM to classify the event. (Step 6) • Ensure compliance with LCO 3.4.14 condition 'a'. (Step 7) • Directs Chemistry to perform the Abnormal Occurrence checklist for a RCS leak. (Step 8) • Notifies RP that an RCS leak exists. (Step 9) • Directs the RO to perform Appendix B, ERFDADS Leak Rate Determination. (Step 10) • Directs an operator to walkdown charging and letdown piping. (Step 12) |

| | | |
|--|----|---|
| | RO | <p>Performs Appendix B ERFDADS Leak Rate determination.</p> <ul style="list-style-type: none"> • Checks that TC is constant ($\pm 1^{\circ}\text{F}$). (Step 2) • Checks that pressurizer pressure is stable between 2235 and 2265 psia. (Step 3) • Ensures Chemistry is not drawing samples. (Step 4) • Ensures Letdown is aligned to the VCT or isolated. (Step 5) • Ensures Charging pump suction is aligned to the VCT. (Step 6) <p>(The following actions occur on B03):</p> <ul style="list-style-type: none"> • Places 210X, Reactor Makeup Water to VCT controller, in "MANUAL" with a zero output. (Step 7) • Places 210Y, Boric Acid Makeup to VCT controller, in "MANUAL" with a zero output. (Step 8) • Places CHN-HS-527, Makeup to Charging Pumps Valve in "CLOSED". (Step 9) • WHEN CHN-UV-527 indicates closed, THEN places CHN-HS-210, Makeup Mode Select Switch, in "MANUAL". (Step 10) • Monitors the leakrate on ERFDADs and allows the trend to run for 15 minutes or until VCT level has lowered to 15%. (Step 15) |
| <p>The examiner may go to the next event after the CRS addresses Tech Specs and the leak rate is steady on ERFDADs. It is not necessary to wait the entire 15 minutes for the leak rate unless the CRS has not addressed Tech Specs.</p> | | |

Appendix D Required Operator Actions [Form ES-D-2](#)

| Op-Test No.: _____ Scenario No.: <u> 2 </u> Event No.: <u> 4 </u> | | |
|---|----------|---|
| Event Description: <u>LOP relay failure</u> | | |
| <hr/> | | |
| Time | Position | Applicant's Actions or Behavior |
| T= 22 | Crew | The crew receives alarms on B01A. (Window 3D – UNDV A CH TRIP) |
| | RO | Address the alarm response procedure (40AL-9RK1A – Panel B03A Alarm Responses). <ul style="list-style-type: none"> Verifies normal PBA-S03 bus voltage using PBA-EI-S03L. Determines which UV relay has tripped. |
| | CRS | <ul style="list-style-type: none"> Evaluates Tech Specs and enters LCO 3.3.7 condition 'a'. Directs the CO to place UV-1 in bypass per section 4.6 of 40OP-9SA01, BOP ESFAS Modules Operation. |
| | CO | Places UV-1 in bypass per 40OP-9SA01 , BOP ESFAS Modules Operation. <ul style="list-style-type: none"> Ensures other train is relays are not in bypass. (Step 4.6.2.3) Verifies that the Sequencer is not in Auto Test. (Step 4.6.3.1) Performs a lamp test on BOP ESFAS cabinet "A". (Step 4.6.3.4) Places Bypass Key in slot for UV-1. (Step 4.6.3.12.1) Turns the key clockwise ~ ¼ turn or until the bypass light comes on. (Step 4.6.3.12.2) |
| The examiner may go to the next event after UV-1 is placed in bypass. | | |

Op-Test No.: _____ Scenario No.: 2 Event No.: 5 Event Description: MSIV 170 inadvertently goes closed

| Time | Position | Applicant's Actions or Behavior |
|--|----------|--|
| T= 32 | Crew | The crew receives alarms on B06 (A), window 7A – SG ISOL VLV TRBL. |
| | CO | <p>Address the alarm response procedure 40AL-9RK6A –Panel B06A Alarm Responses.</p> <ul style="list-style-type: none"> Checks MSIV handswitches (B06) and determines that MSIV-170 is closed as indicated by SGA-HS-170A & SGB-HS-170B. Informs CRS that the ARP directs a downpower to $\leq 65\%$ per 40OP-9ZZ05, Power Operations. |
| <p>Examiner Note: An MSIV may be considered operable if it is closed and its opening capability is disabled. The CRS may decide to initiate a RPCB to downpower per step 6.3.1 of 40OP-9ZZ05. If this occurs go to the section for RPCB on page 10.</p> | | |
| | CRS | <p>Refers to 40OP-9ZZ05, Power Operations (section 6 or 8).</p> <ul style="list-style-type: none"> Informs Rx Engineering, ECC and Water Rec. Facility of power reduction. (Steps 6.2.5 – 6.2.9) Refers to the Maneuvering Box Tools for downpower strategies. (Step 6.2.11) Holds a reactivity brief. Directs Chemistry to monitor secondary chemistry during power reduction. (Step 6.3.6) Ensures that RCN-LIC-110 (B03), Pressurizer Level Control is in Remote Auto. (Step 6.3.13) Directs an operator to close SCN-V011 & SCN-V012, isolation valves for Blowdown Flash Tank controller. (Step 6.3.15) Directs use of Appendix U (Route Operations of CEAs During Power Operations) if CEAs are going to be moved. (Step 6.3.25) Directs the RO to borate per the established game plan from the Maneuvering Box Tools or STA worksheet (~1850 gallons) at a rate determined by the CRS. (Step 6.3.25) <p style="text-align: center;">Continued on next page</p> |

| | | |
|--|----|---|
| | RO | <p>Borates the RCS at the desired rate using 40OP-9CH01, CVCS Normal Operations.</p> <p>(The following actions occur on B03):</p> <ul style="list-style-type: none"> • Set the desired boric acid makeup flow rate on the Foxboro controller. (Step 7.3.6) • CHN-FIC-210Y.Selects the Target makeup flow on the boric acid totalizer/counter module (Micro-Motion), CHN-FQIS-210Y. (Step 7.3.7) • Places CHN-HS-210 in “borate”. (Step 7.3.10.1) • Depresses the “reset” pushbutton – the left pushbutton on the totalizer/counter module (Micro-Motion). (Step 7.3.10.2) • Depresses the “start” pushbutton – the left pushbutton on the totalizer/counter module (Micro-Motion). (Step 7.3.10.3) <ul style="list-style-type: none"> ○ Actual system flow is displayed on the “Process Flow” bar graph – the middle bar graph on the selected makeup flow control module. ○ Actual flow may be read on recorder CHN-FR 210Y, green pen. |
| | CO | <ul style="list-style-type: none"> • Adjust feed pump bias (B06) as directed by CRS • Adjust Δp between the FWP discharge pressure and SG pressure to maintain sufficient feedwater flow. • Inserts CEAs per the power reduction plan. • Unloads the turbine by slowly lowering the Load Limit Potentiometer to maintain T_{avg} within $\pm 3^\circ$ of T_{ref}. |

| RPCB section | | |
|---|-----|---|
| | CRS | <p>Directs an operator to initiate a RPCB (Step 6.3.1 of 40OP-9ZZ05) Enters 40AO-9ZZ09, RPCB (Loss of Feedpump).</p> <ul style="list-style-type: none"> • Checks that a RPCB has actuated and CEA subgroups 4,5 , and 22 have inserted. (Step 2) • Checks the Main Turbine Setback-Runback has lowered Turbine load to 65% or less. (Step 3) • Directs the STA to perform Appendix D, Status Check. (Step 5) • Directs the CO to restore and maintain SG levels 45-60% NR. (Step 8) • Checks that RRS is adjusting CEA to restore Tave/Tref +3°F. (Step 9). • Directs an operator to remove RPCB from service (Step 12). • Directs the CO to reduce the load limit pot to illuminate the LOAD LIMITING light. • Directs an operator to place CEDMCS in Standby. (Step 16) • Directs the RO to start boron equalization (Step 19) |
| The examiner may go to the next event after the crew downpowers ~5% or the crew stabilizes after a RPCB is initiated. | | |

Op-Test No.: _____ Scenario No.: 2 Event No.: 6 Event Description: Stator Cooling Pump "B" trips, standby pump "A" fails to auto start

| Time | Position | Applicant's Actions or Behavior |
|---|----------|---|
| T= 40 | Crew | Crew receives alarms on B06 (B) windows 7A, 7B and 7C. |
| | CO | <ul style="list-style-type: none"> Refers to 40AL-9RK6B (Window 7B) Starts standby Stator Cooling Water pump CEN-P01A by going to start on handswitch, CEN-HS-30. |
| Examiner Note: Generator trip circuit has a 70-second delay. If condition persists, generator will trip. | | |
| | CRS | <ul style="list-style-type: none"> Directs CO to start Stator Cooling Water Pump CEN-P01A. |
| The examiner may go to the next event after the standby Stator Cooling Water Pump is started or the Main Turbine trips. | | |

Appendix D Required Operator Actions [Form ES-D-2](#)

| Op-Test No.: _____ Scenario No.: <u>2</u> Event No.: <u>7&8</u> | | |
|--|----------|---|
| Event Description: <u>(7) RCS leak degrades to a LOCA, requiring a reactor trip.</u> <u>(8) No SIAS, CIAS, and MSIS</u> | | |
| Time | Position | Applicant's Actions or Behavior |
| T= 44 | Crew | Observes Pzr level and RCS pressure lowering. |
| Standard Post Trip Actions | | |
| | CRS | <ul style="list-style-type: none"> • Directs RO to start additional charging pumps and isolate letdown. • Due to pressurizer level continuing to lower, directs a manual reactor trip and possibly a SIAS/CIAS/MSIS based on trend. • Directs the crew to perform 40EP-9EO01, Standard Post Trip Actions <ol style="list-style-type: none"> 1. Open the placekeeper and enter the EOP Entry Time. 2. Determine that Reactivity Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that reactor power is dropping. b. Check that start-up rate is negative. c. Check that ALL full strength CEAs are inserted. <ul style="list-style-type: none"> • Crew cannot verify CEA positions due to loss of PKC, directs RO to borate the RCS using Standard Appendix 103. 3. Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that the Main Turbine is tripped. b. Check that the Main Generator output breakers are open. c. Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered 4. Determine that RCS Inventory Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> • 10 - 65% • Trending as expected to 33 - 53% |
| | RO | Reports the status of the Electric Plant (all buses energized and DGs running with SP pumps IF SIAS/CIAS initiated). |

| | | |
|--|-----|--|
| | | <p>5. Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837 - 2285 psia • Pressurizer pressure is trending as expected to 2225 - 2275 psia • RCS is 24°F or more subcooled |
| | RO | Stops 2 RCPs when < 1837 psia, stops all 4 RCPs on the Loss of Subcooling (< 24°). |
| | | <p>6. Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>7. Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <p>a. Check that at least one Steam Generator meets BOTH of the following conditions:</p> <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45 - 60% NR <p>b. Check that Tc is 560 - 570°F.</p> <p>c. Check that steam generator pressure is 1140 - 1200 psia.</p> <p>Directs CO to use SBCS valves 1007/1008 or Atmospheric Dump Valves (ADV) to control SG pressure due to loss of vacuum that occurs when a vacuum breaker opens.</p> |
| | CO | <p>Uses Auxiliary Feedwater 'B' to feed the SGs.</p> <p>Uses SBCS valves 1007/1008 or Atmospheric Dump Valves (ADV) to control SG pressure due to loss of vacuum that occurs when a vacuum breaker opens.</p> |
| | CRS | <p>8. Determine that Containment Isolation acceptance criteria are met by the following:</p> <p>a. Check that Containment pressure is less than 2.5 psig.</p> <p>b. REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions:</p> <ul style="list-style-type: none"> • No valid containment area radiation monitor alarms or unexplained rise in activity • No valid steam plant activity monitor alarms or unexplained rise in activity <p>(Continued on next page)</p> |

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| | | <p>9. Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that containment temperature is less than 117°F. Check that containment pressure is less than 2.5 psig. <p>10. IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Diagnoses a LOCA</p> |
| LOCA Procedure | | |
| | CRS | <p>Diagnoses a LOCA (40EP-9EO03) and performs the following:</p> <ul style="list-style-type: none"> Confirms the diagnosis by directing the performance of the Safety Function Status Check. (Step 1) Directs the CO to ensure the Steam Generator Sample Valves are open. (Step 1) Directs Chemistry to perform the Abnormal Occurrence Checklist. (Step 1) Directs the SM to classify the event. (Step 2) Checks a SIAS is actuated if pressurizer pressure drops to the SIAS setpoint. (Step 4) |
| <p>Examiner Note: If the crew has not yet initiated SIAS/CIAS/MSIS, the CRS should direct manual ESFAS actuations at this time.</p> | | |
| <p>CRITICAL TASK: Initiate Safety Injection flow when the SIAS setpoint has been exceeded prior to completing Step 4 of the LOCA procedure.</p> | | |
| | CRS | <ul style="list-style-type: none"> If SIAS has actuated, directs RO to check that HPSI and LPSI pumps have started and that safety injection flow is adequate. (Step 5) May direct the RO to shift charging pump suction to the RWT per Standard Appendix 10. (Step 6) Directs the RO to stop one RCP in each loop if pressurizer pressure remains below the SIAS setpoint (this may have been done in the SPTAs). (Step 7) <p>(Continued on next page)</p> |

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| | CRS continued | <ul style="list-style-type: none"> • Directs the RO to perform Appendix 16, RCP Trip Criteria. (Step 8) • Directs the RO to verify that Letdown is isolated. (Step 9) • Directs the CO to verify that the RCS sample lines are isolated. (Step 9) • Directs the RO to place the Hydrogen Analyzers in service. • Verifies that CIAS is actuated. (Step 11) • Directs the RO to verify that an isolation valve is closed for each containment penetration. (Step 14) • If containment pressure is 8.5 psig or more, then check CSAS is actuated. (Step 16) • If CSAS has actuated, then perform the following: (Step 17) <ul style="list-style-type: none"> a. Ensure at least one Containment Spray header flow is greater than 4350 gpm. b. Ensure all RCPs are off. c. Ensure RCP controlled bleedoff flow is isolated. d. PERFORM Appendix 19, Containment Hydrogen Control to align the Hydrogen recombiners. |
| The examiner may go to the next event after the crew verifies adequate CS flow. | | |

| Op-Test No.: _____ Scenario No.: <u> 2 </u> Event No.: <u> 7&8 </u> | | |
|---|----------|---|
| Event Description: <u> Trip of Containment Spray Pump "B" </u> | | |
| | | |
| Time | Position | Applicant's Actions or Behavior |
| Examiner Note: Direct the driver to activate Key 9 causing CS pump "B" (SIB-P03) to trip on an 86 lockout. | | |
| Functional Recovery Procedure | | |
| T= 57 | CRS | Diagnoses a lost Safety Function and goes to 40EP-9EO09 , FRP and performs the following: <ul style="list-style-type: none"> Directs the SM to classify the event. (Step 1) IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following (Step 3): <ul style="list-style-type: none"> Ensure ONE RCP is stopped in each loop. IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped. IF any RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied. (Step 4) Perform the following: <ul style="list-style-type: none"> Ensure that the Steam Generator Sample Valves are open. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. Place the Hydrogen Analyzers in service. |
| | RO | Places the hydrogen analyzers in service as follows (this is expected to be completed without the procedure in hand): <ul style="list-style-type: none"> Open HPA-UV-1 Open HPA-HV-7A and 7B Place HPA-HS-9A to the 'ANALYZE' position. |

| | | |
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| | CRS | <ul style="list-style-type: none"> Identify the success path(s) to be used to satisfy each safety function. REFER TO BOTH of the following: (Step 7) <ul style="list-style-type: none"> Section 4.0, Safety Function Tracking. Section 6.0, Resource Assessment Trees. PERFORM Section 5.0, Safety Function Status Check for those success paths in use. Identifies CTPC-2 as Jeopardized. If CSAS actuated, then check at least one CS header is delivering 4350 gpm or more. (Step 3) <ul style="list-style-type: none"> Implements contingency actions to establish CS flow. |
| | RO | <p>If it is desired to use LPSI Pump A to supply CS A train, and LPSI Pump A is not needed to support any RC, IC, or HR success path, then perform the following (B02): (Step 3.1)</p> <ul style="list-style-type: none"> a. Ensure that LPSI Pump A is running. b. Ensure (closes) that SIA-HV-306, LPSI Shutdown Cooling Heat Exchanger A Bypass Valve, is closed. c. Ensure that SIA-HV-687, LPSI Containment Spray from Shutdown Heat Exchanger a Cross-Tie Valve, is open. <p style="text-align: center;">(Continued on next page)</p> |
| Examiner Notes: <ol style="list-style-type: none"> There is no indication of CS flow when using a LPSI pump for CS flow. The CRS may either direct the following steps or give them to the RO to perform. | | |

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|--|-----------------|---|
| | RO continued | <ul style="list-style-type: none"> d. Ensure that SIA-UV-672, Containment Spray a Discharge to Spray Header 1 Valve, is open. e. Ensure (opens) SIA-HV-685, LPSI-Containment Spray to Shutdown Heat Exchanger a Cross-Tie Valve, is open. f. Check that the LPSI pump is running at less than 60 amps. <p>If it is desired to use LPSI Pump B to supply CS B train, and LPSI Pump B is not needed to support any RC, IC, or HR success path, then perform the following (B02): (Step 3.2)</p> <ul style="list-style-type: none"> a. Ensure that LPSI Pump B is running. b. Ensure (closes) that SIB-HV-307, LPSI Shutdown Cooling Heat Exchanger B Bypass Valve, is closed. c. Ensure that SIB-HV-695, LPSI Containment Spray from Shutdown Heat Exchanger B Cross-Tie Valve, is open. d. Ensure that SIB-UV-671, Containment Spray B Discharge to Spray Header 2 Valve, is open. e. Ensure (opens) SIB-HV-694, LPSI-Containment Spray to Shutdown Heat Exchanger a Cross-Tie Valve, is open. f. Check that the LPSI pump is running at less than 60 amps. |
| CRITICAL TASK: Initiate CS flow when the CSAS setpoint has been exceeded prior to completing step 3 of CTPC-2 of the Functional Recovery Procedure. | | |
| Scenario termination: The scenario may be ended once CSAS flow has been established using a LPSI pump. | | |

| | | |
|---|------------------------|------------------------------------|
| Facility: <u>PVNGS</u> | Scenario No.: <u>4</u> | Op-Test No: <u>2012</u> |
| Examiners: _____ _____ _____ | | Operators: _____ _____ _____ |
| Initial Conditions: (100% power, MOC). | | |
| Turnover: Unit 1 is at 100% power (250 EFPD). AFA-P01 and Containment Spray 'A' are tagged out. | | |

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|---|---------------------|---|
| 1 | None | N CO/SRO | Shift Steam Bypass Master Controller, SGN-PIC-1010 from manual to automatic mode of operation. |
| 2 | mfTRRX11SGCPT1013C_4 | I CO/SRO (TS) | Channel "C" SG 1 pressure transmitter fails low requiring multiple parameters to be placed in bypass. (SGC-PI-1013C) |
| 3 | cmTRCV19RCALT110X_4 | I RO/SRO (TS) | Pressurizer level transmitter "X" fails low. Crew selects channel "Y" on pressurizer heater and level control selectors. |
| 4 | mfCH01B mfCH01D | C CO/SRO | Loss of Control Element Drive Mechanism cooling. HCN-A02A and A02C fans fail to auto-start 40AO-9ZZ20, Loss of HVAC |
| 5 | mfMC01A | R -RO C - CO/SRO | Loss of condenser vacuum requiring the crew to downpower. 40AO-9ZZ07, Loss of Condenser Vacuum |
| 6 | mfCV11A f:100 | | RCP 1A seal failure. Crew evaluates the status of the affected RCP. 40AO-9ZZ04, Reactor Coolant Pump Emergencies |
| 7 | cmCPRC02RCEP01A_6 mfRP04A mfRP04C mfRD12A | M ALL | RCP 1A trips but PPS fails to initiate a reactor trip. RO opens L03B2 and L10B2 breakers on B01. CRITICAL TASK – Trip the Reactor prior to completion of SPTAs |
| 8 | mfED02 mfEG06B | M ALL | After the Reactivity Safety Function is addressed a Loss of Offsite Power will occur. DG "B" will trip when it starts. 40EP-9EO07, Loss of Offsite Power/Loss of Forced Circulation |
| 9 | cmCPCC08SPAP01_5 | C RO/SRO | Spray Pond pump "A" fails to auto start. CRITICAL TASK – Starts SPA-P01 prior to DG "A" running > 3 minutes with no cooling water. CRITICAL TASK – Establish feed to at least one SG using AFN-P01 prior to lifting primary safeties. 40EP-9EO09, FRP (MVAC-3) |
| End point | Once the crew has verified that Natural Circulation flow has been established | | |

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

Turnover

Plant conditions:

Unit 1 is at 100% power.

The core is presently at 250 EFPD.

Risk Management Action Level is ORANGE.

Train B is protected equipment.

AF 'B' and AF 'N' are protected.

CS 'B' is protected.

PC is NOT recircing the RWT.

Unit 2 is supplying the Aux Steam cross-tie header.

I&C have completed testing on the SBCS master controller SGN-PIC-1010 and it can be returned to automatic operation.

Equipment out of service:

Auxiliary Feedpump 'A' (AFA-P01) is tagged out due to a noisy bearing. LCO 3.7.5 conditions 'a' and 'b' have been entered. Expected to return to service in 7 hours.

CS 'A' is tagged out for scheduled maintenance. LCO 3.6.6 condition 'a' has been entered. Expected to return to service in 12 hours.

Planned shift activities:

Shift SGN-PIC-1010 from local/auto to remote/auto mode of operation.

Scenario 4 Overview

| | |
|---------|---|
| Event 1 | The CO shifts the Steam Bypass Master Controller from manual to Remote Automatic. |
| Event 2 | A failure low of the Channel C SG #1 pressure transmitter. The CO should address the alarm response procedure. The CRS should address Tech Specs. The CO bypasses the correct parameters on the PPS cabinets. |
| Event 3 | Pressurizer Level Transmitter 'X' fails low. The RO addresses the alarm response procedure and selects the unaffected instrument. |
| Event 4 | Loss of CEDM cooling fans A and C with the failure of the B and D to auto start. The CRS should enter 40AO-9ZZ20 and direct the CO to start the standby fans. |
| Event 5 | Loss of condenser vacuum. The CRS enters 40AO-9ZZ07 and the crew down powers to maintain vacuum. |
| Event 6 | RCP 1A seal failure. The crew responds to B04 alarms and determines a seal has failed on RCP 1A. |
| Event 7 | RCP 1A trips, but an ATWS occurs. The RO opens breakers on Board 1 to trip the reactor. The crew performs the SPTAs. |
| Event 8 | After the crew addresses reactivity control, a loss of offsite power will occur and the B DG trips causing a loss of PBB-S04. |
| Event 9 | The 'A' Spray Pond pump will fail to auto start requiring the RO to start it manually. |

Op-Test No.: _____ Scenario No.: 4 Event No.: 1 Event Description: Shifting the Steam Bypass Master Controller, SGN-PIC-1010 from the Manual to Automatic mode of operation.

| Time | Position | Applicant's Actions or Behavior |
|--|----------|--|
| T=0 | CRS | Directs the CO to shift the Steam Bypass Master controller from Local/Auto to Remote/Auto mode of operation per 40OP-9SF05 (Operation of the Steam Bypass Control System) . |
| | CO | <p>Depresses the "MAN" pushbutton on the Steam Bypass Master controller, SGN-PIC-1010 (B06) and verifies that the pushbutton backlight illuminates. (Step 4.4.3.1)</p> <p>Places the Remote/Local Setpoint Selector switch on the left side of the Master Controller to the "R" (Remote) position ensuring full movement of switch travel. (Step 4.4.4.2)</p> |
| Examiner Note: There should be no adjustment of the steam modulation setpoint (black and white pointer) | | |
| | | <p>Verifies that the steam header pressure (red pointer) is less than or equal to the SBCS modulation setpoint program (black and white pointer), THEN depress the "AUTO" pushbutton on the bottom of the Master Controller and ensure that the pushbutton backlight illuminates. (Step 4.4.5.4)</p> <p>The Master Controller is now in Remote-Automatic, and its output will be a function of the SBCS modulation setpoint program.</p> <p>Verifies that the Local-Automatic Setpoint (black pointer) thumbwheel on the right side of the Master Controller to 1170 psia.</p> |

Op-Test No.: _____ Scenario No.: 4 Event No.: 2 Event Description: Channel "C" SG 1 pressure transmitter (SGN-PI-1013C 0 fails low.

| Time | Position | Applicant's Actions or Behavior |
|---|----------|--|
| T= 4 | Crew | Receives alarms on B05A windows 7C and 7D along with B05B windows 8C, 8D and 2D. Addresses alarm response procedure 41AL-1RK5A (Panel B05A Alarm Responses) and 40AL-9RK5B (Panel B05B Alarm Responses) . |
| | CO | Addresses the alarm response for window 7C (LO SG 1 PRESS CH Trip) and performs the following: <ul style="list-style-type: none"> • Determines SGC-PI-1013C has failed low • Verifies SG 1 level on B05 class indicators. • Determines SG 1 total feedwater/main steam flow on DFWCS monitor (B06) • Determines Tave on the Tave/Tref recorder, RCN-TR-100 (B04). • When directed, bypasses parameters 11, 18 and 19 on Channel C PPS cabinet behind B06. |
| Examiner Note: Although the SG-2 HI delta P bistable is tripped, there is no direction for the crew to bypass the parameter as the bypass is non-functional. | | |
| | CRS | Addresses Tech Specs and enters: <ul style="list-style-type: none"> • LCO 3.3.1 condition A. • LCO 3.3.5 condition A. <p>Refers to Tech Spec Bases and determines that in addition to the failed instrument SG 1 & 2 levels (ESF) must be placed in bypass.</p> <p>Directs the CO to bypass parameters 11, 18 and 19 on Channel "C" PPS.</p> |

Appendix D Required Operator Actions [Form ES-D-2](#)

Op-Test No.: _____ Scenario No.: 4 Event No.: 3

Event Description: Pressurizer level transmitter RCA-LT-110X fails low.

| Time | Position | Applicant's Actions or Behavior |
|-------|----------|---|
| T= 14 | Crew | Receives alarms on B04 windows 1A (PZR TRBL) and 2B (PZR LVL HI-LO) and addresses alarm response procedure 40AL-9RK4A (Panel B04A Alarm Responses) . |
| | RO | <p>Diagnoses and reports that instrument RCA-LT-110X has failed low Addresses the Alarm Response procedure and performs the following:</p> <ul style="list-style-type: none"> • Determines RCA-LI-110X has failed low • Places the following handswitches on B04 in Channel Y <ul style="list-style-type: none"> ○ RCN-HS-110, Level Control Selector Channel X/Y ○ RCN-HS-100-3, Heater Control Selector Level Trip Channel X/Y • Resets and energizing the proportional heaters by taking the following Pzr heater control handswitches on B04 to "ON": <ul style="list-style-type: none"> ○ RCN-HS-100-1 ○ RCN-HS-100-2 |
| | CRS | <p>Consults Tech Specs and enters:</p> <ul style="list-style-type: none"> • LCO 3.3.10 Condition 'a' • LCO 3.3.11 Condition 'a' |

Appendix D Required Operator Actions [Form ES-D-2](#)

| Op-Test No.: _____ Scenario No.: <u>4</u> Event No.: <u>4</u> | | |
|--|----------|---|
| Event Description: <u>Loss of Control Element Drive Mechanism cooling. HCN-A02B and A02D fail to auto-start.</u> | | |
| Time | Position | Applicant's Actions or Behavior |
| T= 26 | Crew | Receives alarms on B07 window 7A9B (CEDM ACU COOL SYS TRBL) and addresses the alarm response procedure 40AL-9RK7A (Panel B07A Alarm Responses) . |
| | CO | <p>Determines that no CEDM fans are running and uses the ARP or direction from the CRS to start the A and C fans using handswitch HCA-HS-49 (B07).</p> <p>Directs the auxiliary operator to check breakers locally (PGBL32E2 and PGB-L34D3).</p> |
| Examiner Note: <ul style="list-style-type: none"> • The crew may elect to wait for an auto-start of HCN-A02A/C. • The standby fans are designed to auto-start after a two minute time delay, however the auto-start has been blocked for this scenario. | | |
| | RO | Responds to alarms on SESS panel (Window 6D). Addresses the alarm response procedure. |
| | CRS | <p>Directs the CO to start CEDM cooling fans HCNA02A AND A02C per either:</p> <ul style="list-style-type: none"> • Loss of HVAC procedure, 40AO-9ZZ20 (Section 10). • Alarm response procedure, 40AL-9RK7A. <p>May performs brief to address the failure and contingencies.</p> |

Op-Test No.: _____ Scenario No.: 4 Event No.: 5Event Description: Loss of Condenser Vacuum requiring the crew to downpower.

| Time | Position | Applicant's Actions or Behavior |
|-------|----------|--|
| T= 32 | Crew | Receives alarms on B05 window 14A (CNDS SYS TRBL) and address the alarm response procedure 40AL-9RK5B (Panel B05B Alarm Responses) . |
| | CO | Determines a loss of Vacuum is occurring in the 'A' Condenser shell. |
| | CRS | <p>Enters Loss of Condenser Vacuum, 40AO-9ZZ07 and performs the following:</p> <ul style="list-style-type: none"> • Performs the diagnostic flow chart and goes to Section 4.0, Strategy/Power Reduction • Directs an auxiliary operator to (Step 1): <ul style="list-style-type: none"> ○ Place seal water on the condenser expansion joints (Dog-bone seals), vacuum breakers, and steam packing exhauster Condenser drain ○ Check for air in leakage at the condenser shells, operation of the gland seal regulators, etc. • Directs the CO to ensure ALL available air removal pumps are in operation. (Step 2) |
| | CO | <p>Starts the 'D' Air Removal pump using handswitch ARN-HS-28 (B07).</p> <p>As directed, opens all Air Removal pump 'D' suction valves using handswitches ARN-HS-14, 15 and 16 (B07) (Step 3).</p> |

Examiner Note: A power reduction to improve condenser vacuum will only be effective for plant conditions impacting heat removal from the main condenser. A loss of vacuum due to air in-leakage can only be temporarily improved with a power reduction.

| | | |
|--|-----|---|
| | CRS | <p>Determines BOTH of the following (Step 7):</p> <ul style="list-style-type: none"> • Magnitude of the power reduction • The rate to reduce power <p>Calculates the reactivity needed using ANY of the following (Step 8):</p> <ul style="list-style-type: none"> • Total gallons of boric acid and addition rate (53 gal/percent) • CEA insertion <p>Directs the RO to commence a boration to reduce power if the CRS uses boration or may allow CEAs to insert in Automatic. (Step 9)</p> <p>Directs the CO to lower turbine load and maintain Tavg/Tref mismatch 5°F or less. (Step 9)</p> |
| <p>Examiner Note: CRS may choose to use CEAs in Auto Sequential or Manual Sequential for the power reduction.</p> | | |
| | RO | <p>Commences a boration using 40OP-9CH01 (CVCS Normal Operations) at a rate and amount directed by the CRS by performing the following:</p> <ol style="list-style-type: none"> 1. Sets the desired makeup flow rate on the Foxboro Controller, CHN-FIC-210Y on B03 (Step 7.3.6) 2. If the makeup rate is greater than 40 gpm, set the makeup flow to not more than 40 gpm initially. (Step 7.3.6.1) 3. Select the "Target" makeup volume (gallons) on the Boric Acid Flow Totalizer CHN-FQIS-210Y on B03 (Step 7.3.7) 4. Start the boration by (Step 7.3.10): <ol style="list-style-type: none"> a. Placing CHN-HS-210 on B03 to "BORATE" b. Depress the "RESET" pushbutton on the Totalizer c. Depress the "START" pushbutton on the Totalizer 5. Checks a boric acid pump started (Step 7.3.11) 6. Checks no flow on RMW flow indicator CHN-FIC-210X on B03 (Step 7.3.11) |

| | | |
|---|-------------------|--|
| | RO (continued) | <p>7. Ensures CHN-UV-527 opened by red lights lit on CHN-HS-527 (Step 7.3.12)</p> <p>8. Checks flow increases on CHN-FIC-210Y on B03 (Step 7.3.13)</p> <p>9. If desired flow is > 40 gpm, raise the flow setpoint on CHN-FIC-210Y to the desired flow rate (Step 7.3.15)</p> <p>10. Informs the CRS that the boration is started.</p> |
| | CO | Lowers turbine load using the Load Limit Set potentiometer on B06 to maintain Tave within 5°F of Tref. |
| | CRS | When the vacuum leak is fixed, the CRS may direct the crew to stop the downpower. |
| | RO | Restores CVCS to a normal lineup when boration is stopped |
| <p>Examiner Note: After the crew has reduced power ~ 5% direct the driver to delete the Loss of Vacuum malfunction.</p> <p>If the crew is going to trip on this event, have the driver insert Event 7.</p> | | |
| | | |

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Event Description: RCP 1A seal failure. Crew evaluates the status of the affected RCP.

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---|
| T=52 | Crew | Receives alarms on B04 window 2A (RCP 1A TRBL) and address the alarm response procedure 40AL-9RK4A – Panel B04A Alarm Responses. |
| | RO | Monitors RCP 1A seal 2 inlet pressure at RCN-PI-152 (B04). Observes a high pressure condition and determines that the first seal on RCP 1A has failed. Verifies that RCN-HS-430, Controlled Bleed-Off valve, indicates open (B03) |
| | CRS | Enters Reactor Coolant Pump Motor Emergencies, 40AO-9ZZ04 and implements section 4, Abnormal Seal Parameters. <ul style="list-style-type: none"> • Directs the RO to verify Seal Injection flow is 6.0 to 7.5 gpm. (Step 4) • Verifies adequate Seal Injection and Nuclear Cooling water flow. (Step 6) • Determines that no RCP trip setpoints have been exceeded. (Step 7) • Contacts engineering to evaluate RCP parameters. (Step 15) |

Appendix D Required Operator Actions [Form ES-D-2](#)

Op-Test No.: _____ Scenario No.: 4 Event No.: 7

Event Description: RCP 1A trips but PPS fails to initiate a reactor trip. RO opens L03B2 and L10B2 breakers on B01.

| Time | Position | Applicant's Actions or Behavior |
|--|----------|--|
| T=62 | Crew | <p>Recognizes that RCP 1A has tripped by alarms (B04 and B05).</p> <p>Recognizes that a Reactor Trip should have occurred by all 4 channels of bistable trip indication on PPS parameter indications on B05 and/or first out annunciator indication on B04.</p> <p>Attempts to trip the reactor using the RTSG pushbuttons, then opens the B2 breakers for L03 and L10 on B01 to trip the reactor using handswitches. (Step 1 of the SPTAs)</p> <ul style="list-style-type: none"> • NGN-HS-L03B2 • NGN-HS-L10B2 |
| CRITICAL TASK – Trip the Reactor prior to completion of SPTAs. | | |
| | CRS | Directs the crew to perform 40EP-9EO01 , Standard Post Trip Actions |
| Standard Post Trip Actions | | |
| | | <p>The CRS enters the Standard Post Trip Actions.</p> <ol style="list-style-type: none"> 1. Open the placekeeper and enter the EOP Entry Time. 2. Determine that Reactivity Control acceptance criteria are met by the following: <ol style="list-style-type: none"> a. Check that reactor power is dropping. b. Check that start-up rate is negative. c. Check that ALL full strength CEAs are inserted. <ul style="list-style-type: none"> • All vital and non-vital DC buses are powered |
| Examiner Note: The SPTAs are continued on the next page. | | |
| | CO | Reports the Reactivity Control Safety Function (CEAs inserted, power dropping, negative startup rate). |
| Examiner Note: Examiner Note: Instruct the driver to insert the LOOP and DG "B" faults after the reactivity report is completed and all CEAs have fully inserted. Spray Pond Pump A will fail to auto start. | | |

| Op-Test No.: _____ Scenario No.: <u>4</u> Event No.: <u>8 & 9</u> | | |
|---|----------|--|
| Event Description: <u>(8) Loss of Offsite power and failure of DG "B"</u> <u>(9) Failure of SPA-P01 (SP-A) to auto start.</u> | | |
| Time | Position | Applicant's Actions or Behavior |
| Examiner Note: Instruct the driver to insert the LOOP and DG "B" faults after the reactivity report is completed and all CEAs have fully inserted. Spray Pond Pump A will fail to auto start. | | |
| | Crew | Observes a LOP on PBB-S04 due to a Loss of Offsite power and subsequent non-recoverable failure of DG "B" to start and load. |
| (SPTAS CONTINUED) | | |
| | | 3. Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following: <ul style="list-style-type: none"> a. Check that the Main Turbine is tripped. b. Check that the Main Generator output breakers are open. c. Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered |
| | RO | Reports the status of the Electric Plant: <ul style="list-style-type: none"> • Only AC bus energized is PBA-S03 being supplied by DG "A" with SP pump failing to auto start. • All class and non-class DC buses are energized • Starts Spray Pond Pump A using SPA-HS-1 on B02. |
| Examiner Note: If the crew fails to start SPA-P01 within 7.5 minutes then instruct the driver to insert Key 31 causing a trip of DG "A" (Key-31). If this occurs the CRS should transition to the FRP. | | |
| CRITICAL TASK – Starts SPA-P01 prior to DG "A" running > 3 minutes with no cooling water. | | |

| | | |
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| | CRS | <p>4. Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <p>a. Check that pressurizer level meets BOTH of the following:</p> <ul style="list-style-type: none"> • 10 - 65% • Trending as expected to 33 - 53% <p>5. Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837 - 2285 psia • Pressurizer pressure is trending as expected to 2225 - 2275 psia • RCS is 24°F or more subcooled <p>6. Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>7. Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <p>a. Check that at least one Steam Generator meets BOTH of the following conditions:</p> <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45 - 60% NR <p>b. Check that Tc is 560 - 570°F.</p> <p>c. Check that steam generator pressure is 1140 - 1200 psia.</p> |
| | CO | Uses AFN and ADVs to feed and steam the SGs. |
| | | <p>8. Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <p>d. Check that at least one Steam Generator meets BOTH of the following conditions:</p> <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45 - 60% NR <p>e. Check that Tc is 560 - 570°F.</p> <p>f. Check that steam generator pressure is 1140 - 1200 psia.</p> |

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| | | <p>9. Directs CO to use SBCS valves 1007/1008 or Atmospheric Dump Valves</p> <p>10. Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is less than 2.5 psig. REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>11. Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that containment temperature is less than 117°F. Check that containment pressure is less than 2.5 psig. <p>12. IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Diagnoses a LOOP/LOFC or FRP if DG is tripped.</p> |
| | RO | <p>Reports the status of the Electric Plant:</p> <ul style="list-style-type: none"> Only AC bus energized is PBA-S03 being supplied by DG "A" with SP pump failing to auto start. All class and non-class DC buses are energized Starts Spray Pond Pump A using SPA-HS-1 on B02. |
| <p>Examiner Note: Electric Plant report may be performed by the CO.</p> | | |
| | CO | <p>Uses AFN and ADVs to feed and steam the SGs.</p> |

Loss of Offsite Power / Loss of Forced Circulation

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| | CRS | <p>Diagnoses a LOOP/LOFC (40EP-9EO07) and performs the following:</p> <ul style="list-style-type: none"> • Confirms the diagnosis by directing the STA to perform the Safety Function Status Check. (Step 1) • Directs Chemistry to perform the Abnormal Occurrence Checklist. (Step 1) • Directs the SM to classify the event. (Step 2) • Verifies that loads have sequenced on at least one 4.16kV AC vital bus (PBA-S03). (Step 4) • Directs RO to verify that seal injection is in service. (Step 5) |
| | RO | May isolate Seal injection and start a charging pump. |
| | CRS | <ul style="list-style-type: none"> • Directs the CO to actuate an MSIS. (Step 6) |
| | CO | Initiates MSIS when directed. |
| | CRS | <ul style="list-style-type: none"> • Check that Tcold is being maintained less than 570°F. (Step 8) • Inform RP that the unit is steaming to atmosphere. (Step 9) • Ensure at least one SG has level being maintained within or being restored to 45 – 60% NR. (Step 10) |
| | CO | <p>Overrides and start AFN-P01.</p> <p>Override Downcomer Isolation Valves:</p> <ul style="list-style-type: none"> • SG 1 - SGA-UV-172 and SGB-UV-130 • SG 2 – SGA-UV-175 and SGB-UV-135 <p>Uses Downcomer control valves (SGN-FV-1113 and SGN-FV-1123) to establish feed to the SGs.</p> |

CRITICAL TASK: Establish feed to at least one SG using AFN-P01 prior to lifting primary safeties.

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| | CRS | <ul style="list-style-type: none"> • Check that pressurizer level meets BOTH of the following (Step 11): <ul style="list-style-type: none"> ○ 10 - 65% ○ Trending to 33 - 53% • If VCT Makeup is NOT available and RWT level is >73% then align Charging Pump suction through CHE-HV-536 or CHN-UV-514 per Standard Appendix 102. (Step 12) |
| | RO | May shift charging pump suction to RWT per Appendix 103 by either opening CHA-HV-536 or starting a BAMP and opening CHN-UV-514. |
| | CRS | <ul style="list-style-type: none"> • Directs CO to verify natural circulation flow in at least one loop by ALL of the following (Step 14): <ul style="list-style-type: none"> ○ Loop ΔT is less than 65°F ○ Hot and cold leg temperatures are constant or lowering ○ RCS is 24°F or more subcooled using CET Subcooling ○ Less than a 30°F ΔT between Th RTDs and the maximum quadrant CET temperature (QSPDS, pages 211 and 213) |
| | | |
| Scenario termination: The scenario may be terminated when the AFW flow has been established to the SGs. | | |

Op-Test No.: _____ Scenario No.: 4 Event No.: 9

Event Description: High temperature trip of DG "A" (If Required)

| Time | Position | Applicant's Actions or Behavior |
|--------------------------------------|----------|---|
| Functional Recovery Procedure | | |
| | CRS | <p>Determines that a loss of all feed water has occurred due to loss of MVAC.</p> <p>Enters the Functional Recovery Procedure (40EP-9EO09) and performs the following:</p> <ul style="list-style-type: none">• Ensures the event is being classified. (Step 1)• Directs the RO to perform Appendix 16 for any running RCPs. (Step 4)• Directs the CO to ensure SG sample valves are open. (Step 5)• Directs Chemistry to perform their Abnormal Occurrence Checklist for the FRP. (Step 5)• Directs the RO to place the Train 'A' Hydrogen Analyzer in service. (Step 6) |
| | RO | <p>Places the hydrogen analyzers in service as follows (this is expected to be completed without the procedure in hand):</p> <p>TRAIN A</p> <ul style="list-style-type: none">• Opens HPA-UV-1• Opens HPA-HV-7A and 7B• Places HPA-HS-9A to the 'ANALYZE' position. |
| | CRS | <ul style="list-style-type: none">• Identifies the success paths to be used to satisfy each safety function. MVAC-3 and HR-1 should be jeopardized. (Step 7) <p>Maintenance of Vital Auxiliaries (MVAC-3)</p> <ul style="list-style-type: none">• Opens the Placekeeper (Step 1)• Informs the Energy Control Center of Blackout (Step 2)• Directs the CO to actuate an MSIS. (Step 3) |

| NOTE | | |
|---|-----|---|
| The SBOGs cannot supply Units 2 and 3 simultaneously but can supply Unit 1 and 2 or Unit 1 and 3. All operations involving the SBOGs will be coordinated by Unit 1. | | |
| | CRS | <ul style="list-style-type: none"> • Directs the RO to place all of the charging pump handswitches in "PULL TO LOCK". (Step 6) • Directs Appendix 80, Align SBOG to PBA-S03 (BO). (Step 7) • Directs Appendix 53, Align Deenergized Buses. (Step 8) |
| | RO | <p>Performs Standard appendices 53 and 80 as directed</p> <p><u>Appendix 53:</u></p> <ol style="list-style-type: none"> 1. IF inspection of de-energized buses is warranted, THEN direct an operator to perform the following for ANY deenergized buses: <ol style="list-style-type: none"> a. Check for protective relay targets. b. Evaluate and reset the targets. REFER TO 40DP- 00P02, Relay Resetting. 2. Unit 1 only - IF NAN-S05 is de-energized, THEN open ALL of the following breakers: <ul style="list-style-type: none"> • NAN-S05G (NAN-HS-S05G) • NAN-S05F (NAN-HS-S05F) • NAN-S05J (NGN-HS-S05J) • NAN-S05D (NAN-HS-S05D) • NAN-S05B (NAN-HS-S05B) • Direct an operator to open 1-E-NAN-S05K, "UPS BLDG LOAD BR SW A-E-NAN-WO/ UPS" <p>(Continued on next page)</p> |

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| | RO | <p>1. Unit 1 only - IF NAN-S06 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S06C (NAN-HS-S06C) • NAN-S06D (NAN-HS-S06D) • NAN-S06J (NAN-HS-S06J) • NAN-S06B (NGN-HS-S06B) • NAN-S06F (NAN-HS-S06F) • NAN-S06H (NAN-HS-S06H) |
| Examiner Note: Steps 4 and 5 are for Units 2 and 3 only. | | |
| | | <p>6. IF NAN-S03 is de-energized THEN open BOTH of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S03A (NBN-HS-S03A) • NAN-S03B (NAN-HS-S03B) <p>7. IF NAN-S04 is de-energized THEN open BOTH of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S04B (NAN-HS-S04B) • NAN-S04A (NBN-HS-S04A) <p>8. IF NAN-S01 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S01A (NAN-HS-S01A) • NAN-S01N (NBN-HS-S01N) • NAN-S01F (NGN-HS-S01F) • NAN-S01E (NGN-HS-S01E) • NAN-S01D (NGN-HS-S01D) • NAN-S01G (NGN-HS-S01G) • NAN-S01H (NGN-HS-S01H) <p>9. IF NAN-S02 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S02G (NGN-HS-S02G) • NAN-S02H (NGN-HS-S02H) • NAN-S02D (NGN-HS-S02D) • NAN-S02E (NGN-HS-S02E) • NAN-S02F (NGN-HS-S02F) • NAN-S02N (NBN-HS-S02N) • NAN-S02A (NAN-HS-S02A) <p>(continued on next page)</p> |

| | | |
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| | RO | <p>NOTE: Appendix 80 or 81 may be performed concurrently with this Appendix. Progression through Appendix 80 or 81 may be at a point that one of the breakers identified in step 10 or step 11 below may be closed and the board is energized.</p> <p>10. IF PBA-S03 is de-energized, THEN ensure that BOTH of the following breakers are open:</p> <ul style="list-style-type: none"> • PBA-S03K (PBA-HS-S03K) • PBA-S03L (PBA-HS-S03L) <p>11. IF PBB-S04 is de-energized, THEN ensure that BOTH of the following breakers are open:</p> <ul style="list-style-type: none"> • PBB-S04L (PBB-HS-S04L) • PBB-S04K (PBB-HS-S04K) <p>12. Ensure that all RCP breakers are open with handswitches in the green flag after stop position.</p> <p>13. Ensure that all Circulating Water Pump breakers are open with handswitches in the green flag after stop position.</p> <p><u>Appendix 80</u></p> <p>1. Direct an operator to PERFORM Attachment 80-A, disable PBA-S03 Breakers.</p> <p>2. Ensure the following breakers are open:</p> <ul style="list-style-type: none"> • PBA-S03B, Diesel Generator 4.16 KV Breaker to PBA-S03 • PBA-S03K, Alternate Supply Breaker to PBA-S03 • PBA-S03L, Normal Supply Breaker to PBA-S03 • NAN-S03A, 13.8 Kv Swgr Cubicle to ESF Xfmr NBN-X03 (NBN-HS-S03A) • PBB-S04L, Alternate Supply Breaker to PBB-S04 <p>3. Direct an operator to close NAN-S03AB, "13.8KV SUPPLY FROM GTG".</p> <p>4. Place ALL of the following in "PULL TO LOCK":</p> <ul style="list-style-type: none"> • Train A Containment Normal ACUs • Train A CEDM ACUs <p>(Continued on next page)</p> |
|--|----|---|

| | | |
|---|----|--|
| | RO | <p>5. WHEN ALL of the following exist:</p> <ul style="list-style-type: none"> • SBOG is running, • NAN-S07 is energized, • NAN-S03AB is closed, <p>THEN direct the SBOG operator to close ONE of the following unit supply breakers:</p> <ul style="list-style-type: none"> • Unit 1 only - NAN-S07D • Unit 2 only - NAN-S07E • Unit 3 only - NAN-S07F <p>6. WHEN informed that the 4.16 kV breakers are disabled (per Attachment 80-A), AND the unit supply breaker on NAN-S07 is closed, THEN perform the following:</p> <ol style="list-style-type: none"> a. Place synchronizing switch PBA-SS-S03L, 4.16 KV Bus S03 Normal Supply, to "ON". b. Close breaker PBA-S03L, 4.16 kV Bus S03 Normal Supply. c. Place synchronizing switch PBA-SS-S03L to "OFF". <p>7. WHEN PBA-S03 is energized, THEN direct an operator to ensure that ANY of the breakers for the battery chargers that were initially aligned to the Train A 125 VDC buses are "ON" and that the main contactors are closed:</p> <p>BATTERY CHARGER A</p> <ul style="list-style-type: none"> • PHA-M3523, "BATTERY CHARGER "A" E-PKA-H11" <p>BATTERY CHARGER C</p> <ul style="list-style-type: none"> • PHA-M3111, "BATTERY CHARGER "C" E-PKC-H13" <p>BATTERY CHARGER AC</p> <ul style="list-style-type: none"> • PHA-M3326, "BATTERY CHARGER "AC" E-PKA-H15" <p>8. WHEN informed that Attachment 80-A, Disable PBA-S03 Breakers, is complete, THEN continue this Appendix.</p> |
| | CO | <p>Resets and start AFN-P01.</p> <p>Override Downcomer Isolation Valves:</p> <ul style="list-style-type: none"> • SG 1 - SGA-UV-172 and SGB-UV-130 • SG 2 – SGA-UV-175 and SGB-UV-135 <p>Uses Downcomer control valves (SGN-FV-1113 and SGN-FV-1123) to establish feed to the SGs.</p> |
| CRITICAL TASK: Establish feed to at least one SG using AFN-P01. | | |
| <p>Scenario termination: The scenario may be terminated when the AFW flow has been established to the SGs.</p> | | |

| Facility: Palo Verde | | | Date of Exam: 3/16-3/24/2012 | | | | | | | | | Operating Test No.: | | | | | | |
|---|---|------------------|------------------------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|------------------|---------------------|-------------|---|-----------------------|--|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | T O T A L | M I N I M U M (*) | | |
| | | 1 | | | 2 | | | 3 | | | 4 | | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | | |
| | | | | | | | | | | | | | | | | R | I | U |
| RO R1, R5, R9, R11, R13 | RX | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | | | | | | 1 | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | 2,4,5 ,8 | | | | 2,4,5, 6 | | | | | | | | 8 | 4 | 4 | 2 |
| | MAJ | | 7 | | | | 7 | | | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO R2,R10, R12, R14 | RX | | | | | 5 | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | 1 | | | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | | 3,5, 6,9 | | 3,8, 9 | | | | | | | | | 7 | 4 | 4 | 2 |
| | MAJ | | | 7 | | 7 | | | | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO R3, R7 | RX | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | | | | | | 1 | | | | | | | 1 | 2 | 1 | 1 | 1 |
| | I/C | | 2,4,5 ,8 | | | | 2,4,5, 6 | | | | | | 2,4,5 | | 11 | 4 | 4 | 2 |
| | MAJ | | 7 | | | | 7 | | | | | | 7,8 | | 4 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO R4, R6, R8 | RX | | | | | 5 | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | 1 | | | | | | | | | | 1 | 2 | 1 | 1 | 1 |
| | I/C | | | 3,5, 6,9 | | 3, 8,9 | | | | | | | 2,4,5 | | 10 | 4 | 4 | 2 |
| | MAJ | | | 7 | | 7 | | | | | | | 7,8 | | 4 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO R15 | RX | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 |
| | I/C | | 2,4,5 ,8 | | | | | | | | | | 2,4,5 | | 7 | 4 | 4 | 2 |
| | MAJ | | 7 | | | | | | | | | | 7,8 | | 3 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 0 | 2 | 2 |

| Facility: Palo Verde | | | | Date of Exam: 3/16-3/24/2012 | | | | Operating Test No.: | | | | | | | | | |
|---|---|-----------------------|-------------|------------------------------|-----------------------|-------------|-------------|---------------------|-------------|-------------|------------------|-------------|-------------|-----------------------|--|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | | | |
| | | 1 | | | 2 | | | 3 | | | 4 | | | T O T A L | M I N I M U M (*) | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | |
| | | R | I | U | | | | | | | | | | | | | |
| SRO-U U1, U5 | RX | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | 1 | | | | | | | | | 1 | | | 2 | 1 | 1 | 1 |
| | I/C | 2,3,4 ,5,6, 8,9 | | | | | | | | | 2,3,4 ,5,9 | | | 12 | 4 | 4 | 2 |
| | MAJ | 7 | | | | | | | | | 7,8 | | | 3 | 2 | 2 | 1 |
| | TS | 4,5,6 | | | | | | | | | 2,3 | | | 5 | 0 | 2 | 2 |
| SRO-U U2, U3 | RX | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | | | | 1 | | | | | | 1 | | | 2 | 1 | 1 | 1 |
| | I/C | | | | 2,3,4 ,5,6, 8,9 | | | | | | 2,3,4 ,5,9 | | | 12 | 4 | 4 | 2 |
| | MAJ | | | | 7 | | | | | | 7,8 | | | 3 | 2 | 2 | 1 |
| | TS | | | | 3,4 | | | | | | 2,3 | | | 4 | 0 | 2 | 2 |
| SRO-U U4 | RX | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | NOR | | | | | | 1 | | | | 1 | | | 2 | 1 | 1 | 1 |
| | I/C | | | | | | 2,4,5, 6 | | | | 2,3,4 ,5,9 | | | 9 | 4 | 4 | 2 |
| | MAJ | | | | | | 7 | | | | 7,8 | | | 3 | 2 | 2 | 1 |
| | TS | | | | | | | | | | 2,3 | | | 2 | 0 | 2 | 2 |
| SRO-I I1, I2, I3, I4, I5 | RX | | | | | | | | | | | 5 | | 1 | 1 | 1 | 0 |
| | NOR | 1 | | | 1 | | | | | | | | | 2 | 1 | 1 | 1 |
| | I/C | 2,3,4 ,5,6, 8,9 | | | 2,3,4 ,5,6, 8,9 | | | | | | | 3, 9 | | 16 | 4 | 4 | 2 |
| | MAJ | 7 | | | 7 | | | | | | | 7, 8 | | 4 | 2 | 2 | 1 |
| | TS | 4,5,6 | | | 3,4 | | | | | | | | | 5 | 0 | 2 | 2 |
| SRO-I I6 | RX | | | | | 5 | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | 1 | | | | | | | | | 1 | | | 2 | 1 | 1 | 1 |
| | I/C | 2,3,4 ,5,6, 8,9 | | | | 3,8, 9 | | | | | 2,3,4 ,5,9 | | | 15 | 4 | 4 | 2 |
| | MAJ | 7 | | | | 7 | | | | | 7,8 | | | 4 | 2 | 2 | 1 |
| | TS | 4,5,6 | | | | | | | | | 2,3 | | | 5 | 0 | 2 | 2 |

| Facility: Palo Verde | | | Date of Exam: 3/16-3/24/2012 | | | | | | | | | Operating Test No.: | | | | | | |
|---|---|------------------|------------------------------|-------------|-----------------------|-------------|-------------|---------------------|---------------|-------------|------------------|---------------------|-------------|----|-----------------------|--|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | T O T A L | M I N I M U M (*) | | |
| | | 1 | | | 2 | | | 3 | | | 4 | | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | | |
| | | | | | | | | | | | | | | | | R | I | U |
| SRO-I 17 | RX | | | | | | | | | | | 5 | | 1 | 1 | 1 | 0 | |
| | NOR | | | 1 | 1 | | | | | | | | | 2 | 1 | 1 | 1 | |
| | I/C | | | 3,5, 6,9 | 2,3,4 ,5,6, 8,9 | | | | | | | 3, 9 | | 13 | 4 | 4 | 2 | |
| | MAJ | | | 7 | 7 | | | | | | | 7, 8 | | 4 | 2 | 2 | 1 | |
| | TS | | | | 3,4 | | | | | | | | | 2 | 0 | 2 | 2 | |
| Scenario 3(spare) totals | RX | | | | | | | | | | | | | | 1 | 1 | 0 | |
| | NOR | | | | | | | 1 | | 1 | | | | | 1 | 1 | 1 | |
| | I/C | | | | | | | 2,3,4 ,5,7, 9 | 2,4,5 ,7,9 | 3,9 | | | | | 4 | 4 | 2 | |
| | MAJ | | | | | | | 6 | 6 | 6 | | | | | 2 | 2 | 1 | |
| | TS | | | | | | | 3,5 | | | | | | | 0 | 2 | 2 | |
| <p>Instructions:</p> <ol style="list-style-type: none"> Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position. Reactivity manipulations may be conducted under normal or <i>controlled</i> abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns. | | | | | | | | | | | | | | | | | | |

| Facility: PVNGS | | Date of Examination: 03/19/12 | | | | Operating Test No.: 2012 | | | | | | | |
|--|-----------------------------------|-----------------------------------|---|---|-----------------------------------|-----------------------------------|---|---|-----------------------------------|-----------------------------------|---|-----------------------------------|--|
| Competencies | APPLICANTS | | | | | | | | | | | | |
| | RO R1, R5, R9, R11, R13 | | | | RO R2, R10, R12, R14 | | | | RO R3, R7 | | | | |
| | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Interpret/Diagnose Events and Conditions | 2,4, 5,7, 8 | 2,4, 5,6, 7 | | | 3,5, 6,7, 9 | 3,5, 7,8, 9 | | | 2,4, 5,7, 8 | 2,4, 5,6, 7 | | 2,4, 5,6, 7,8 | |
| Comply With and Use Procedures (1) | 1,2, 4,5, 7,8 | 1,2, 4,5, 6,7 | | | 1,3, 5,6, 7,9 | 3,5, 7,8, 9 | | | 1,2, 4,5, 7,8 | 1,2, 4,5, 6,7 | | 1,2, 4,5, 6,7, 8 | |
| Operate Control Boards (2) | 1,2, 4,5, 6,7, 8 | 1,2, 4,5, 6,7 | | | 1,3, 5,6, 7,9 | 3,5, 7,8, 9 | | | 1,2, 4,5, 6,7, 8 | 1,2, 4,5, 6,7 | | 1,2, 4,5, 7,8 | |
| Communicate and Interact | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | |
| Demonstrate Supervisory Ability (3) | | | | | | | | | | | | | |
| Comply With and Use Tech. Specs. (3) | | | | | | | | | | | | | |
| Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs. | | | | | | | | | | | | | |

Instructions: Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

| Facility: PVNGS | | Date of Examination: 03/19/12 | | | | Operating Test No.: 2012 | | | | | | | |
|--|-----------------------------------|-----------------------------------|---|-----------------------------------|-----------------------------------|--------------------------|---|-----------------------------------|-----------------------------------|---|---|-----------------------------------|--|
| Competencies | APPLICANTS | | | | | | | | | | | | |
| | RO R4, R6, R8 | | | | RO R15 | | | | SRO-U U1, U5 | | | | |
| | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Interpret/Diagnose Events and Conditions | 3,5, 6,7, 9 | 3,5, 7,8, 9 | | 2,4, 5,6, 7,8 | 2,4, 5,7, 8 | | | 2,4, 5,6, 7,8 | 2,3, 4,5, 6,7, 8,9 | | | 2,3, 4,5, 6,7, 8,9 | |
| Comply With and Use Procedures (1) | 1,3, 5,6, 7,9 | 3,5, 7,8, 9 | | 1,2, 4,5, 6,7, 8 | 1,2, 4,5, 7,8 | | | 1,2, 4,5, 6,7, 8 | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | |
| Operate Control Boards (2) | 1,3, 5,6, 7,9 | 3,5, 7,8, 9 | | 1,2, 4,5, 7,8 | 1,2, 4,5, 6,7, 8 | | | 1,2, 4,5, 7,8 | | | | | |
| Communicate and Interact | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | |
| Demonstrate Supervisory Ability (3) | | | | | | | | | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | |
| Comply With and Use Tech. Specs. (3) | | | | | | | | | 4,5, 6 | | | 2,3 | |
| Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs. | | | | | | | | | | | | | |

Instructions: Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

| Facility: PVNGS | | Date of Examination: 03/19/12 | | | | Operating Test No.: 2012 | | | | | | | |
|--|-----------------|-----------------------------------|---|-----------------------------------|-------------|-----------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|---|-----------------------------------|--|
| Competencies | APPLICANTS | | | | | | | | | | | | |
| | SRO-U U2, U3 | | | | SRO-U U4 | | | | SRO-I I1, I2, I3, I4, I5 | | | | |
| | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Interpret/Diagnose Events and Conditions | | 2,3, 4,5, 6,7, 8,9 | | 2,3, 4,5, 6,7, 8,9 | | 2,4, 5,6, 7 | | 2,3, 4,5, 6,7, 8,9 | 2,3, 4,5, 6,7, 8,9 | 2,3, 4,5, 6,7, 8,9 | | 3,5, 7,8, 9 | |
| Comply With and Use Procedures (1) | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 4,5, 6,7 | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 3,5, 6,7, 8,9 | |
| Operate Control Boards (2) | | | | | | 1,2, 4,5, 6,7 | | | | | | 3,5, 7,8, 9 | |
| Communicate and Interact | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | |
| Demonstrate Supervisory Ability (3) | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | | |
| Comply With and Use Tech. Specs. (3) | | 3,4 | | 2,3 | | | | 2,3 | 4,5, 6 | 3,4 | | | |
| Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs. | | | | | | | | | | | | | |

Instructions: Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

| Facility: PVNGS | | Date of Examination: 03/19/12 | | | | Operating Test No.: 2012 | | | | | | | |
|--|-----------------------------------|-----------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|---|-----------------------------------|----------|---|---|---|--|
| Competencies | APPLICANTS | | | | | | | | | | | | |
| | SRO-I I6 | | | | SRO-I I7 | | | | | | | | |
| | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Interpret/Diagnose Events and Conditions | 2,3, 4,5, 6,7, 8,9 | 3,5, 7,8, 9 | | 2,3, 4,5, 6,7, 8,9 | 3,5, 6,7, 9 | 2,3, 4,5, 6,7, 8,9 | | 2,3, 4,5, 6,7, 8,9 | | | | | |
| Comply With and Use Procedures (1) | 1,2, 3,4, 5,6, 7,8, 9 | 3,5, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | 1,3, 5,6, 7,9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | | | | |
| Operate Control Boards (2) | | 3,5, 7,8, 9 | | | 1,3, 5,6, 7,9 | | | | | | | | |
| Communicate and Interact | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | | | | |
| Demonstrate Supervisory Ability (3) | 1,2, 3,4, 5,6, 7,8, 9 | | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | 1,2, 3,4, 5,6, 7,8, 9 | | | | | |
| Comply With and Use Tech. Specs. (3) | 4,5, 6 | | | 2,3 | | 3,4 | | 2,3 | | | | | |
| Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs. | | | | | | | | | | | | | |

Instructions: Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.