# Final Submittal
(Blue Paper)

## FINAL JPMS

1. ADMINISTRATIVE JPMs
2. IN-PLANT JPMs
3. SIMULATOR JPMs (CONTROL ROOM)

SEQUOYAH
2008-301

| | | | |
|---|---|---|---|
| Facility: Sequoyah 1 & 2 | | Date of Examination: | 1/2008 |
| Examination Level (circle one): | RO SRO | Operating Test Number: | NRC |

| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
|---|---|---|
| Conduct of Operations | N,R | 2.1.1 Knowledge of conduct of operations requirements. (CFR: 41.10 / 45.13) 3.7 / 3.8<br><br>Determine license status Active / Inactive |
| Conduct of Operations | D,S | 2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 / 45.3) 3.4 / 4.0<br><br>Perform Shift Log SI-2 SG Level Instrumentation (JPM 176) |
| Equipment Control | N,R | 2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations. (CFR: 43.5 / 45.13) 3.6<br><br>Containment Closure Time |
| Radiation Control | D,R | 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10) 2.9 / 3.3<br><br>Survey Map (JPM 166) |
| Emergency Plan | D,S | 2.4.41 Knowledge of the emergency action level thresholds and classifications.(CFR: 43.5 / 45.11) 4.1<br><br>Classify the REP Degraded Core with Possible Loss of Coolable Geometry and Likely Cntmt Failure (JPM 109) |

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

*Type Codes & Criteria:

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

**SRO Admin JPM Summary**

A1a The applicant will evaluate the status of licensed operators work history to determine if license is active or inactive.

A1b The applicant will be required to recognize a required Technical Specification entry while completing and a portion of the daily shift surveillance instruction.

A2 The applicant will evaluate a request to open a containment penetration during a refuel outage and determine the requirements.

A3 The applicant will use a survey map to determine anti-contamination clothing requirements, stay time, and radiation levels in area.

A4 The applicant will evaluate conditions for entry into the E-Plan, determine the proper classification, protection action recommendation, and make required notifications.

ADMIN A.1.a

# SEQUOYAH NUCLEAR PLANT
# JOB PERFORMANCE MEASURE

## A.1.a
## JPM

Determine License Status Active / Inactive

**PREPARED/**
**REVISED BY:** ______________________ Date/ __________

**VALIDATED BY:** * ______________________ Date/ __________

**APPROVED BY:** ______________________ Date/ __________
(Operations Training Manager)

**CONCURRED:** ** ______________________ Date/ __________
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.
** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

**NUCLEAR TRAINING**

**REVISION/USAGE LOG**

| REVISION NUMBER | DESCRIPTION OF REVISION | V | DATE | PAGES AFFECTED | PREPARED/ REVISED BY: |
|---|---|---|---|---|---|
| 0 | New | Y | | All | |

V - Specify if the JPM change will require another validation (Y or N).
See cover sheet for criteria.

**SEQUOYAH NUCLEAR PLANT**
**RO/SRO**
**JOB PERFORMANCE MEASURE**

**Task:**

Determine License Status     Active / Inactive

**JA/TA task:**

**#** 3410970302 (**RO**)

**K/A Ratings:**

2.1.1   Knowledge of conduct of operations requirements. (CFR: 41.10 / 45.13)   3.7 / 3.8

Determine license status     Active / Inactive

**Task Standard:**

1) Candidate determines the correct status of each of the three Reactor Operator licenses. Operator A and C are active,     Operator B is Inactive

**Evaluation Method** : Simulator __X____ In-Plant ________

================================================================================

**Performer:** ______________________________________
NAME     Start Time ________

**Performance Rating :** SAT _____ UNSAT _____ Performance Time _____     Finish Time _______

**Evaluator:** ________________________________/________
SIGNATURE     DATE

================================================================================

**COMMENTS**

**SPECIAL INSTRUCTIONS TO EVALUATOR:**

1. Any UNSAT requires comments
2. This task can be performed in a classroom setting.

**Validation Time: CR.** 6 min **Local** ____________

**Tools/Equipment/Procedures Needed:**

OPDP-1, Conduct of Operations

**References:**

| | Reference | Title | Rev No. |
|---|---|---|---|
| 1. | OPDP-1 | Conduct of Operations | 8 |

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**READ TO OPERATOR**

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Three Reactor Operators have the following history:

- All three have off-shift assignments at the plant, are current in License Operator Requal Training and have had a medical examination in the past 2 years.
- None of the 3 have worked any shift since 12/31/07.
- Active/Inactive status and time on shift since October 1, 2007 is as follows for each of the Reactor Operators:
  - Operator A - License was active on October 1, 2007
    10/02/07 - worked 0700-1900 shift as Unit 2 OATC
    10/03/07 - worked 0700-1900 shift as Unit 1 OATC
    10/04/07 - worked 0700-1900 shift as Unit 1 CRO
    10/05/07 - worked 0700-1900 shift as Unit 2 OATC
    10/14/07 - worked 1900-0700 shift as Unit 2 OATC
    11/17/07 - worked 1900-0700 shift as Unit 1 CRO
  - Operator B - License was active on October 1, 2007
    10/28/07 - worked 0700-1900 shift as Unit 1 OATC
    11/03/07 - worked 0700-1900 shift as Unit 1 OATC
    11/05/07 - worked 0700-1900 shift as Unit 1 OATC
    11/14/07 - worked 1900-0700 shift as Unit 1 OATC
    12/02/07 - worked 0700-1900 shift in the Tagging Office.
  - Operator C - License was inactive on October 1, 2007
    11/12/07 thru 11/16/07 worked 40 hours under the direction of the Unit 1 OATC and completed all requirements for license reactivation.
    12/10/07 - worked 0700-1900 shift as Unit 1 OATC
    12/12/07 - worked 0700-1900 shift as Unit 2 CRO
    12/14/07 - worked 1900-0700 shift as Unit 2 OATC
    12/31/07 - worked 1900-0700 shift as Unit 1 OATC

**INITIATING CUES:**

You are to determine if each of the Reactor Operators is eligible to work the Unit 1 OATC position on the 0700 - 1900 shift on January 31, 2008.

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 1.: Determine if the Active / Inactive status of Operator A license<br><br>STANDARD: Candidate determines the license is Active because the operator worked the required 5 twelve hour shifts in a license position during the previous quarter.<br><br>COMMENTS: | Start Time____<br>___ SAT<br>___ UNSAT<br>**Critical Step** |
| STEP 2.: Determine if the Active / Inactive status of Operator B license<br><br>STANDARD: Candidate determines the license is Inactive because the operator did not work the required 5 twelve hour shifts in a license position during the previous quarter<br><br>COMMENTS: | ___ SAT<br>___ UNSAT<br>**Critical Step** |
| STEP 3.: Determine if the Active / Inactive status of Operator C license<br><br>STANDARD: Candidate determines the license is Active because the license was reactivated in the previous quarter there is not a requirement to complete the normally required 5 twelve hour shifts in a license position during the quarter. *(i.e. could complete the reactivation during the last week of a quarter, thus the opportunity would not be available to work the 5 shifts*)<br><br>COMMENTS: | ___ SAT<br>___ UNSAT<br>**Critical Step**<br>Stop Time____ |

## CANDIDATE CUE SHEET
## (TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Three Reactor Operators have the following history:

- All three have off-shift assignments at the plant, are current in License Operator Requal Training and have had a medical examination in the past 2 years.
- None of the 3 have worked any shift since 12/31/07.
- Active/Inactive status and time on shift since October 1, 2007 is as follows for each of the Reactor Operators:
  - Operator A - License was active on October 1, 2007
    10/02/07 - worked 0700-1900 shift as Unit 2 OATC
    10/03/07 - worked 0700-1900 shift as Unit 1 OATC
    10/04/07 - worked 0700-1900 shift as Unit 1 CRO
    10/05/07 - worked 0700-1900 shift as Unit 2 OATC
    10/14/07 - worked 1900-0700 shift as Unit 2 OATC
    11/17/07 - worked 1900-0700 shift as Unit 1 CRO
  - Operator B - License was active on October 1, 2007
    10/28/07 - worked 0700-1900 shift as Unit 1 OATC
    11/03/07 - worked 0700-1900 shift as Unit 1 OATC
    11/05/07 - worked 0700-1900 shift as Unit 1 OATC
    11/14/07 - worked 1900-0700 shift as Unit 1 OATC
    12/02/07 - worked 0700-1900 shift in the Tagging Office.
  - Operator C - License was inactive on October 1, 2007
    11/12/07 thru 11/16/07 worked 40 hours under the direction of the Unit 1 OATC and completed all requirements for license reactivation.
    12/10/07 - worked 0700-1900 shift as Unit 1 OATC
    12/12/07 - worked 0700-1900 shift as Unit 2 CRO
    12/14/07 - worked 1900-0700 shift as Unit 2 OATC
    12/31/07 - worked 1900-0700 shift as Unit 1 OATC

**INITIATING CUES:**

You are to determine if each of the Reactor Operators is eligible to work the Unit 1 OATC position on the 0700 - 1900 shift on January 31, 2008.

| | | |
|---|---|---|
| TVA<br>**TVAN Standard Department Procedure** | **TITLE**<br>**Conduct of Operations** | **OPDP-1**<br>**Rev. 0008**<br>**Page 1 of 103** |
| | | Quality Related ☑ Yes ☐ No<br>PORC Required ☐ Yes ☑ No<br><br>Effective Date 3/19/2007 |

Responsible Peer Team: Operations

| | | |
|---|---|---|
| Concurred by: | M. H. Palmer<br>Primary Sponsor | 3/9/07<br>Date |
| Approved by: | James R. Douet<br>Peer Team Mentor<br>*Nuclear Assurance SDPs are approved by General Manager, NA. Site-specific changes are approved by Site Sponsor and Site Vice President (see PCF) | 3/12/07<br>Date |

## Revision Log

| Revision or Change Number | Effective Date | Affected Page Numbers | Description of Revision/Change |
|---|---|---|---|
| 0 | 6/30/99<br>COC &<br>WBN<br>*YSO*<br>*10/16/00*<br>*YSO*<br>*8/3/99*<br>8/6/99<br>(SQN)<br>10/18/2000<br>(BFN) | All | Initial issue. This OPDP in conjunction with SPP-10.0 replaces NP STD-12.1 and SSP-12.1 for TVAN sites |
| 1 | 3/14/01 | 2, 15, 16, 18, 19, 21, 24, 28 | Revised to allow Unit Supervisor to approve Narrative Logs. Deleted reference to documentation for shift turnover checklists. Corrected references to processes maintained via NOMS software. Clarified expectations for annunciator response. Modified Shift Turnover Checklist. Corrected procedure references. |
| 2 | 4/11/03 | 2, 19, 25, 26 | Added the third priority for the Operator Workaround Program, this is to comply with BFN PER 02-6284-000. Section 3.5.1 was revised to encompass the new e-SOMS ability to transmit records electronically. The third paragraph was changed to provide the following guidance: At the end of each shift, the Log is approved by the SM's or US's hand-written signature or via electronic signature in the form of a user ID and password. Once approved, the log becomes an official QA record and is transmitted to Document Control Records Management (DCRM). |
| 3 | 1/7/04 | 2, 3, 12, 15, 16, 19, 21-24, 27-29 | Update references from NOMS to eSOMS. Revised Section 3.1.3 to require an active licensed SRO in the control room at all times. Incorporate requirement to make formal log entries for Temporary Relief in Section 3.11.2. Incorporate the definitions for the Intolerance to Equipment Deficiencies. |

## Revision Log

| Revision or Change Number | Effective Date | Affected Page Numbers | Description of Revision/Change |
|---|---|---|---|
| 4 | 2/5/04 | 2, 24 | Added clarification to Section 3.11.2 that Temporary Relief of approximately 15 minutes or less does not require log entry. |
| 5 | 7/8/05 | All | Procedure rewritten to provide clear direction and emphasis on operations standards of behavior and evaluation and reinforcement of those behaviors. Removed PORC review requirement. |
| 6 | 10/05/06 (SQN,WBN) 10/23/06 (BFN) | 3, 6, 8-11, 13, 15-38, 40-49, 51, 54-62, 64-94 | This document has been converted from Word 95 to Word 2002 (XP) using Rev. 5.<br><br>Procedure change to streamline behavior standards, changed definition of WCC-SRO, changed minimum staffing requirements for BFN as result of unit start-up, deleted unnecessary forms in appendices, added exemption to procedure place keeping for immediate and prudent operator actions, added detail for license reactivation by inclusion of Return to Active Status Checklist and BFN specific forms. Added requirement to Appendix E that the performance of PER Operability Reviews be logged in the Operating Log. Added Requirement that EP Manager be notified of the return to active status of a licensee. |
| 7 | 1/10/2007 | 3, 6, 15, 24, 56, 69, 71, 72, 76, 79, 80, 85, 98 | Deleted requirement for Unit Manager to hold SRO license. Revised Sect. 3.1.3 shift staffing table to add mode-dependent information for WBN and to revise BFN staffing numbers to include Unit 1. Revised Appendix J to exclude log entries for short duration temporary reliefs. Clarified reactivation documentation requirements in Appendix O. Corrected errors in plant tour areas for WBN and SQN. Revised BFN license activation forms to include Unit 1. Revised Attachment 4 to include reference to Appendix O reactivation requirements.<br><br>(WBN PER 117175) |

## Revision Log

| Revision or Change Number | Effective Date | Affected Page Numbers | Description of Revision/Change |
|---|---|---|---|
| 8 | 3/19/07 | 4, 16, 28-31, 57, 58, 77, 98, 99 | Added direction in Appendix B regarding the use of the new Appendix R. Appendix R provides clear expectations for to be taken in preparation for transient and emergent evolutions. Added Appendix Q to provide clear expectations on prudent operator actions. Modified Appendix I Item 8.f to include the provision of using equipment ID numbers in communications. |

## Table of Contents

Table of Contents (continued)

## 1.0 PURPOSE

The purpose of this procedure is to provide guidelines and instructions to ensure shift operations are conducted in a safe, conservative, and cautious manner in accordance with the operating license, plant procedures, and applicable regulatory requirements.

## 2.0 SCOPE

Provide administrative instructions necessary for daily conduct of plant operations and applies to all TVA Nuclear (TVAN) operations personnel.

## 3.0 INSTRUCTIONS

### 3.1 Operations Department Organization and Administration

#### 3.1.1 Operations Department Position Responsibilities

A. Operations Manager

The Operations Manager reports to the Plant Manager and is responsible for the overall management of the Operations department to ensure safe and efficient operation of the plant. This involves establishing operations policies and expectations, monitoring and providing feedback on performance, and ensuring adherence to requirements and procedures.

B. Operations Superintendent

The Operations Superintendent reports to the Operations Manager and is responsible for management of the operations on-shift organization. This involves the management of plant startup, operation, shutdown, operations work control process, and refueling activities. This also includes enforcing operations policies and expectations, monitoring and providing feedback on performance, and ensuring adherence to requirements and procedures. The Operations Superintendent shall hold a current SRO license.

C. Operations Support Superintendent

The Operations Support Superintendent reports to the Operations Manager and is responsible for management of the operations support organization. This involves the management of fire protection, operations procedures, ops corrective action program and other activities required to support safe and reliable operation of the plant. This also includes enforcing operations policies and expectations, monitoring and providing feedback on performance, and ensuring adherence to requirements and procedures.

D. Unit Manager

The Unit Manager reports to the Operations Superintendent and provides oversight of daily unit operations including the scheduling of assigned unit activities and ensuring activities are conducted in accordance with all applicable TVA policies, programs, and procedures, plant Technical Specifications (TS), and federal, state, and local regulations.

**3.1.1 Operations Department Position Responsibilities (continued)**

E. Operations Procedures Supervisor

The Operations Procedures Supervisor reports to the Operations Support Superintendent and supervises activities related to preparation and maintenance of operations procedures, equipment labeling, operator aids, DCN review, and operations computer data bases.

F. Operations Specialist

Personnel assigned to the Operations Specialist position report to various operations managers/supervisors. Typical duties may include the following:

1. Support of shift operations and refueling activities.
2. Operations procedures development/revision.
3. Design change notice review/approval/implementation for Operations.
4. Corrective action program activities.
5. Nuclear industry experience review/incorporation.
6. Operations self assessment program.
7. NRC/INPO/QA inspection/evaluation interface.
8. Equipment labeling.
9. Operations computer data bases.
10. Industry owners group support.
11. Operations action item tracking.
12. Duties as assigned by Operations management.

G. Fire Operations Supervisor

The Fire Operations Supervisor reports to the Operations Support Superintendent and supervises activities related to conduct of the fire protection program including implementation of fire protection program requirements, supervision of fire operations and fire brigade personnel, maintenance of fire protection equipment, development/revision of fire protection procedures, and adherence to applicable regulatory requirements.

H. In addition, all Operations Managers Superintendents, Shift Managers, and Unit Supervisors are responsible for.

1. Fostering a safety culture that focuses attention on planning and execution of all activities to attain safe and reliable plant operations.

**3.1.1 Operations Department Position Responsibilities (continued)**

2. Fostering an environment of continuous improvement.

3. Maintaining an atmosphere of open communications and professionalism.

4. Setting challenging goals.

5. Pursuing root cause(s) of problems.

6. Holding departmental personnel accountable for achieving expected levels of performance.

7. Demanding attention to equipment issues important to safe, reliable generation.

8. All other responsibilities described in this procedure.

I. Shift Manager (SM)

1. As the senior management representative on shift, the SM is in direct charge of plant operations and is responsible through the Operations Superintendent and Operations Manager to the Plant Manager for safe and reliable operation of the nuclear plant.

2. The SM is responsible for on-shift management and oversight in the control room and all plant group activities.

3. The SM has the authority to take action necessary to ensure compliance with TS, operating license requirements, and approved plant procedures to protect the health and safety of employees and the public, to ensure adequate security, and to protect the plant from damage.

4. The SM shall hold an active SRO license.

5. The SM is responsible for overall reactor operations and maintains the broadest perspective of operational conditions affecting the safety of the plant as a matter of highest priority at all times.

6. The SM should not become involved in any single operation that distracts him when multiple operations are required in the control room (e.g., during plant transients or an emergency).

7. The SM is responsible for ensuring a professional atmosphere is maintained in the control room at all times.

8. During emergency situations the SM shall remain in the control room unless properly relieved. The SM may be relieved only by an active SRO licensed SM or an active SRO licensed plant management representative.

9. The SM functions as Site Emergency Director and implements Emergency Plan procedures until relieved by a qualified higher management authority.

**3.1.1 Operations Department Position Responsibilities (continued)**

J. Unit Supervisor (US)

The control room Unit Supervisor reports to the SM and has command and control of the assigned unit.

1. The control room US shall hold an active SRO license. The US will assume responsibilities of the SM in the event the SM is unavailable.

2. The US is responsible for supervising, coordinating, and directing all activities to achieve safe, reliable, and efficient unit operation and taking necessary actions to ensure compliance with TS, operating license requirements, and approved plant procedures.

3. The Unit Supervisor assigned to support duties is responsible for coordinating and monitoring activities outside the control room as directed by the Shift Manager and/or control room Unit Supervisors. Typical duties may include the following:

   a. Incident Commander.

   b. Shift Technical Advisor.

   c. Equipment operation, removal/return to service, clearance tagging, and testing.

   d. Monitoring performance of rounds, lineups, surveillances and other shift activities, providing instructions and coaching as required.

   e. FIN Team Coordination.

   f. License training instructor.

   g. Outage support.

K. Work Control Center SRO

The individual assigned to WCC-SRO duties administratively reports to the SM and is under functional direction of the US. There are three qualification levels for the position of WCC-SRO.

1. The WCC-SRO is qualified if currently holding an SRO license.

2. The WCC-SRO is qualified if the individual is a watch-qualified STA with a SRO Certification. In this case, the individual may sign documents normally signed by the Unit Supervisor, but cannot sign where an SRO signature is required.

3. The WCC-SRO is qualified if the individual has held an active SRO license at the facility. In this case, the individual may sign documents normally signed by the Unit Supervisor but cannot sign where an SRO signature is required. The individual must meet site specific training requirements.

**3.1.1 Operations Department Position Responsibilities (continued)**

Typical WCC SRO duties may include the following:

a. Switchyard inspection and local operation.

b. Review Work documents for operability, operational impact, and to ensure the plants procedural and regulatory requirements are maintained.

c. Authorize and approve Work documents for Work on plant equipment.

d. Provide a focal point for the clearing of equipment for support of maintenance activities; review and approve clearance requests and clearances.

e. Initiate and prioritize emergent Work through the SM.

f. Maintain a point of contact for schedule delays and the coordination of Work between various Work groups.

g. Provide interface between the SM, US, and other Work groups.

h. Review and ensure the adequacy of assigned post maintenance/modification testing (PMT) when equipment is returned to service.

i. Issue and release of permits as required.

j. FIN Team Coordination.

k. Incident Commander.

l. Maintain LCO Tracking in accordance with approved procedures.

m. Track progress on Tech. Spec. component outages.

n. Assist SM in performing operability, risk and reportability determinations.

L. Shift Technical Advisor (STA)

The STA reports to the SM and is responsible for the following:

1. Assists in oversight providing an independent verification of critical safety functions, using redundant and diverse plant indications during transients and emergencies.

2. Immediately reporting any abnormalities or plant condition that may represent a challenge to the critical safety functions or that could result in a degradation of the safety level.

3. Assessing plant parameters during and following an accident in order to ascertain whether core damage has occurred or appears imminent.

### 3.1.1 Operations Department Position Responsibilities (continued)

4. Providing recommendations on appropriate corrective actions to restore plant parameters to acceptable values.

5. Investigating the causes of abnormal or unusual events that occur and assess any adverse effects.

6. Evaluating the effectiveness of procedures in terms of terminating or mitigating accidents and make recommendations when changes are needed.

7. Provides an independent verification on all emergency classifications when possible.

8. Assists the SM in classifying an emergency. Performs notifications as directed by the SM.

9. When not performing specific duties as described above, the STA will be following along in the abnormal and emergency procedures to ensure proper movement through the procedures. This includes looking ahead and anticipating transitions and procedure terminations.

10. During an emergency condition, the STA will only operate equipment that provides indication only. The STA will give no direction during an accident but will provide recommendations to the Unit Supervisor and the Shift Manager. Communications should be exclusively with the SM & US.

11. STA will monitor status trees as directed by emergency procedures. This monitoring shall include trending of important, diverse indications that will lead to higher level transitions to restore critical safety functions.

12. The STA will provide independent monitoring of continuous action steps and foldout criteria for applicability.

13. Assists in evaluating the operability of plant equipment.

14. Assist SM in performing operability, risk and reportability determinations.

15. Perform the functions of the WCC SRO as discussed in the WCC-SRO section above.

    The STA function may be fulfilled by manning a separate STA position or by a qualified individual assigned to another shift position. This individual shall be relieved of all non-STA duties and assume the STA advisory role within ten minutes following entry into an Abnormal or Emergency Instruction as required by the instruction.

**3.1.1 Operations Department Position Responsibilities (continued)**

M. Unit Operator (UO)

The UO reports to the control room US and is responsible for:

1. Operation of all equipment controlled from the main control board area. Operation is interpreted to mean the following:

   a. Manipulating controls in accordance with approved procedures.

   b. Monitoring equipment and system parameters.

   c. Documenting evolutions and significant events related to those systems and/or components controlled from the main control board.

   d. Initiating and performing operator actions required by normal operating procedures/instructions, emergency operating procedures/instructions, abnormal operating procedures/instructions, and annunciator response procedures/instructions applicable to the main control board area.

   e. The accurate communication of system parameter changes, operating conditions and events observed by the UO to the US or SM.

2. Recording control room log readings, logging activities in the narrative log, and maintaining control room recorder charts.

3. Initiating power reductions if plant parameters indicate that such action is required to prevent a unit trip or damage to equipment.

4. Initiating a reactor trip if:

   a. Indications exceed automatic reactor trip setting and trip has not occurred.

   b. Indications are approaching and cannot be prevented from exceeding an automatic reactor trip setting.

   c. The reactor safety is considered to be in jeopardy (operator's opinion that plant conditions warrant trip).

   d. A safety limit is exceeded.

   e. Specifically directed by procedure.

5. Initiating emergency safety systems actuation if:

   a. Indications exceed automatic actuation setpoints and actuation has not occurred.

   b. Indications are approaching and cannot be prevented from exceeding an automatic actuation setpoint.

**3.1.1 Operations Department Position Responsibilities (continued)**

c. If reactor safety is considered to be in jeopardy.

d. Specifically directed by procedure.

6. Initiating holds during plant evolutions that are required to ensure that the evolution does not threaten the stability of the unit, result in damage to equipment, or violate administrative controls such as unit operating procedures, TS, etc.

7. Obtaining permission from the US before performing planned reactivity changes and electrical switchyard manipulation.

8. Providing direction to Assistant Unit Operators.

9. Perform clearance tagging duties.

N. Radwaste Unit Operators

1. Functionally report to the UO and responsible to the US for operation and monitoring of equipment, performance of evolutions, and cleanliness of equipment in assigned areas.

2. Perform clearance tagging duties.

3. Responsible and accountable for reviewing chemical and radiological parameters of the plant process streams and directing proper processing for the most effective and efficient treatment.

4. Manipulating equipment controls in accordance with approved procedures as appropriate for qualification level.

O. Assistant Unit Operators

1. Functionally report to the UO and responsible to the US for operation and monitoring of equipment, performance of evolutions, and cleanliness of equipment in assigned areas.

2. Perform clearance tagging duties.

3. May act as fire brigade member, when designated.

4. Manipulating equipment controls in accordance with approved procedures as appropriate for qualification level.

### 3.1.2 Operating Policies

In addition to the responsibilities listed in Section 3.1.1, the following operating policies are delineated for Operations Department personnel:

- All operations personnel on shift must be aware of and responsible for plant status at all times. Supervisors are responsible for the performance of all personnel assigned to their shift who could affect plant safety.

- Operations personnel must be alert and should remain within their immediate areas of responsibility until properly relieved and shall be responsible for monitoring the instrumentation and controls located within their areas. They are responsible for taking timely and proper actions to ensure safe operation of the facility.

- Operation of equipment that may indirectly affect the power level or reactivity of a reactor shall only be accomplished with the knowledge and permission from the US or SM.

- Automatic actions of engineered safety features (ESFs) shall not be overridden unless continued operation of the ESF will result in an unsafe plant condition or unless the plant is in a stable condition in which TS or other approved procedures clearly indicate that continued operation of the ESF is no longer required.

- When working on or near sensitive equipment, an increased level of planning, coordination, management attention, and support organization involvement is essential to ensure the activity or evolution is performed in a safe, efficient manner.

### 3.1.3 Shift Staffing

A. A SM with an active SRO license, who is also a member of the Operations shift crew, shall be on site at all times when fuel is in the reactor.

B. In addition to the SM on site, a second active licensed SRO shall be in the control room at all times. The SM may, from time to time, act as relief operator for the licensed SRO assigned to the control room.

C. In addition to the staffing requirements stated above, shift crew assignments during periods of core alterations, shall include a licensed SRO to supervise the core alterations. This SRO shall not have any other concurrent operational duties.

D. Additional personnel may be required on shift because of unusual plant conditions or operational needs. The SM shall obtain the additional personnel as necessary. Activities requiring additional personnel will not be undertaken until the required personnel are available.

E. An individual fulfilling the STA function shall be assigned to each shift and within 10 minutes of the control room when a plant is being operated in Modes 1-4 for a PWR and Modes 1-3 for a BWR. The STA may serve more than one unit if qualified.

### 3.1.3 Shift Staffing (continued)

F. A fire brigade of at least five members shall be maintained onsite at all times. The fire brigade shall not include those personnel required in the control room, as noted in this procedure, or those personnel necessary for the 10CFR50 Appendix R safe shutdown of the unit(s). Only personnel who have satisfactorily completed the fire-fighting training required by the TVA fire protection plan shall be assigned as fire brigade members. The members of the fire brigade shall be designated for each shift.

G. Deviations in shift complement may be made, provided minimum manning and license requirements of TS are met.

H. Operations personnel should not be shifted from one unit to another unit without sufficient time for the individual to become familiar with its conditions.

I. The following table summarizes minimum staffing requirements:

| | WBN Mode 1-4 | WBN Mode 5 & 6 | SQN | BFN |
|---|---|---|---|---|
| Shift Manager (SRO) | 1 | 1 | 1 | 1 |
| Unit Supervisor (SRO) | 1 | 1 | 3 | 3 |
| Unit Operator (RO) | 2 | 1 | 4 | 6 |
| Non-licensed (AUO) | 5 | 3 | 8 | 8 |
| STA | 1 | | 1 | 1 |

SQN The SM or a US may be the STA and one US will be the Incident Commander.

BFN One of the US can be the STA. The Incident Commander position may be filled by an additional qualified person.

### 3.1.4 Notification of Absences

A. Operations personnel (except Fire Operations) unable to report for shift duty shall, at the earliest possible time and no later than 2 hours before the scheduled time, inform the SM/US of the situation. The SM/US shall make necessary arrangements for obtaining a replacement.

B. Fire Operations personnel unable to report for shift duty shall, at the earliest possible time and no later than 2 hours before the scheduled time, inform the Fire Operations Foreman of the situation. The Fire Operations Foreman shall make necessary arrangements for obtaining a replacement.

## 4.0 RECORDS

### 4.1 QA Records

Lifetime Retention:

A. Operating Logs

B. Form OPDP-1-4, "Licensee Documentation Form (SRO & RO)"

### 4.2 Non-QA Records

A. Form OPDP-1-1, "Shift Turnover Checklist"

B. Form OPDP-1-2, "Standing Orders"

C. Form OPDP-1-3, "Shift Orders"

## 5.0 DEFINITIONS

**Abnormal/Unusual Condition** - Any condition that is not normal for the present condition of the plant or system.

**Active License** - A licensed individual who has actively performed the functions of a Reactor Operator or a Senior Reactor Operator for a minimum of seven 8-hour or five 12-hour shifts per calendar quarter.

**Control Board Walk Down** - A detailed review of each control board by the oncoming and off-going operator. Items checked should include annunciators, switch alignment and other light indications.

**Controls** - Apparatus and mechanisms, which directly affect the reactivity or power level of the reactor when manipulated.

**Narrative Log** - A chronological sequence of events as related to unit/plant activities. The Narrative Log will normally be maintained using the eSOMS computer application. If eSOMS is not available, then either hard bound ledger(s), or duplicate type books with numbered pages (kept in the various operating locations at the plant as determined by Operations management) may be used.

## 6.0 APPENDICES

Each appendix in this procedure documents performance requirements for specific operator activities. Most appendices include at least one Standards Form associated with those activities.

## 7.0 REQUIREMENTS AND REFERENCES

Requirements and References are contained in the "OPDP-1 REQ & REF" document.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

A. Appendix Scope

This appendix has sections for reinforcing established expectations for watch rounds and tours per station general operating instructions. It also reinforces expectations for board awareness, supervisory skills, general radcon practices and house keeping.

B. Round Development

Rounds should be developed and approved by the Operations Manager or designee and should include areas and equipment parameters located within the particular shift position. Where appropriate, equipment parameters should include maximum/minimum values, expected operating ranges or tolerances, to enable operators to recognize abnormal readings quickly. Where appropriate the frequency of recording information will be specified. Equipment should be listed on round sheets in the same order that it would be encountered during a normal tour of the operating station.

C. Round & Tour Performance

Rounds are used for providing operators with guidance on the extent to which equipment and areas should be inspected. Recording key equipment parameters provides a record of performance that can be used to reconstruct unusual occurrences or system malfunctions. This also allows for trending so that undesirable trends and equipment problems can be identified and corrected. The general operations instructions procedures for each site list the specific requirements for each round.

Parameters not within the specified maximum/minimum values should be identified (red circled on rounds sheets if performed on a hard copy) and promptly reported to the control room. The causes of abnormal indications should be promptly investigated with supervisors becoming involved as appropriate. The rounds data shall be reviewed by a Unit Supervisor (US)/designee to identify trends or abnormal readings and to verify that data has been properly recorded.

Round sheets/Abnormal readings will be utilized to facilitate operator turnover of equipment status.

A round normally should be made early in the shift, before the operator attends to other duties, so that he can become familiar with the condition and status of equipment for which he is responsible.

The Shift Manager may alter equipment inspection frequencies as necessary based upon ALARA principles, equipment operating characteristics, or other considerations.

Operator rounds should be periodically monitored by supervisory personnel to ensure that comprehensive rounds continue to be conducted.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

D. General Watch Standing & Tour Inspection Expectations
Safety Practices:

1. Security badge worn properly.
2. Work area maintained/adequate (lighting, ventilation, housekeeping).
3. Scaffolding/ladder requirements met: appropriate fall protection; ladders tied-off correctly and stored in approved locations.
4. Chemical control requirements are met.
5. Proper energized electrical equipment protection used: face shields; gloves; fuse pullers, arc flash suits, and rubber mat, etc., as required by safety procedure.
6. Compressed gas cylinders labeled and stored properly.
7. PPE properly utilized.
8. Fall protection used IAW with OPS JSA.
9. FME practices utilized when applicable.

E. RADCON Safety Practices:

1. Wears TLD properly for all entries into all RCAs.
2. Complies with posted radiological requirements and checks postings frequently.
3. Notifies RadCon personnel when appropriate.
4. Wears personal anti-C clothing properly.
5. Radiological practices are consistent with requirements (e.g., storage of RadCon items, meets procedural requirements for labeling and bagging, frisking is performed, etc.).
6. Practices ALARA principle.

F. Housekeeping Practices:

1. General areas cleared of litter; supplies stored; trash disposed of; work areas orderly.
2. Panel interiors free of dirt and debris.
3. No water/oil leaks.
4. Floor and skid drains are functional.
5. Leaks/deficiencies are reported to MSS or in EMPAC WO.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

6. Floor, wall, and equipment coatings in good condition (no chipping or peeling).

7. Area protected from extreme weather as appropriate.

8. Temporary cables, extension cords, air/water hoses routed & tagged properly.

9. Lighting and ventilation systems are functional, filters are clean.

10. Unresolved housekeeping deficiencies are reported to "PHIL".

11. Scaffold permits are current and scaffolds are actually in use.

12. No indications of eating or use of tobacco in prohibited areas.

13. Personnel access/egress paths safe; trip hazards marked; aisles free for movement.

14. Housekeeping issues not immediately resolved are placed on the Housekeeping List.

G. Plant Material Condition & Labeling:

1. Hold and Caution Order tags fastened properly.

2. Equipment safety guards in place; operation not obstructed by tools, scaffolds, etc.

3. Systems, Structures and Components in good working order w/no signs of degradation. Submit W.O. as necessary.

4. Panel lights, indicators and annunciators are functional; burnt bulb replaced.

5. Insulation not damaged, missing, or degraded.

6. Door hardware in good order; doors not blocked; doors not held open w/o authorization.

7. No graffiti or unauthorized operator aids; signs and labels are legible and relevant.

8. Panel covers, junction boxes, cable tray covers, and HVAC access ports in place.

9. Sensitive equipment properly labeled & barricaded; adequate space to store materials.

10. Green tags submitted for missing component labels IAW approved procedures.

H. FME/Material Storage/Fire Protection:

1. Proper FME practices observed in work areas near open systems.

2. Stored materials not expired; chemicals and hazardous materials properly stored/labeled.

3. Compressed gas cylinders labeled and stored properly. Remove empty cylinders and replace with full cylinder.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

4. Temporary equipment constrained, tagged, and at required spacing from safety equipment.

5. Fire extinguishers/hoses properly located/readily accessible: spray heads unobstructed.

6. No unauthorized transient fire loads or accumulation of combustible materials in area.

7. PCB Fire Exclusion zones are clear of combustible material storage.

I. MCR Access Expectations:

1. NRC staff may enter after asking if they do not get a prompt response.

2. Only members of the on shift crew (SM, US, UO, and AUOs) and their trainees can enter the control room without asking permission. All other personnel must ask and receive permission before they enter.

3. The Unit Supervisor may give permission to “come and go” from the control room. This allowance will reduce distractions by those who already have permission to work in the control room.

4. UO, US, and SM can give non-shift personnel permission to approach the controls of the plant. This includes the red carpeted area and the area in front of the control board from the ends of the “horseshoe”.

5. Members of either unit’s control room staff may enter the controls area.

6. SM or US may limit control room access to personnel as desired.

7. Maintenance briefings should not be conducted in the horseshoe area.

8. The only briefings that are to occur in the horseshoe are transient briefings associated with events, or special evolutions where crew updates or crew announcements are used.

J. Leadership

1. Conservative decision making with respect to nuclear safety, public and personal safety.

2. Eliminates schedule pressure; priority is on safety, quality, cost, then schedule.

3. Gathers required info to make informed decisions.

4. Optimizes use of resources; maintains the “big picture”.

5. Controls number of concurrent evolutions to maintain ability to respond.

6. Identifies and solicits recommendations for performance and productivity improvements before initiating the job.

7. Assigns right worker to right job based on workload, experience, attitude and alertness.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

8. Ensures pre-job walk downs are performed and work package reviews completed. Reject substandard/incomplete work package.

9. Doesn't let position, job longevity, experience, friendship, and external pressure override intuition and training during work package review, job pre-briefing and during the job.

10. Creates open communication and encourages honest atmosphere with peers and coworkers.

11. Confronts and corrects inappropriate behavior immediately with specific/timely coaching.

12. Personnel/Work Group Conflicts: resolves so as to minimize impact on safety and reliability; focus on the long term solution.

13. Performance Problems: focuses on root cause, recurrence prevention, and positive reinforcement.

14. Remains a leader. Acts the role and is a role model for others.

15. Procedure adherence; correctly manipulates plant components IAW latest approved control document.

16. Sensitive to operating limits and takes action prior to exceeding the limit.

17. Suggest better way to do repetitive chore; submits procedure revision, as needed. Obeys the procedure or follows protocol to change it.

18. Provides timely support to start and complete daily activities.

19. Questioning attitude (QV&V); challenge the status quo.

20. Uses Self-checking (e.g., Touch STAR) and Peer Checking per expectations.

21. Schedules walk through of watch areas with the appropriate System Engineer/Maintenance Staff/OPS leadership on a periodic basis. Identify both what are good, and what resources are needed to make improvement in the watch area or to eliminate operator work around.

22. Initiates PER, procedure revision, or documents the appropriate action(s) from observed conditions, post job, post tour, etc.

23. Spends time in the field and offers support to struggling teammates.

24. Praises and coaches teammates to reinforce teams expectations.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

K. Tour Inspection and Watch Standing Expectations

Plant specific procedures developed for tours and watch standing should include the following principles of TVAN conduct of Operations.

1. Each operator shall conduct a tour of all areas within his/her responsibility at least once each shift unless otherwise directed by the Shift Manager.
2. During the tour, equipment shall be inspected to ensure that it is operating properly. In the case of standby equipment, it is fully capable of being operated when needed.
3. Believes indications/responds conservatively unless known incorrect; uses multiple inputs.
4. Identifies, records and reports abnormal indications and conditions.
5. The general operations instructions procedures for each site list the specific requirements for site tours.
6. Operators shall take prompt action to report and correct deficiencies noted during rounds and tours.
7. Eliminates housekeeping discrepancies: initiates corrective actions for the unresolved deficiencies; report lingering deficiencies.
8. Equipment deficiencies should also be documented in accordance with MMDP-1, "Maintenance Management System."
9. Generates Problem Evaluation Report (PER) in accordance with TVAN procedure on "Corrective Action Program."
10. In all cases the Control Room shall be notified of unexpected conditions.

L. AUO-Specific Watch Standing Attributes

1. Adherence to the attributes mentioned above.
2. Complies with radcon, security, and safety requirements and encourages others in same.
3. Reads and records all required parameters on logs.
4. Inspects operating equipment for unusual sound vibration, oil level, flow, panel display.
5. Observes passive equipment conditions that affect their watch station: labels, tags, fire barriers, lamps, wiring, etc.
6. Identifies, records, and reports abnormal indications and conditions.
7. Tests & resets alarms on local panels: informs control room prior to affecting indications.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

8. Remains cognizant of on-going activities in assigned area.

9. Sensitive to operating limits and takes action prior to exceeding the limit.

M. UO-Specific Watch Standing Attributes

1. Adherence to the AUO specific attributes.

2. Create condition and situation for the AUO to be successful.

3. Reviews previous shift operating log.

4. Reviews Reactivity Briefing Sheet.

5. Cognizant of RCS Leak Rate (PWR) / Containment Leak Rate (BWR).

6. Maintains professionalism, limits distractions and limits MCR access.

7. Walks down of MCR boards should be conducted at least every two hours during steady state condition.

8. Responds to alarms promptly using ARPs and IAW Attachment C of this procedure.

9. Tests and resets alarms on panels: informs control room prior to affecting indications.

10. Observes/pays attention to reactor and system controls, parameters and status.

11. Aware of active LCOs, system status, and reasons for lit alarms.

12. Keeps the other UOs and SROs informed of the status of ongoing activities.

13. Ensures that operator standing by for safety-related equipment start/test as time allows.

N. US-Specific Watch Standing Attributes

1. Adherence to the UO specific attributes.

2. Create condition and situation for the UO to be successful.

3. US conducts at least one board walk down with UO during the shift.

4. Conducts administrative business to minimize distracting UOs.

5. Minimizes distractions and number of concurrent evolutions to maintain ability to respond.

6. Communicates Entry and Exit of LCOs to Control Room Staff.

7. Unit Supervisor objective is always in an oversight position at ALL times.

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**Operator Watch Standing, Tours, Control Board Awareness and Activation**

8. Unit Supervisors should not operate switches, alarms or other electrical control circuitry. However, in cases of emergency or when there is no one else who is qualified and with the permission of the Shift Manager, some electrical switching may be needed by the US. Typically, the US does not perform peer checks however in some accident conditions this may be needed.

9. Unit Supervisor should normally supervise from the raised platform area. After stepping off the platform to observe an indication or control, the US should return to the platform when that observation is completed.

10. The Unit Supervisor will direct normal and emergency procedure actions from the platform. This includes GO/GOIs for startup, shutdown, and load changes, AOP/AOIs, and EOP/EOIs.

O. SM-Specific Watch Standing Attributes

1. Adherence to the US specific attributes.

2. Create condition and situation for the US to be successful.

3. Ensures shift staffing and crew composition requirements for oncoming shift are met.

4. Shift Managers should perform a plant tour each shift. The performance of a tour is not an absolute requirement. SM should choose a different area each time and do a walk through looking for safety items, housekeeping, safe work practices, flagging, etc., and indicate actions to resolve identified issues.

**Appendix B**
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**Plant Monitoring Methods and Practices**

A. Monitoring

1. The status of plant systems and equipment shall be appropriately monitored. Methods available for monitoring are annunciators, indicating light, indicators, recorders, CRTs and computers. This monitoring equipment should be maintained in proper working order at all times (Reference SPP-10.0 Plant Operations procedure).

2. Operators should monitor instrument readings and treat them as accurate unless proven otherwise.

3. The number of evolutions affecting control board indications being performed concurrently should be limited so the control room staff's ability to detect and respond to abnormal conditions will not be compromised.

4. The status of control board or local panel alarms should be readily available to appropriate operating personnel.

5. Information that should be available includes:

   a. alarms that are totally disabled,

   b. alarms with individual inputs disabled,

   c. alarms with temporarily changed setpoints,

   d. alarms that are normally lighted during power operation, and

   e. multiple input alarms that do not reflash when more than one input is activated.

   Reference procedure SPP-10.0, Plant Operations, for the responsibilities of the "Operator of the Controls" (OATC).

6. During steady state condition, a walk down of MCR boards should be conducted at least every two hours.

7. Operators use operating procedures to maintain status control and perform various administrative monitoring as discussed below.

B. Trending:

1. Ensures chart recorders are operating properly or takes action to correct deficient recorders.

2. Operators should be alert and attentive to control board indications, trends and alarms and understand what "normal" system trend looks like.

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**Plant Monitoring Methods and Practices**

3. Should establish specific computer trends during evolutions and normal OPS and closely monitor plant trends to identify performance degradation or component or control failure prior to receiving an alarm.

4. Sensitive to operating limits and takes action prior to exceeding the limit and promptly notifies SM / US of degrading trends prior to exceeding an OPS or TS limit.

5. Uses trend to calculate rate of change to predict time to exceeding limits when applicable.

6. Establishes computer trends to identify intersystem relationships. Uses trend data to monitor system performance.

C. Safety Parameter Display System (SPDS)

During normal plant operations and evolutions the SPDS computer displays should be fully utilized by the operating crew. During accident conditions the system may be utilized as an operator aid to provide indication of abnormal conditions, however, any action or diagnostics performed during accident conditions shall be based on qualified instrumentation only.

D. Enterprise Shift Operations Management System (eSOMS)

The eSOMS software package is a computer-based, information management and data-collection program used by Plants Operations, which may be used to implement the following processes:

1. Clearances

2. Limiting Conditions for Operations (LCO) Tracking

3. Narrative Logs

4. Operator Rounds

E. Reaction to Adverse Trend, Instrument or Component Failure

1. Immediately Notify SM/US of adverse trend.

2. Monitor indications closely and frequently. Appendix R of this procedure provides guidance on expectations on establishing parameter threshold values (triggers) for initiating operator actions to place the plant in a safe condition.

3. Take prompt action to determine the cause of abnormalities. Use all resources available such as approved procedures, Engineering and Maintenance as necessary to determine the cause.

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### Plant Monitoring Methods and Practices

4. When an instrument failure is suspected, the following actions shall be taken to determine the true condition and to implement compensatory actions:

   a. Stabilize or limit plant conditions until all aspects of the instrument failure are understood and compensatory actions taken.

   b. Compare independent indicators of directly or indirectly related parameters. If this cannot be done from the control room it should be done locally.

   c. Periodically monitor the independent indicators for any failed instrument which would be used in system operations.

   d. Develop plan to manage any issues associated with the failure .

5. If the instrument cannot be immediately repaired, the impact of its loss on normal, abnormal and emergency procedures should be discussed by the UO, US, SM and included in any turnover. The Operational Decision Making Instruction (ODMI) procedure should be reviewed for equipment failures and conditions to determine when the ODMI process should be used.

6. The guidance contained in Appendix R of this procedure is to be utilized when placing a controller in manual and as part of the Pre-Job Briefing process for Critical and higher risk evolutions.

## Appendix C
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### Response to Annunciators

A. Response to Annunciators During Steady State Operation

- During steady-state operations, all MCR annunciators shall be responded to promptly.
- The unit operator responding to the alarm shall announce each annunciator that was flashing. Get the US acknowledgment, then proceed IAW the appropriate procedure requirements. Use all available indications when evaluating the alarm condition.
- The US shall acknowledge the announcement by the UO to ensure it was understood. If the alarm is expected as result of a known activity and the alarm is expected numerous times due to that activity, then with SM/US concurrence, the alarm may be considered an Expected alarm, the ARI need not be pulled and all future alarms pertaining to the current activity may be announced and acknowledged as 'Expected Alarm' with a brief verbal description of the initiator.
- Prudent Operator Actions are to be performed in accordance with the guidance contained in Appendix Q.
- In the event an alarm becomes a nuisance and challenges crew communication or performance, then refer to OPDP-4, Annunciator Disablement, for additional guidance.
- If alarms are being tested, the test should be announced prior to the test. Review of alarm response procedures is not required for alarm tests.
- The alarm response procedure shall be treated as a continuous use procedure and shall be reviewed to determine the cause and any required actions. The crew will fully utilize the alarm response procedure utilizing place keeping techniques. If the alarm is expected as result of a known activity and the alarm is expected numerous times due to that activity, then with SM/US concurrence, the alarm response procedure need not be reviewed every time the alarm is received during the activity.
- During planned evolutions/activities which will cause annunciator alarms, appropriate crew members should be briefed on the evolution/activity and the expected alarms.
- The UO shall never assume that an alarm associated with a pre-planned activity was generated by that activity unless there is positive indication that the activity is indeed in progress.

If an annunciator alarms in the MCR indicating an alarm condition on a local annunciator panel, the UO acknowledging the alarm shall immediately dispatch an operator to that panel to acknowledge the alarm and report back to the UO the alarm and the condition. If the local panel is manned, then the UO will immediately request a report from the local operator on the alarm and the condition that brought it in. If the alarm is unexpected, the Operator should direct that the activity be placed on hold until a determination is made as to the cause of the alarm and the most appropriate course of action.

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## Response to Annunciators

B. Response to Annunciators During Transient Operation

- During emergencies, transients, or critical operations, the UO is not required to announce every annunciator that comes into alarm.
- The UO should acknowledge multiple alarms and ensure that each alarm is properly attended to as soon as practical.
- Prudent Operator Actions are to be performed in accordance with the guidance contained in Appendix Q.
- The UO should use sound judgment when deciding which alarms to announce to the crew. Annunciators that indicate ESF actuation, deterioration of a once stable condition, or loss of a component or function critical to the evolution in progress shall be announced to the US and the crew as soon as practical.

C. Operation Above an Alarm Setpoint

- If an operating parameter is out-of-limit and the limit has a procedure, Tech Spec, T.R.M. or other administrative procedural required action associated with the limit, then the required action shall be taken.
- If the out-of-limit parameter does not have a required action and can not be or prudently should not be restored to its normal operating range, then the appropriate corrective action document (i.e., WO, PER, etc.) should be initiated. Every available resource, including Engineering and Maintenance should be utilized to determine if operation in the condition is acceptable.

D. Inoperable Annunciators and Instruments

1. Instruments which are determined to be incorrect shall be identified as such and an alternate means established to monitor the parameter while the instrument is suspected to be in error. In the event there is no other means to determine the value of the parameter monitored by an instrument, the most conservative value shall be assumed as a guide to the operator's response.
2. Annunciators that are known to be false due to instrumentation problems, electrical problems, or other problems, or MCR instruments that are known to be invalid or out of service, shall be identified by initiating a work order (WO).

## Appendix C
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### Response to Annunciators

3. The SM/US shall determine during the operability evaluation portion of the WO what, if any additional monitoring or compensatory measures need to be implemented until the condition is corrected. When practical, the SM/US shall obtain concurrence from the Operations Superintendent if it is determined that no compensatory measures are required.

4. If the maintenance activity cannot correct the condition that is causing an invalid alarm, initiate actions within 72 hours to have alarm cleared/disabled.

## Appendix D
(Page 1 of 4)

**Control of Equipment, System Status and Clearances**

A. Status Change Authorization and Reporting

1. The SM or his designee shall authorize status changes to major plant equipment and to all safety-related equipment and systems in accordance with procedures.

2. When a status change is made, it shall be reported back to individual authorizing the change.

B. Equipment and System Alignments

1. Individual components for plant equipment and systems shall be properly aligned or checked for system integrity as appropriate and in accordance with approved procedures before placing the equipment or system into operation following major maintenance or a refueling outage. Alignment checklists should be used to guide the operator in establishing the correct component positions. The SM/US should review and approve completed alignment checklists.

2. Unless specifically approved by the SM, equipment shall not be declared operable until properly aligned, all required testing is completed, and associated documentation for operability is completed and approved by the US or WCC SRO.

C. Clearances

The Pre-Job briefs shall be conducted IAW the Pre-job Briefing/Post Job Review. All clearance activities shall be IAW requirements specified in SPP-10.2.

D. Expectations
Generic Skills:

1. Applies Self Check, QV&V and Touch STAR.

2. All participants are trained and understood the clearance steps IAW with SPP-10.2.

3. Makes conservative decisions with respect to nuclear and personal safety.

4. Verify computer master clearance exactly reflects the initials on the clearance sheet used to hang or remove the tags.

E. Clearance Preparation and Approval:

1. Preparers understand what clearance is providing protection for, scope of work, etc.

2. Plant and safety effects considered and procedures and drawings are used.

3. The clearance preparer (RO, SRO, WCC/SRO or WCC Operations Specialist) reviews potential impact before writing a clearance.

4. Shutdown/restoration of system/components adequately addressed.

## Appendix D
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**Control of Equipment, System Status and Clearances**

5. Components properly checked (de-energized, depressurized, drained, vented, FME, valve line up configuration is verified, etc.).

6. The clearance reviewer (RO, SRO, WCC/SRO, or WCC Operations Specialist) independently verifies boundaries, tagging points, sequence, and component positions.

7. Cover sheet instructions are appropriate and restoration section is properly completed.

8. Redundant train equipment/LCO entry is verified prior to issuing clearance.

9. Verification the component is within the correct work week work train.

F. Pre-Job Brief and Clearance Final Check:

1. Questioning attitude (QV&V). Given the present plant status and know forthcoming evolution, is this the right time to hang this clearance?

2. Is the sequence that the tags are being hung logical and technically correct? Can be safely performed?

3. Cross-check component noun name and ID numbers on the clearance cover sheet with schedule log notes.

4. Cross-check component noun name and ID numbers on each tag with the entry on the clearance cover sheet.

5. Ensure the number of cards (actually in hand) for the clearance matches the number of cards on the field copy and the master copy.

6. Verifies the field copy has the correct sequence.

7. Verifies the field copy has the verification requirements (Independent/Concurrent) as designated by the Unit Supervisor or WCC/SRO.

8. Review notes or comments located on the clearance cover sheet associated with the placement of the clearance.

9. Ensure operators only initial the blanks on clearance sheet actually performed.

10. All requirements in SPP-10.2 are met for the clearance.

**Appendix D**
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**Control of Equipment, System Status and Clearances**

G. Hanging Hold Order Tags:

1. AO/AUO reviews clearance and WCC-SRO/SRO/RO administers pre-job brief using prints on removing equipment from service, draining and venting activities, status control issues, etc.

2. Correctly applies cover sheet instructions/right procedure used in removing equipment.

3. Give the work area a close inspection.

4. Questioning attitude (QV&V); Given what I observed, is this the right time to hang this clearance?

5. Is the component repositioning and tags hanging sequence logical and technically correct?

6. Can this clearance tag hanging be safely performed?

7. Hangs tags at control points in correct positions and sequence (uses Touch STAR).

8. Fuses and PK Blocks are correctly pulled/stored.

9. Tag is hung using correct material (string, tie-wrap, weather protective cover, etc.) IAW SPP-10.2.

10. Clearance is correctly IV/CV.

11. Notifies supervisor if component is found NOT aligned as expected.

H. Preparation for Clearance Removal:
SRO will

1. Review restoration of clearance sequencing, specific tags to remove, precautions. Does the clearance removal need to happen in a specific order?

2. Ensure verification of components status control inside the clearance boundary. Does configuration control inside the clearance boundary need to be reestablished before the clearance tags are removed?

3. Evaluate the impact once the clearance boundary is restored per the clearance lift order component final position, and the sequence of the component manipulation.

   AUO/RO reviews clearance and WCC-SRO/SRO/RO administers pre-briefing using prints on restoring equipment to service, refilling and venting activities, status control issues, etc.

**Appendix D**
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**Control of Equipment, System Status and Clearances**

I. Removing Hold Order tags:

1. Give the work area a close inspection.

2. Questioning attitude (QV&V); Given what I observed, is this the right time to lift this clearance?

3. Is the tags removing and component repositioning sequence logical and technically correct?

4. Can this clearance tag lifting be safely performed?

5. AUO/UO correctly applies cover sheet instruction/right procedure used in restoring equipment.

6. AUO/UO verifies that components inside boundary are correctly positioned if necessary.

7. AUO/UO pull tags in correct sequence and left component in correct position.

8. AUO/UO returns tags to WCC-SRO/SRO.

J. Post Job Review:

1. Discuss what went right.

2. Discuss what went wrong.

3. Are procedure revisions necessary (UNIDs and component nomenclature accurate).

4. Is the field copy signed off?

5. Ensure the clearance is signed off in the computer (If a partial release was performed, ensure that only the cards which were released have been signed off.).

6. Verify computer clearance reflects the initials on the clearance sheet used to hang or remove the tags.

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**Log Keeping**

Log keeping provides three functions: (1) a record of what was done and if the expected response was obtained, (2) a record for current plant status, and (3) a record for subsequent evaluation of the status of the plant.

A. Establishment of Operating Logs

1. The enterprise Shift Operations Management System (eSOMS) maintains the operating log for key shift positions including the SM, US, STA, UO and AUO.

2. At the beginning of each shift, the previous shift's Log is approved by the SM's, STA or US's hand-written signature or via electronic signature in the form of a user ID and password.

3. In the event computerized logs are unavailable, narrative logs will be taken on a suitable paper format approved by the SM for the following shift positions using the guidelines set forth in the remainder of this section for content and approval; SM, US, UO, STA and AUO watch standers. When the computerized logs become available, narrative log entries should be transferred to the eSOMS application.

B. Timeliness of Recordings

Information should be promptly recorded in the logs. Delaying the recording of activities or events often leads to incomplete or inaccurate entries. All log entries should be current at shift turnover including transfer of informal notes.

C. Information to be Recorded

1. The following information shall be recorded in the operating log, although any one log might not contain all of these items:

   a. Watch station relief.

   b. Pertinent event(s) related to specific operating stations.

   c. Completion of significant Plant Procedures.

   d. Entering and exiting TS action statements and annotating unplanned LCO entry as such.

   e. Reactor mode or condition changes (e.g., cold shutdown, power operation, run, start-up, refueling, etc.).

   f. Criticality and appropriate critical data.

   g. Issue and release of clearances (normally automatically issued from eSOMS).

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**Log Keeping**

h. Status changes to safety-related and other major plant equipment including the instruction and procedure section used if appropriate. The reason for the change should also be recorded.

i. Placing the main generator on or off the line.

j. Switching orders from load dispatch.

k. Initiation and completion of surveillance tests, including starting/stopping time, and problems found as determined by the Shift Manager. Surveillance start and stop times are documented on STS tracking sheets and transmitted to EDMS.

l. Out-of-specification chemistry results, and other chemistry results provided to the unit, as appropriate.

m. Initiation and completion of radioactive releases.

n. Abnormal plant operation.

o. Phone calls made to senior management or NRC regarding significant events.

p. Significant events involving changes in radiological conditions.

q. Medical, fire, or other plant emergencies.

r. Occurrence of any reportable events, or offsite notification.

s. Reportable Events requiring entry into the REP.

t. Security incidents.

u. Log entries 'content quality' expectation:

   (1) Units of measure are included when appropriate.

   (2) Lists people and organization names when appropriate.

   (3) Uses clear and precise locations when appropriate.

   (4) Closure information is provided (problems found in earlier entries have resolution described).

   (5) All entries are made in chronological order or annotated at the time indicated on the log: for multiple-unit entries, all units enter the same time for common when appropriate (e.g., LCO entry on common unit equipment.

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**Log Keeping**

2. To aid in event reconstruction, as much significant information as possible should be logged during emergencies and abnormal or unexpected events. However, log keeping should not take precedence over controlling and monitoring the plant.

D. Legibility

Log entries shall be made in a manner such that they can be easily read and understood. Additionally, the log entries should be readily reproducible with standard photocopy machines.

E. Corrections

1. Corrections shall be made by editing the appropriate log entry, or shall be made by placing a single line through the incorrect entry, writing in the correct entry, initialing, and dating in a nearby space.

2. Spell checking and related corrections on eSOMS narrative logs does not require initialing and dating when done before official approval and printing.

3. All corrections to approved computer printed documents shall be initialed and dated and approved by the SM.

4. Late entries (past shift turnover) shall be annotated by placing the current time and the Words "LATE ENTRY", followed by the time the entry should have been made, and then the entry.

F. Log Review

The previous shifts logs shall be reviewed prior to assuming watch. Operating logs shall be reviewed by the SM/US. These reviews normally would occur shortly before shift relief and should ensure that entries are accurate and adequate, and that no open ended entries remain. Additionally, the Operations Superintendent, or his designee should review the operating logs on a daily basis when he is on site.

## Appendix F
## (Page 1 of 4)

## Plant Operating Procedures

A. Procedure Compliance

1. Plant equipment shall be operated in accordance with written approved procedures as discussed in SPP-2.2, Administration of Site Technical Procedures.

2. Appendix F, section E, contains expectations for procedure usage. Procedure users should use it to evaluate their own conduct.

B. Precautions, Limitations and Initial Conditions

1. All applicable Precautions and Limitations, Initial Conditions, and all procedure sections to be performed SHALL be reviewed prior to performance:

   **IF** a procedure is in progress to maneuver the plant **AND** the direction of that maneuver is changed, **THEN** all P/Ls of the applicable procedure(s) SHALL be re-reviewed prior to continuing with the evolution.

2. **IF** a procedure in progress is suspended **OR** exited prior to completion, **THEN** the following SHALL be verified prior to recommencement:

   a. Initial conditions

   b. Precautions and limitations

C. Procedure Place keeping

1. Place keeping is an effective tool for reducing human error and maintaining status control by maintaining positive control of steps, especially following delays and interruptions. Place keeping includes the following:

   a. Marking each step of a procedure as it is performed,

   b. Marking steps that are not applicable, and

   c. Marking each step of a clearance order as it is performed.

2. Examples of acceptable methods for marking up a procedure including initialing each step as it is performed, marking off the steps by checking them off, or using the place keeping boxes on those procedures where they have been provided.

3. The following practices may be used to enhance place keeping:

   a. Re-reading the previous several steps after being distracted.

   b. Identifying the last procedure page to be performed by marking it as "LAST PAGE."

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**Plant Operating Procedures**

c. Circling a step that is in progress and slashing through the circle when the step is complete.

d. Marking completion of a procedure page in the bottom margin on the page.

e. Marking steps that will not be performed in advance or during the Pre-Job Brief.

4. Place keeping shall be used, unless the procedure classification is "information only."

5. During implementation of the Abnormal or Emergency Operating Procedure, place keeping shall be used (immediate actions and prudent operator actions are exempt when performed. Place keeping shall be used during verification of those actions.).

6. To facilitate place keeping for clearance orders, a separate sheet should be provided for independent verifications.

7. Erasable markers, page protectors or clear cover sheets can be used to facilitate place keeping during routine activities that do not require archival records retention. When the evolution is completed the mark can be wiped off. In cases where procedures require signatures or initials those are used instead of erasable markers.

8. For evolutions that are not completed by the end of shift, the marked up pages shall be included in the shift turnover process for the applicable watch station. The status of procedure completion should be reported to the control room. At the end of the evolution, any procedures not required for retention as archival records may be discarded.

D. Alternative Place Keeping - Reader/Worker

Place keeping via a 'Reader/Worker' method may be used to facilitate place keeping under conditions in harsh environment such as working in a contaminated zone or working in a situation where worker cannot support/hold paper work. In these cases a second person is allowed to sign off a step as completed only when in direct contact with the performer. When a second person is required, the second individual should sign "for" the performer, such as "JCS/TMM."

E. Use of 10 CFR 50.54 (x) and (y)

1. Operations personnel SHALL **NOT** give or accept directions or guidance that conflicts with approved procedures, Technical Specifications, or a License Condition, with the exception of those actions pursuant to 50.54 (x) and (y).

2. All actions that occur per 50.54 (x) and (y) SHALL be approved by a licensed Senior Reactor Operator and those actions SHALL be immediately reported to the Operations Manager, Plant Manager, and Site Vice President and documented via PER.

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**Plant Operating Procedures**

3. Operations personnel MAY take responsible action that departs from a License Condition or Technical Specification pursuant to 10 CFR 50.54 (x) and (y), within the limits of the following:

   a. The provision must be invoked in order to take necessary actions.

   b. **IF** an emergency protective action is needed **AND NO** action consistent with the license is immediately apparent that can provide adequate or equivalent protection, **THEN** personnel are obligated to take protective action under this provision.

   c. Use of the provision does **NOT** require NRC concurrence. IF time permits, THEN NRC Operations Center telephone notification should be made before action is taken. IF time does NOT permit, THEN NRC Operations Center telephone notification SHALL be made as soon as possible but not to exceed one hour per SPP-3.5 and NuReg-1022.

   d. Provision does **NOT** apply where time permits NRC amendment to Technical Specifications or License Condition.

   e. Provision SHALL **NOT** be used to prevent damage to the plant or machinery unless such damage is tied to a possible adverse effect on public health and safety.

   f. Provision ONLY applies to emergencies where license compliance poses a barrier to effective protective action, and rapid action is needed to protect public health and safety.

   g. Immediate threat of injury to personnel is appropriate justification for the use of the provision.

   h. Use of the provision is **NOT** tied to the declaration of any emergency classification in the Emergency Plan. Since emergencies can develop rapidly, use of the provision should **NOT** be encumbered by administrative prerequisites.

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**Plant Operating Procedures**

F. Expectations

1. Operators may use Appendix “F” to evaluate their own conduct. Supervisors should use the same when evaluating operators against the expectation.

2. During Procedure Use:

   a. Verifies correct procedure and revision is being used (Verifies For Use).

   b. Reviews appropriate portion of procedure, and ensures prerequisites are met before continuing.

   c. Reviews precautions and ensures they are understood by step performers.

   d. Ensures a pre-evolution briefing is conducted IAW pre-job checklist.

   e. Ensures appropriate personnel are available or informed, as necessary, before starting.

   f. Ensures that instruments are checked for calibration and documented as required.

   g. Applies proper usage requirements as denoted on procedure (e.g., continuous use).

   h. Stops and notifies supervisor if it cannot be performed as written and initiates change if needed.

   i. Applies Self Check, QV&V and Touch STAR.

   j. Applies place keeping tools as appropriate.

   k. Meets applicable verification requirements during procedure use.

   l. Initiates appropriate documentation as required for problems in procedures.

   m. Properly completes all steps (e.g., performs action prior to sign off).

   n. All required sign-offs and record pages are completed by appropriate personnel (no blanks).

   o. Stops and notifies supervision if component not aligned per procedure (e.g., valve is to be opened, but found already open).

   p. Does not move on without first signing each completed step as appropriate.

   q. Reviews entire procedure for completeness prior to concluding the task is complete.

## Appendix G
(Page 1 of 4)

### Self Checking and Peer Checking

Self Check and Peer Check methods are listed in SPP-10.3, Verification Program, and in the TVAN Human Performance Handbook in greater detail.

A. Self Checking

Self-checking SHALL be used by all Operators performing any task.

1. **Stop** - Pause before performing operation/manipulation, especially at critical steps, decision points, or touch points (electrical). Eliminate distractions, if necessary.

2. **Think** - Focus attention on the step to be performed. Verify the action is appropriate for equipment/system status. Anticipate expected result(s) of the action and its indications. Consider what actions to take should an unexpected result occur (contingency). If uncertain, use QV&V.

3. **Act** - Without losing eye contact, touch the component, label, etc. Compare component label, etc., with checklist, procedure step, or drawing. Without losing physical contact established earlier, perform the action.

4. **Review** - Verify anticipated result obtained. Perform contingency, if expected result does not occur.

B. Peer Checking

1. Peer checking is used as a tool to augment self-checking by using team peers to ensure proper operations and to prevent errors.

   a. A peer is a person with the same or higher qualifications than the person performing the task.

   b. Peer checking does NOT relieve an operator of his responsibility to perform self-checking (STAR).

   c. Using 3-way communication, performer and peer agree on the action to take, on which component, and for what purpose, confirmed by the guiding document.

   d. Using self-checking, the performer and peer individually confirm the correct component, label, etc. Flag the component if desired.

   e. Performer performs predetermined action and only that action.

   f. Peer watches the actions of the performer to verify the action is correct.

2. In general, Peer Checks should NOT be performed by Unit Supervisors since peer checking can interfere with oversight responsibilities.

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**Self Checking and Peer Checking**

3. US peer checks should be limited to simple and short duration tasks. Also, the activity should be located close to the horseshoe operating area.

4. During Emergency and Abnormal operations the US may perform a peer check, but the check is greatly limited and effectively becomes verification of correct component and position.

5. The US shall NOT perform peer checks for PLANNED reactivity changes.

6. The Shift Manager should NOT engage in Peer Checks of component manipulation. SM responsibility for oversight and for command and control out weigh the obligations of peer checking. Conditions requiring SM Peer Check of component manipulation should be extremely isolated and rare.

7. The Shift Technical Advisor (STA) may perform Peer Checks so long as he is qualified to perform the task and doing so does not distract from his duties as an STA. A Non-Licensed STA with an SRO certification may perform as Peer Check for Reactivity changes provided the requirements of SRO oversight are maintained.

8. Peer Checking SHALL be practiced whenever possible utilizing available manpower and within the following guidelines:

    a. Peer Checks ARE REQUIRED FOR ALL PLANNED reactivity manipulations.

    b. Lack of a Peer Check should NOT PREVENT operators from performing EMERGENCY ACTIONS required to minimize a transient, protect equipment, protect personnel or the health and safety of the public. (NOTE - No emergency action directs addition of positive reactivity.)

    c. During normal operations peer checking should be used for switch manipulations inside the operator at the controls designated area at all times, except:

        (1) Annunciator response resets

        (2) Radiation monitor pushbuttons

        (3) Computer operations

        (4) Chart adjustments

        (5) Taking logs

        (6) If second party, concurrent verification activities are required.

        (7) As excused by the SRO with oversight responsibility on a case by case bases (i.e., No blanket exceptions).

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**Self Checking and Peer Checking**

e. The following activities will require a peer check in the field if 2nd Party is not required:

(1) Safety Related Component manipulation.

(2) PWR - Primary demineralizer changes both in/out of service.

(3) PWR - Manual adjustments of hotwell level make-up or dump-back.

(4) If identified in a Pre-Job Brief

(5) If requested by the individual performing the activity.

C. Expectations

1. Actions taken prior to Self Checking Component Manipulation:

a. Verify correct procedure and revision is being used (Verifies For Use).

b. Reviews appropriate portion of procedure, and ensures prerequisites are met before continuing including applicable precautions.

c. Stops and notifies supervisor if it cannot be performed as written and initiates change if needed.

d. Takes a moment to think about the task.

e. Points to each component/indication.

f. Verified the correct component will be manipulated.

g. Verifies the expected conditions, indications, response and outcome.

h. Thinks through the desired response/indications/outcome.

i. Determines contingent action if things do not go as expected.

2. During the Self Checking action or manipulation:

a. Applies place keeping tools as appropriate.

b. Meets applicable verification requirements during procedure use.

c. Verifies the expected conditions, indications, response, and outcome.

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**Self Checking and Peer Checking**

3. After completing the Self Checking action:

   a. Points to the associated indications.

   b. Verifies the expected conditions, indications, response and outcome.

   c. If the expected outcome is NOT obtained, THEN supervisor is informed.

4. Action taken prior to Peer Checking Component Manipulation:

   a. Verifies correct procedure and revision is being used (Verifies For Use).

   b. PC reviews appropriate portion of procedure, and ensures prerequisites are met before continuing including applicable precautions.

   c. PC takes a moment to think about the task.

   d. PC concurs/agrees the performer has identified each component/indication to be used.

   e. Verifies the expected conditions, indications, response and outcome.

   f. PC thinks through the desired response/outcome and discusses with performer

   g. PC concurs with performer about contingent actions if things do not go as expected.

5. During the Peer Checking action or manipulations:

   a. Applies place keeping tools as appropriate.

   b. PC may be used to meet applicable CV requirements.

   c. Verifies the expected conditions, indications, response and outcome.

   d. Was the Peer Checker close enough to stop an undesired action.

6. After completing the Peer Checked action:

   a. PC point to the associated indications.

   b. Verifies the expected conditions, indications, response and outcome.

   c. IF the expected outcome is NOT obtained, THEN supervisor is informed.

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**Briefings**

The purpose of a briefing is to get the right information to the right people in time to prevent an error. During a transient a briefing takes advantage of team knowledge to respond to the transient.

A. Pre-Job Briefs

Pre-Job brief and Post Job brief requirements are defined in the "Pre-Job/Post Job Briefing". The forms and format from that procedure should be used. The individual responsible for task performance is expected to lead the pre-job briefing.

B. Post-Job Brief/Critique

Post-job critiques are conducted to identify lessons learned during the job to capture learning opportunities and improve the activity. SM/US shall determine when a Post-Job brief is required and designate a person to conduct the post job brief to capture any unexpected results or lessons learned during the evolution or task.

C. Shift Turnover Brief

The format for the Shift Turnover Brief is contained in Standards Form 1 of this appendix. The Standards Form provides a script that can be easily followed to help ensure briefing expectations are met.

D. Event Based Brief

The format for the Event Based Brief is contained in Standards Form 3 of this appendix. The Standards Form provides a script that can be easily followed to help ensure briefing expectations are met. Event-based briefs should include references to Tech Specs and REP.

E. Crew Updates

During many conditions communication of information to the crew may not need a scripted brief. In these cases the Crew Update/Announcement can be used. For example, during emergency conditions the SM should use a crew update to announce a change in REP status. Any crew member may update the crew as follows by obtaining the crew's attention by stating "crew update/announcement", announcing the information and then stating "end of brief/announcement".

F. Observations

The Standards Forms below contain expectations and format for crew briefs.

- Standards Form 1 - Format of Shift Turnover
- Standards Form 2 - Format of Middle of Shift Briefing
- Standards Form 3 - Format of Event Based Brief

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**Briefings**

**Standards Form 1 of Appendix H**
**Format of Shift Turnover Brief**

A. SM starts with announcement to start brief

1. Discuss Safety

2. Discuss Human Performance

B. SM requests status from the following positions:

1. Chemistry

2. RadCon (ALARA)

3. Security (When applicable)

C. US Agenda - US states plant power level and request status from unit watch stations

**US provides summary including notable items complete last shift and activities for current shift. (For multiple unit sites the US for each unit addresses the crew as appropriate.)**

D. SM request status from support positions which may include the following positions;

1. Support US

2. WCC SRO

3. MSS

4. WWM

5. Eng Rep

E. SM recaps significant items/activities and action items and who is responsible for those actions. SM should also discuss any new standing orders, shift orders, site activities or protected equipment as applicable.

F. SM requests input from other Management which may include the following positions;

1. OPS Manager

2. Asst PM / PM / SVP

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**Briefings**

**Standards Form 1 of Appendix H**
**Format of Shift Turnover Brief**

G. General Requirement;

Shift personnel should speak loudly for all to hear. SM controls the meeting. US briefs UO who remain in horseshoe immediately upon completion of turnover.

H. Reactivity Brief

Shift Turnover Reactivity Brief should be conducted in the horseshoe with the US and UOs assuming the watch. Evolutions affecting reactivity and the following should be available for the brief;

For BWR

1. Reactor Power
2. Thermal Power
3. Turbine Power (MWe)
4. Rod Position
5. Reactor Recirculation Flow Control
6. Core Xenon conditions

For PWR

1. Water used last shift to maintain power and expected use during the current shift.
2. Blend ratios for VCT make-up
3. Volume of Boric Acid (BA) to accomplish $1^0$ F temperature reduction, and 10% and 50% power reductions

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**Briefings**

**Standards Form 2 of Appendix H**
**Format of Middle of Shift Briefings**

A. SM Starts the Middle of Shift Brief with announcement to start brief.

1. Discuss Safety.
2. Discuss Human Performance.
3. Discuss ALARA.

B. US continues the briefing with Status updates on his Unit and Common AUO watch-stations. (Ensure human performance is emphasized.)

This will include the following:

1. Watch-station round status (uploaded?).
2. Safety issues.
3. House keeping issues.
4. Clearances, maintenance support activities, status control green cards.

**For Multi-Unit sites this activity is repeated by the US for each unit as appropriate**

C. Unit US will ask for update from UO. (This will include completed and upcoming activities.) Ensure human performance is emphasized.

D. WCC SRO continues the briefing with updates on upcoming work and leads discussion on daily operation experience.

E. SM closes the brief with any additional administrative issues or focus areas not previously discussed.

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**Briefings**

**Standards Form 3 of Appendix H**
**Format of Event Based Brief**

A. Beginning: The US announces the up coming brief.

B. Review: Discuss sequence of events, including major equipment out of service and major procedures in use.

C. Input: Ask for crewmember's input and questions.

D. Expectations:

- Describe the "big picture" direction for managing the event.
- List the references to Tech Specs, and major REP procedures that will be used.
- List major parameters to be monitored.
- Ensure each crew member understands their role.
- Establish Priorities.

E. Finish: The US announces to the crew that the brief is over.

F. General Expectations / Information

1. When the US begins a brief, each participating crewmember shall verbally acknowledge the briefing. The crew is expected to pay attention and participate in the brief however, UOs must maintain plant monitoring during the brief.
2. A brief should be paused if equipment manipulation is required.
3. The brief can be paused or interrupted at anytime due to any reason.
4. The brief is a tool for the SM/US to establish and maintain command and control as well as communicate the vital information discussed above.

*** This form and format is not required to be used during an event based brief. The goal is to effectively and efficiently communicate information and direction to manage the event.**

**Appendix I**
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**Communications**

A. The purpose of this standard is to provide clear guidelines on the communication processes and content specific to Operations. Accurate and effective communication is essential to the safe and efficient operation of TVAN Nuclear Power Plants. Consistent use of effective communications during normal operations helps to reduce errors, and develops the necessary habits to sustain its use during off-normal and emergency conditions.

B. Formal Communication - A spoken interchange between personnel, the purpose of which is to provide one or more of the following directives or parameters that affect plant operations.

1. Status of plant systems, components, or procedure.
2. Direction requiring operator or individual action.
3. Operating limitations or cautions.
4. Annunciator response.
5. *ALL FORMAL COMMUNICATIONS REQUIRE THE USE OF THREE WAY COMMUNICATION.*

C. Informal Communications - An interchange or discussion that is not intended to provide the status of the plant systems/components/procedures, direction requiring operator individual action, or operating limitations/cautions. This type of communication involves a free exchange of information and does NOT need to be repeated back. However, the exchange must be conducted in a professional manner, (avoid slang and ambiguities) and the receiver should acknowledge the message.

D. Directed Communication - A spoken message initiated by announcing the name(s) of the intended receiver(s). When an interchange takes place face-to-face between two individuals, only the initiating leg of each interchange needs to be directed. When multiple commands are intended for the same operator in a single procedure step, it is NOT necessary to address the operator by name for each command.

1. Three-way Communication

All operators are responsible for consistent, effective communications. Three-way communication is the standard for all operations communications. Three-way communication consists of the following;

a. The sender states the name of the receiver and when attention is gained, clearly states the message. The sender should consider how to word the communication prior to initiating the conversation.

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**Communications**

b. The receiver repeats back the message to the sender. The repeat back can be verbatim or functional. In many cases a functional repeat back best communicates the receivers understanding of the message. This can be done in several ways to accomplish the desired goals. For example the sender might say, "Bob, report RCS pressure and trend." The receiver could respond in either of two ways.

(1) The receiver could respond with, "Report RCS pressure and trend. RCS pressure is 2250 psig and stable."

Or

(2) The receiver could respond with, "RCS pressure is 2250 psig and stable."

c. The sender verbally acknowledges that the receiver correctly understood the message. The verbal acknowledgement can be simple such as, "That is correct". If the sender has requested and received information then the sender shall provide either verbatim or functional repeat back to demonstrate his understanding of the receiver's message. For the example above the sender could respond with, "I understand 2250 and stable."

2. Phonetic Alphabet

The phonetic alphabet is a tool to improve communications. In general, operations communication should use the phonetic alphabet except when well established acronyms describe the subject. If use of phonetic alphabet will reduce effectiveness of communications then it should not be used. The following are examples of when the phonetic alphabet should not be used:

a. It is not desirable to use Romeo-Charlie-Sierra to describe the RCS (Reactor Coolant System).

b. If a procedural step is written using acronyms, it may be read and ordered as such.

c. If a component tag or label is written using acronyms then the acronyms may be used.

3. General Standards

a. All communications shall be clear, concise, and precise. All operational communications shall be conducted in a formal and professional manner. In all communications, the sender and intended receiver should be readily identifiable.

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**Communications**

b. Use equipment noun names and/or identification (ID) numbers to describe a component.

c. The use of sign language is undesired but maybe used when verbal communications is not practical.

d. Take time when reporting abnormal conditions. Speak deliberately, distinctly and calmly. Identify yourself and watch station or your location. Describe the nature and severity of the problem. State the location of the problem if appropriate. Keep the communication line open if possible or until directed otherwise.

e. The completion of directed actions should be reported to the governing station, normally the control room.

f. Require other plant personnel (including contractors) conducting operational communication to do so in accordance with this procedure.

g. If there is any doubt concerning any portion of the communication or task assigned, resolve it before taking any action.

h. When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

4. Emergency Communications Systems

When personnel are working in areas where the public address (PA) system or emergency signals cannot be heard, alternate methods for alerting these persons should be devised. Flashing lights, personal pagers that vibrate and can be felt, and persons dedicated to notifications are examples of alternate methods.

5. PA System

a. Use of the plant PA system shall be limited to ensure it retains its effectiveness in contacting plant personnel. Excessive use of the PA system should be avoided. Plant telephones and other point-to-point communications channels should be used in lieu of the PA system whenever practical.

b. The announcement of planned starting or stopping large equipment should be made to alert personnel working in that area.

c. The plant PA system may be used in abnormal or emergency conditions, to announce change of plant status, or give notification of major plant events either in progress or anticipated.

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**Communications**

d. When using the plant PA system:

(1) Speak slowly and deliberately in a normal tone of voice.

(2) When announcements of abnormal or emergency conditions are made, they shall be made at least twice.

(3) When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

6. Plant Telephones

When using Plant telephones:

a. Identify yourself and watch station.

b. When trying to make contact with the main Control Room, if the message is of a routine nature, the sender should hang up when the main Control Room fails to answer after the fifth ring to avoid unnecessary Control Room noise. The phone shall be allowed to ring until answered if the information is important to Operations.

c. During times when the DO NOT DISTRUB (DND) function has been used by MCR personnel, follow the directions on the recording as appropriate.

d. When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

7. Radio/phone Communication

Radio/phone usage shall not be allowed in areas where electronic interference with plant equipment may result.

a. When making announcements for drills or exercises, begin and end the announcement with "This is a Drill."

b. Sender should identify themselves by watch station.

c. Three way communications should be used.

d. Clear concise language should be used since radio/phone contact does not have the advantage of face to face communication.

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**Communications**

8. Expectations

Operators may use Appendix I to evaluate their own conduct. Supervisors should use the same when evaluating operators against the expectation.

a. Clear terminology is used.

b. The receiver is clearly identified on initial communications (by name or position).

c. The sender clearly identifies who is to perform an action.

d.. Communicates with others using 3-way communication and phonetic alphabet.

e.. The sender clearly states the action to be performed.

f. Senders and receivers use noun names of equipment and/or identification (ID) numbers to describe a component.

g. Senders and receivers use the phonetic alphabet when appropriate (i.e., 'lettered' equipment).

h. The sender clearly communicates the urgency of the required action.

i. The receiver either verbatim or paraphrases prior to taking action (repeats back).

j. The receiver reports back after the action has been taken.

k. All crew members are kept informed of overall situations through periodic crew briefings.

l. Accurate, relevant information is provided to personnel outside the MCR (e.g., starting pumps).

**Appendix J**
**(Page 1 of 4)**

**Shift Turnover**

A. Shift Turnover

1. Operating personnel shall conduct shift turnovers in a professional manner. Oncoming operators shall review documents specified on their checklists before assuming responsibility for their shift position. Walk downs of appropriate control boards shall be conducted by each shift watch stander. The individual being relieved is responsible for passing on all pertinent information concerning work under his jurisdiction to his relief.

2. The following shift positions will document shift turnover:

    a. Shift Manager

    b. Unit Supervisors (MCR)

    c. Unit Operators

    d. Assistant Unit Operators (assigned duty stations)

    e. Shift Technical Advisor (or position assigned STA function)

    f. Fire OPS Supervisor (FOS)

3. The following general requirements apply to all watchstanders:

    a. Relief shall, as a minimum, consist of reviewing the information provided in the Shift Turnover Checklist for the watch station which is provided below.

    b. Reviews turnover checklist with off-going watchstander including; Safety-related equipment status; running equipment, train alignments; inoperable equipment, LCOs & SIs required; reasons for alarms; abnormal conditions & problem areas; clearance, caution order and other abnormal indications; activities in progress; recent load changes; recent Standing Order and evolutions planned during the shift.

    c. Oncoming operations personnel shall review documents and historical information as specified on their turnover checklist when assuming responsibility for their positions.

    d. Notes any abnormalities during previous 24 hours.

    e. Previous shifts logs shall be reviewed by the oncoming crew prior to assuming watch (N/A for AUOs). Be aware of what had happened during your absence if you are among the new oncoming rotating shift.

    f. If possible, perform a quick walk through of your watch station prior to the watch relief and turnover meeting.

**Appendix J**
**(Page 2 of 4)**

**Shift Turnover**

g. Communicates significant information about watch at shift turnover meeting.

h. Operations personnel performing shift turnover activities will not be involved in plant evolutions/activities during performance of the shift turnover activities.

i. The individual being relieved is responsible for passing on all pertinent information concerning work under his jurisdiction to his relief.

j. The individual being relieved shall address abnormalities which have occurred or exist and significant journal entries.

k. The individual being relieved shall retain the responsibilities of the job until he has fully informed his relief of the status of all equipment under his jurisdiction.

l. Unless emergency conditions exist, the relief operator/supervisor will perform no on-watch duties until he completes established relief requirements.

m. The off-going operator shall explain all items noted on the turnover checklist, and the oncoming operator should ask any questions he might have. When both operators are satisfied that the oncoming operator is fully cognizant of the plant conditions, the oncoming operator shall state that he is assuming responsibility for the shift position.

n. All operators will inform their immediate supervisor of their location if other than their duty station.

o. Temporary relief shall be limited in duration and frequency to that of absolute necessity. When temporary relief is necessary, the person being relieved shall acquaint the oncoming person with job information such as any abnormal or unusual conditions existing, any actions anticipated during his absence, and where he may be reached in the plant during his absence. Temporary relief as described here does not require completion of a shift turnover checklist. A log entry must be made when the individual is relieved and when he reassumes the watch (except for short duration relief described below). The log must include the names of relieving person and relieved person. Temporary relief of a short duration (approximately 15 minutes or less) does not require a log entry.

p. Each individual is personally responsible for ensuring their "Active Status" is in good standing prior to assuming duty. This status includes proper number of shifts/hours worked per quarter, training qualifications, and up-to-date medical status.

q. No person shall assume a shift position unless they are physically and mentally fit to competently assume the responsibilities.

**Appendix J**
**(Page 3 of 4)**

**Shift Turnover**

r. No person shall permit their relief to assume the shift if any doubt exists concerning the on-coming person's alertness, coherence, and capability of performing their assigned duties.

s. The off-going operator shall not be relieved until the equipment they are responsible for is stable or the condition has been discussed and understood by the on-coming operator.

4. Persons assigned to specific tasks shall remain on them until properly relieved by someone of equal or higher qualification or released by their supervisor.

5. The individual with command and control will inform the MCR he is leaving the Control Room and designates a qualified SRO as replacement for the control room command function.

6. Relief occurring during the shift will require completion of the appropriate shift relief checklist.

7. Refueling shift turnover will be conducted between the off-going and oncoming FHS. The oncoming FHS will be made aware of refueling status, any problems encountered during the previous shift, any abnormal conditions in existence, any abnormal radiological conditions or hazards, and all entries made in the FHS narrative log. When the oncoming FHS has a clear understanding of the status of all activities, he will assume the shift. The FHS will inform the Shift Manager and the Unit Supervisor of the current refueling status and the objectives of his shift. The FHS will brief his refueling crew of all pertinent conditions and the shift objectives before the refueling operation commences.

B. Shift Turnover Brief

A shift turnover brief for the on-coming shift shall be facilitated by the SM as discussed in Appendix H of this procedure.

C. Control Board Walkdown

Walk downs of appropriate control boards shall be conducted by each control room watch station. The purpose of a board walkdown is to determine plant status through observation of plant system lineups, switch positions, lighted annunciators, chart recorders, and status lights.

D. Distinctive Identification of On-Shift Operations Personnel

Operations personnel should wear the TVA issued fire retardant articles of clothing when on-shift. The Operations Superintendent determines what positions and what conditions require fire retardant clothing. A shift manning chart may be obtained from the clerk if needed to identify on shift crew by job assignment.

**Appendix J**
**(Page 4 of 4)**

**Shift Turnover**

E. Observations

The form below contains expectations for Shift Turnover.

- OPDP-1-1 Shift Turnover Checklist (Attachment 1).

Operators may use Attachment 1 to evaluate their own conduct. Supervisors should use the same when evaluating operators against the expectation.

**Appendix K**
**(Page 1 of 2)**

**Standing Orders & Shift Orders**

A. Standing Orders

1. Information such as administrative policy, designation of turnover times, requirements to transmit particular operating data to management, limitations of access to certain areas and equipment, shipping and receiving instructions, and other similar long-term or policy matters can be included in standing orders. Information and policies intended to become permanent should be incorporated into appropriate procedures. Standing orders will be approved and reviewed periodically by the Operations Superintendent or designee. Standing orders shall not be in effect for more than one fuel cycle.

2. Standing orders should be clearly written, dated, and maintained in the control room.

3. Standing orders shall not be used as operating procedures.

4. Operations personnel shall review the standing orders periodically, when there are changes, or when required by shift turnover process.

5. Standing order(s) will be located at the applicable work station(s) as deemed necessary by the Operations Superintendent.

6. Standing order(s) should be developed using a form similar to OPDP-1-2 , Attachment 2, "Standing Order."

B. Shift Orders

1. Shift orders will be used by Operations management to communicate short-term instructions, expectations and information to Operations Shift personnel.

2. Each issued shift order supersedes the previously issued shift order. Superseded shift orders may be discarded.

3. Shift orders shall be approved by the Operations Superintendent or his designee.

4. Shift orders should be clearly written, dated, and maintained in the control room.

5. Shift orders shall not be used as operating procedures.

6. Appropriate Operations personnel shall review the shift orders early in the shift. Reviews of shift orders are required daily.

7. Shift orders should be developed using a form similar to OPDP-1-3, Attachment 3, "Shift Order." Shift orders distribution is determined by the Operations Superintendent or designee.

**Appendix K**
**(Page 2 of 2)**

**Standing Orders & Shift Orders**

C. Required Reading

Operations Management can communicate information via required reading. When needed, Operations Management may issue a standing order to track completion of required reading.

D. Observations

The forms below contain expectations for standing orders and shift orders.

- OPDP-1-2 Standing Order (Attachment 2)
- OPDP-1-3 Shift Order (Attachment 3)

## Appendix L
(Page 1 of 1)

### Operator Workarounds

Operator Workarounds are long term equipment problems or deficiencies of a maintenance or engineering nature which require significant compensatory actions to be taken by Operations. The actions can be the result of many reasons including, but not limited to MCR deficiencies, Locked in alarms, disabled alarms, AUO round deficiencies or degraded or inoperable equipment. There are three types of Operator Workarounds:

A. Operator Work-Arounds (OWAs) resulting from equipment deficiencies that adversely affect plant operations are defined as follows:

   **Priority 1 OWA**: Operator must take compensatory action during response to ***accidents or transients***.

   **Priority 2 OWA**: Operator must take compensatory action during ***normal operations***. Plant equipment could be degraded if compensatory actions not taken.

B. Operator Work-Arounds resulting from equipment deficiencies that do not adversely affect plant operations are defined as follows:

   **Priority 3 OWA**: Operator is taking compensatory action such as additional monitoring or leak cleanup. Actions necessary due to deficiencies on non-plant or facilities support equipment (such as station lighting, potable water, sewage treatment, etc.) should also be categorized as Priority 3 OWAs. Priority 3 OWAs are tracked to quantify the time spent by plant operators on low level equipment deficiencies.

C. Anyone may submit either a single item or an aggregate effect for consideration as an Operator Workaround. Submission may be by a simple Write-up of the problem, which should be forwarded to the SM/US.

D. The SM/US shall assess newly identified equipment deficiencies for Operator Workarounds and notify the Work Control SRO if any are identified. The Work Control Center SRO is responsible for the following:

   1. Evaluating identified items to determine if they constitute an operator Workaround.
   2. Reviewing Immediate Attention Work, equipment in reduced status, Operation's concerns, disabled alarms, control room WO list, Operators' trouble lists, and caution orders for equipment problems and access with respect to Operator Workaround. This review should be done at least quarterly.
   3. Evaluate identified Operator Workarounds for the aggregate impact, and ensure that appropriate controls are in place to properly initiate and control required compensatory actions.
   4. Evaluate identified Operator Workarounds for the aggregate impact when reviewing and scheduling equipment maintenance.
   5. Periodically providing a list of identified Operator Workarounds to Operations personnel.

## Appendix M
## (Page 1 of 2)

### Intolerance for Equipment Deficiencies

Expectation

Intolerance for Equipment Deficiencies is an overall station program that focuses on identification, documentation, prioritizing, scheduling, and correcting short and long-term equipment problems in an appropriate and timely manner. This must foster, in each individual, a zero tolerance to accept operating equipment deficiencies and equipment failures. Achieving and maintaining high equipment reliability at TVAN, system engineers must own system reliability, maintenance personnel must own component reliability, and operators must monitor and keep equipment within operating limits. Definitions which are used to help categorize Focus Areas are:

A. Fire Protection Impairments (Non-Outage)

Fire Protection System Impairments that require the posting of a Fire Watch as a compensatory Measure. This would include those impairments that document a failure of a fire protection system to meet operability requirements but would not include those that are caused by plant maintenance/modification activities (which contain instructions to return the affected systems to service upon completion of the work activities).

B. Priority 1 and 2 Operator Work Arounds

Operator Workarounds, (Reference Appendix L), are those long term equipment problems or deficiencies of a maintenance or engineering nature which require significant compensatory actions to be taken by Operations.

C. Control Room Panel Deficiencies

These are deficiencies which are associated with control room panel, or backup control panel, controls, switches, indications, which adversely affect the ability to control or monitor the plant.

D. AUO Round Deficiencies

These are deficiencies which are a direct result of deficient conditions associated with specific AUO round checks. Deficient plant conditions which are identified during AUO rounds, but not associated with a specific item checked on the round sheet (hard copy or electronic) is not counted as an AUO round deficiency.

E. Unplanned Lit Annunciators

Annunciators other than those associated with the following are considered Unplanned Lit Annunciators (ULA):

1. Maintenance in progress

2. Testing in progress

3. In alarm condition due to systems (or parts of systems) removed from service in accordance with a pre-planned work activity.

**Appendix M**
**(Page 2 of 2)**

**Intolerance for Equipment Deficiencies**

F. Disabled Annunciators (Non-Outage)

Alarms which have been disabled due to equipment or input failure. Alarms which are disabled by approved plant procedure are not counted as Disabled Annunciators.

**Appendix N**
**(Page 1 of 5)**

**Reactivity Management**

The TVAN Reactivity Management Program is defined in SPP-10.4. This appendix addresses unit specific aspects of reactivity control not listed in SPP-10.4.

A. **Requirements**

This appendix does not repeat the requirements listed in SPP-10.4. Therefore SPP-10.4 should be used in conjunction with this appendix. Specific requirements are:

1. Three-way communications shall be used for reactivity manipulations.
2. All reactivity manipulations shall be IAW with approved procedures.
3. All reactivity manipulations shall be conducted in a controlled manner utilizing management oversight. (All reactivity changes shall be approved and controlled by a control room supervisory individual who holds an active SRO License).
4. Practice conservative decision making at all times.
5. Ensure the effects of reactivity change are understood, anticipated and monitored.
6. Anticipate criticality at any time during approach to criticality.
7. Manage any off-normal indication in a conservative manner.
8. Move control rods in only a deliberate controlled manner with management oversight.
9. Minimize distractions during reactivity manipulations.
10. Independent verification of reactivity calculations prior to use is required.
11. Peer Checks shall be utilized as specified in Appendix G of this procedure which states in part, reactivity manipulations planned or otherwise should be peer checked.
12. If the approach to criticality is suspended for an extended period of time near the point of criticality, the reactor core shall be made sufficiently subcritical to avoid an inadvertent criticality.

B. **REFUELING/SPENT FUEL POOL REACTIVITY MANAGMENT**

During Refueling/Spent Fuel Pool Operations:

1. Pre-evolution briefing has been conducted.
2. Fuel Handling Supervisor is directly supervising/observing core alterations.
3. Shutdown Margin is calculated and documented correctly.
4. Evolutions affecting SDM are identified and controlled by supervisor oversight.

**Appendix N**
**(Page 2 of 5)**

**Reactivity Management**

5. Refueling source range nuclear indication is closely monitored.

6. Boron addition paths are procedurally identified and controlled. (PWR)

7. UO or Reactor Engineer calculates and SRO second checks all dilutions. (PWR)

8. Sensitive to operating limits and takes action prior to exceeding the limit.

9. During refuel moves constant communication is maintained with control room.

10. Each fuel move is procedural controlled and all required controls are adhered to.

11. Applies Self Check, QV&V and Touch STAR.

12. Communicates with others using 3-way communication and phonetic alphabet.

13. Refueling SRO gives permission prior to each fuel move (Refueling OPS Only).

14. Reactor Engineering gives permission for each fuel move prior to the move. (Refueling Only)

15. Core off load/Core reload status is communicated to SM/US each shift.

16. Crew uses computer monitoring capabilities to maximum advantage to trend critical parameters.

C. **PWR REACTIVITY MANAGEMENT EXPECTATIONS**

1. PWR Reactor Startup:

   a. Actions affecting reactivity are controlled and monitored.

   b. Maintains professionalism, limits distractions, and limits MCR access.

   c. SRO dedicated to overseeing low power physics testing and approach to criticality.

   d. Pre-evolution briefing has been conducted.

   e. Abnormal or unusual conditions are handled conservatively (Rx is tripped if necessary).

   f. Power distribution is verified and expectations for new distribution are understood.

   g. Established specific rate of power change, method to achieve it, and final power level.

**Appendix N**
**(Page 3 of 5)**

**Reactivity Management**

h. Change of Xe, rod height, etc., are properly accounted for.

i. UO remains at the controls and does not become distracted by other activities.

2. At All Times:

a. Multiple/diverse indications of power are used to ensure response is as expected.

b. OATC/CRO determines effect of activities on reactivity before start and monitors at end.

c. Peer checks are conducted on all manipulations involving reactivity controls.

d. Applies place keeping tools as appropriate.

e. Communicates with others using 3-way communication and phonetic alphabet.

f. Crew focuses on <u>all</u> activities which could have an effect on reactivity, including placing in service mixed beds or cation beds in the CVCS system, etc.

g. Sensitive to operating limits and takes action prior to exceeding the limit.

h. UO <u>never</u> moves rods except in a deliberate, carefully controlled manner while closely monitoring the reactor's response, under observation by second licensed individual.

i. Rod control selector switch is peer checked when manipulated prior to any rod motion.

j. Boron/Primary Water integrator setting is peer checked prior to starting boration/dilution.

k. Monitor effect of dilution/boration on power understanding the time delay of the activity.

m. UO obtains SM/US approval and informs other UO prior to normal reactivity changes.

n. US provides supervisory oversight of reactivity changes; limits MCR access as needed.

o. OATC/CRO continuously monitor and verify correct/proper response until plan is stable and notified US if unexpected response is seen.

p. Calculations for all Manual blender operations are independently verified by an SRO.

**Appendix N**
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**Reactivity Management**

q. Two licensed operators in MCR for all reactivity manipulations.

r. Uses computer monitoring to maximum advantage of trending critical parameters.

s. Makes conservative decisions with respect to nuclear safety.

D. **BWR REACTIVITY MANAGEMENT**

1. BWR Reactor Startup:

   a. Actions affecting reactivity are controlled and monitored.

   b. Maintains professionalism, limits distractions, and limits MCR access.

   c. SRO is dedicated to overseeing low power physics testing and approach to criticality.

   d. Pre-evolution briefing has been conducted.

2. At All Times:

   a. Abnormal or unusual conditions are handled conservatively (Rx is tripped if necessary).

   b. Power distribution is verified and expectations for new distribution are understood.

   c. Established specific rate of power change, method to achieve it, and final power level.

   d. Change of Xe, rod height, etc., are properly accounted for.

   e. UO remains at the controls and does not become distracted by other activities.

   f. Multiple/diverse indications of power are used to ensure response is as expected.

   g. OATC/CRO determines effect of activities on reactivity before start and monitors at end.

   h. Peer checks are conducted on all manipulations involving reactivity controls.

   i. Applies place keeping tools as appropriate.

   j. Communicates with others using 3-way communication and phonetic alphabet.

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**Reactivity Management**

k. Sensitive to operating limits and takes action prior to exceeding the limit.

m. UO never moves rods except in a deliberate, carefully controlled manner while closely monitoring the reactor's response, under observation by second licensed individual.

n. Rod control selector switch is peer checked when manipulated prior to any rod motion.

o. UO obtains SM/US approval and informs other UO prior to normal reactivity changes.

p. US provides supervisory oversight of reactivity changes; limits MCR access as needed.

q. OATC/CRO continuously monitor and verify correct/proper response until plan is stable and notified US if unexpected response is seen.

r. Two licensed operators in MCR for all reactivity manipulations.

s. Uses computer monitoring to maximum advantage of trending critical parameters.

t. Makes conservative decisions with respect to nuclear safety.

## Appendix O
(Page 1 of 22)

### License Status - Active/Inactive License

A. License Status

1. To maintain an active status, the licensee shall actively perform the functions of an operator or senior operator for a minimum of seven 8-hour shifts a calendar quarter or five 12-hour shifts a calendar quarter. It is the licensee's responsibility to maintain cognizance of his/her license status.

2. A listing of "Active" license status is provided to the SM at the end of each quarter. If an individual's license is currently listed as being "Inactive" (not on the active list), it is imperative that he or she not perform in a TS licensed position.

   The STA will remain active by complying with Section 3.4 of TRN-11.6.

B. Regaining Active Status

1. In order to regain active status, the following requirements must be met:

   a. The licensee qualifications (SCBA, valid physical in the last two years) are current and satisfactory completion of license operator requalification training.

   b. The licensee has completed a minimum of 40 hours of shift functions under the direction of a RO or SRO and in the position to which the individual will be assigned. These shifts must occur with the unit in Modes 1 - 6. The forty hours must include a complete tour of the plant (with active licensed operator of equal status, SRO requires another SRO, RO may be accompanied by a SRO or RO) and a review of all required shift turnover procedures. This tour shall be in those areas covered by the Return to Active Status Checklist and should consist of:

      (1) Inspection of running equipment,

      (2) Review of safety-related equipment out of service,

      (3) Review of evolutions in progress in each area,

      (4) Inspection of equipment in standby to meet TS requirements,

      (5) Inspection of any plant modifications recently installed.

2. Entries in the operating logs should be used to document the 40-hour shift function requirement for ROs and SROs. Copies of this documentation and the applicable forms from this appendix should be attached to Form OPDP-1-4 Licensee Documentation Form.

3. If an SRO is activating a license for fuel handling only, then a minimum of one eight hour shift under the direction of an active SRO must be completed. Copies of documentation and the applicable forms from this appendix should be attached to Form OPDP-1-4 Licensee Documentation Form.

**Appendix O**
**(Page 2 of 22)**

**License Status - Active/Inactive License**

**Return to Active Status Checklist**

Sheet 1 of 4

Licensed Individual ______________________________

The licensed individual has completed a minimum of 40 hours of shift functions under the direction of an active licensed operator of qualifications equal to or above the position to which the individual will be assigned. SRO-licensed individuals assuming a SRO position shall perform the actions and responsibilities of the Unit Supervisor (US) or Shift Manager (SM). SRO or RO-licensed individuals assuming an RO position shall perform the actions of a Unit Operator (UO). The 40 hours must have included a complete review of all required shift turnover procedures. SRO licensed individuals who reactivate their license solely to allow watchstanding in the UO must complete 40 hours of shift functions as a Unit UO under the directions of a UO prior to being assigned to the position. Attach a copy of security door printouts for both the licensed individual reactivating and the supervising license for each date listed below.

| Date | Hours | Total Hours | Position (circle one) | Supervising Licensee |
|---|---|---|---|---|
| | | | SRO/RO | |
| | | | SRO/RO | |
| | | | SRO/RO | |
| | | | SRO/RO | |
| | | | SRO/RO | |
| | | | SRO/RO | |
| | | | SRO/RO | |

Verified by: ______________________________ ______________

Superintendent - Shift Operations Date

**Appendix O**
**(Page 3 of 22)**

**License Status - Active/Inactive License**

**Return to Active Status Checklist**

For Sequoyah Only

Sheet 2 of 4

During the minimum of 40 hours of shift functions above, the licensed individual has completed a plant tour including all areas listed below (excluding high radiation areas) under the direction of an operator or senior operator as appropriate. Tours will include a review of all required NLO shift turnover procedures. Attach a copy of the security door printouts for both the licensed individual reactivating and the supervising license for each date listed below.

| Date | Time | Area Toured | Supervising Licensee |
|---|---|---|---|
| | | All Levels of Auxiliary Building | |
| | | All Levels of Turbine Building and Cond DI Building | |
| | | Diesel Generator Building | |
| | | All Levels of Control Building | |
| | | Outside areas, including CCW Building, New Makeup DI Building and Switchyard | |
| | | ERCW Structure | |
| | | Review AUO Shift Turnovers | |

Verified by: ______________________________ ____________

Superintendent - Shift Operations Date

Ensure the licensed individual has reviewed the required reading, standing orders, and ODMIs for the period of absence or for the most recent requalification cycle to present date, whichever is shorter, and the current standing orders. Ensure requirements of 0-PI-OPS-000-027.0 met and appropriate forms attached.

Verified by: ______________________________ ____________

Superintendent - Shift Operations Date

**Appendix O**
**(Page 4 of 22)**

**License Status - Active/Inactive License**

**Return to Active Status Checklist**

For Watts Bar Only

Sheet 3 of 4

During the minimum of 40 hours of shift functions above, the licensed individual has completed a plant tour including all areas listed below (excluding high radiation areas) under the direction of an operator or senior operator as appropriate. Tours will include a review of all required NLO shift turnover procedures. Attach a copy of the security door printouts for both the licensed individual reactivating and the supervising license for each date listed below.

| Date | Time | Area Toured | Supervising Licensee |
| --- | --- | --- | --- |
| | | All Levels of Auxiliary Building | |
| | | All Levels of Turbine Building | |
| | | Diesel Generator Building | |
| | | All Levels of Intake Pumping Station | |
| | | Outside areas, including CCW Building, New makeup DI Building and Switchyard | |
| | | All Levels of Control Building | |
| | | Review AUO Shift Turnovers | |

Verified by: ______________________________ ______________

Superintendent - Shift Operations Date

Ensure the licensed individual has reviewed the required reading, standing orders, and ODMIs for the period of absence or for the most recent requalification cycle to present date whichever is shorter and the current standing orders.

Verified by: ______________________________ ______________

Superintendent - Shift Operations Date

**Appendix O**
**(Page 5 of 22)**

**License Status - Active/Inactive License**

**Return to Active Status Checklist**
**For Sequoyah and Watts Bar**

Sheet 4 of 4

Ensure Emergency Preparedness Manager is notified of the return to active status of the licensee (WBN PER 90074).

Verified by: ______________________________ __________

Superintendent - Shift Operations    Date

Ensure all medical qualifications are current including respirator training, SCBA and fit test.

Verified by: ______________________________ __________

Superintendent - Shift Operations    Date

Ensure uninterrupted participation in the Licensed Operator Requalification Program or meet with the Operations Training Manager or Designee to discuss the material from all requalification sessions which were missed.

Verified by: ______________________________ __________

Operations Training Manager or Designee    Date

Ensure all on-the-job training and evaluation requirements of the Requalification Program are current.

Verified by: ______________________________ __________

Operations Training Manager or Designee    Date

I certify the requirements for returning to active status have been met for the above-named licensed individual.

Verified by: ______________________________ __________

Manager - Operations    Date

After receiving the final review signature, this checklist becomes a QA RECORD and should be submitted to Document Services.

**Appendix O**
**(Page 6 of 22)**

**License Status - Active/Inactive License**

**Activation of SRO License Limited to Fuel Handling**

Sheet 1 of 2

Licensed Individual ______________________________

| NOTE |
|---|
| Personnel who activate their SRO License Limited to Fuel Handling MAY NOT stand watch in the Main Control Room or any other position that requires an active licensed SRO. |

Licensed Individual SSN. The above named licensed individual has successfully completed the following:

Uninterrupted participation in the Licensed Operator Requalification Program or met with the Superintendent - Operations Training or Designee to discuss the material from all requalification sessions which were missed.

Verified by: ______________________________ ______________

Operations Training Manager or Designee Date

Work for one shift, (12 hours) moving fuel under the direction of an active licensed SRO***.

| Date* | Position Moving Fuel | Moving Fuel Hours** | Active Licensed SRO*** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

*Should include shift turnover.

**Must include a total of 12 hours moving fuel under the direction of an active licensed SRO

***Active SRO or Active SRO Limited to Fuel Handling.

**Appendix O**
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**License Status - Active/Inactive License**

**Activation of SRO License Limited to Fuel Handling**

Sheet 2 of 2

The licensed individual has completed a tour of fuel handling areas with an active Senior Licensed Operator*** including all levels of the Fuel Handling Area, (excluding high radiation areas) and the Reactor Containment Building (if fuel handling activities are in progress).

Verified by: ______________________________ ______________

Superintendent - Shift Operations Date

I certify the requirements for returning to active status, limited to fuel handling, as listed in OMM-001, Section 5.5.2, have been met for the above named licensed individual.

Verified by: ______________________________ ______________

Superintendent - Shift Operations Date

***Active SRO or Active SRO Limited to Fuel Handling.

After receiving the final review signature, this checklist becomes a QA RECORD and should be submitted to Document Services.

## Appendix O
## (Page 8 of 22)

## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR MAINTAINING ACTIVE LICENSE STATUS

Sheet 1 of 4

1.0 PURPOSE

The purpose of this document is to provide administrative instructions in order to comply with 10CFR55.53 (e), ... "actively performing the functions of an operator or senior operator."

2.0 REFERENCES/BACKGROUND

2.1 References

- 10 CFR 50.54(m)(2)(i)
- 10 CFR 55.4
- 10 CFR 55.53(e)
- NUREG-1262 - Preface; pages 71-80
- Technical Specification

2.2 To maintain active status, per 55.53(e), Conditions of License, the licensee shall actively perform the functions of an operator or senior operator on a minimum of seven (7) 8-hour or five (5) 12-hour shifts per calendar quarter.

2.3 Actively performing the functions of an operator or senior operator means that an individual has a position on the shift crew that requires the individual to be licensed as defined in Technical Specification, and that the individual carries out and is responsible for the duties covered by that position.

2.4 Technical Specifications and 10 CFR 50.54 specify the minimum requirement per shift.

2.5 Licensed personnel who do not meet these requirements are designated as inactive licensees.

3.0 RESPONSIBILITIES

3.1 All licensed personnel who maintain an active license shall comply with these requirements.

3.2 All licensed personnel who maintain an active license and are OFF SHIFT (not part of a rotating shift) shall provide on-shift documentation quarterly to the Operations Superintendent. [Form 1].

3.3 The Operations Superintendent is responsible for administering this program and documentation.

4.0 INSTRUCTIONS

4.1 Individuals assigned to the following positions, AND NO OTHERS, on each shift, are considered to be actively performing the functions of an operator or senior operator in order to maintain active license status:

Browns Ferry Nuclear

- Shift Manager
- Unit 1 Unit Supervisor [Control Room SRO]
- Unit 2 Unit Supervisor [Control Room SRO]
- Unit 3 Unit Supervisor [Control Room SRO]
- Unit 1 Board and Desk ROs
- Unit 2 Board and Desk ROs
- Unit 3 Board and Desk ROs

## Appendix O
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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR MAINTAINING ACTIVE LICENSE STATUS

Sheet 2 of 4

4.2 To be granted credit for a shift, the individual will be present from shift turnover thru shift turnover. Short absences from the Control Room are acceptable (i.e., rest room visits). Absences from the Control Room for extended periods (i.e., Fitness for Duty testing) will not count towards shift functions. For these type of cases, the time absence will be made up by working additional time on another shift or an additional shift.

4.3 The shift period is defined by the schedule worked by the rotating shift crews. Either 12-hour or 8-hour shifts is the normal. If a 12-hour shift rotation is used, then a minimum of five (5) shifts in a licensed position per quarter, or if an 8-hour shift rotation is used, then a minimum of seven (7) shifts in a licensed position per quarter is required in order to remain "active."

4.4 Technical Specifications / 10CFR50 for each site contains the requirement for the minimum number of licenses required. However, only the positions listed for the applicable site as listed in 4.1 above qualify for license maintenance.

4.5 If the operating crews convert from an 8-hour to a 12-hour, or a 12-hour to an 8-hour shift rotation schedule during a calendar quarter, then the number of shifts required to be worked in a licensed position to be credited for active license maintenance on the combination of shifts (8's and 12's) will be in accordance with the following:

| 8-Hour Shifts TO 12-Hour Shifts | | 12-Hour Shifts TO 8-Hour Shifts | |
|---|---|---|---|
| # Shifts Completed Prior to Change | # Additional Shifts Needed On New Schedule | # Shifts Completed Prior to Change | # Additional Shifts Needed On New Schedule |
| 6 | 1 | 4 | 2 |
| 5 | 2 | 3 | 3 |
| 4 | 3 | 2 | 5 |
| 3 | 3 | 1 | 6 |
| 2 | 4 | 0 | 7 |
| 1 | 5 | - | - |
| 0 | 5 | - | - |

4.6 The individual assigned to one of the seven (7) positions designated for maintaining an active license, shall log "in" and "out" on the Narrative Log for each shift worked.

4.7 The Shift Manager on each shift shall verify that the data entered into the "Shift Staffing Log" in the Narrative Log is correct for their shift.

4.8 A Shift Manager shall actively perform the functions of a Shift Manager a minimum of seven 8-hour or five 12-hour shifts per calendar quarter to remain current.

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**License Status - Active/Inactive License**

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR MAINTAINING ACTIVE LICENSE STATUS

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5.0 DOCUMENTATION

5.1 Form 1 of this Appendix contains the form "(Active) Licensed Off-Shift Personnel Quarterly On-Shift Time Documentation" that is submitted by active off-shift licensed individuals each quarter to the Operations Superintendent.

5.2 The Control Room logs are the legal record of watchstander assignment.

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR MAINTAINING ACTIVE LICENSE STATUS

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**(ACTIVE) LICENSED OFF SHIFT PERSONNEL**
**QUARTERLY ON-SHIFT TIME DOCUMENTATION**

**FORM 1 (BFN)**

NAME: ______________

I certify that on the dates listed below, I performed the licensed duties as defined in 10 CFR 55 for a minimum of five (5) 12-hour shifts, seven (7) 8-hour shifts, or combination as described in this procedure.

Covering Quarter: ☐ Jan - March ☐ April - June ☐ July - Sept ☐ Oct - Dec

| DATES | SHIFT | | POSITIONS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 HR | 12 HR | SM | U1 US | U2 US | U3 US | U1 BD | U1 DK | U2 BD | U2 DK | U3 BD | U3 DK |
| DAY 1: | | | | | | | | | | | | |
| DAY 2: | | | | | | | | | | | | |
| DAY 3: | | | | | | | | | | | | |
| DAY 4: | | | | | | | | | | | | |
| DAY 5: | | | | | | | | | | | | |
| DAY 6: | | | | | | | | | | | | |
| DAY 7: | | | | | | | | | | | | |
| DAY 8: NOTE (2) | | | | | | | | | | | | |

NOTE: (1) Indicate the date, check the shift duration and appropriate position held.

NOTE: (2) The Day 8 slot is to be used if one does not complete full shift on one of the first seven days.

NOTE: (3) Once the form is completed, forward to Operations Superintendent. Do not retain form until the end of the quarter.

Signature: ______________________________ Date: ______________

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS

Sheet 1 of 7

1.0 PURPOSE

This document is intended to provide additional guidance, to return a licensed individual to an active status.

2.0 REFERENCES/BACKGROUND

2.1 The Code of Federal Regulation, 10 CFR55.53 f(2) specifies returning a license to active status. The intent of the law is to ensure proficiency in the conduct of licensed activities prior to assuming licensed duties. The following requirements are addressed as part of this law:

2.1.1 The qualifications and status of the licensee are current and valid. This requirement ensures the licensee has completed all required requalification training, including plant modifications and industry events; and secondly, that all conditions of his/her license are still being met.

2.1.2 This licensee has completed a minimum of 40 hours of shift functions under the direction of a reactor operator or senior operator, as appropriate, and in the position to which the individual will be assigned. This ensures that an active license is directing or performing the manipulations of plant controls, and allows the inactive individual to obtain proficiency at his/her watch station. Included within the minimum of 40 hours is the following:

a. A complete review of turnover procedures by the reactor operator or senior reactor operator as appropriate for the position, to ensure that the licensee is familiar with current shift turnover practices.

b. A complete tour of the plant, to ensure the individual is aware of changing plant conditions that have occurred since he/she has been inactive. The individual performing the tour will be accompanied by a Licensed Reactor Operator or a Licensed Senior Reactor Operator, as appropriate.

3.0 RESPONSIBILITIES

3.1 All licensed personnel who maintain an active license shall comply with these requirements. The Operations Superintendent is responsible for administering the process.

4.0 INSTRUCTIONS

4.1 The following guidelines are to be used when reactivating a license:

4.1.1 Prior to standing the minimum of 40 hours of shift functions, the licensed individual shall meet with the Operation Training Manager and the Operations Superintendent to discuss his/her current status and any standards and/or expectations. For certain individuals, additional requirements may be imposed (greater than those required by law) if directed by the Operations Superintendent.

4.1.2 The following positions are the <u>only</u> ones that qualify for reactivation of a license:
Browns Ferry Nuclear

- Shift Manager
- Unit 1 Unit Supervisor [Control Room SRO]
- Unit 2 Unit Supervisor [Control Room SRO]
- Unit 3 Unit Supervisor [Control Room SRO]
- Unit 1 Board and Desk ROs
- Unit 2 Board and Desk ROs
- Unit 3 Board and Desk ROs

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS

Sheet 2 of 7

4.1.3 The individual shall be under the direct supervision of an active licensed individual in the position to which the individual will be assigned. To receive credit for a shift, the individual will be present from shift turnover thru shift turnover. Short absences from the Control Room are acceptable (i.e., rest room visits); however, the total time in the Control Room under supervision will total at least 40 hours (this 40 hours does not include the plant tour).

To ensure that the minimum of 40 hours is obtained in the Control Room under supervision, the break-in period will be seven (7)-8 hour shifts or five (5)-12 hour shifts. This applies to all positions used to re-activate a license to active status.

4.1.4 The individual shall make a Narrative log entry at the start of the shift which will include the following at a minimum:

- Name and time of assuming shift
- Shift Position (as identified in 4.1.2) assumed under direction
- Name of the operators (Board and Desk), Control Room SRO, or Shift Manager providing supervision.

4.1.5 The individual shall make a Narrative Log entry at the end of the shift indicating they have completed the shift under supervision. A copy of the Narrative log for each shift worked shall be obtained for processing after the break-in is complete. This will be the entire log for the shift worked and not selected entries.

4.1.6 The individual shall complete Form 2 for each shift listing unit, shift, position assuming, along with the activities the individual was personally involved in. Time, Position, Unit, Activity, and Date must be filled out for each activity performed. The position the individual is holding must be one of the seven indicated in step 4.1.2. Form 3 is to be used to account for a plant tour and shift turnover briefing. Form 3 is required to be signed by the Operations Superintendent ensuring that all appendixes have been reviewed and once reviewed, these appendixes will be submitted with the reactivation documentation and will become part of the individuals training record.

4.1.7 If license re-activation is for a multi-unit site, then the individual shall divide their time between the units to ensure adequate break-in in all license areas they may be assigned. The amount of time in each Control Room does not have to be equalized between units, but should be enough to ensure that the individual will be ready to assume the shift once their license is returned to active status.

4.1.8 If an individual moves from one unit to another unit during the same shift for the purpose of breaking-in on the other unit, the individual shall make an log entry indicating that they are moving to the other unit to continue their break-in. Another entry, to include the areas in 4.1.4, will be made when the individual goes under instruction on the new unit. This requirement is not applicable to an individual being re-activated as a Shift Manager since the break-in would still be under the same individual.

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**License Status - Active/Inactive License**

| BROWNS FERRY NUCLEAR PLANT<br>REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS |
| --- |

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4.1.9 The individual shall review the turnover procedures with an active reactor operator or senior reactor operator, as applicable. The following are the minimum procedures that will be reviewed:

- Plant Operations Manger, Operations Superintendent, and/or Operations Support Superintendent will decide the requirements here.
-

4.1.10 As a minimum, the following shall be completed to satisfy the plant tour requirement:

a. Review of Control Room logs and equipment status in order to ascertain current plant status and configuration.

b. Review of radiological conditions in the plant.

c. Tour of accessible plant areas where significant modifications have occurred or major maintenance activities are occurring, with special attention if safety-related systems are involved.

(1) Prior to beginning the tour, a discussion should be held with the Shift Manager to obtain guidance on which areas to focus on during the plant tour.

(2) Document areas discussed on Form 3 and have the Shift Manager sign that the discussion was held.

(3) The plant tour will be performed by the individual accompanied by a Licensed Reactor Operator or a Senior Reactor Operator, as applicable, and logged in the Narrative Log.

4.1.11 Additionally, the following are considerations for performing the plant tour:

a. ALARA will be considered when deciding which areas of the plant to tour.

b. The individual should walkdown additional areas, as he/she deems appropriate, to ensure he/she is comfortable with plant conditions.

4.2 Returning an Inactive Shift Manager to active Status

4.2.1 Before resumption of independent Shift Manager duties, the Plant Manager or designee will certify the following:

4.2.1.1 The individual has completed 40 hours of break-in under the current Shift Manager.

4.2.1.2 Prior to a Shift Manager being assigned to an on-shift crew, that individual should attend simulator training with the other licensed members of that crew.

4.2.1.3 Documentation of completion shall be forwarded to Operations Training Manager for retention.

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS

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5.0 DOCUMENTATION

The completed Forms 2 and 3, with Narrative logs, and all required signatures on the To Licensed Status Certification" shall be completed prior to being reactivated. The "Return To Licensed Status Certification" form, Forms 2 and 3, and the narrative logs will then become part of the individual's training record.

For the Shift Manager, the log of activities outside of the Control Room will also become part of the individual's training record, if applicable.

**Complete** and **Attach** OPDP-1-4, Licensee Documentation Form, as the cover-sheet for this record [BFN PER 01-008306-000]

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### License Status - Active/Inactive License

| BROWNS FERRY NUCLEAR PLANT<br>REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS |
|---|

Sheet 5 of 7

To: Operations Training Manager
From: Operations Superintendent ________________
Date

**RETURN TO ACTIVE LICENSE STATUS CERTIFICATION**

NAME: ________________________________

1. Licensee requalification training is current, including a simulator evaluation within the past 12 months in the position(s) to be assumed and the licensee has had a physical in the last two years.
(To be verified prior to standing the 40 hours of shift functions under instruction.)

________________________________ Date: ___/___/___
Operational Training Manager

2. The qualifications and status of the licensed individual listed above are current and valid, and Standards and Expectations have been discussed, prior to standing the 40 hours of shift functions under instruction.

________________________________ Date: ___/___/___
Operational Superintendent

3. If the licensee has a medical restriction requiring corrective lenses, the licensee will verify that he/she has the proper corrective lenses required to Don SCBA available while performing license duties (N/A if corrective lenses are not required).

________________________________ Date: ___/___/___
Licensee

4. The above licensed individual has completed at least 40 hours of shift functions under the direction of an operator or senior operator, as appropriate, including a complete tour of the plant accompanied by a licensed RO or SRO, as applicable, and review of all required shift turnover procedures.

________________________________ Date: ___/___/___
Licensee

________________________________ Date: ___/___/___
Shift Manager

________________________________ Date: ___/___/___
Operations Superintendent

________________________________ Date: ___/___/___
Operations Manager

5. The above licensed individual is authorized to resume licensed activities.

________________________________ Date: ___/___/___
Plant Manager

6. Complete and Attach OPDP-1-4, Licensee Documentation Form (SRO & RO) as the cover sheet for this documentation.

________________________________ Date: ___/___/___
Licensee

cc: Operations Manager
Training File

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS

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Form 2
(Completed for EACH Shift)

NAME: ______________________
Licensee

Date: ____________

Shift and position ________

- Narrative Log Entry made including the following: Name and time assuming shift ______________________ (Licensee)
  Shift Position assumed under direction
  Name of Operator providing supervision

- Reactivation Activities Performed During the Shift
  (The following record is a list of activities in which the licensee was personally involved)

| TIME | POSITION | UNIT<br>1, 2 or 3 | ACTIVITY | DATE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

- Narrative Log Entry made for completion of shift ______________________ (Licensee)
  (Note: A completed shift must be from turnover thru turnover)

- Copy of Complete Narrative Logs attached to this form ______________________ (Licensee)

Shift Manager has reviewed this form. ______________________ (Shift Manager)

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
REQUIREMENTS FOR RETURNING AN INACTIVE LICENSE TO ACTIVE STATUS

Sheet 7 of 7

Form 3
(Completed ONCE per Reactivation)

NAME: ______________________________
Licensee

Date: ______________

- Areas discussed with the Shift Manager to Tour — ______________________ (Shift Manager)
  As a minimum they should include
  Review Control Room Logs
  Radiological Conditions in the plant
  Significant Modifications and major maintenance activities.

________________________________________________________________

________________________________________________________________

- Areas that were toured with another Licensed Operator and discussed with the Shift Manager

________________________________________________________________

________________________________________________________________

- Licensed Operator verified Tour. — ______________________ (Tour Verifier)
- Plant Tour discussed with Shift Manager — ______________________ (Shift Manager)
- Narrative Log Entry made for completion of tour as well as being logged in as break-in for the tour duration. — ______________________ (Licensee)
- Shift Turnover Procedure Reviewed — ______________________ (Licensed Operator)
  NOTE: ROs CANNOT sign for SROs.
- Required amount of shifts have been completed — ______________________ (Licensee)
  (5-12 hour or 7-8 hours shifts)
- All Form 2s have been reviewed and are complete along with the Narrative logs attached

  ______________________ (Licensee)
- All Form 2s have been reviewed and are complete along with the Narrative logs attached

  ______________________ / ______
  Operations Superintendent Date

## Appendix O
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## License Status - Active/Inactive License

| BROWNS FERRY NUCLEAR PLANT<br>AUO PROFICIENCY GUIDLINES |
|---|

Sheet 1 of 4

**1.0 PURPOSE**

This document is intended to provide guidance in defining the BFN Proficiency requirements and to return a non-licensed individual to a proficient status.

**2.0 REFERENCES/BACKGROUND**

2.1 Non-Licensed Operator (NLO) watch station proficiency is maintained by completing one 12-hour shift on each affected watch station within an 18-month period for on-shift personnel and a 6-month period for off-shift personnel. For proficiency purposes the 12-hour period must include a:

1. Turnover with complete review of turnover information as appropriate for the position.

2. Complete tour of the plant (round), to ensure the individual is aware of changing plant conditions that have occurred since he/she last held that position.

2.2 The requirements for maintaining proficiency are located in Site specific , Non-Licensed Operator Training Requirements; proficiency can be lost by one of the following:

1. Failure of a non-licensed operator (NLO) requalification examination. The NLO is non-proficient until passing a re examination.

2. Failure to attend non-licensed operator requalification (if two cycles are missed or retraining for one missed cycle is not completed prior to the end of the next scheduled cycle)

3. Failure to carry any watch station indicated below:

   - For on-shift personnel, the non-licensed operator loses proficiency on any watch station if they fail to carry a shift for that station within any 18-month period (this includes attending turnover and conducting one complete round on that watch station)

   - For off-shift personnel, the non-licensed operator loses proficiency on any watch station if they fail to carry a shift for that station within any 6-month period (this includes attending turnover and conducting one complete round on that watch station)

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## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
AUO PROFICIENCY GUIDLINES

Sheet 2 of 4

**3.0 RESPONSIBILITIES**

All non-licensed personnel who actively carry shift duties and their supervisors shall comply with these requirements. The Operations Superintendent is responsible for administering the process.

**4.0 INSTRUCTIONS**

4.1 The following guidelines are to be used when reinstating watch station proficiency:

4.1.1 Operations Training/Scheduling will notify the Operations Superintendent and appropriate Shift Manager of the failure to meet this requirement and subsequent loss of proficiency on that watch station. The following guidance will be followed to reinstate proficiency.

This ensures a non-proficient individual the opportunity to obtain proficiency at his/her watch station.

a. Complete review of turnover information as appropriate for the position
b. 3 complete tours of the station, to ensure the individual is aware of changing plant conditions that have occurred since he/she was last proficient.
c. The individual performing the tours will be accompanied by a proficient non-licensed operator.
d. For these instances, the completion of Form 4 is required.

4.1.2 For certain individuals, additional requirements may be imposed (such as failure to attend requalification training and meet watch station standing requirements) if directed by the Operations Superintendent and/or Shift Manager. Upon satisfactory completion of the defined requirements and re-evaluation, proficiency will be granted and the NLO returned to shift. The completion of Form 4 is required as documented in 4.1.1 above.

4.1.3 The individual shall make a Narrative log entry at the start of the shift which will include the following at a minimum:

- Name and time of assuming shift
- Watch Station Position (as identified in 4.1.7)

## Appendix O


## License Status - Active/Inactive License

BROWNS FERRY NUCLEAR PLANT
AUO PROFICIENCY GUIDLINES

Sheet 3 of 4

- Name of the proficient non-licensed operator providing supervision.

4.1.4 The individual shall make a Narrative log entry at the end of the shift indicating they have completed the shift under supervision.

4.1.5 The individual shall complete Form 4 for the watch station worked. The appropriate Shift Manager/Unit Supervisor will ensure the Form 4 is properly completed and reviewed, submitted to the Training Department where it will become part of the individuals training record.

4.1.6 When possible, the individual shall divide their time between the operating units to ensure adequate break-in of all areas they may be assigned. The amount of time on each unit does not have to be equally split, but should be enough to ensure that the individual will be ready to assume the position on any unit once their proficiency is reestablished.

4.1.7 The following watch stations are required to maintain NLO proficiencies:

Browns Ferry

| | |
|---|---|
| • Reactor Building | • Turbine Building |
| • Control Bay | • Outside |
| • Radwaste | |

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**License Status - Active/Inactive License**

BROWNS FERRY NUCLEAR PLANT
AUO PROFICIENCY GUIDLINES

Sheet 4 of 4

FORM 4
(NLO DOCUMENT FOR RETURN TO PROFICIENT STATUS)

NAME: ______________________________ Date: ______________
Licensee

NLO DOCUMENT FOR RETURN PROFICIENT STATUS

Employee ID Number: ___________________

Shift and position: ___________________

1 Narrative Log Entry made including the following:

Name and time assuming shift

Shift Position assumed under direction

Name of Proficient Non-Licensed Operator providing supervision

| (Complete the following for proficiency documentation) | | | | |
|---|---|---|---|---|
| TIME | POSITION | UNIT 1, 2 or 3 | Name of Proficient Non-Licensed Operator Providing Supervision | DATE |
| | | | | |
| | | | | |
| | | | | |

Browns Ferry Appropriate ATIS Tracking Numbers are per watch station are:

Reactor Bldg: OPN118.501
Turbine Bldg: OPN118.502
Control Bay: OPN118.503
Outside: OPN118.504
Radwaste: OPN118.505

1 Narrative Log Entry made for completion of all tours: (init) ________

2 Shift Turnover Procedure Reviewed: (init) ________

3 Tour Areas Discussed with Shift Manager: (init) ________

______________________________________________
Operations Superintendent/Shift Manager DATE

Appendix P
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**Control of Work**

The TVAN Work control process is defined in SPP 7.1, "On Line Work Management". This appendix is not intended to duplicate that procedure. The Maintenance Management System procedure MMDP-1 controls the maintenance process. This appendix does not repeat or supersede requirements in that procedure. This appendix merely provides Standards Forms containing items taken from SPP-7.1 and MMDP-1 which are used to reinforce expectations described in those procedures. Procedure SPP-7.1 lists many activities that, "an operations SRO", will conduct. This appendix establishes roles within OPS to meet the requirements established in SPP-7.1 in an organized manner.

A. Responsibilities

1. Shift Manager

   The SM is responsible for ensuring nuclear safety and a high level of schedule discipline. The SM directs use of Operations resources to assist in performance of scheduled activities IAW process procedures. The schedule DOES NOT take precedence over approved plant procedures, management directives, or sound plant practices.

2. Unit Supervisor

   a. The Unit Supervisors are each jointly responsible for reviewing and implementing the schedule, including all Operations activities as well as support for work scheduled by other departments IAW process procedures.

   b. The US notifies the SM if unable to complete or support scheduled work.

   c. The US updates the schedule for his unit and provides it to the WCC SRO.

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**Control of Work**

3. WCC SRO
The Work Control Center is staffed with a Work Control Coordinator/SRO (WCC/SRO) with a primary goal of reducing control room traffic and the Work Control aspects of schedule implementation in the main control rooms. The primary function of the WCC/SRO will be to serve as the Operations interface with other site organizations for coordination of work activities.

   a. The WCC/SRO reports to the Shift Manager. The WCC/SRO will be the initial point of contact for anyone needing to get work signed on or reviewed after work completion. If Work Orders are signed on in the WCC they shall also be logged in the narrative log by the WCC/SRO.

   b. The WCC/SRO should perform all clearance briefs, the Control Room should perform briefs for surveillances. These activities can also be performed by an RO, control room operator or balance of plant unit operator.

   c. The WCC/SRO or Maintenance Shift Manager will review the Daily Schedule during the first part of the shift.

   d. The WCC/SRO will also be the primary contact for all clearance related matters. The WCC/SRO will interface with the main control room as necessary and make the determination if the work package needs to be taken to the main control room.

   e. The WCC SRO is jointly responsible with each US for schedule performance.

   f. The WCC SRO is the primary contact and coordinator for site groups needing Operations support in completing scheduled activities and should maintain a broad awareness of maintenance activities being performed in the plant aggressively pursuing completion of scheduled activities.

   g. The WCC SRO reviews emergent work for clearance need, and either writes one or defers it if workload constraints prevent supporting it.

   h. The WCC SRO coordinates PMT completion, per the schedule, with the Risk SRO, the craft and the US for package closure or operability declaration.

   i. The WCC SRO updates the schedule and provides it to the WWM or Daily Scheduling Group (DSG). The WCC SRO should add information useful to on shift personnel to a scheduled activity to aid in allocating resources, prioritizing activities and minimizing equipment unavailability. The WCC SRO may also perform the activities of Risk SRO discussed below.

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**Control of Work**

4. Risk SRO

   a. Risk is managed IAW SPP-7.1, "On Line Work Maintenance". That procedure references many tasks performed by an SRO. In general, these activities are performed by either the WCC SRO or Risk SRO. The RSRO is a point of contact for the DSG when questions arise concerning feasibility of performing work or determining proper logic ties. The RSRO fills the role of the UM when unavailable.

   b. The RSRO reviews the schedule for risk to nuclear safety and continued operation, IAW requirements listed in SPP-7.1, "On Line Work Maintenance" and is responsible for ensuring that the schedule makes sense from an Operations perspective. The RSRO ensures LCO times are optimized, hold order placement and removal are timed properly, and sensitive equipment is flagged. The RSRO provides input to DSG to add a schedule note to clarify an activity, or to add an Operations activity in support of another activity. The RSRO is the primary coordinator for PMTs (performance and tracking).

5. WCC Operations Specialist

   a. The WCC OS reports to the UM, and is responsible for writing clearances IAW requirements listed in SPP-7.1, "On Line Work Maintenance". The WCC OS informs the UM if the package is rejected during this clearance review.

   b. While performing package reviews for necessary clearances, the WCC OS identifies pertinent information and forwards it to the UM to be added to the schedule. The WCC OS may assist the WCC SRO by writing clearances for routine or emergent work. If this impacts his ability to complete the advance clearances needed to support the upcoming work week, the UM should be notified.

   c. The WCC OS should add information useful to on shift personnel to a scheduled activity to aid in allocating resources, prioritizing activities and minimizing equipment unavailability.

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**Control of Work**

B. General Requirements

1. The WWM, RSRO and UMs are responsible for efficiently scheduling equipment outages. Their goal is to get the greatest number of deficiencies corrected in the least number of equipment outages and shortest overall out-of-service time. Functional Work Groups should be identified in the schedule to ensure the most efficient use of equipment outages.

2. Unit Supervisor review of the schedule shall include, but is not limited to:

   a. Verification of scheduled activities to support the crafts and operations scheduled activities (i.e. board transfers, equipment spare outs, etc.) and the resources to support those activities.

   b. Verification that clearance placements and removals are properly scheduled including proper durations for placement and removal.

   c. Schedule reviews should include a walkdown of all clearances scheduled for placement to identify obstacles, such as inoperable/tagged equipment, the need for ladders or scaffolding to access components to be tagged, craft support for installing and removing flanges, hoses and fittings or other impediments to placement of the clearances. This should also identify clearances already in place which work could be performed under and revision of the schedule to reflect the previously issued clearance number.

   d. Operations SI and PI performances are scheduled properly with reasonable durations.

   e. PMT activities are properly scheduled.

   f. PSA Risk

3. If Work Week activities cannot be performed as scheduled the Unit Supervisor on the affected unit shall provide an explanation and suggest a resolution.

4. Schedule reviews should verify that scheduled activities identify LCO/TRM/ODCM actions required to be entered during the performance of the activity.

## Appendix Q
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## Prudent Operator Action Expectations

### 1.0 EXPECTATION

Prudent Operator Actions should be performed with the concurrence of the Unit Supervisor.

### 1.1 EXCEPTIONS

The following are circumstances and exceptions which allow a Unit Operator to take prudent action without waiting for SRO concurrence:

- When there is NOT an active SRO in the horseshoe.

  OR

- When prompt action is needed to manually trip the reactor

  OR

- When prompt action is needed to manually control components to prevent an avoidable automatic trip or transient.

  OR

- When prompt action is needed to actuate ESF equipment which failed to operate.

When a Unit Operator takes prudent action without prior SRO concurrence, it is the responsibility of that Unit Operator to ensure the action is appropriate and that the action is promptly reported to the Shift Manager or Unit Supervisor.

**Appendix R**
**(Page 1 of 1)**

**Establishing Parameter Threshold Values**

## 1.0 APPLICABILITY

This checklist provides guidance on expectations for the establishment of parameter thresholds for initiating operator actions to place the plant in a safe condition. This guidance applies during the following conditions / events:

- Conditions which could reasonably be assumed to generate a transient.
- Conditions requiring the placement of a process controller in manual.
- Degradation or failure of equipment or instrumentation has been identified.
- Any evolution considered as being critical or higher risk.

## 2.0 CHECKLIST

| | Action | Complete (√) |
|---|---|---|
| a. | Determine appropriate critical parameters. | |
| b. | Determine appropriate action(s) to respond to adverse conditions for each critical parameter. | |
| c. | Establish threshold value(s) for each critical parameter. (Action Limits) | |
| d. | Assign specific individual(s) to monitor identified critical parameter(s) | |
| e. | Assign specific individual(s) to initiate identified action(s) | |

**Attachment 1**
**(Page 1 of 1)**

**OPDP-1-1 Shift Turnover Checklist**

## SHIFT TURNOVER CHECKLIST

Page _____ of _____

☐ SM
☐ US/MCR  Unit ______  ____________________
☐ UO  Unit ______  Off-going - Name
☐ AUO  Station ________  ____________________
☐ STA (STA Function)  On-coming - Name

**Part 1 - Completed by off-going shift/Reviewed by on-coming shift:**

- Abnormal equipment lineup/conditions:

  ____________________
  ____________________
  ____________________
  ____________________
  ____________________

- SI/Test in progress/planned: (including need for new brief)

  ____________________
  ____________________
  ____________________
  ____________________
  ____________________

- Major Activities/Procedures in progress/planned:

  ____________________
  ____________________
  ____________________
  ____________________
  ____________________

- Radiological changes in plant during shift:

  ____________________
  ____________________
  ____________________
  ____________________

**Part 2 - Performed by on-coming shift**

☐ A review of the Operating Log since last held shift or 3 days, whichever is less (N/A for AUOs)
☐ A review of the Rounds sheets/Abnormal readings (AUOs only)

Review the following programs for changes since last shift turnover:

☐ Standing Orders  ☐ LCO(s) in actions (N/A for AUOs)  ☐ PER review (WBN ONLY)
☐ Immediate required reading  ☐ TACF (N/A for AUOs)

**Part 3 - Performed by both off-going and on-coming shift**

☐ A walkdown of the MCR control boards (N/A for AUOs)

Relief Time: ____________________  Relief Date: ____________________

Attachment 2
(Page 1 of 1)

OPDP-1-2 Standing Order

STANDING ORDER

Order No.: ______________________ Expiration Date: ______________

Ops Supt. Signature: ____________________________ Approval Date: ______________

| | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | |
|---|---|---|---|---|---|---|
| SM Initials | | | | | | |
| Date | | | | | | |

## Attachment 3
(Page 1 of 1)

## OPDP-1-3 Shift Order

| SHIFT ORDER | | |
|---|---|---|
| | Expiration Date: | ______________ |
| Ops Supt. Signature: ______________________ | Approval Date: | ______________ |
| COMMON: ______________________ | | |
| UNIT 1: ______________________ | | |
| UNIT 2: ______________________ | | |
| UNIT 3: ______________________ | | |

## Attachment 4
(Page 1 of 1)

## OPDP-1-4 Licensee Documentation Form (SRO & RO)

**LICENSEE DOCUMENTATION FORM (SRO & RO)**

A. **License Status**
Current Licensee SRO ☐ RO ☐ (check one)

B. **40 Hours on Shift**
- Attach copy of Operating Log for each shift.

C. **Tour of Plant**
(Those areas normally accessible for operator routines (N/A those not applicable for specific site)

☐ Turbine building(s) ☐ Auxiliary building(s) ☐ Radwaste ☐ Outside
☐ Cond. DI ☐ Control Room(s)/Bays ☐ Makeup DI ☐ Reactor Building

D. **Shift Turnover**

1. Attended shift turnover briefings No. of Times ________
2. Observed shift turnover No. of Times ________
3. Reviewed shift turnover checklist applicable to the position Date ________

______________________________
*Printed Name*

______________________________
*Licensee's Signature*

E. Licensee qualifications current and valid including:
- A physical in the last two years.
- Satisfactory completion of license operator requalification training.

______________________________ ____________
*Operations Training Manager/Designee* *Date*

F. **Documentation**
- Attach copies of applicable forms from Appendix O.

G. Licensee meets reactivation requirements in Appendix O and is reinstated to active status.

______________________________ ____________
*Operations Superintendent/Designee* *Date*

# SEQUOYAH NUCLEAR PLANT
# JOB PERFORMANCE MEASURE

## A.1.b

## JPM # 176 – Modified

Perform Shift Log (SI-2) – S/G Level Instrumentation

**PREPARED/ REVISED BY:** ______________________ Date/ __________

**VALIDATED BY:** * ______________________ Date/ __________

**APPROVED BY:** ______________________ Date/ __________
(Operations Training Manager)

**CONCURRED:** ** ______________________ Date/ __________
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.
** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

**NUCLEAR TRAINING**

**REVISION/USAGE LOG**

| REVISION NUMBER | DESCRIPTION OF REVISION | V | DATE | PAGES AFFECTED | PREPARED/ REVISED BY: |
|---|---|---|---|---|---|
| 0 | Initial Issue | Y | | All | |

V - Specify if the JPM change will require another Validation (Y or N).
See cover sheet for criteria.

**SEQUOYAH NUCLEAR PLANT**
**RO/SRO**
**JOB PERFORMANCE MEASURE**

| **Task** | **JA/TA task #** |
|---|---|
| Know the conditions and limitations in the facility license | 0001100301 (RO) |
| Know the conditions and limitations in the facility license | 0001100302 (SRO) |
| Implement TS Requirements | 0001430302 (SRO) |
| Implement the requirements of SPP-8.1 for test directors | 0001760301 (RO) |
| Implement the requirements of SPP-8.1 for test directors | 0001760302 (SRO) |
| Implement Technical Specification requirements | 1190150301 (RO) |
| Perform specific system and integrated plant procedures during all modes of plant operations | 3410140301 (RO) |

**K/A Ratings:**

2.1.10 (2.7/3.9) 2.1.12 (2.9/4.0) 2.1.23 (3.9/4.0)
2.2.12 (3.0/3.4) 2.2.22 (3.4/4.1)

**Task Standard:**

**Properly evaluate S/G Water level Instrumentation channels per 1-SI-OPS-000-002.0, document deviations, and evaluate associated Tech Specs.**

**Evaluation Method** : Simulator ___X____ In-Plant ________

================================================================================

**Performer:** ________________________________________
NAME Start time ________

**Performance Rating :** SAT _____ UNSAT _____ Performance Time _____ Finish time ________

**Evaluator:** __________________________/________________
SIGNATURE DATE

================================================================================

**COMMENTS**

___

___

___

___

___

___

___

**SPECIAL INSTRUCTIONS TO EVALUATOR:**

1. A **Critical step** is identified in bold type in the SAT/UNSAT column.
2. Sequenced steps identified by an "s"
3. Any UNSAT requires comments
4. Reset the Simulator to **IC 192**. If not available reset to IC-16 and complete next step (5).
5. Override **RX17D to 36.5** to create a 7-8% S/G Level Deviation between 1-LI-3-110 and 1-LI-3-106 and 1-LI 3-107 on S/G #4. Ensure that 1-LI-3-106 and 1-LI-3-107 agree reasonably close and that1-LI-3-110 to indicates ~7-8% **lower** than normal as required to ensure a 7-8% deviation from both of the other indicators. Insert the following to create variances on additional instrumentation to be evaluated during the JPM: **RX15B to 39.5** and **RX16A to 41** to cause other SG(#1 & #2) level indications to show some variance.
   Insert **RX26F to 70.83 (850psig) and RX27C to 73.33 (880psig)** to show variance in SG #3 steam pressures, and **RX27B to 70.83 (850psig)** to show variance in SG #2 steam pressures. **Validate meter readings to ensure only SG #4 level will fail channel check, minor adjustments in overrides may be needed.**
6. Task should begin at the Simulator.
7. Insure operator performs the following required actions for **SELF-CHECKING**;
   a. Identifies the correct unit, train, component, etc.
   b. Reviews the intended action and expected response.
   c. Compares the actual response to the expected response.

**Validation Time: CR** 30 **Local** ___________

**Tools/Equipment/Procedures Needed:**

**1-SI-OPS-000-002.0 with Appendix A only**. Complete SI, as required, and Appendix A through page 2 of Appendix A.

Copy of SPP-8.1 available for reference and a **blank copy of a Chronological Test Log (CTL)** to provide to the JPM performer.

Copy of Unit 1 Tech Specs Available for reference.

**REFERENCES:**

| | Reference | Title | Rev No. |
|---|---|---|---|
| A. | 1-SI-OPS-000-002.0 | Shift Log | 88 |
| B. | TECH SPEC | Tech Spec Unit 1 | 191 |
| C. | SPP-8.1 | Conduct of Testing | 4 |

| Task Number | Task Title | Cont TRN |
|---|---|---|
| 0001100301 | Know the conditions and limitations in the facility license | N |
| 0001100302 | Know the conditions and limitations in the facility license | |
| 0001430302 | Implement TS Requirements | |
| 0001760301 | Implement the requirements of SPP-8.1 for test directors | |
| 0001760302 | Implement the requirements of SPP-8.1 for test directors | |
| 1190150301 | Implement Technical Specification requirements | Y |
| 3410140301 | Perform specific system and integrated plant procedures during all modes of plant operations | |

=======================================================================

## READ TO OPERATOR

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. All steps shall be **Performed** for this task. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 is at 100% Power with no equipment out of service.

**INITIATING CUES:**

You are the Unit 1 OAC and have been designated as the Test Director for the day shift (0630-1830) performance of 1-SI-OPS-000-002.0 (Shift Log) by the Unit 1 Unit Supervisor. The SI is already in progress and Appendix A is complete through page 2. You are to continue with the completion of Appendix A beginning with page 3 for S/G water level instruments and complete through Page 5 for shutdown banks. The CRO will then complete the rest of Appendix A.

The Unit Supervisor has requested that if any deviations are encountered, you are to log them in an SPP-8.1 Chronological Test Log (CTL), and evaluate any associated Technical Specification, Technical Requirements Manual (TRM), or Offsite Dose Calculation Manual (ODCM) requirements then advise him of any LCOs or other requirements that need to be addressed.

When you have finished performing the assigned pages of Appendix A and addressed any deviations, notify the Unit Supervisor that you have completed your task.

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 1: Obtain copy of 1-SI-OPS-000-002.0 in progress.<br><br>STANDARD: Operator obtains copy of 1-SI-OPS-000-002.0 Appendix A already in progress from the Evaluator.<br><br>***Evaluator Note: A copy of the CTL is to be provided when the candidate determines it is needed.*** | ___ SAT<br><br>___ UNSAT<br><br>Start Time____ |
| STEP 2: Record information for S/G Level Water Level Channel Deviation, Steam Line Pressure, and Shutdown Banks in Appendix A.<br><br>***Cue: If operator informs the Unit Supervisor of the 1-LI-3-110 deviation at this point, role play as Unit Supervisor and request him to complete the Chronological Test Log as appropriate.***<br><br>***Cue: If Operator addresses preparing a WO and/or PER, state that he is requested to complete the requirements evaluation and SPP-8.1 Chronological Test Log (CTL) first, then you will assign him or someone else to prepare a WO and PER.***<br><br>STANDARD: Operator records S/G Level, Steam Line Pressure, and Shutdown Banks instrumentation in Appendix A and identifies that deviation between S/G #4 Instrument 1-LI-3-110 and the other S/G #4 channels does not meet the 6% deviation requirement in Note 17 **(Critical).** Operator should inform SRO of the discrepancy, also, Operator may not Initial at bottom of column since Note 17 was not satisfied. (Not Critical) | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step** |

Job Performance Checklist:

| STEP/STANDARD | | SAT/UNSAT |
|---|---|---|
| STEP 3: | Evaluates Technical Specification LCOs. | ___ SAT<br>___ UNSAT<br>**Critical Step** |
| ***Cue:*** | ***If operator address making LCO tracking Log entry or NOMs Log Entry cue that the Unit Supervisor will make these entries.*** | |
| STANDARD: | Operator Evaluates Tech Spec Requirements and determines the Following LCOs and actions are applicable: **LCO 3.3.1.1 Action 9a, and LCO 3.3.2.1 Actions 17a and 36a (Critical).** Operator may also indicate that based on these Actions associated B/S will have to be tripped within 6 hours (Not Critical). In addition to these LCOs, the operator should identify that 1-LI-3-110 is a PAM instrument and that **LCO 3.3.3.7 Action 1a (Critical)** is applicable also requiring the channel to be returned to OPERABLE status within 30 days (Not Critical). | |
| Note: | Identification of TS not required would result in unsatisfactory performance. Discussed with licensee. | MB 01-23-2008 |
| STEP 4: | Operator completes an SPP-8.1 CTL. | ___ SAT<br>___ UNSAT |
| **NOTE:** | **Provide Operator blank copy of SPP-8.1 CTL when requested.** | |
| STANDARD: | Operator properly completes SPP-8.1 CTL. Including as a minimum the Procedure No., Rev, Date/Time, Appropriate Narrative of discrepancy, and their Initials. | |
| STEP 5: | Notify Unit Supervisor that 1-SI-OPS-000-002.0 Appendix A for S/G Water Level Channels is complete. | ___ SAT<br>___ UNSAT<br>Stop Time____ |
| STANDARD: | Operator Notifies Unit Supervisor that 1-SI-OPS-000-002.0 Appendix A for S/G Level, Steam Line Pressure, and Shutdown Banks instrumentation in Appendix A is complete and informs him of the discrepancy and applicable Tech Specs if not reported earlier. | |

**End of JPM**

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. All steps shall be **Performed** for this task. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 is at 100% Power with no equipment out of service.

**INITIATING CUES:**

You are the Unit 1 OAC and have been designated as the Test Director for the day shift (0630-1830) performance of 1-SI-OPS-000-002.0 (Shift Log) by the Unit 1 Unit Supervisor. The SI is already in progress and Appendix A is complete through page 2. You are to continue with the completion of Appendix A beginning with page 3 for S/G water level instruments and complete through Page 5 for shutdown banks. The CRO will then complete the rest of Appendix A.

The Unit Supervisor has requested that if any deviations are encountered, you are to log them in an SPP-8.1 Chronological Test Log (CTL), and evaluate any associated Technical Specification, Technical Requirements Manual (TRM), or Offsite Dose Calculation Manual (ODCM) requirements then advise him of any LCOs or other requirements that need to be addressed.

When you have finished performing the assigned pages of Appendix A and addressed any deviations, notify the Unit Supervisor that you have completed your task.

## SURVEILLANCE TASK SHEET (STS)
Page 1 of 1

### SURVEILLANCE TASK SHEET (STS)

| | |
|---|---|
| Work Order | |
| SI Key | P9008 |
| Procedure No. | 1-SI-OPS-000-002.0 |
| Title | SHIFT LOG |
| Perf. Section | OPERATIONS |
| Test Reason | SCHEDULED PERFORMANCE |
| Data Sheets | |
| Due | |
| Extension | |
| Max. Extension | |
| Frequency | |
| EQ | |
| ASME XI | |
| APP Mode | |
| Performance Mode | |
| Operational Condition | |
| Dry Cask Storage | ☐ Yes ☐ No |
| Subsequent Reviews Instruction | |

Page ____ of ____

| | | |
|---|---|---|
| Authorization to Begin: SRO | 01/XX/08 Date | XXXX Time |
| | Start Date | Time |
| | Completion Date | Time |

| Name | Test Performer's Signature | Initial | Section |
|---|---|---|---|
| Joe CAAN | Joe CAAN | JC | OPS |

| | |
|---|---|
| Was this a complete or partial performance? (Explain "Partial" in Remarks) | Complete ☐ Partial ☐ |
| Were all Tech Spec/Tech Req./ISFSI CoC/ODCM/Fire Protection Req. acceptance criteria satisfied? | Yes ☐ No ☐ N/A ☐ |
| Were all other acceptance criteria satisfied? | Yes ☐ No ☐ N/A ☐ |
| If all Tech Spec/Tech Req./ISFSI CoC/ODCM/Fire Protection Req. were not satisfied, was an LCO/TR/ODCM/OR action required? (Explain in Remarks) | Yes ☐ No ☐ N/A ☐ |
| Alert Scheduling Required | Yes ☐ No ☐ N/A ☐ |

Test Director/Lead Performer ____ Date ____

Acceptance Criteria Review: SRO (ASME XI SIs require review within 96 hours) ____ Date ____ Time ____

Independent Reviewer ____ Date ____

ANII (If required) ____ Date ____

Remark:

Copy of STS sent to Scheduling ____ Initials ____ Date

| Section | No. Men | Dur. Hrs |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Containment Radioactivity | 4.4.6.1.a 4.3.3.1.A.2.b.i 4.3.3.1.A.2.b.ii | 1,2,3,4 | 11, 12, 13, 69 | Operable | 1-RI-90-106A PART | CPM | 3.02 E+2 | | |
| | | | | | 1-RI-90-106A GAS | CPM | 1.07 E+3 | | |
| | | | 11, 14 | | 1-RR-90-106 | √ | ✓ | | |
| | | | 11, 12, 13, 69 | | 1-RM-90-112A | CPM | 1.78 E+3 | | |
| | | | | | 1-RM-90-112B | CPM | 7.19 E+3 | | |
| | | | 11, 14 | | 1-RR-90-112 | √ | ✓ | | |
| | | | | | | UO/RO Review Initials | JK | | |

**NOTES:**

11. General Notes: In the event a radiation monitor or recorder listed in this Instruction becomes inoperable, the monitor and/or recorder is to be listed on Attachment 1. **NOTIFY** the SRO to consult the Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

12. **VERIFY** RM-90-106 particulate and gas channels **OR** RM-90-112A & B are operable by power "on," instrument malfunction alarms clear, and readings of at least background level. Recorded radiation levels will be compared to steady state levels from the previous shift and must be evaluated for trending to ensure data is expected and reasonable (such as data changes due to filter changeout). Either RM-90-106 or RM-90-112 must be operable and aligned to lower containment to satisfy acceptance criteria.

13. **OBTAIN** particulate reading by depressing "PART" pushbutton. **OBTAIN** gaseous reading by depressing "GAS" pushbutton. **LEAVE** monitor in gaseous. **IF** lower compartment particulate or gas monitor is inoperable in modes 1, 2, 3, or 4, **THEN, ENSURE** sampling requirements of SI-183 are met or perform 0-SI-OPS-068-137.0 "Reactor Coolant System Water Inventory". See TS LCO 3.4.6.1 action b. RM-90-112 is not required by Tech Specs when RM-90-106 is operable; RM-90-106 is not required by Tech Specs when RM-90-112 is operable and aligned to lower containment.

14. **VERIFY** recorder power is 'on', time is correct and data is being displayed

69. **IF** countrate doubles (previous steady state reading to present) on RM-90-106 OR 112 particulate or gas channel in Modes 1, 2, 3 or 4, **THEN** performance of 0-SI-OPS-068-137.0, 'Reactor Coolant System Water Inventory', is required.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SFP Area and Fuel Pool Rad Monitors | 4.3.3.1.A.1.a | All | 11,16 | Operable | 0-RM-90-102 | mR/hr | 1.5 E 0 | | |
| | | | | | 0-RM-90-103 | mR/hr | 6.0 E -1 | | |
| Condensate Storage Tank Level | 4.7.1.3.1 ODCM 2.1.1.A.4.a | 1,2,3,4 | 3,15 | > 240,000 Gal Operable | 0-LI-2-230A | gals | 310,000 | | |
| | | | | | 0-LI-2-233A | gals | 305,000 | | |
| | | | | | | UO/RO Review Initials | | | |

## NOTES:

3. Applicable at all times during modes 1, 2, & 3. Applicable during mode 4, only when steam generator is relied upon for heat removal.

11. General Notes: In the event a radiation monitor listed in this Instruction becomes inoperable, the monitor is to be listed on Attachment 1. **NOTIFY** the SRO to consult Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

15. **LOG** the water level indicated on LI-2-230A for CST A and LI-2-233A for CST B. Operability is determined by having equal to or greater than 240,000 gallons, in the CST aligned to the unit. Either A or B CST may be aligned to the operable unit. **IF** inoperable **THEN REFER** to 0-SI-OPS-067-117.0.

16. **VERIFY** the Fuel Pool Radiation Monitors are operable by observing power is “on,” instrument malfunction alarms clear, and readings of at least background on ratemeter. **COMPARE** radiation levels to opposite train monitor and to levels from the previous shift using either the ICS computer or ratemeter readings. RADCON Area surveys are required when RM-90-102 and RM-90-103 are inoperable with fuel in the storage pool, and the survey results are recorded on Attachment 1.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SG Water Level Channel Deviation | 4.3.1.1.1.A.14.A<br>4.3.1.1.1.A.14.B<br>4.3.2.1.1.A.5.a<br>4.3.2.1.1.A.6.c.1<br>4.3.2.1.1.A.6.c.2 | 1,2,3 | 17 | OPERABLE | #1 LI-3-42 | % | | | |
| | | | | OPERABLE | #1 LI-3-39 | % | | | |
| | | | | OPERABLE | #1 LI-3-38 | % | | | |
| | | | | OPERABLE | #2 LI-3-55 | % | | | |
| | | | | OPERABLE | #2 LI-3-52 | % | | | |
| | | | | OPERABLE | #2 LI-3-51 | % | | | |
| | | | | OPERABLE | #3 LI-3-97 | % | | | |
| | | | | OPERABLE | #3 LI-3-94 | % | | | |
| | | | | OPERABLE | #3 LI-3-93 | % | | | |
| | | | | OPERABLE | #4 LI-3-110 | % | | | |
| | | | | OPERABLE | #4 LI-3-107 | % | | | |
| | | | | OPERABLE | #4 LI-3-106 | % | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

17. **COMPARE** the three Steam Generator Level indicators for each S/G located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 6%.

| Date |
|---|
| / / |



| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Steam Line Pressure | 4.3.2.1.1.A.1.f<br>4.3.2.1.1.A.4.d<br>4.3.2.1.1.A.4.e<br>4.3.2.1.1.A.6.d | 1,2,3 | 18 | OPERABLE | #1 PI-1-2A | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-2B | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-5 | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9A | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9B | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-12 | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20A | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20B | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-23 | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27A | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27B | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-30 | PSIG | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

18. **COMPARE** the three steam line pressure indicators for each steam line, located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 60 psig.

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Shutdown Banks | 4.1.3.1.1<br>4.1.3.2<br>4.1.3.5.b | A | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | B | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | C | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | D | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand.
    **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps. **RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable
    **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SG Water Level Channel Deviation | 4.3.1.1.1.A.14.A<br>4.3.1.1.1.A.14.B<br>4.3.2.1.1.A.5.a<br>4.3.2.1.1.A.6.c.1<br>4.3.2.1.1.A.6.c.2 | 1,2,3 | 17 | OPERABLE | #1 LI-3-42 | % | | | |
| | | | | OPERABLE | #1 LI-3-39 | % | | | |
| | | | | OPERABLE | #1 LI-3-38 | % | | | |
| | | | | OPERABLE | #2 LI-3-55 | % | | | |
| | | | | OPERABLE | #2 LI-3-52 | % | | | |
| | | | | OPERABLE | #2 LI-3-51 | % | | | |
| | | | | OPERABLE | #3 LI-3-97 | % | | | |
| | | | | OPERABLE | #3 LI-3-94 | % | | | |
| | | | | OPERABLE | #3 LI-3-93 | % | | | |
| | | | | OPERABLE | #4 LI-3-110 | % | | | |
| | | | | OPERABLE | #4 LI-3-107 | % | | | |
| | | | | OPERABLE | #4 LI-3-106 | % | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

17. **COMPARE** the three Steam Generator Level indicators for each S/G located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 6%.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Steam Line Pressure | 4.3.2.1.1.A.1.f 4.3.2.1.1.A.4.d 4.3.2.1.1.A.4.e 4.3.2.1.1.A.6.d | 1,2,3 | 18 | OPERABLE | #1 PI-1-2A | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-2B | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-5 | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9A | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9B | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-12 | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20A | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20B | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-23 | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27A | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27B | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-30 | PSIG | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

18. **COMPARE** the three steam line pressure indicators for each steam line, located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 60 psig.

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Shutdown Banks | 4.1.3.1.1 4.1.3.2 4.1.3.5.b | A | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | B | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | C | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | D | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand.
**COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps. **RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable
**VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Rod Banks | 4.1.3.1.1 4.1.3.2 4.1.3.6 4.1.1.1.1.b | A | 1,2 | 19,21,22 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | B | 1,2 | 19,21,22 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22, | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

**APPENDIX A**
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| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Rod Banks | 4.1.3.1.1 4.1.3.2 4.1.3.6 4.1.1.1.1.b | C | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | D | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | | | | | | | | | |

**Within ± 12 steps of step counter.

UO/RO Review Initials

NOTES:

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Att. 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2)
    **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)
23. **IF** manual rod motion occurs during SI performance, **THEN** allowing one-half hour for thermal soak may provide a more accurate RPI reading.
66. **MAINTAIN** rods above insertion limits as shown by COLR Figure 1. IF LEFM calorimetric power indication (U2118) is inoperable, then rod insertion limit lines in COLR must be raised by 3 steps withdrawn until LEFM is restored.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| ΔI | N/A | > 50% RTP | 24,25 | VARIABLE | 1-XI-92-5005 | % | | | |
| | | | | | 1-XI-92-5006 | % | | | |
| | | | | | 1-XI-92-5007 | % | | | |
| | | | | | 1-XI-92-5008 | % | | | |
| | | | | | | UO/RO Review Initials | | | |

## NOTES

24. Administrative Limit.

25. **REFER** to ΔI curve in TI-28 or COLR if plant computer is NOT available. IF LEFM calorimetric power indication (U2118) is inoperable, then AFD limit lines in TI-28 and COLR must be made more restrictive by 1% until LEFM is restored.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Nuclear Instrumentation | 4.3.1.1.1.A.2 4.3.1.1.1.A.5 | 1,2 | 26 | OPERABLE | N-41 | % | | | |
| | | | | | N-42 | % | | | |
| | | | | | N-43 | % | | | |
| | | | | | N-44 | % | | | |
| | | 1,2 | 27 | OPERABLE | N-35 | % | | | |
| | | | | | N-36 | % | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES**

26. **COMPARE** the four power range channels to each other. This constitutes an adequate "channel check" and acceptable deviation between channels is equal to or less than 3.5%.

27. **COMPARE** the two intermediate range channels located on panel 1-M-4. Readings on both channels will provide evidence that the instruments are operable. Agreement between the readings provides additional verification of channel operability. Control Board indicators are verified operable if they are reading within 0.75 decades of each other. Use the following examples as a guide to determine the .75 decade deviation. The following equation will convert the IRM Indicated % RTP to a voltage value which can be used to determine the IRM indication difference and to determine if those readings are within the .75 decades acceptance limit. The IRM 10 decade scale is equal to 10 volts, thus each decade is equivalent to 1 volt.

| | | | | | |
|---|---|---|---|---|---|
| Example #1 | LOG (% IRM RTP) = Voltage | N-35 is indicating 30% RTP | Log (% IRM RTP) = Voltage Log (30%) = Voltage 1.4771 = 1.4771 volts | Difference = 1.6021 - 1.4771 = **0.125** | Difference between N-35 and N-36 is **0.125** which is within the .75 decade acceptance range. |
| | | N-36 is indicating 40% RTP | Log (% IRM RTP) = Voltage Log (40%) = Voltage 1.6021 = 1.6021 volts | | |
| Example #2 | LOG (% IRM RTP) = Voltage | N-35 is indicating 15% RTP | Log (% IRM RTP) = Voltage Log (15%) = Voltage 1.176 = 1.176 volts | Difference = 1.929 - 1.176 = **0.753** | Difference between N-35 and N-36 is **0.753** which is outside the .75 decade acceptance range. Notify the UO and SRO of the deviation. |
| | | N-36 is indicating 85% RTP | Log (% IRM RTP) = Voltage Log (85%) = Voltage 1.929 = 1.929 volts | | |

| | Surveillance Ref. | Modes | Notes | Ts Limits | Instrument No. | Units | 0630-0830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Pressurizer Level | 4.3.1.1.1.A.11<br>4.4.4.1 | 1,2,3 | 28 | ≤ 92 %<br>Operable | 1-LI-68-339A | % | | | |
| | | | | | 1-LI-68-335A | % | | | |
| | | | | | 1-LI-68-320 | % | | | |
| Pressurizer Pressure | 4.3.1.1.1.A.9<br>4.3.1.1.1.A.10<br>4.3.2.1.1.A.1.d<br>4.3.2.1.1.A.6.d<br>4.2.5.1 | 1,2,3 | 29 | ≥ 2205 psig<br>Operable | 1-PI-68-340A | psig | | | |
| | | | | | 1-PI-68-334 | psig | | | |
| | | | | | 1-PI-68-323 | psig | | | |
| | | | | | 1-PI-68-322 | psig | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

28. **COMPARE** the three pressurizer level indicating channels on panel 1-M-4; operability is verified by an acceptable deviation between channels of equal to or less than 5%. The channel check requirement of Tech Spec Surveillance Requirement 4.3.1.1.1.A.11 is not required in mode 3.

29. **COMPARE** the four pressurizer pressure indicating channels located on panel 1-M-5; operability is verified by an acceptable deviation between channels of equal to or less than 35 psi. This channel check is required under the following conditions for DNB considerations; with the unit in mode 1 the "DNB parameter pressurizer pressure" must be equal to or greater than 2220 psia except during a thermal power ramp in excess of 5 percent/min; a thermal power step in excess of 10 percent; physics testing; or performance of 0-SI-NUC-000-139.0 and 0-SI-NUC-000-007.0. N/A if PRZ pressure is less than 1700 psig in Mode 3 (Indicator scale starts at 1700 psig).

| | Surveillance Ref. | Mode | Notes | Ts Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| ΔT | 4.3.1.1.1.A.14.C<br>4.3.2.1.1.A.6.c.3 | 1,2<br>1,2,3 | 30 | Operable | 1-TI-68-2D | % | | | |
| | | | | | 1-TI-68-25D | % | | | |
| | | | | | 1-TI-68-44D | % | | | |
| | | | | | 1-TI-68-67D | % | | | |
| OverPower ΔT | 4.3.1.1.1.A.8 | 1,2 | 31 | Operable | 1-TI-68-2A | % | | | |
| | | | | | 1-TI-68-25A | % | | | |
| | | | | | 1-TI-68-44A | % | | | |
| | | | | | 1-TI-68-67A | % | | | |
| OverTemperature ΔT | 4.3.1.1.1.A.7 | 1,2 | 32 | Operable | 1-TI-68-2B | % | | | |
| | | | | | 1-TI-68-25B | % | | | |
| | | | | | 1-TI-68-44B | % | | | |
| | | | | | 1-TI-68-67B | % | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

30. **COMPARE** the four ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 5%. **WHEN** RCS temperature is below 530°F or when an RCP is out of service the channel check criteria is equal to or less than 5% of zero for the affected loop.
31. **COMPARE** the four OverPower ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 5%.
32. **COMPARE** the four Over Temperature ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 10%. The 10% limit encompasses the affects of rapidly changing loop hot leg temperatures as a result of the upper plenum anomaly and at present, is applicable to Unit 1 only.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Coolant Flows | 4.2.5.1<br>4.3.1.1.1.A.12<br>4.3.1.1.1.A.13 | 1 | 1,2 | ≥ 100% | ICS computer printout OR PERFORM Appendix K (backup method) | (√) | | | |
| Reactor Coolant Pumps in Operation and Coolant Flow | 4.4.1.1 | 1,2 | 35 | All four RCPs running and flow in all four loops | RCP motor indicator lights, amp meters, frequency meters and flow indicators. | (√) | | | |
| DNB Parameters Tavg | 4.2.5.1 | 1 | 36 | < 583°F Operable | 1-TI-68-2E | °F | | | |
| | | | | | 1-TI-68-25E | °F | | | |
| | | | | | 1-TI-68-44E | °F | | | |
| | | | | | 1-TI-68-67E | °F | | | |
| RWST Temperature Indication | TR 4.1.2.5.b.3,<br>TR 4.1.2.6.b.3,<br>4.5.5.b | All | 37 | ≤ 105°F<br>≥ 60°F | 1-TI-63-131 | °F | | | |
| | | | | | 1-TI-63-132 | °F | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

1. **DETERMINE** operability of the Reactor coolant loop flows as follows:
   A. **OBTAIN** printout of the RCS loop flows from the ICS computer Group display Menu. **IF any** data is unavailable on printout, **THEN PERFORM** Appendix K.
   B. **WHEN** printout is complete, **THEN VERIFY** maximum channel deviation is ≤ 6% and that the total RCS flow (10 min. average) is ≥ 100% and ≤ 115%. **IF** any channel flow is > 115%, **THEN PERFORM** APP. K and **NOTIFY** US to evaluate LCO actions.
   C. **ATTACH** printout from ICS computer to this surveillance package.
2. **IF** the average RCS flow is < 100%, **THEN NOTIFY** Unit SRO to **EVALUATE** LCO 3.2.5 (Figure 3.2-1) for power versus RCS flow rate. **IF** average RCS flow is in the *Unacceptable Operation Region*, **THEN** Unit SRO is to evaluate possible power reduction until the flow rate is in the *Acceptable Operation Region*. **RECORD** determination in the REMARKS column.

35. **VERIFY** flow in all four reactor coolant loops, **THEN NOTIFY** SRO of any loop not in operation immediately.
36. **COMPARE** the four average temperature (Tavg) indicators on 1-M-5 to each other. Acceptable deviation between channels is equal to or less than 5°F.
37. **COMPARE** the two Refueling Water Storage Tank (RWST) temperature indicators on panel 1-M-6 to each other. Acceptable deviation between channels is equal to or less than 6°F.

| | Surveillance Ref. | | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| ECCS Subsystem | 4.5.2.a | | 1,2,3 | 38 | Valve Open | 1-HS-63-1A | (√) | | | |
| | | | | 68 | | 1-HS-63-22A | (√) | | | |
| RWST Level and CNTMT Level for Auto Swapover Cold Leg during SI | 4.3.2.1.1.A.9.a | RWST | 1,2,3,4 | 39 | Operable | 1-LI-63-50 | % | | | |
| | | | | | | 1-LI-63-51 | % | | | |
| | | | | | | 1-LI-63-52 | % | | | |
| | | | | | | 1-LI-63-53 | % | | | |
| | | CTNMT | 1,2,3,4 | 40 | Operable | 1-LI-63-176 | % | | | |
| | | | | | | 1-LI-63-177 | % | | | |
| | | | | | | 1-LI-63-178 | % | | | |
| | | | | | | 1-LI-63-179 | % | | | |
| Cold Leg Accumulator Isolation Valves | 4.5.1.1.1.a.2 | | 1,2,3 | 41 | Valves Fully Open | 1-HS-63-118A | (√) | | | |
| | | | | | | 1-HS-63-98A | (√) | | | |
| | | | | | | 1-HS-63-80A | (√) | | | |
| | | | | | | 1-HS-63-67A | (√) | | | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

38. **VERIFY** by use of the indicating lights on panel 1-M-6 that these valves are open. Verification of power disconnected will be accomplished later in this Instruction.
39. **COMPARE** the four RWST level indicators to each other. Acceptable deviation between channels is equal to or less than 5%.
40. **COMPARE** the four containment sump level indicators to each other. Acceptable deviation between channels is equal to or less than 6%. With no water in the sump, no indicator should read more than 4%.
41. **WHEN** pressurizer pressure is above 1000 psig, **THEN VERIFY** each of the four cold leg accumulator isolation valves on panel 1-M-6 are open by observation of the position indicating lights.
68. When entering Mode 3 from Mode 4, FCV-63-22 may be closed to support transition from LCO 3.4.12 for up to 4 hrs. or until the temperature of all RCS cold legs exceeds 375°F (whichever comes first).

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1 4.5.1.1.1.b | #1 | 42 | 1,2,3 | > 7615 gal < 7955 gal | 1-LIS-63-129 | gal. | ____ - ____ Present Level Level After Last Fill = ____ Level Change | ____ - ____ Present Level Level After Last Fill = ____ Level Change | |
| | | | Is level increase +75 gals (≥ 1%) on the digital indication and from a source other than the RWST? If yes, **NOTIFY** Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal < 7955 gal | 1-LIS-63-119 | gal. | ____ - ____ Present Level Level After Last Fill = ____ Level Change | ____ - ____ Present Level Level After Last Fill = ____ Level Change | |
| | | | Is level increase +75 gals (≥ 1%) on the digital indication and from a source other than the RWST? If yes, **NOTIFY** Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons? If yes, see Note 43. | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

42. In the 0630-1830 Shift column, log "Level After Last Fill" entry from the previous day's Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #1 | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-128 | psig | | | |
| | | | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-126 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #2 | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-109 | gal. | ____ - ____<br>Present Level Level After Last Fill<br>= ____<br>Level Change | ____ - ____<br>Present Level Level After Last Fill<br>= ____<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication and from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-99 | gal. | ____ - ____<br>Present Level Level After Last Fill<br>= ____<br>Level Change | ____ - ____<br>Present Level Level After Last Fill<br>= ____<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication and from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons?<br>If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | UO/RO Review Initials | | |

**NOTES:**

42. In the 0630-1830 Shift column, log “Level After Last Fill” entry from the previous day’s Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, **DETERMINE** which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #2 | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-108 | psig | | | |
| | | | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-106 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

UO/RO Review Initials

## NOTES:

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

**APPENDIX A**
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| | Surveillance Ref | Acc | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #3 | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-89 | gal. | Present Level - Level After Last Fill<br>= Level Change | Present Level - Level After Last Fill<br>= Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-81 | gal. | Present Level - Level After Last Fill<br>= Level Change | Present Level - Level After Last Fill<br>= Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons?<br>If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

42. In the 0630-1830 Shift column, log "Level After Last Fill" entry from the previous day's Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #3 | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-88 | psig | | | |
| | | | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-86 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #4 | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-82 | gal. | ___ - ___<br>Present Level  Level After Last Fill<br>= ___<br>Level Change | ___ - ___<br>Present Level  Level After Last Fill<br>= ___<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-60 | gal. | ___ - ___<br>Present Level  Level After Last Fill<br>= ___<br>Level Change | ___ - ___<br>Present Level  Level After Last Fill<br>= ___<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |
| | | | | | | | | UO/RO Review Initials | | |

**NOTES:**

42. In the 0630-1830 Shift column, log “Level After Last Fill” entry from the previous day’s Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

**APPENDIX A**


| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #4 | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-62 | psig | | | |
| | | | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-61 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Containment Pressure HI and HI-HI for SI, ESF, and Main Steam Isolation | 4.3.2.1.1.A.1.c 4.3.2.1.1.A.2.c 4.3.2.1.1.A.3.b.3 4.3.2.1.1.A.4.c 4.3.2.1.1.A.6.c.4 4.3.2.1.1.A.6.d 4.3.1.1.1.A.14.D | 1,2,3,4 | 44 | Verify operable by having ≤ 0.8 psig (5%) deviation between Channels. | 1-PDI-30-45 | PSIG | | | |
| | | | | | 1-PDI-30-44 | PSIG | | | |
| | | | | | 1-PDI-30-43 | PSIG | | | |
| | | | | | 1-PDI-30-42 | PSIG | | | |
| Primary Containment Internal Pressure | 4.6.1.4 | 1,2,3,4 | 45 | ≥ -0.1 ≤ 0.3 psig | 1-PDI-30-133 or Plant Compt. Pts. 1P1000A, 1P1001A, 1P1002A, 1P1003A | PSIG | | | |
| Shield Bldg, Annulus Vacuum | Not Tech Spec SR | 1,2,3,4 | 46 | Equal to or more negative than -5" $H_2O$ | 1-PDI-30-126 | Inches $H_2O$ | | | |
| | | | | | 1-PDI-30-127 | Inches $H_2O$ | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

44. **COMPARE** the four containment pressure indicators to each other. Acceptable deviation between channels is equal to or less than 0.8 psig (5 percent).
45. **IF** pressure indicator 1-PDI-30-133 is inoperable, **THEN RECORD** the containment pressure obtained from one of the following Plant computer points: 1P1000A, 1P1001A, 1P1002A or 1P1003A.
46. **VERIFY** the annulus vacuum is within the specified limits once per shift. Twenty four hours is provided to restore annulus vacuum to within its limits when surveillance testing or maintenance is the cause for the out-of-limit condition. **IF** time limit will be exceeded**, THEN** write a PER and obtain engineering evaluation. This requirement is not applicable if the out-of-limit condition is created by personnel entrance or exit from the annulus, if venting containment to maintain pressure limits, or if the out-of-limits condition does not exist in excess of 30 minutes. **ALLOW** 30 minutes after the above conditions no longer exists prior to taking readings.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Trip System Instrumentation | 4.3.1.1.1.A.6 | 2,3,4 | 47 | Operable | N31 | CPS | | | |
| | | | | | N32 | CPS | | | |
| Reactor Coolant Loop Operability S/G's Operable | 4.4.1.2.2 | 3 | 48 | Narrow Range Level ≥ 21% | SG #1 | % | | | |
| | | | | | SG #2 | % | | | |
| | | | | | SG #3 | % | | | |
| | | | | | SG #4 | % | | | |
| Required Reactor Coolant Loops Operating | 4.4.1.2.3 | 3 | 49,50 | With Reactor Trip Breakers Closed, 2 of 4 RCS Loops flow ≥ 90% each, with Rx Trip Breakers Open 1 of 4 RCS Loops Flow ≥ 90% | Loop #1 | (√) Operable Loops Only | | | |
| | | | | | Loop #2 | | | | |
| | | | | | Loop #3 | | | | |
| | | | | | Loop #4 | | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

47. **COMPARE** the two source range neutron flux indicators to each other, **THEN VERIFY** indicators operable and indicating. This channel check is performed to verify operability of the instrumentation associated with the low power source range trip and is only applicable at levels below the P-6 interlock setpoint.
48. **VERIFY** operability of two steam generators with the reactor trip breakers closed, or one S/G with the reactor trip breakers open by having an indicated narrow range level of greater than or equal to 21%. The operable S/Gs must be on the same operating loops listed below under Surveillance Reference SR 4.4.1.2.3.
49. **VERIFY** at least two reactor coolant loops are operable. **IF** the reactor trip breakers are closed at least two RCPs must be circulating coolant with a flow of at least 90% each, with the reactor trip breakers open at least one RCP must be circulating coolant with a flow of at least 90%. The S/Gs on the loops with operating RCPs must be the required operable loops under Surveillance Reference SR 4.4.1.2.2 listed above.
50. All RCPs may be deenergized for up to one hour provided that:
    A. No operations are permitted that would introduce water with boron conc. less than that required for shutdown margin (LCO 3.1.1.1) into the RCS, and
    B. Core outlet temperature is maintained at least 10°F below saturation temperature.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Coolant Loop Operability | 4.4.1.3.2 | 4 | 51 | Wide Range Level ≥ 10% | SG #1 | % | | | |
| | | | | | SG #2 | % | | | |
| | | | | | SG #3 | % | | | |
| | | | | | SG #4 | % | | | |
| Two Coolant Loops Operable and one in operation | 4.4.1.3.3 | 4 | 52,53 | One or more RCPs running with loop flow or one RHR pump running with flow | RCS Loop 1 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 2 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 3 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 4 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RHR Train "A" | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RHR Train "B" | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| RHR Suction from RWST | 4.5.3 | 4 | | Operable | 1-FCV-63-1 | (√) | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

51. **VERIFY** at least two steam generators operable by having an indicated level of equal to or greater than 10% on the wide range indication on panel 1-M-4. The required operable S/G's must be on the associated operating loops listed under surveillance reference SR 4.4.1.3.3 listed below.
52. **VERIFY** at least two RCS loops and/or two RHR loops operable, with at least one RCP running with flow or one RHR loop operating with flow.
53. All reactor coolant pumps and residual heat removal pumps may be deenergized for up to one hour provided that:
    A. No operations are permitted that would introduce water with boron conc. less than that required for shutdown margin (LCO 3.1.1.1) into the RCS, and
    B. Core outlet temperature is maintained at least 10°F below saturation temperature.

**APPENDIX A**


| | SR. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Ultimate Heat Sink | 4.7.5.1 | 1,2,3,4 | 54, 55, 56, 57, 58, 70 Perform App. G if ≥ 81°F with ≥ 670 ft OR ≥ 82.5°F with > 680 ft | ≤83°F with Forebay water level ≥ 670' **OR** ≤ 84.5°F with Forebay water level > 680' | 1-TW-67-426/1T2006A ☐ 2-TW-67-425/2T2007A ☐ OR Appendix G ☐ OR 1-TW-67-425 (el 669') ☐ 2-TW-67-426 (ERCW Pipe Tunnel) ☐ | °F | | N/A | |
| | | | | | **M&TE Instrument No. Used** | | | | |
| | | | | | 0-LI-27-133/2-M-15 | ft | | N/A | |
| | | 1,2,3,4 | 54, 59 | | ERCW Strainer Inoperable Yes ☐ No ☐ | °F | | N/A | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES**:

54. **IF** Unit 2 is in mode 1, 2, 3, or 4, **THEN OBTAIN** ultimate heat sink data from the Unit 2 "Shift Log" and ensure all necessary actions are initiated via the Unit 2 "Shift Log". Otherwise, **OBTAIN** data from Unit 1 and take all necessary actions via the Unit 1 "Shift Log."

55 **CHECK** box(es) for method used to determine ERCW supply temp. If ICS points are unavailable, calculate manual instantaneous average using App. G

56. **IF** thermal probe is used, **THEN RECORD** MT&E instrument number.

57. **IF** ERCW temperature is ≥ 81°F with water level ≥ 670 ft but ≤ 680 ft **OR IF** ERCW temperature is ≥ 82.5°F with water level > 680 ft., **THEN NOTIFY** both unit SROs **AND PERFORM** Appendix G to obtain the instantaneous average.

58. **IF** level indicator 0-LI-27-133 is inoperable, ICS Computer Points 0Y2200A or 0Y2201A can be used to determine water level.

59. **IF** ERCW Strainer (at ERCW Pumping Station) is inoperable, instantaneous average ERCW temperature must be verified ≤ 73°F. **IF** temperature is > 73°F with strainer inoperable, **THEN NOTIFY** the SM to evaluate the applicability of LCO 3.7.4. N/A if all Strainers operable. **[C.5]**

70 **IF** temperature is > 81°F and 0-FCV-67-205, 1A ERCW supply Header to Station Air Compressors, is OPEN, **THEN** evaluate LCO 3.7.15 for operability of A-A MCR Chiller and TR 3.7.14 for EBR Chiller A. (PER 117954 & FE 41792 R1)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Ice Bed Temperatures | 4.6.5.1.a T.R. 4.6.5.2 | 1,2,3,4 | **[C.2][C.3]** 60,61,62 | ≤ 27°F | ICS computer printout OR Appendix F OR Appendix I (backup) Performed | (√) | ☐ | ☐ | |
| Ice Bed Door Position Monitoring System | 4.6.5.3.1.a T.R. 4.6.5.4.a | 1,2,3,4 | 63,65 | Operable | XI-61-187/1-M-10 | (√) | ☐ | ☐ | |
| Ice Bed Door Position | 4.6.5.3.1a T.R 4.6.5.4.a | 1,2,3,4 | 64,65 | Closed | XI-61-187/1-M-10 | (√) | ☐ | ☐ | |
| | | | | | | UO/RO Review Initials | | | |

60. **DETERMINE** operability of the ice condenser from the temperature standpoint as follows:
    A. **OBTAIN** printout of the ice condenser temperatures.
    B. **WHEN** printout is complete, **THEN OBTAIN** MAX and AVG ice bed temp. from printout **AND MARK** yes or no block. **IF** MAX or AVG temp. is unavailable on printout, **THEN PERFORM** App. I.
    C. **REVIEW** data on printout to determine operability of RTDs. RTD is considered operable if reading is ≤ 27°F and no inop indication is present beside data. **IF** an RTD is determined to be inoperable, **THEN PLACE** a CTL- next to the applicable TE number. (no data entry is required next to the TE number if the TE is operable). **MARK** yes or no to verify there are at least two operable RTDs at each of the three basic elevations for each one third of the ice condenser.
    D. Attach data printout from 1-TR-61-138 P001 to App. F OR attach data printout from ICS computer to the package.
    E. **IF** a "No" response is recorded on App. F., **THEN NOTIFY** the Unit SRO.
    F. **IF** the average ice bed temperature is not in the optimum range of 18°F to 20°F, **THEN NOTIFY** the Unit SRO to ensure adequate chiller alignment for maintaining optimum average temperature. The ice condenser temperatures may be operated outside the optimum range in accordance with engineering recommendations (see Precautions & limitations "C").**[C.2]**
61. **VERIFY** operability of the ice bed temperature monitoring system by checking power to 1-TR-61-138 P001 is **ON**.
62. **ENTER** any inoperable channels in the **REMARKS** section **AND NOTIFY** the Instrument Department to initiate 1-SI-IXX-061-138.0 to take local readings if 1-TR-61-138 P001 becomes inoperable. **[C.3]**
63. **VERIFY** the ice bed door position monitoring system XI-61-187 on panel 1-M-10 is operable as follows:
    A. Power to panel is on.
    B. All lamps for door closed position are lit.
64. **VERIFY** the door position for each door is closed as indicated on XI-61-187.
65. If the ice bed door position monitoring system is inoperable or any ice condenser doors are open and cannot be closed, **THEN PERFORM** App. F or I once each 4 hours to comply with action for LCO 3.6.5.3 and/or T.R 3.6.5.4.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Discharge Valves | 4.4.12.4 | 4 | 66 | CLOSED | 1-FCV-63-118<br>1-FCV-63-98<br>1-FCV-63-80<br>1-FCV-63-67 | (√) | | | |
| 1A-A CCP or 1B-B CCP | 4.4.12.3 | 4 | 67 | Incapable of Injection into the RCS | Enter option number | | | | |
| 1A-A SI Pump and 1B-B SI Pump | 4.4.12.2 | 4 | 68 | Incapable of Injection into the RCS | Enter option number | | | | |
| | | | | | | UO/RO Review Initials | | | |

66. Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. If MCR valve position indication not available, then verify position using Hold Order or verify position locally or comply with LCO 3.4.12 action b.

67. CCP configuration options:

Option 1: 1A-A or 1B-B CCP breaker racked out and tagged under clearance.

Option 2: 1-VLV-62-527 and 526 (1A-A CCP discharge vlvs.) locked closed and tagged under a clearance.

**OR**

1-VLV-62-533 and 534 (1B-B CCP discharge vlvs.) locked closed and tagged under a clearance.

68. SI Pump configuration options see Appendix L.

**APPENDIX B**
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## SHIFT LOG- MODES 1-4 (OUTSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Room Isolation Rad. Monitors | 4.3.3.1.A.2.c | All * | 4,6 | Operable | RM-90-125 | Mechanical Equipment Room Elevation 732.0 | CPM | | | |
| | | | 4,6 | | RM-90-126 | | CPM | | | |
| Containment Purge Air Exh. Activity | 4.3.3.1.A.2.a 4.3.2.1.1.A.3.c.3 | 1-4 | 6,7 | Operable | RM-90-130A/ 1R1027A | Penet. Room el 690 west wall | CPM | | | |
| | | | | | RM-90-131A/ 1R1028A | | CPM | | | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

4. **OBSERVE** RM-90-125 and RM-90-126 in the mechanical equipment room to verify the monitors on and reading at least background with no alarms present. **COMPARE** RM-90-125 and RM-90-126 count rates. Any monitor that is questionable may be blocked and source checked in accordance with 0-SO-90-2 to aid in determining operability.
6. **VERIFY** monitor is in service and instrument malfunction alarm is clear. **LIST** all inoperable monitors on Attachment 1.
7. **VERIFY** RM-90-130A and RM-90-131A operable by power to the monitors "on" and monitor reading at least background with no alarms present. **COMPARE** radiation levels to the opposite train and to the levels from previous shift using ICS computer or local ratemeter. Any monitor that is questionable may be blocked and source checked in accordance with 1-SO-90-2 to aid in determining operability.

* and during movement of irradiated fuel assemblies.

## CHRONOLOGICAL TEST LOG (CTL)
Page 1 of 1

**CHRONOLOGICAL TEST LOG (CTL)**

Data Package Page ______ of ______

Procedure No. ________________________________ Rev. ________

| Date[3]/Time[1] | Narrative | Initials |
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Log entries have been reviewed and items are appropriately addressed.

________________________________ Test Director[2]    ________________ Date

[1]Use 24 hour clock for each entry.
[2]Test Director signature only required on last sheet of CTL. The other review blanks can be marked N/A.
[3]The Date column needs to be filled in for the first entry on the CTL and for the first entry after each date change.

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

# 1-SI-OPS-000-002.0

# SHIFT LOG

Revision 88

**QUALITY RELATED**

PREPARED/PROOFREAD BY: H J RICKS

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: W. T. LEARY

EFFECTIVE DATE: 08/03/07

LEVEL OF USE: **CONTINUOUS**

REVISION DESCRIPTION: Revised the Ultimate Heat Sink ERCW average temperature calculations and references to stipulate an instantaneous average of various temperature points instead of a time average. The NRC Inspection Manual part 9900 section 3.7.5 Ultimate Heat Sink states that time average is not acceptable for demonstrating compliance with the TS limits. The 'average' is based on the readings of various individual points taken at the same time.

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## 1.0 INTRODUCTION

### 1.1 Purpose

This Instruction provides the detailed steps necessary to satisfy the shiftly surveillance requirements associated with various instruments.

### 1.2 Scope

1.2.1 This assessment will include where possible the following indications and be documented on logs to satisfy the Surveillance Requirements (SR), Technical Requirements (TR), and Offsite Dose Calculation Manual (ODCM) Requirements.

A. Comparison of the channel indication with other indications derived from independent instrument channels measuring the same parameter.

B. Where only one instrument is utilized to measure a variable, the assessment will be considered satisfactory and the instrument operable if the instrument reading is responsive to intentional parameter changes, or is within specified limits. This check also ensures that the Instrument is reading on scale and has not failed off scale. **[C.4]**

### 1.2.2 Surveillance Requirements Fulfilled

A. This Surveillance Instruction fulfills the following Surveillance Requirements:

| | | | |
|---|---|---|---|
| 4.1.1.1.1.b | 4.3.2.1.1.A.1.c | 4.4.1.1 | 4.6.1.4 |
| 4.1.3.1.1 | 4.3.2.1.1.A.1.d | 4.4.1.2.2 | 4.6.5.1.a |
| 4.1.3.2 | 4.3.2.1.1.A.1.f | 4.4.1.2.3 | 4.6.5.3.1.a |
| 4.1.3.5.b | 4.3.2.1.1.A.2.c | 4.4.1.3.2 | 4.7.1.3.1 |
| 4.1.3.6 | 4.3.2.1.1.A.3.b.3 | 4.4.1.3.3 | |
| 4.2.5.1 | 4.3.2.1.1.A.3.c.3 | 4.4.1.4 | 4.7.5.1 |
| 4.3.1.1.1.A.2 | 4.3.2.1.1.A.4.c | 4.4.4.1 | |
| 4.3.1.1.1.A.5 | 4.3.2.1.1.A.4.d | 4.4.6.1.a | |
| 4.3.1.1.1.A.6 | 4.3.2.1.1.A.4.e | | |
| 4.3.1.1.1.A.7 | 4.3.2.1.1.A.5.a | 4.4.12.2 (partial) | |
| 4.3.1.1.1.A.8 | 4.3.2.1.1.A.6.c.1 | 4.4.12.3 (partial) | |
| 4.3.1.1.1.A.9 | 4.3.2.1.1.A.6.c.2 | 4.4.12.4 | |
| 4.3.1.1.1.A.10 | 4.3.2.1.1.A.6.c.3 | 4.4.12.5.a | |
| 4.3.1.1.1.A.11 | 4.3.2.1.1.A.6.c.4 | | |
| 4.3.1.1.1.A.12 | 4.3.2.1.1.A.6.d | 4.5.1.1.1.a.1 | |
| 4.3.1.1.1.A.13 | 4.3.2.1.1.A.9.a | 4.5.1.1.1.a.2 | |
| 4.3.1.1.1.A.14.A | 4.3.3.1.A.1.a | 4.5.1.1.1.b | |
| 4.3.1.1.1.A.14.B | 4.3.3.1.A.2.a | (partial) | |
| 4.3.1.1.1.A.14.C | 4.3.3.1.A.2.b.i | 4.5.2.a | |
| 4.3.1.1.1.A.14.D | 4.3.3.1.A.2.b.ii | 4.5.3 | |
| | 4.3.3.1.A.2.c | 4.5.5.b | |

B. This Surveillance Instruction fulfills the following LCO Requirements:

3.1.3.2.c.1
3.6.5.3
3.6.5.4

### 1.2.3 Technical Requirements Manual (TRM) Requirements Fulfilled

This Surveillance Instruction fulfills the following Technical Requirements:

| | |
|---|---|
| 4.1.2.5.b.3 | 4.7.2 (partial) |
| 4.1.2.6.b.3 | |
| 4.6.5.2 | |
| 4.6.5.4.a | |
| 4.6.4.1 | |

### 1.2.4 Offsite Dose Calculation Manual (ODCM) Requirements Fulfilled

This Surveillance Instruction fulfills the following ODCM Requirements:

2.1.1.A.4.a

### 1.2.5 Modes

A. Applicable Modes - Log sheets will reflect the applicable mode for each SR on an individual basis.

B. Performance Modes - all.

### 1.3 Frequency/Conditions

This Instruction combines multiple Surveillance Requirements listed in the Technical Specifications (TS) and Technical Requirements Manual (TRM) for data to be taken on a shift basis. Log sheets will cover a period of 24 hours, consisting of two 12 hour shifts. Shift logs will be performed between 0800 and 1000 for the day shift. Night shift performance shall be between 2000 and 2200.

## 2.0 REFERENCES

### 2.1 Performance References

None.

### 2.2 Developmental References

A. SQN Technical Specifications:

| | | |
|---|---|---|
| 3/4.1.1 | 3/4.4.4 | 3/4.6.4 |
| 3/4.1.3 | 3/4.4.6 | 3/4.6.5 |
| 3/4.2.5 | 3/4.4.12 | 3/4.7.1 |
| 3/4.3.1 | 3/4.5.1 | 3/4.7.5 |
| 3/4.3.2 | 3/4.5.2 | 3/4.7.7 |
| 3/4.3.3 | 3/4.5.3 | |
| 3/4.4.1 | 3/4.6.1 | |

B. Control Room Design Review. DCN 1636 thru 1641

C. SI-2, *Shift Log*

D. NCO 860410 670 (RIMS Letter L44 870714 800) Sequoyah Nuclear Plant (SQN) Audit of Detailed Control Room Design Review (DCRDR) Program

E. NCO 870361 065 (RIMS Letter L44 871229 810) Response to NRC Inspection Report 50-327/87-48 and 50-328/87-48

F. NCO 880410 010 (RIMS Letter S53 880409 831) - Reportable Occurrence Report SQRO-50-328/8803 Revision 1

G. RIMS Letter S10 890911 181 - NRC Inspection Report Nos. 50-327/89-18 and 50-328/89-18.

H. Offsite Dose Calculation Manual (ODCM)

I. Core Operating Limits Report (COLR)

J. Technical Requirements Manual (TRM)

K. NRC Inspection Manual Part 9900 - Section 3.7.5 Ultimate Heat Sink

Date__________

## 3.0 PRECAUTIONS AND LIMITATIONS

A. During all operations conducted outside the main control room, failure to observe all posted radiation control requirements may lead to unnecessary radiation absorbed doses.

B. Each instrument reading should be logged as accurately as possible, and checked to be within the Tech. Spec. , Technical Requirement Manual, and/or ODCM limits. This check also ensures that the instrument is reading on scale and has not failed off scale. **[C.4]**

C. The ice condenser may be operated at a temperature outside the optimum range, provided technical specifications limits are maintained, in accordance with Engineering recommendations to support system maintenance or planned outages.

## 4.0 PREREQUISITE ACTIONS

### 4.1 Preliminary Actions

[1] **ENSURE** instruction to be used is a copy of the effective version and data package cover sheet is attached. ______________

### 4.2 Measuring and Test Equipment, Parts and Supplies

None.

### 4.3 Field Preparations

None.

### 4.4 Approvals and Notifications

None.

## 5.0 ACCEPTANCE CRITERIA

A. Specific quantitative and/or qualitative requirements that are intended to be verified by this Instruction are noted in the instruction steps where the verifying actions are performed and documented.

B. If specific acceptance criteria stated in the instruction steps are not met, notify the SRO as soon as practical after observation of the noncompliance.

Date__________

## 6.0 PERFORMANCE

**NOTE 1** "Inside MCR" appendices shall be completed by Unit Operator/RO; "Outside MCR" appendices are normally completed by Assistant Unit Operators, however the Unit Operator/RO is responsible for completion of all appendices regardless of who takes the readings. The individual recording the data shall ensure all NOTES and ACCEPTANCE CRITERIA are met for that data.

**NOTE 2** Performance instructions are provided by the notes listed on the appendix under the column heading "notes." Instructional notes associated with each page of the appendix are on associated page.

**NOTE 3** Steps may be performed out of sequence.

**[1]** **COMPLETE** applicable appendices as follows (to prevent exceeding the 25% extension time).

| SHIFT | COMPLETE LOG BETWEEN | √ |
|---|---|---|
| Day | 0800 and 1000 hours | ☐ |
| Night | 2000 and 2200 hours | ☐ |

**NOTE** Applicable appendices should be completed for present and anticipated operating mode. UO/RO initials in the lower block of a column signify that all data listed in the column is complete, satisfies specified NOTES, and complies with acceptance criteria (mark non - applicable steps N/A).

**[2]** **PERFORM** applicable appendices for present or anticipated operating mode:

| MODE | APPENDICES | UO/RO INITIALS |
|---|---|---|
| 1 - 4 | A and B | ______ |
| 5, 6, or DEFUELED | C and D | ______ |

Date__________

## 6.0 PERFORMANCE (Continued)

**NOTE** Appendix E, "Ventilation Fan Status", Appendix G, "Instantaneous Average Ultimate Heat Sink Calculation" and Appendix J, "Hourly S/G And RCS Pressure Readings" require four hour or one hour readings continuously through the shift. These appendices are not applicable when verifying shift logs are completed at 0800-1000 and 2000-2200, but should be verified complete at the end of the 12 hour shift.

[3] **VERIFY** Shift Log was completed as follows:

| SHIFT | COMPLETED LOG BETWEEN | UO Initials |
|---|---|---|
| Day | 0800 and 1000 hours | ________ |
| Night | 2000 and 2200 hours | ________ |

[4] **IF** Appendices E, G or J have been required **THEN**

**ENSURE** required readings are complete and attached.

| | |
|---|---|
| 0630 to 1830 shift | __________<br>UO |
| 1830 to 0630 shift | __________<br>UO |

**NOTE** Each shift US/SRO will review and approve SI for his/her shift.

[5] **DELIVER** SI Package to the US/SRO for review and approval.

| | |
|---|---|
| 0630 to 1830 shift | __________<br>SRO |
| 1830 to 0630 shift | __________<br>SRO |

## 7.0 POST SURVEILLANCE ACTIVITIES

None

**APPENDIX A**
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| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Containment Radioactivity | 4.4.6.1.a<br>4.3.3.1.A.2.b.i<br>4.3.3.1.A.2.b.ii | 1,2,3,4 | 11, 12, 13, 69 | Operable | 1-RI-90-106A PART | CPM | | | |
| | | | | | 1-RI-90-106A GAS | CPM | | | |
| | | | 11, 14 | | 1-RR-90-106 | √ | | | |
| | | | 11, 12, 13, 69 | | 1-RM-90-112A | CPM | | | |
| | | | | | 1-RM-90-112B | CPM | | | |
| | | | 11, 14 | | 1-RR-90-112 | √ | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

11. General Notes: In the event a radiation monitor or recorder listed in this Instruction becomes inoperable, the monitor and/or recorder is to be listed on Attachment 1. **NOTIFY** the SRO to consult the Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

12. **VERIFY** RM-90-106 particulate and gas channels **OR** RM-90-112A & B are operable by power "on," instrument malfunction alarms clear, and readings of at least background level. Recorded radiation levels will be compared to steady state levels from the previous shift and must be evaluated for trending to ensure data is expected and reasonable (such as data changes due to filter changeout). Either RM-90-106 or RM-90-112 must be operable and aligned to lower containment to satisfy acceptance criteria.

13. **OBTAIN** particulate reading by depressing "PART" pushbutton. **OBTAIN** gaseous reading by depressing "GAS" pushbutton. **LEAVE** monitor in gaseous. **IF** lower compartment particulate or gas monitor is inoperable in modes 1, 2, 3, or 4, **THEN, ENSURE** sampling requirements of SI-183 are met or perform 0-SI-OPS-068-137.0 "Reactor Coolant System Water Inventory". See TS LCO 3.4.6.1 action b. RM-90-112 is not required by Tech Specs when RM-90-106 is operable; RM-90-106 is not required by Tech Specs when RM-90-112 is operable and aligned to lower containment.

14. **VERIFY** recorder power is 'on', time is correct and data is being displayed

69. **IF** countrate doubles (previous steady state reading to present) on RM-90-106 OR 112 particulate or gas channel in Modes 1, 2, 3 or 4, **THEN** performance of 0-SI-OPS-068-137.0, 'Reactor Coolant System Water Inventory', is required.

**APPENDIX A**


| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SFP Area and Fuel Pool Rad Monitors | 4.3.3.1.A.1.a | All | 11,16 | Operable | 0-RM-90-102 | mR/hr | | | |
| | | | | | 0-RM-90-103 | mR/hr | | | |
| Condensate Storage Tank Level | 4.7.1.3.1 ODCM 2.1.1.A.4.a | 1,2,3,4 | 3,15 | > 240,000 Gal Operable | 0-LI-2-230A | gals | | | |
| | | | | | 0-LI-2-233A | gals | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

3. Applicable at all times during modes 1, 2, & 3. Applicable during mode 4, only when steam generator is relied upon for heat removal.

11. General Notes: In the event a radiation monitor listed in this Instruction becomes inoperable, the monitor is to be listed on Attachment 1. **NOTIFY** the SRO to consult Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

15. **LOG** the water level indicated on LI-2-230A for CST A and LI-2-233A for CST B. Operability is determined by having equal to or greater than 240,000 gallons, in the CST aligned to the unit. Either A or B CST may be aligned to the operable unit. **IF** inoperable **THEN REFER** to 0-SI-OPS-067-117.0.

16. **VERIFY** the Fuel Pool Radiation Monitors are operable by observing power is "on," instrument malfunction alarms clear, and readings of at least background on ratemeter. **COMPARE** radiation levels to opposite train monitor and to levels from the previous shift using either the ICS computer or ratemeter readings. RADCON Area surveys are required when RM-90-102 and RM-90-103 are inoperable with fuel in the storage pool, and the survey results are recorded on Attachment 1.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SG Water Level Channel Deviation | 4.3.1.1.1.A.14.A<br>4.3.1.1.1.A.14.B<br>4.3.2.1.1.A.5.a<br>4.3.2.1.1.A.6.c.1<br>4.3.2.1.1.A.6.c.2 | 1,2,3 | 17 | OPERABLE | #1 LI-3-42 | % | | | |
| | | | | OPERABLE | #1 LI-3-39 | % | | | |
| | | | | OPERABLE | #1 LI-3-38 | % | | | |
| | | | | OPERABLE | #2 LI-3-55 | % | | | |
| | | | | OPERABLE | #2 LI-3-52 | % | | | |
| | | | | OPERABLE | #2 LI-3-51 | % | | | |
| | | | | OPERABLE | #3 LI-3-97 | % | | | |
| | | | | OPERABLE | #3 LI-3-94 | % | | | |
| | | | | OPERABLE | #3 LI-3-93 | % | | | |
| | | | | OPERABLE | #4 LI-3-110 | % | | | |
| | | | | OPERABLE | #4 LI-3-107 | % | | | |
| | | | | OPERABLE | #4 LI-3-106 | % | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

17. **COMPARE** the three Steam Generator Level indicators for each S/G located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 6%.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Steam Line Pressure | 4.3.2.1.1.A.1.f 4.3.2.1.1.A.4.d 4.3.2.1.1.A.4.e 4.3.2.1.1.A.6.d | 1,2,3 | 18 | OPERABLE | #1 PI-1-2A | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-2B | PSIG | | | |
| | | | | OPERABLE | #1 PI-1-5 | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9A | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-9B | PSIG | | | |
| | | | | OPERABLE | #2 PI-1-12 | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20A | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-20B | PSIG | | | |
| | | | | OPERABLE | #3 PI-1-23 | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27A | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-27B | PSIG | | | |
| | | | | OPERABLE | #4 PI-1-30 | PSIG | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

18. **COMPARE** the three steam line pressure indicators for each steam line, located on panel 1-M-4 to each other. Operability is verified by an acceptable deviation between channels of equal to or less than 60 psig.

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Shutdown Banks | 4.1.3.1.1 4.1.3.2 4.1.3.5.b | A | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | B | 1,2 | 19,21,22 | COLR | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | C | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | D | 1,2 | 19,21,22 | COLR | Gr Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand.
    **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps. **RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable
    **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Rod Banks | 4.1.3.1.1 4.1.3.2 4.1.3.6 4.1.1.1.1.b | A | 1,2 | 19,21,22 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | B | 1,2 | 19,21,22 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22, | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Attachment 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2) **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)

| | Surveillance Ref. | Bank | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Rod Banks | 4.1.3.1.1<br>4.1.3.2<br>4.1.3.6<br>4.1.1.1.1.b | C | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | D | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 1 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 1 RPIs | Steps | | | |
| | | | 1,2 | 19,21,22,23, 66 | COLR Figure 1 | Gr 2 Step | Steps | | | |
| | | | 1,2 | 20 | ** | Gr 2 RPIs | Steps | | | |
| | | | | | | | UO/RO Review Initials | | | |

**Within ± 12 steps of step counter.

**NOTES:**

19. **COMPARE** each full length rod position indicator (RPI) to its associated group demand position indicator **AND VERIFY** correct rod position by each RPI within ± 12 steps of the indicated group demand. **COMPARE** each group of RPIs to the associated group demand position indicator **AND VERIFY** the rod position indication system and the rod position demand indication system are operating and agree within ± 12 steps, **THEN RECORD** steps in the applicable column of the data sheet.
20. With Keff equal to or greater than 0.99.
21. **REFER** to COLR Figure 1 for fully withdrawn position range of rod banks. TI-28, Att. 6, provides the desired position within this range.
22. **WHEN** the rod position deviation monitor is inoperable **OR WHEN** the rod insertion limit monitor is inoperable
    **VERIFY** rod position once per 4 hours and **LOG** on the data sheet. (Reference LCO 3.1.3.2)
    **WHEN** a maximum of one demand position indicator per bank is inoperable, **THEN VERIFY** that all RPIs for the affected bank are operable and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other, once per 12 hours. (Reference LCO 3.1.3.2.c.1)
23. **IF** manual rod motion occurs during SI performance, **THEN** allowing one-half hour for thermal soak may provide a more accurate RPI reading.
66. **MAINTAIN** rods above insertion limits as shown by COLR Figure 1. IF LEFM calorimetric power indication (U2118) is inoperable, then rod insertion limit lines in COLR must be raised by 3 steps withdrawn until LEFM is restored.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| ΔI | N/A | > 50% RTP | 24,25 | VARIABLE | 1-XI-92-5005 | % | | | |
| | | | | | 1-XI-92-5006 | % | | | |
| | | | | | 1-XI-92-5007 | % | | | |
| | | | | | 1-XI-92-5008 | % | | | |
| | | | | | | UO/RO Review Initials | | | |

## NOTES

24. Administrative Limit.

25. **REFER** to ΔI curve in TI-28 or COLR if plant computer is NOT available. IF LEFM calorimetric power indication (U2118) is inoperable, then AFD limit lines in TI-28 and COLR must be made more restrictive by 1% until LEFM is restored.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Nuclear Instrumentation | 4.3.1.1.1.A.2 4.3.1.1.1.A.5 | 1,2 | 26 | OPERABLE | N-41 | % | | | |
| | | | | | N-42 | % | | | |
| | | | | | N-43 | % | | | |
| | | | | | N-44 | % | | | |
| | | 1,2 | 27 | OPERABLE | N-35 | % | | | |
| | | | | | N-36 | % | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES**

26. **COMPARE** the four power range channels to each other. This constitutes an adequate "channel check" and acceptable deviation between channels is equal to or less than 3.5%.
27. **COMPARE** the two intermediate range channels located on panel 1-M-4. Readings on both channels will provide evidence that the instruments are operable. Agreement between the readings provides additional verification of channel operability. Control Board indicators are verified operable if they are reading within 0.75 decades of each other. Use the following examples as a guide to determine the .75 decade deviation. The following equation will convert the IRM Indicated % RTP to a voltage value which can be used to determine the IRM indication difference and to determine if those readings are within the .75 decades acceptance limit. The IRM 10 decade scale is equal to 10 volts, thus each decade is equivalent to 1 volt.

| | | | | | |
|---|---|---|---|---|---|
| Example #1 | LOG (% IRM RTP) = Voltage | N-35 is indicating 30% RTP | Log (% IRM RTP) = Voltage Log (30%) = Voltage 1.4771 = 1.4771 volts | Difference = 1.6021 - 1.4771 = **0.125** | Difference between N-35 and N-36 is **0.125** which is within the .75 decade acceptance range. |
| | | N-36 is indicating 40% RTP | Log (% IRM RTP) = Voltage Log (40%) = Voltage 1.6021 = 1.6021 volts | | |
| Example #2 | LOG (% IRM RTP) = Voltage | N-35 is indicating 15% RTP | Log (% IRM RTP) = Voltage Log (15%) = Voltage 1.176 = 1.176 volts | Difference = 1.929 - 1.176 = **0.753** | Difference between N-35 and N-36 is **0.753** which is outside the .75 decade acceptance range. Notify the UO and SRO of the deviation. |
| | | N-36 is indicating 85% RTP | Log (% IRM RTP) = Voltage Log (85%) = Voltage 1.929 = 1.929 volts | | |

| | Surveillance Ref. | Modes | Notes | Ts Limits | Instrument No. | Units | 0630-0830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Pressurizer Level | 4.3.1.1.1.A.11<br>4.4.4.1 | 1,2,3 | 28 | ≤ 92 %<br>Operable | 1-LI-68-339A | % | | | |
| | | | | | 1-LI-68-335A | % | | | |
| | | | | | 1-LI-68-320 | % | | | |
| Pressurizer Pressure | 4.3.1.1.1.A.9<br>4.3.1.1.1.A.10<br>4.3.2.1.1.A.1.d<br>4.3.2.1.1.A.6.d<br>4.2.5.1 | 1,2,3 | 29 | ≥ 2205 psig<br>Operable | 1-PI-68-340A | psig | | | |
| | | | | | 1-PI-68-334 | psig | | | |
| | | | | | 1-PI-68-323 | psig | | | |
| | | | | | 1-PI-68-322 | psig | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

28. **COMPARE** the three pressurizer level indicating channels on panel 1-M-4; operability is verified by an acceptable deviation between channels of equal to or less than 5%. The channel check requirement of Tech Spec Surveillance Requirement 4.3.1.1.1.A.11 is not required in mode 3.

29. **COMPARE** the four pressurizer pressure indicating channels located on panel 1-M-5; operability is verified by an acceptable deviation between channels of equal to or less than 35 psi. This channel check is required under the following conditions for DNB considerations; with the unit in mode 1 the "DNB parameter pressurizer pressure" must be equal to or greater than 2220 psia except during a thermal power ramp in excess of 5 percent/min; a thermal power step in excess of 10 percent; physics testing; or performance of 0-SI-NUC-000-139.0 and 0-SI-NUC-000-007.0. N/A if PRZ pressure is less than 1700 psig in Mode 3 (Indicator scale starts at 1700 psig).

| | Surveillance Ref. | Mode | Notes | Ts Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| ΔT | 4.3.1.1.A.14.C<br>4.3.2.1.1.A.6.c.3 | 1,2<br>1,2,3 | 30 | Operable | 1-TI-68-2D | % | | | |
| | | | | | 1-TI-68-25D | % | | | |
| | | | | | 1-TI-68-44D | % | | | |
| | | | | | 1-TI-68-67D | % | | | |
| OverPower ΔT | 4.3.1.1.1.A.8 | 1,2 | 31 | Operable | 1-TI-68-2A | % | | | |
| | | | | | 1-TI-68-25A | % | | | |
| | | | | | 1-TI-68-44A | % | | | |
| | | | | | 1-TI-68-67A | % | | | |
| OverTemperature ΔT | 4.3.1.1.1.A.7 | 1,2 | 32 | Operable | 1-TI-68-2B | % | | | |
| | | | | | 1-TI-68-25B | % | | | |
| | | | | | 1-TI-68-44B | % | | | |
| | | | | | 1-TI-68-67B | % | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

30. **COMPARE** the four ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 5%. **WHEN** RCS temperature is below 530°F or when an RCP is out of service the channel check criteria is equal to or less than 5% of zero for the affected loop.
31. **COMPARE** the four OverPower ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 5%.
32. **COMPARE** the four Over Temperature ΔT indicators to each other. Acceptable deviation between channels is equal to or less than 10%. The 10% limit encompasses the affects of rapidly changing loop hot leg temperatures as a result of the upper plenum anomaly and at present, is applicable to Unit 1 only.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Coolant Flows | 4.2.5.1<br>4.3.1.1.1.A.12<br>4.3.1.1.1.A.13 | 1 | 1,2 | ≥ 100% | ICS computer printout<br>OR<br>PERFORM Appendix K (backup method) | (√) | | | |
| Reactor Coolant Pumps in Operation and Coolant Flow | 4.4.1.1 | 1,2 | 35 | All four RCPs running and flow in all four loops | RCP motor indicator lights, amp meters, frequency meters and flow indicators. | (√) | | | |
| DNB Parameters Tavg | 4.2.5.1 | 1 | 36 | < 583°F Operable | 1-TI-68-2E | °F | | | |
| | | | | | 1-TI-68-25E | °F | | | |
| | | | | | 1-TI-68-44E | °F | | | |
| | | | | | 1-TI-68-67E | °F | | | |
| RWST Temperature Indication | TR 4.1.2.5.b.3,<br>TR 4.1.2.6.b.3,<br>4.5.5.b | All | 37 | ≤ 105°F<br>≥ 60°F | 1-TI-63-131 | °F | | | |
| | | | | | 1-TI-63-132 | °F | | | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

1. **DETERMINE** operability of the Reactor coolant loop flows as follows:
   A. **OBTAIN** printout of the RCS loop flows from the ICS computer Group display Menu. **IF any** data is unavailable on printout, **THEN PERFORM** Appendix K.
   B. **WHEN** printout is complete, **THEN VERIFY** maximum channel deviation is ≤ 6% and that the total RCS flow (10 min. average) is ≥ 100% and ≤ 115%. **IF** any channel flow is > 115%, **THEN PERFORM** APP. K and **NOTIFY** US to evaluate LCO actions.
   C. **ATTACH** printout from ICS computer to this surveillance package.
2. **IF** the average RCS flow is < 100%, **THEN NOTIFY** Unit SRO to **EVALUATE** LCO 3.2.5 (Figure 3.2-1) for power versus RCS flow rate. **IF** average RCS flow is in the *Unacceptable Operation Region*, **THEN** Unit SRO is to evaluate possible power reduction until the flow rate is in the *Acceptable Operation Region*. **RECORD** determination in the REMARKS column.

35. **VERIFY** flow in all four reactor coolant loops, **THEN NOTIFY** SRO of any loop not in operation immediately.
36. **COMPARE** the four average temperature (Tavg) indicators on 1-M-5 to each other. Acceptable deviation between channels is equal to or less than 5°F.
37. **COMPARE** the two Refueling Water Storage Tank (RWST) temperature indicators on panel 1-M-6 to each other. Acceptable deviation between channels is equal to or less than 6°F.

| | Surveillance Ref. | | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| ECCS Subsystem | 4.5.2.a | | 1,2,3 | 38 | Valve Open | 1-HS-63-1A | (√) | | | |
| | | | | 68 | | 1-HS-63-22A | (√) | | | |
| RWST Level and CNTMT Level for Auto Swapover Cold Leg during SI | 4.3.2.1.1.A.9.a | RWST | 1,2,3,4 | 39 | Operable | 1-LI-63-50 | % | | | |
| | | | | | | 1-LI-63-51 | % | | | |
| | | | | | | 1-LI-63-52 | % | | | |
| | | | | | | 1-LI-63-53 | % | | | |
| | | CTNMT | 1,2,3,4 | 40 | Operable | 1-LI-63-176 | % | | | |
| | | | | | | 1-LI-63-177 | % | | | |
| | | | | | | 1-LI-63-178 | % | | | |
| | | | | | | 1-LI-63-179 | % | | | |
| Cold Leg Accumulator Isolation Valves | 4.5.1.1.1.a.2 | | 1,2,3 | 41 | Valves Fully Open | 1-HS-63-118A | (√) | | | |
| | | | | | | 1-HS-63-98A | (√) | | | |
| | | | | | | 1-HS-63-80A | (√) | | | |
| | | | | | | 1-HS-63-67A | (√) | | | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

38. **VERIFY** by use of the indicating lights on panel 1-M-6 that these valves are open. Verification of power disconnected will be accomplished later in this Instruction.
39. **COMPARE** the four RWST level indicators to each other. Acceptable deviation between channels is equal to or less than 5%.
40. **COMPARE** the four containment sump level indicators to each other. Acceptable deviation between channels is equal to or less than 6%. With no water in the sump, no indicator should read more than 4%.
41. **WHEN** pressurizer pressure is above 1000 psig, **THEN VERIFY** each of the four cold leg accumulator isolation valves on panel 1-M-6 are open by observation of the position indicating lights.
68. When entering Mode 3 from Mode 4, FCV-63-22 may be closed to support transition from LCO 3.4.12 for up to 4 hrs. or until the temperature of all RCS cold legs exceeds 375°F (whichever comes first).

| Surveillance | Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #1 | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-129 | gal. | ______ - ______<br>Present Level - Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level - Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals (≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? If yes, **NOTIFY** Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-119 | gal. | ______ - ______<br>Present Level - Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level - Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals (≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? If yes, **NOTIFY** Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

42. In the 0630-1830 Shift column, log “Level After Last Fill” entry from the previous day’s Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #1 | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-128 | psig | | | |
| | | | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-126 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

## NOTES:

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable
**AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #2 | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-109 | gal. | ____ - ____<br>Present Level  Level After Last Fill<br>= ____<br>Level Change | ____ - ____<br>Present Level  Level After Last Fill<br>= ____<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-99 | gal. | ____ - ____<br>Present Level  Level After Last Fill<br>= ____<br>Level Change | ____ - ____<br>Present Level  Level After Last Fill<br>= ____<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

42. In the 0630-1830 Shift column, log "Level After Last Fill" entry from the previous day's Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, **DETERMINE** which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #2 | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-108 | psig | | | |
| | | | | 1,2,3 | > 624 psig<br>< 668 psig | 1-PIS-63-106 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

**APPENDIX A**


| | Surveillance Ref | Acc | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #3 | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-89 | gal. | ______ - ______<br>Present Level  Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level  Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication and from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-81 | gal. | ______ - ______<br>Present Level  Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level  Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication and from a source other than the RWST?<br>IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons?<br>If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

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**NOTES:**

42. In the 0630-1830 Shift column, log "Level After Last Fill" entry from the previous day's Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #3 | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-88 | psig | | | |
| | | | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-86 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Water Level | 4.5.1.1.1.a.1<br>4.5.1.1.1.b | #4 | 42 | 1,2,3 | > 7615 gal<br>< 7955 gal | 1-LIS-63-82 | gal. | ______ - ______<br>Present Level Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 42 | 1,2,3 | > 7615 gal<br>< 7955gal | 1-LIS-63-60 | gal. | ______ - ______<br>Present Level Level After Last Fill<br>= ______<br>Level Change | ______ - ______<br>Present Level Level After Last Fill<br>= ______<br>Level Change | |
| | | | Is level increase +75 gals ( ≥ 1%) on the digital indication <u>and</u> from a source other than the RWST? IF yes, NOTIFY Chem Lab to PERFORM 0-SI-CEM-063-052.0 on the affected CLA within 6 hours to verify boron concentration. | | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | 43 | Compare CLA present levels. Is the deviation between channels ≥ 75 gallons? If yes, see Note 43. | | | | Yes ☐<br>No ☐ | Yes ☐<br>No ☐ | |
| | | | | | | | | | | |

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**NOTES:**

42. In the 0630-1830 Shift column, log "Level After Last Fill" entry from the previous day's Shift Log **OR** from last sample taken by Chem Lab. The recorded value should be updated when a chemistry sample is taken.
43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Accu. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Indicated Pressure | 4.5.1.1.1.a.1 | #4 | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-62 | psig | | | |
| | | | | 1,2,3 | > 624 psig < 668 psig | 1-PIS-63-61 | psig | | | |
| | | | 43 | Compare CLA pressure channels. Is the deviation between channels ≥ 24.5 psig? If yes, see Note 43. | | | | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

43. **VERIFY** operability by acceptable deviation between redundant level and pressure channels when pressurizer pressure is above 1000 psig. **IF** deviation limit is exceeded, determine which channel is inoperable **AND RECORD** only the operable channel. This channel check is not a technical specification requirement.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Containment Pressure HI and HI-HI for SI, ESF, and Main Steam Isolation | 4.3.2.1.1.A.1.c 4.3.2.1.1.A.2.c 4.3.2.1.1.A.3.b.3 4.3.2.1.1.A.4.c 4.3.2.1.1.A.6.c.4 4.3.2.1.1.A.6.d 4.3.1.1.1.A.14.D | 1,2,3,4 | 44 | Verify operable by having ≤ 0.8 psig (5%) deviation between Channels. | 1-PDI-30-45 | PSIG | | | |
| | | | | | 1-PDI-30-44 | PSIG | | | |
| | | | | | 1-PDI-30-43 | PSIG | | | |
| | | | | | 1-PDI-30-42 | PSIG | | | |
| Primary Containment Internal Pressure | 4.6.1.4 | 1,2,3,4 | 45 | ≥ -0.1 ≤ 0.3 psig | 1-PDI-30-133 or Plant Compt. Pts. 1P1000A, 1P1001A, 1P1002A, 1P1003A | PSIG | | | |
| Shield Bldg, Annulus Vacuum | Not Tech Spec SR | 1,2,3,4 | 46 | Equal to or more negative than -5" $H_2O$ | 1-PDI-30-126 | Inches $H_2O$ | | | |
| | | | | | 1-PDI-30-127 | Inches $H_2O$ | | | |
| | | | | | | UO/RO Review Initials | | | |

## NOTES:

44. **COMPARE** the four containment pressure indicators to each other. Acceptable deviation between channels is equal to or less than 0.8 psig (5 percent).
45. **IF** pressure indicator 1-PDI-30-133 is inoperable, **THEN RECORD** the containment pressure obtained from one of the following Plant computer points: 1P1000A, 1P1001A, 1P1002A or 1P1003A.
46. **VERIFY** the annulus vacuum is within the specified limits once per shift. Twenty four hours is provided to restore annulus vacuum to within its limits when surveillance testing or maintenance is the cause for the out-of-limit condition. **IF** time limit will be exceeded**, THEN** write a PER and obtain engineering evaluation. This requirement is not applicable if the out-of-limit condition is created by personnel entrance or exit from the annulus, if venting containment to maintain pressure limits, or if the out-of-limits condition does not exist in excess of 30 minutes. **ALLOW** 30 minutes after the above conditions no longer exists prior to taking readings.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Trip System Instrumentation | 4.3.1.1.1.A.6 | 2,3,4 | 47 | Operable | N31 | CPS | | | |
| | | | | | N32 | CPS | | | |
| Reactor Coolant Loop Operability S/G's Operable | 4.4.1.2.2 | 3 | 48 | Narrow Range Level ≥ 21% | SG #1 | % | | | |
| | | | | | SG #2 | % | | | |
| | | | | | SG #3 | % | | | |
| | | | | | SG #4 | % | | | |
| Required Reactor Coolant Loops Operating | 4.4.1.2.3 | 3 | 49,50 | With Reactor Trip Breakers Closed, 2 of 4 RCS Loops flow ≥ 90% each, with Rx Trip Breakers Open 1 of 4 RCS Loops Flow ≥ 90% | Loop #1 | (√) Operable Loops Only | | | |
| | | | | | Loop #2 | | | | |
| | | | | | Loop #3 | | | | |
| | | | | | Loop #4 | | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

47. **COMPARE** the two source range neutron flux indicators to each other, **THEN VERIFY** indicators operable and indicating. This channel check is performed to verify operability of the instrumentation associated with the low power source range trip and is only applicable at levels below the P-6 interlock setpoint.
48. **VERIFY** operability of two steam generators with the reactor trip breakers closed, or one S/G with the reactor trip breakers open by having an indicated narrow range level of greater than or equal to 21%. The operable S/Gs must be on the same operating loops listed below under Surveillance Reference SR 4.4.1.2.3.
49. **VERIFY** at least two reactor coolant loops are operable. **IF** the reactor trip breakers are closed at least two RCPs must be circulating coolant with a flow of at least 90% each, with the reactor trip breakers open at least one RCP must be circulating coolant with a flow of at least 90%. The S/Gs on the loops with operating RCPs must be the required operable loops under Surveillance Reference SR 4.4.1.2.2 listed above.
50. All RCPs may be deenergized for up to one hour provided that:
    A. No operations are permitted that would introduce water with boron conc. less than that required for shutdown margin (LCO 3.1.1.1) into the RCS, and
    B. Core outlet temperature is maintained at least 10°F below saturation temperature.

**APPENDIX A**
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| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Coolant Loop Operability | 4.4.1.3.2 | 4 | 51 | Wide Range Level ≥ 10% | SG #1 | % | | | |
| | | | | | SG #2 | % | | | |
| | | | | | SG #3 | % | | | |
| | | | | | SG #4 | % | | | |
| Two Coolant Loops Operable and one in operation | 4.4.1.3.3 | 4 | 52,53 | One or more RCPs running with loop flow or one RHR pump running with flow | RCS Loop 1 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 2 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 3 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RCS Loop 4 | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RHR Train "A" | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RHR Train "B" | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| RHR Suction from RWST | 4.5.3 | 4 | | Operable | 1-FCV-63-1 | (√) | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

51. **VERIFY** at least two steam generators operable by having an indicated level of equal to or greater than 10% on the wide range indication on panel 1-M-4. The required operable S/G's must be on the associated operating loops listed under surveillance reference SR 4.4.1.3.3 listed below.
52. **VERIFY** at least two RCS loops and/or two RHR loops operable, with at least one RCP running with flow or one RHR loop operating with flow.
53. All reactor coolant pumps and residual heat removal pumps may be deenergized for up to one hour provided that:
    A. No operations are permitted that would introduce water with boron conc. less than that required for shutdown margin (LCO 3.1.1.1) into the RCS, and
    B. Core outlet temperature is maintained at least 10°F below saturation temperature.

**APPENDIX A**


| | SR. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Ultimate Heat Sink | 4.7.5.1 | 1,2,3,4 | 54, 55, 56, 57, 58, 70 Perform App. G if ≥ 81°F with ≥ 670 ft OR ≥ 82.5°F with > 680 ft | ≤83°F with Forebay water level ≥ 670' **OR** ≤ 84.5°F with Forebay water level > 680' | 1-TW-67-426/1T2006A ☐<br>2-TW-67-425/2T2007A ☐<br>OR<br>Appendix G ☐<br>OR<br>1-TW-67-425 (el 669') ☐<br>2-TW-67-426 (ERCW Pipe Tunnel) ☐ | °F | | N/A | |
| | | | | | **M&TE Instrument No. Used** | | | | |
| | | | | | 0-LI-27-133/2-M-15 | ft | | N/A | |
| | | 1,2,3,4 | 54, 59 | | ERCW Strainer Inoperable Yes ☐ No☐ | °F | | N/A | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES**:
54. **IF** Unit 2 is in mode 1, 2, 3, or 4, **THEN OBTAIN** ultimate heat sink data from the Unit 2 "Shift Log" and ensure all necessary actions are initiated via the Unit 2 "Shift Log". Otherwise, **OBTAIN** data from Unit 1 and take all necessary actions via the Unit 1 "Shift Log."
55 **CHECK** box(es) for method used to determine ERCW supply temp. If ICS points are unavailable, calculate manual instantaneous average using App. G
56. **IF** thermal probe is used, **THEN RECORD** MT&E instrument number.
57. **IF** ERCW temperature is ≥ 81°F with water level ≥ 670 ft but ≤ 680 ft **OR IF** ERCW temperature is ≥ 82.5°F with water level > 680 ft., **THEN NOTIFY** both unit SROs **AND PERFORM** Appendix G to obtain the instantaneous average.
58. **IF** level indicator 0-LI-27-133 is inoperable, ICS Computer Points 0Y2200A or 0Y2201A can be used to determine water level.
59. **IF** ERCW Strainer (at ERCW Pumping Station) is inoperable, instantaneous average ERCW temperature must be verified ≤ 73°F. **IF** temperature is > 73°F with strainer inoperable, **THEN NOTIFY** the SM to evaluate the applicability of LCO 3.7.4. N/A if all Strainers operable. **[C.5]**
70 **IF** temperature is > 81°F and 0-FCV-67-205, 1A ERCW supply Header to Station Air Compressors, is OPEN, **THEN** evaluate LCO 3.7.15 for operability of A-A MCR Chiller and TR 3.7.14 for EBR Chiller A. (PER 117954 & FE 41792 R1)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Ice Bed Temperatures | 4.6.5.1.a T.R. 4.6.5.2 | 1,2,3,4 | **[C.2][C.3]** 60,61,62 | ≤ 27°F | ICS computer printout OR Appendix F OR Appendix I (backup) Performed | (√) | ☐ | ☐ | |
| Ice Bed Door Position Monitoring System | 4.6.5.3.1.a T.R. 4.6.5.4.a | 1,2,3,4 | 63,65 | Operable | XI-61-187/1-M-10 | (√) | ☐ | ☐ | |
| Ice Bed Door Position | 4.6.5.3.1a T.R 4.6.5.4.a | 1,2,3,4 | 64,65 | Closed | XI-61-187/1-M-10 | (√) | ☐ | ☐ | |
| | | | | | | UO/RO Review Initials | | | |

60. **DETERMINE** operability of the ice condenser from the temperature standpoint as follows:
    A. **OBTAIN** printout of the ice condenser temperatures.
    B. **WHEN** printout is complete, **THEN OBTAIN** MAX and AVG ice bed temp. from printout **AND MARK** yes or no block. **IF** MAX or AVG temp. is unavailable on printout, **THEN PERFORM** App. I.
    C. **REVIEW** data on printout to determine operability of RTDs. RTD is considered operable if reading is ≤ 27°F and no inop indication is present beside data. **IF** an RTD is determined to be inoperable, **THEN PLACE** a CTL- next to the applicable TE number. (no data entry is required next to the TE number if the TE is operable). **MARK** yes or no to verify there are at least two operable RTDs at each of the three basic elevations for each one third of the ice condenser.
    D. Attach data printout from 1-TR-61-138 P001 to App. F OR attach data printout from ICS computer to the package.
    E. **IF** a "No" response is recorded on App. F., **THEN NOTIFY** the Unit SRO.
    F. **IF** the average ice bed temperature is not in the optimum range of 18°F to 20°F, **THEN NOTIFY** the Unit SRO to ensure adequate chiller alignment for maintaining optimum average temperature. The ice condenser temperatures may be operated outside the optimum range in accordance with engineering recommendations (see Precautions & limitations "C").**[C.2]**
61. **VERIFY** operability of the ice bed temperature monitoring system by checking power to 1-TR-61-138 P001 is **ON**.
62. **ENTER** any inoperable channels in the **REMARKS** section **AND NOTIFY** the Instrument Department to initiate 1-SI-IXX-061-138.0 to take local readings if 1-TR-61-138 P001 becomes inoperable. **[C.3]**
63. **VERIFY** the ice bed door position monitoring system XI-61-187 on panel 1-M-10 is operable as follows:
    A. Power to panel is on.
    B. All lamps for door closed position are lit.
64. **VERIFY** the door position for each door is closed as indicated on XI-61-187.
65. If the ice bed door position monitoring system is inoperable or any ice condenser doors are open and cannot be closed, **THEN PERFORM** App. F or I once each 4 hours to comply with action for LCO 3.6.5.3 and/or T.R 3.6.5.4.

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Discharge Valves | 4.4.12.4 | 4 | 66 | CLOSED | 1-FCV-63-118<br>1-FCV-63-98<br>1-FCV-63-80<br>1-FCV-63-67 | (√) | | | |
| 1A-A CCP or 1B-B CCP | 4.4.12.3 | 4 | 67 | Incapable of Injection into the RCS | Enter option number | | | | |
| 1A-A SI Pump and 1B-B SI Pump | 4.4.12.2 | 4 | 68 | Incapable of Injection into the RCS | Enter option number | | | | |
| | | | | | | | | | |
| | | | | | | | UO/RO Review Initials | | |

66. Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. If MCR valve position indication not available, then verify position using Hold Order or verify position locally or comply with LCO 3.4.12 action b.

67. CCP configuration options:

Option 1: 1A-A or 1B-B CCP breaker racked out and tagged under clearance.

Option 2: 1-VLV-62-527 and 526 (1A-A CCP discharge vlvs.) locked closed and tagged under a clearance.

**OR**

1-VLV-62-533 and 534 (1B-B CCP discharge vlvs.) locked closed and tagged under a clearance.

68. SI Pump configuration options see Appendix L.

**APPENDIX B**
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## SHIFT LOG- MODES 1-4 (OUTSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Room Isolation Rad. Monitors | 4.3.3.1.A.2.c | All * | 4,6 | Operable | RM-90-125 | Mechanical Equipment Room Elevation 732.0 | CPM | | | |
| | | | 4,6 | | RM-90-126 | | CPM | | | |
| Containment Purge Air Exh. Activity | 4.3.3.1.A.2.a<br>4.3.2.1.1.A.3.c.3 | 1-4 | 6,7 | Operable | RM-90-130A/ 1R1027A | Penet. Room el 690 west wall | CPM | | | |
| | | | | | RM-90-131A/ 1R1028A | | CPM | | | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

4. **OBSERVE** RM-90-125 and RM-90-126 in the mechanical equipment room to verify the monitors on and reading at least background with no alarms present. **COMPARE** RM-90-125 and RM-90-126 count rates. Any monitor that is questionable may be blocked and source checked in accordance with 0-SO-90-2 to aid in determining operability.

6. **VERIFY** monitor is in service and instrument malfunction alarm is clear. **LIST** all inoperable monitors on Attachment 1.

7. **VERIFY** RM-90-130A and RM-90-131A operable by power to the monitors "on" and monitor reading at least background with no alarms present. **COMPARE** radiation levels to the opposite train and to the levels from previous shift using ICS computer or local ratemeter. Any monitor that is questionable may be blocked and source checked in accordance with 1-SO-90-2 to aid in determining operability.

* and during movement of irradiated fuel assemblies.

**SHIFT LOG- MODES 1-4 (OUTSIDE MCR)**

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Hydrogen Monitors Operable | TR 4.6.4.1 | 1,2 | 8 | Operable | $H_2$AN-43-200 | el 734 U-1 Side east wall | (√) | ☐ | ☐ | |
| | | | | | $H_2$AN-43-210 | | (√) | ☐ | ☐ | |
| | | 1,2 | 11 | Operable | $H_2$I-43-200 | 1-M-10 | (√) | ☐ | ☐ | |
| | | | | | $H_2$I-43-210 | | (√) | ☐ | ☐ | |
| ECCS Subsystem | 4.5.2.a | 1,2,3 | 9 | Open | 1-FCV-63-1 | Reactor MOV Bd 1A1-A Compt. 11A | (√) | ☐ | ☐ | |
| | | | 10 | Open | 1-FCV-63-22 | Reactor MOV Bd 1B1-B Compt. 15B | (√) | ☐ | ☐ | |
| | | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

8. **PERFORM** a "channel check" of the two hydrogen monitors located on el 734 U-1 side east wall to verify the following.
   A. Power "ON".
   B. Instrument in standby mode.
   C. Absence of local or remote alarms.
9. **VERIFY** the valves indicate the OPEN position by their indicating lights, and power to the valve motor is disconnected.
10. When entering Mode 3 from Mode 4, FCV-63-22 may be closed to support transition from LCO 3.4.12 for up to 4 hrs. or until the temperature of all RCS cold legs exceeds 375°F (whichever comes first).
11. **IF** Hydrogen Analyzer are in the ANALYZE position, **THEN**
    **PERFORM** a "channel check" to ensure %$H_2$ indicators are operable and indicating within 0.8% (meter indication) of each other. For example: if the meter indicates 1%, the other meter must indicate between 0.2% and 1.8%. The Hydrogen Monitors are Post Accident Monitors (PAM), however Technical Specification 3.3.3.7 does not apply.

## SHIFT LOG- MODES 1-4 (OUTSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Breaker No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Accumulator Breaker Position | 4.4.12.4 | 4 | 13 | Breaker Locked in OFF | 1-BCTD-63-118-A | RMOV Bd.1A1-A C/13E | (√) | | | |
| | | | | | 1-BCTD-63-80-A | RMOV Bd.1A1-A C/13C | (√) | | | |
| | | | | | 1-BCTD-63-98-B | RMOV Bd.1B1-B C/11E | (√) | | | |
| | | | | | 1-BCTD-63-67-B | RMOV Bd.1B1-B C/11B | (√) | | | |
| | | | | | | | | | | |

UO/RO Review Initials

NOTES:

13. Verify motive power breaker locked in OFF. Accumulator may be unisolated when accumulator pressure is less than maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

## SHIFT LOG - MODE 5 OR 6 (INSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SFP Area and Fuel Pool Rad Monitors | 4.3.3.1.A.1.a | (All) 5,6 | 12,13 | Operable | 0-RM-90-102 | mR/hr | | | |
| | | | | | 0-RM-90-103 | mR/hr | | | |
| RWST Temperature Indication | TR 4.1.2.5.b.3, TR 4.1.2.6.b.3, SR 4.5.5.b | All | 15,16 | ≤ 105°F ≥ 60°F | 1-TI-63-131 | °F | | | |
| | | | | | 1-TI-63-132 | °F | | | |
| | | | | | | | | | |
| | | | | | | | UO/RO Review Initials | | |

**NOTES:**

12. General Notes: In the event a radiation monitor listed in this instruction becomes inoperable, the monitor is to be listed on Attachment 1. **NOTIFY** the SRO to consult Tech Specs for appropriate actions for inoperable monitors. Any questionable monitor may be source checked in accordance with 1-SO-90-2 for Unit 1 monitors and 0-SO-90-2 for Unit 0 monitors to aid in determining operability.

13. **VERIFY** the Fuel Pool Radiation Monitors are operable by observing power is “on,” instrument malfunction alarms are clear, and readings of at least background on the ratemeter. **COMPARE** radiation levels to the opposite train monitor and to levels from the previous shift using either the ICS computer or ratemeter readings. RADCON Area surveys are required when RM-90-102 and RM-90-103 are inoperable with fuel in the storage pool, and the survey results are recorded on Attachment 1.

15. RWST temperature limits are only required when the RWST is the source of borated water.

16. **COMPARE** the two Refueling Water Storage Tank (RWST) temperature indicators on panel 1-M-6 to each other. Acceptable deviation between channels is equal to or less than 6°F.

**APPENDIX C**
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## SHIFT LOG - MODE 5 OR 6 (INSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Trip System Instrumentation | 4.3.1.1.1.A.6 | 5 | 17 | Operable | N31 | CPS | | | |
| | | | | | N32 | CPS | | | |
| RCS Pressurizer Level | 4.4.1.4 | 5 | 18 | Level ≥ 24% | 1-LI-68-339A | % | | | |
| | | | | | 1-LI-68-335A | % | | | |
| | | | | | 1-LI-68-320 | % | | | |
| | | | | | 1-LI-68-321 | % | | | |
| | | | | | | UO/RO Review Initials | | | |

### NOTES:

17. **COMPARE** the two source range neutron flux indicators to each other, **THEN VERIFY** indicators operable and indicating. This channel check is performed to verify operability of the instrumentation associated with the low power source range trip and is only applicable at levels below the P-6 interlock setpoint.

18. **VERIFY** 1-LI-68-321 AND at least one of the "HOT CAL" indicators (LI-68-339A, 335A, or 320) indicates ≥ 24% level (for maintenance activities, i.e., coupling RCPs, the level may be reduced to 20% during the maintenance activity). **ENTER** the data for LI-68-321 and the "HOT CAL" indicator used, and **MARK** the others N/A. This verifies four filled RCS loops and partially fulfills the requirements for substituting four filled RCS loops and 2 S/Gs with wide range level ≥10% for one RHR cooling loop under Surveillance Reference SR 4.4.1.4.

## SHIFT LOG - MODE 5 OR 6 (INSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| RHR Loop Operability | 4.4.1.4 | 5 | 19 | Wide Range Level ≥ 10% | SG #1 | % | | | |
| | | | | | SG #2 | % | | | |
| | | | | | SG #3 | % | | | |
| | | | | | SG #4 | % | | | |
| Two RHR Loops One Operating One Operable | 4.4.1.4 | 5 | 20,21 | Two RHR Loops operable and ≥ one pump running with flow | RHR Train “A” | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | | | | RHR Train “B” | Operable (√)<br>Running (√) | ☐<br>☐ | ☐<br>☐ | |
| | | 5 | 20 | | Flow Train A and/or B | GPM | | | |
| | | | | | | UO/RO Review Initials | | | |

**NOTES:**

19. **VERIFY** at least two S/G’s have a wide range level indication of at least 10% (panel 1-M-4). This partially fulfills the requirements for substituting four (4) filled RCS loops and two (2) operable S/G’s for 1 RHR loop when in mode 5 under Surveillance Reference 4.4.1.4.
20. **VERIFY** at least two RHR loops operable, with at least one RHR loop in operation (pump running) with flow.
21. The RHR pumps may be deenergized for up to one hour provided that:
    A. No operations are permitted that would introduce water with boron conc. less than that required for shutdown margin (LCO 3.1.1.2) into the RCS, and
    B. Core outlet temperature is maintained at least 10°F below saturation temperature.
    One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is operable, and in operation. Four filled reactor coolant loops with at least 2 steam generators having wide range level indication of greater than or equal to 10% may be substituted for one RHR loop. Credit cannot be taken for filled steam generators in accordance with Tech Spec. 3.4.1.4 unless the RCS remains pressurized above 50 psig (if RCPs have been in service) or at least 150 psig (following RCS vacuum refill until all four RCPs have been operated).

## SHIFT LOG - MODE 5 OR 6 (INSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Ice Bed Temperatures | N/A | 5, 6 | 9 | ≤ 27°F | ICS computer printout OR Appendix F OR Appendix I (backup) Performed | √ | | | |
| RCS Vent Pathway | 4.4.12.5.a | 5 and 6 with Rx head ON | 10 | ≥ 3.0 square inch vent pathway | 1-PCV-68-340A<br>1-FCV-68-332<br>1-PCV-68-334<br>1-FCV-68-333 | OPEN √ | | | |
| S/G Pressure/ RCS pressure | TR 4.7.2 | 5, 6 and "No Mode" with no RCPs running | 22 | See TR 4.7.2 | N/A | √ | | | |
| | | | | | | | UO/RO Review Initials | | |

**NOTES:**

9. **IF** ice condenser maintenance and ice weighing will be performed during the outage, **THEN N/A** this step until notified that 0-SI-MIN-061-105.0 "AS LEFT" ice weighing data collection is being initiated. **IF** limit is exceeded **THEN CONTACT** System Engineering for evaluation to determine if acceptance criteria of 0-SI-MIN-061-105.0 has been invalidated.

10. **IF** the RCS is vented using open PORVs to comply with LCO 3.4.12, **THEN VERIFY** BOTH Pressurizer PORVs OPEN **AND** both Block Valves OPEN. IF RCS is not vented using PORVs, **THEN** mark this item N/A.

22. **IF** no RCPs are in operation, **THEN PERFORM** Appendix J hourly.

**APPENDIX C**
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## SHIFT LOG - MODE 5 OR 6 (INSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No./Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Cold Leg Accumulator Discharge Valves | 4.4.12.4 | 5, 6 | 23, 24 | CLOSED | 1-FCV-63-118<br>1-FCV-63-98<br>1-FCV-63-80<br>1-FCV-63-67 | (√) | | | |
| 1A-A CCP or 1B-B CCP | 4.4.12.3 | 5, 6 | 24, 25 | Incapable of Injection into the RCS | Enter option number | | | | |
| 1A-A SI Pump and 1B-B SI Pump | 4.4.12.2 | 5, 6 | 24, 26 | Incapable of Injection into the RCS | Enter option number | | | | |
| | | | | | | | | | |

UO/RO Review Initials

23. CLAs may be unisolated when accumulator pressure is less than maximum RCS pressure for existing RCS cold leg temperature allowed by P/T limit curves in PTLR. If MCR valve position indication not available, then verify position using Hold Order or verify position locally or comply with LCO 3.4.12 action b.

24. Applicable in Mode 5 and Mode 6 when the reactor vessel head is on.

25. CCP configuration options:

Option 1: 1A-A or 1B-B CCP breaker racked out and tagged under clearance.

Option 2: 1-VLV-62-527 and 526 (1A-A CCP discharge vlvs.) locked closed and tagged under clearance.

**OR**

1-VLV-62-533 and 534 (1B-B CCP discharge vlvs.) locked closed and tagged under clearance.

26. SI Pump configuration options see Appendix L.

**APPENDIX D**
Page 1 of 2

## SHIFT LOG- MODES 5 OR 6 (OUTSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Instrument No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Control Room Isolation Rad Monitors | 4.3.3.1.A.2.c | (All) 5,6 * | 4,6 | Operable | RM-90-125 | Mechanical Equipment Room Elevation 732.0 | CPM | | | |
| | | | 4,6 | | RM-90-126 | | CPM | | | |
| Containment Purge Air Exh. Activity | 4.3.3.1.A.2.a 4.3.2.1.1.A.3.c.3 | 6 | 6,7 | Operable | RM-90-130A/ 1R1027A | Penet. Room el 690 west wall | CPM | | | |
| | | | | | RM-90-131A/ 1R1028A | | CPM | | | |
| | | | | | | | UO/RO Review Initials | | | |

**NOTES:**

4. **OBSERVE** RM-90-125 and RM-90-126 in the mechanical equipment room to verify the monitors on and reading at least background with no alarms present. **COMPARE** RM-90-125 and RM-90-126 count rates. Any monitor that is questionable may be blocked and source checked in accordance with 0-SO-90-2 to aid in determining operability.
6. **VERIFY** monitor is in service and the instrument malfunction is clear. **LIST** all inoperable monitors on Attachment 1.
7. **VERIFY** RM-90-130A and RM-90-131A operable by power to the monitors "on" and monitor reading at least background with no alarms present. **COMPARE** radiation levels to the opposite train and to the levels from previous shift using ICS computer or local ratemeter. Any monitor that is questionable may be blocked and source checked in accordance with 1-SO-90-2 to aid in determining operability.

* and during movement of irradiated fuel assemblies.

## SHIFT LOG- MODES 5 OR 6 (OUTSIDE MCR)

| | Surveillance Ref. | Mode | Notes | TS Limits | Breaker No. | Location | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Accumulator Breaker Position | 4.4.12.4 | 5, 6 | 8 | Breaker Locked in OFF | 1-BCTD-63-118-A | RMOV Bd.1A1-A C/13E | (√) | | | |
| | | | | | 1-BCTD-63-80-A | RMOV Bd.1A1-A C/13C | (√) | | | |
| | | | | | 1-BCTD-63-98-B | RMOV Bd.1B1-B C/11E | (√) | | | |
| | | | | | 1-BCTD-63-67-B | RMOV Bd.1B1-B C/11B | (√) | | | |
| | | | | | | | UO/RO Review Initials | | | |

NOTES:

8. Applicable in Mode 5 or Mode 6 when the reactor vessel head is on. Verify motive power breaker locked in OFF. Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

**APPENDIX E**
Page 1 of 4

## VENTILATION FAN STATUS U-1 (Shield Building)

**Vent Flow Rate Monitor inop flow rate estimate**

| FAN | Design Flowrate (CFM) | Mark "Yes" if fan is "running", "No" if fan is "off." | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0800 | | 1200 | | 1600 | | 2000 | | 2400 | | 0400 | | Remarks |
| | | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | |
| Containment Purge Exhaust Fan "A" | 14,000 | | | | | | | | | | | | | |
| Containment Purge Exhaust Fan "B" | 14,000 | | | | | | | | | | | | | |
| Instrument Room Exhaust Fan "A" | 800 | | | | | | | | | | | | | |
| ABGTS Exhaust Fan "A" | 9,000 | | | | | | | | | | | | | |
| EGTS Exhaust Fan "A" | 4,000 | | | | | | | | | | | | | |
| EGTS Exhaust Fan "B" | 4,000 | | | | | | | | | | | | | |
| PASF Gas Treatment Exhaust Fan B2[(1)] | 2,000 | | | | | | | | | | | | | |
| UO/RO Review Initials | | | | | | | | | | | | | | |

(1) Unit 2 PASF Emergency Ventilation System exhausts to the Unit 1 Shield Building Vent Stack. Verification of fan operation must be performed locally.

## VENTILATION FAN STATUS U-1 (Shield Building)

| Skid mounted Vacuum Pumps inop / OOS | | | | | |
|---|---|---|---|---|---|
| Shield Building Stack 1-PMP-90-452A | If Vacuum Pumps are Inoperable, Complete This Table by Checks and Initials | | | | |
| Vacuum Pumps 1-PMP-90-452B | 0630-1830 | | 1830-0630 | | Hold Order # / Remarks |
| (See Notes 1 & 2) | Yes | No | Yes | No | |
| Pumps Hand Switches "Off" | | | | | |
| 1-90-263 Isol Valve for 1-L-707 Closed AND | | | | | |
| 1-90-264 Isol Valve for 1-L-707 Closed (located at the Primary sampling skid) | | | | | |
| UO/RO Review Initials | | | | | |

1. IF 1-RM-90-400 IS INOPERABLE, NON-PAM radiation monitors 1-RM-90-260 and 1-RM-90-261 are used to monitor noble gas activity during post accident radiological conditions. For 1-RM-90-260 and 1-RM-90-261 to be operable, the Primary sample pumps (el 759 M/G Set Room) must be aligned with one (1) pump in service. 1-RM-90-400A (low range) is supplemented by Chem Lab sampling. 1-RM-90-400B (mid range) and 1-RM-90-400C (high range) are supplemented by 1-RM-90-260 and 1-RM-90-261. The ADMIN LIMIT for 1-RM-90-400 to be INOPERABLE is thirty (30) days.

2. **IF** both Shield Building Stack (Primary) sample pumps (el 759 M/G Set Room) are INOPERABLE, THEN ENSURE pumps off, AND CLOSE either Primary skid mounted flow isolation valves (1-ISIV-90-452A and 1-ISIV-90-452B) **OR** header isolation valves (1-90-263 and 1-90-264) to allow continued sampling of the shield bldg exhaust (NA valve set not closed). PLACE Hold Order on valves closed for configuration control. Isolating these pumps will cause 1-RM-90-260 and 1-RM-90-261 to be inoperable. (REF. 47W610-90-5).

## AUXILIARY BUILDING VENTILATION FAN STATUS

**Vent Flow Rate Monitor inop flow rate estimate (1)**

| FAN | Design Flowrate (CFM) | Mark "Yes" if fan is "running", "No" if fan is "off". | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0800 | | 1200 | | 1600 | | 2000 | | 2400 | | 0400 | | Remarks |
| | | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | |
| Fuel Handling Area Exhaust Fan "A" | 60,000 | | | | | | | | | | | | | |
| Fuel Handling Area Exhaust Fan "B" | 60,000 | | | | | | | | | | | | | |
| Auxiliary Bldg. Gen. Exhaust Fan 1A-A | 84,000 | | | | | | | | | | | | | |
| Auxiliary Bldg. Gen. Exhaust Fan 1B-B | 84,000 | | | | | | | | | | | | | |
| Auxiliary Bldg. Gen. Exhaust Fan 2A-A | 84,000 | | | | | | | | | | | | | |
| Auxiliary Bldg. Gen. Exhaust Fan 2B-B | 84,000 | | | | | | | | | | | | | |
| Operator's Initials | | | | | | | | | | | | | | |

(1) Refer to 1-SI-OPS-000-003.D.

## VENTILATION FAN STATUS U-1
## (Condenser Vacuum)

| **Vent Flow Rate Monitor inop estimated flow rate** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FAN | Design Flowrate | IF condenser vacuum flow monitor inop use 45 CFM for estimated value. | | | | | | |
| | **(CFM)** | 0800 | 1200 | 1600 | 2000 | 2400 | 0400 | Remarks |
| Condenser Vacuum Pump Exhaust | 45 | | | | | | | |
| UO/RO Review Initials | | | | | | | | |

**APPENDIX F**
Page 1 of 1

| | Max Ice Bed Temp. ≤27 °F? | Average Ice Bed Temp. in Range of 18°F to 20°F? (3) | ≥2 RTDs operable at each elevation for each one third of the ice condenser? (1) (2) | Data Printout from 1-TR-61-138 P001 attached to Appendix F? | **UO/RO Review Initials** |
|---|---|---|---|---|---|
| **0630 1830** | Yes ☐ No ☐ | Yes ☐ No ☐ | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| **1830 0630** | Yes ☐ No ☐ | Yes ☐ No ☐ | Yes ☐ No ☐ | Yes ☐ No ☐ | |
| | | | | | |
| REMARKS | | | | | |

(1) **IF** an RTD is determined to be inoperable, **THEN WRITE** "INOP" next to the applicable TE number below. (no data entry required next to the TE number if the TE is operable.)

(2) RTD is considered operable if reading is ≤27 °F and **no** asterisk is present beside data.

(3) The ice condenser temperatures may be operated outside the optimum range in accordance with engineering recommendations (see Precautions & limitations "C").

| | TE | 0630-1830 | 1830-0630 |
|---|---|---|---|
| el 778' Group 7 | 138 | | |
| | 141 | | |
| | 144 | | |
| | 147 | | |
| | 150 | | |
| el 778' Group 8 | 153 | | |
| | 156 | | |
| | 159 | | |
| | 165 | | |
| | 183 | | |
| el 778' Group 9 | 168 | | |
| | 171 | | |
| | 174 | | |
| | 177 | | |
| | 180 | | |

| | TE | 0630-1830 | 1830-0630 |
|---|---|---|---|
| el 753'9" Group 4 | 139 | | |
| | 142 | | |
| | 145 | | |
| | 148 | | |
| | 151 | | |
| el 753'9" Group 5 | 154 | | |
| | 157 | | |
| | 160 | | |
| | 166 | | |
| | 184 | | |
| el 753'9" Group 6 | 169 | | |
| | 172 | | |
| | 175 | | |
| | 178 | | |
| | 181 | | |

| | TE | 0630-1830 | 1830-0630 |
|---|---|---|---|
| el 733'6" Group 1 | 143 | | |
| | 146 | | |
| | 149 | | |
| | 152 | | |
| el 733'6" Group 2 | 155 | | |
| | 161 | | |
| | 167 | | |
| el 733'6" Group 3 | 170 | | |
| | 173 | | |
| | 176 | | |
| | 179 | | |

REMARKS____________________

## INSTANTANEOUS AVERAGE ULTIMATE HEAT SINK CALCULATION

[1] **CONTACT** River Scheduling at 632-7064 **AND**

**NOTIFY** the Lead Engineer that Sequoyah Nuclear Plant is experiencing high Ultimate Heat Sink temperature and river flow changes should be minimized. ☐

[2] **IF** 1T2006A and 2T2007A are available **AND** showing good data, **THEN** **PERFORM** the following:

[ a] **RECORD** temperature from 1T2006A and 2T2007A at least once each hour on the attached data sheet. ☐

[b] **CALCULATE** instantaneous average ERCW temperature by summing the recorded values and dividing by 2. ☐

[c] **OBTAIN** independent verification of the calculated value. ☐

[d] **CONTINUE** to record temp readings and water level UNTIL

- Eight consecutive temperature readings are less than 82.5°F with water level ≥ 680 ft,

OR

- Eight consecutive temperature readings are less than 81°F with water level ≥ 670 ft and ≤ 680 ft. ☐

**INSTANTANEOUS AVERAGE ULTIMATE HEAT SINK CALCULATION**

[3] **IF** 1T2006A and 2T2007A are NOT available **OR** show bad data, **THEN**
**PERFORM** the following:

[a] **OBTAIN** Fluke 2189A Temperature Systems (accuracy +/- 0.2 deg F) from M&TE. ☐

[b] **RECORD** M&TE equipment numbers (N/A as necessary)
1-TW-67-425 ____________
2-TW-67-426 ____________

[c] **OBTAIN** heat sink compound from MIG or power stores. ☐

[d] **APPLY** heat sink compound to Fluke probe. ☐

[e] **INSTALL** Fluke Thermometry system at 1-TW-67-425 or 2-TW-67-426 as needed. ☐

[f] **RECORD** temperature from 1-TW-67-425 and 2-TW-67-426 at least once each hour on the attached data sheet. ☐

[g] **CALCULATE** instantaneous average ERCW temperature by summing the recorded values and dividing by 2 ☐

[h] **OBTAIN** independent verification of the calculated value. ☐

[i] **CONTINUE** to record temperature readings and water level UNTIL

- Eight consecutive temperature readings are less than 82.5°F with water level ≥ 680 ft,

OR

- Eight consecutive temperature readings are less than 81°F with water level ≥ 670 ft and ≤ 680 ft. ☐

**INSTANTANEOUS AVERAGE ULTIMATE HEAT SINK CALCULATION**

[4] **WHEN** Appendix G can be exited, **THEN**

**NOTIFY** River Scheduling at 632-7064 that Ultimate Heat Sink temperature is no longer critical and normal river flow control may be resumed. ☐

[5] **ENSURE** Fluke Thermometry system installed in step **[3] [e]** has been removed. ☐

**APPENDIX G**
Page 4 of 4

**INSTANTANEOUS AVERAGE ULTIMATE HEAT SINK CALCULATION**

DATE ____________

| TIME | ERCW HDR TEMP | ERCW HDR TEMP | Instantaneous Average. | WATER LEVEL | INITIALS | IV |
|---|---|---|---|---|---|---|
| | 1T2006A or 1-TW-67-425 | 2T2007A or 2-TW-67-426 | | | | |
| 0700 | | | | | | |
| 0800 | | | | | | |
| 0900 | | | | | | |
| 1000 | | | | | | |
| 1100 | | | | | | |
| 1200 | | | | | | |
| 1300 | | | | | | |
| 1400 | | | | | | |
| 1500 | | | | | | |
| 1600 | | | | | | |
| 1700 | | | | | | |
| 1800 | | | | | | |
| 1900 | | | | | | |
| 2000 | | | | | | |
| 2100 | | | | | | |
| 2200 | | | | | | |
| 2300 | | | | | | |
| 2400 | | | | | | |
| 0100 | | | | | | |
| 0200 | | | | | | |
| 0300 | | | | | | |
| 0400 | | | | | | |
| 0500 | | | | | | |
| 0600 | | | | | | |

**ACCEPTANCE CRITERIA:** Average ERCW supply temperature ≤83°F with water level ≥ 670'
OR ≤ 84.5°F with water level > 680'

**APPENDIX H**
Page 1 of 1

## ODCM ACTIONS FOR INOPERABLE SHIELD BUILDING VENT FLOW RATE MONITOR
## ODCM 1.1.2.3.a ACTION 43

| Shield Building | ODCM Limits | Notes | Instrument No./Location | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|
| Vent Flow Rate Monitor (inoperable) | "Low Rng" is selected | 1,2 | 1-RI-90-400 M-30 | √ | | | |
| | Instrument Malfunction is clear | 1,3 | 1-XA-55-30 M-30 (Window 15) | √ | | | |
| | "Low Rng" reading obtained at least once per 24 hours | 1,4,5 | 1-RI-90-400 M-30 | μCi/cc | | | |
| | | | | UO/RO Review Initials | | | |

NOTES:

1. With any inoperable flow element on a discharge pathway where a fan is operating (Purge A, Purge B, ABGTS, or EGTS), effluent release may continue provided the actions of Appendix E are performed
2. **ENSURE** the "Low Range" button on 1-RI-90-400 has been selected (button will be lit).
3. **VERIFY** window 15 on 1-XA-55-30 is clear.
4. **RECORD** reading on digital display for 1-RI-90-400.
5. **VERIFY** Low Range value is less than or equal to 1.74E-03. (This maximum value is equivalent to 9.36% of the site release rate limit). **IF** the Low Range reading exceeds 1.74E-03, **THEN STOP** any gas release in progress and NOTIFY Chemistry to determine release rate in accordance with 0-SI-CEM-030-415.0.

**APPENDIX I**
Page 1 of 2

## ICE BED TEMPERATURES BACKUP METHOD

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 778' Group 7 | 138 | | | ≤ 27°F |
| | 141 | | | |
| | 144 | | | |
| | 147 | | | |
| | 150 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 753'9" Group 4 | 139 | | | ≤ 27°F |
| | 142 | | | |
| | 145 | | | |
| | 148 | | | |
| | 151 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 733'6" Group 1 | 143 | | | ≤27°F |
| | 146 | | | |
| | 149 | | | |
| | 152 | | | |
| | | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 778' Group 8 | 153 | | | ≤ 27°F |
| | 156 | | | |
| | 159 | | | |
| | 165 | | | |
| | 183 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 753'9" Group 5 | 154 | | | ≤ 27°F |
| | 157 | | | |
| | 160 | | | |
| | 166 | | | |
| | 184 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 733'6"' Group 2 | 155 | | | ≤27°F |
| | 161 | | | |
| | | | | |
| | 167 | | | |
| | | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 778' Group 9 | 168 | | | ≤ 27°F |
| | 171 | | | |
| | 174 | | | |
| | 177 | | | |
| | 180 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 753'9" Group 6 | 169 | | | ≤ 27°F |
| | 172 | | | |
| | 175 | | | |
| | 178 | | | |
| | 181 | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | TE | 0630 1830 | 1830 0630 | Limit |
|---|---|---|---|---|
| el 733'6" Group 3 | 170 | | | ≤27°F |
| | 173 | | | |
| | 176 | | | |
| | 179 | | | |
| | | | | |
| Two Highest Temps 1. | | | | |
| 2. | | | | |
| Sum of 1 & 2 | | | | |

| | Total of Sums | Average Ice Bed Temp.(Totals Divided by 18) | Optimum Average Ice Bed Temp. | UO/RO Review Initials |
|---|---|---|---|---|
| 0630 / 1830 | °F | °F | 18°F - 20°F | |
| 1830 / 0630 | °F | °F | 18°F - 20°F | |
| REMARKS | | | | |

## ICE BED TEMPERATURES BACKUP METHOD

1. **DETERMINE** operability of the ice condenser from the temperature standpoint as follows:
   A. **PUSH** the **MAN PRINT** button on 1-TR-61-138 P001 temperature recorder located on 1-M-10 in the Main Control Room.
   B. **WHEN** printout is complete, **THEN RECORD** the data from the printout for the applicable ice bed TE's on Appendix I. **IF** printout is unavailable, **THEN RECORD** data from recorder display.
   C. **RECORD** the two highest temperatures in each group where indicated on Appendix I.
   D. **SUM** the two highest temperatures **AND ENTER** the total where indicated on Appendix I.
   E. **TOTAL** the sums of the two highest temperatures in all groups **AND ENTER** where indicated on Appendix I.
   F. **DIVIDE** the total by 18 to calculate the average temperature **AND ENTER** the value where indicated on Appendix I.
   G. **IF** the calculated average temperature is not in the optimum range of 18°F to 20°F, **THEN NOTIFY** the unit SRO to ensure adequate chiller alignment for maintaining optimum average temperature. **[C.2]**
2. **VERIFY** operability of the ice bed temperature monitoring system as follows:
   A. Power to 1-TR-61-138 P001 is **ON**.
   B. Comparing temperatures on Appendix I, **VERIFY** there are at least two operable RTDs at each of the three basic elevations for each one third of the ice condenser.
3. **ENTER** any inoperable channels in the **REMARKS** section **AND NOTIFY** the Instrument Department to initiate 1-SI-IXX-061-138.0 to take local readings if 1-TR-61-138 P001 becomes inoperable. **[C.3]**

**APPENDIX J**
Page 1 of 2

Date___________

## HOURLY S/G AND RCS PRESSURE READINGS

| TIME | SG #1 | SG #2 | SG #3 | SG #4 | RCS PRESS | INITIALS |
|---|---|---|---|---|---|---|
| | PI-1-2A **or** PI-1- 2B (computer points P0400A or P0401A) NOTE 1 | PI-1-9A **or** PI-1- 9B (computer points P0420A or P0421A) NOTE 1 | PI-1-20A **or** PI-1-20B (computer points P0440A or P0441A) NOTE 1 | PI-1-27A **or** PI-1-27B (computer points P0460A or P0461A) NOTE 1 | PI-68-66 **or** PI-68-62 **or** PI-68-69 (computer points P0129A or P0499A) NOTE 1, 2 | |
| 0700 | | | | | | ______ |
| 0800 | | | | | | ______ |
| 0900 | | | | | | ______ |
| 1000 | | | | | | ______ |
| 1100 | | | | | | ______ |
| 1200 | | | | | | ______ |
| 1300 | | | | | | ______ |
| 1400 | | | | | | ______ |
| 1500 | | | | | | ______ |
| 1600 | | | | | | ______ |
| 1700 | | | | | | ______ |
| 1800 | | | | | | ______ |

**(continued next page)**

(1) **IF** S/G or RCS pressure is greater than 200 psig, **THEN PERFORM** 0-SI-OPS-000-004.0.

(2) **IF** reactor vessel head is removed, then "HEAD OFF" may be entered in place of RCS pressure.

**APPENDIX J**
Page 2 of 2

Date____________

## HOURLY S/G AND RCS PRESSURE READINGS

| TIME | SG #1 | SG #2 | SG #3 | SG #4 | RCS PRESS | INITIALS |
|---|---|---|---|---|---|---|
| | PI-1-2A **or** PI-1- 2B (computer points P0400A or P0401A)<br><br>NOTE 1 | PI-1-9A **or** PI-1- 9B (computer points P0420A or P0421A)<br><br>NOTE 1 | PI-1-20A **or** PI-1-20B (computer points P0440A or P0441A)<br><br>NOTE 1 | PI-1-27A **or** PI-1-27B (computer points P0460A or P0461A)<br><br>NOTE 1 | PI-68-66 **or** PI-68-62 **or** PI-68-69 (computer points P0129A or P0499A)<br>NOTE 1, 2 | |
| 1900 | | | | | | ______ |
| 2000 | | | | | | ______ |
| 2100 | | | | | | ______ |
| 2200 | | | | | | ______ |
| 2300 | | | | | | ______ |
| 2400 | | | | | | ______ |
| 0100 | | | | | | ______ |
| 0200 | | | | | | ______ |
| 0300 | | | | | | ______ |
| 0400 | | | | | | ______ |
| 0500 | | | | | | ______ |
| 0600 | | | | | | ______ |

(1) **IF** S/G or RCS pressure is greater than 200 psig, **THEN PERFORM** 0-SI-OPS-000-004.0.

(2) **IF** reactor vessel head is removed, then "HEAD OFF" may be entered in place of RCS pressure.

**APPENDIX K**
Page 1 of 1

## RCS FLOWS BACKUP METHOD

| | Surveillance Ref. | Notes | Mode | TS Limits | Instrument No. | Units | 0630-1830 | 1830-0630 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| Reactor Coolant Flow | 4.2.5.1 4.3.1.1.1.A.12 4.3.1.1.1.A.13 | 33 | 1 | ≥ 100 % | 1-FI-68-6A | % | | | |
| | | | | | 1-FI-68-6B | % | | | |
| | | | | | 1-FI-68-6D | % | | | |
| | | | | | 1-FI-68-29A | % | | | |
| | | | | | 1-FI-68-29B | % | | | |
| | | | | | 1-FI-68-29D | % | | | |
| | | | | | 1-FI-68-48A | % | | | |
| | | | | | 1-FI-68-48B | % | | | |
| | | | | | 1-FI-68-48D | % | | | |
| | | | | | 1-FI-68-71A | % | | | |
| | | | | | 1-FI-68-71B | % | | | |
| | | | | | 1-FI-68-71D | % | | | |
| | | | Total all operable indicators and divide by number of operable indicators for average | | | | ____ ÷ ____ Total # Ind = ________ Average | ____ ÷ ____ Total # Ind = ________ Average | |
| | | 34 | Compare average to 100% Mark YES if ≥ 100%. IF < 100% then perform the action of Note 34. | | | | ☐ Yes ☐ No ☐ Acceptable | ☐ Yes ☐ No ☐ Acceptable | |
| | | | | | | | | | |

UO/RO Review Initials

**NOTES:**

33. **COMPARE** the three flow indicating channels on each RCS loop to each other. Acceptable deviation between channels is equal to or less than 7%.
34. **IF** the average RCS flow is < 100%, **THEN NOTIFY** Unit SRO to **EVALUATE** LCO 3.2.5 (Figure 3.2-1). **IF** the average RCS flow is within the *Acceptable Operation Region* of the Tech Spec Flow vs. Power figure 3.2-1, **THEN** mark Acceptable. **IF** average RCS flow is in the *Unacceptable Operation Region*, **THEN** mark NO and **NOTIFY** the Unit SRO to evaluate LCO 3.2.5 and possible power reduction until the flow rate is in the *Acceptable Operation Region* .

**APPENDIX L**
Page 1 of 2

**ENSURE** Safety Injection Pumps cannot inject into the RCS by verifying all of OPTION 1 or 2 or 3 or 4 or 5:

OPTION 1. 1A-A and 1B-B SIS Pumps and injection flow path.

| | | |
|---|---|---|
| SI Pump 1A PULL-TO-LOCK | 1-FCV-63-156 CLOSED | 1-FCV-63-23 CLOSED |
| SI Pump 1B PULL-TO-LOCK | 1-FCV-63-157 CLOSED | |
| 1-FCV-63-22 CLOSED | 1-VLV-63-645 CLOSED | |

OPTION 2 1A-A and 1B-B SI pump breakers racked out and tagged under a clearance:

OPTION 3. The following valves closed and tagged under a clearance:

| | |
|---|---|
| 1-FCV-63-22 (handwheel and breaker tagged)<br>**OR**<br>1-FCV-63-152 **AND** 1-FCV-63-153 (handwheel and breakers tagged) | 1-FCV-63-23 (fuses tagged) |
| 1-FCV-63-156 (handwheel and breaker tagged) | 1-VLV-63-645 LOCKED CLOSED and tagged |
| 1-FCV-63-157 (handwheel and breaker tagged) | |

APPENDIX L
Page 2 of 2

OPTION 4. Combination of pump breaker racked out and tagged **AND** valves associated with opposite train closed:

1. SI Pump 1A-A and “B” Train valves:

| | |
|---|---|
| 1A-A SI Pmp Breaker RACKED OUT and TAGGED | 1-FCV-63-157 CLOSED. |
| SI Pump 1B-B PULL-TO-LOCK. | 1-FCV-63-153 CLOSED. |

**OR**

2. SI Pump 1B-B and “A” Train valves:

| | |
|---|---|
| 1B-B SI Pmp Breaker RACKED OUT and TAGGED | 1-FCV-63-152 CLOSED |
| SI Pump 1A-A PULL-TO-LOCK | 1-FCV-63-23 CLOSED |
| 1-FCV-63-156 CLOSED | |

OPTION 5: Filling the CLA will require the following:

| | |
|---|---|
| SI Pump not used for filling the CLA: PULL-TO-LOCK<br><br>Flow Control Valves closed with breaker and handwheel tagged under clearance:<br>1-FCV-63-22, 1-FCV-63-156, 1-FCV-63-157.<br><br>1-VLV-63-645 locked closed and tagged under clearance. | Test header valves closed, fuses pulled, and tagged:<br>1-FCV-63-21, 1-FCV-63-24, 1-FCV-63-68, 1-FCV-63-69, 1-FCV-63-78, 1-FCV-63-79, 1-FCV-63-96, 1-FCV-63-97, 1-FCV-63-111, 1-FCV-63-112, 1-FCV-63-116, 1-FCV-63-117, 1-FCV-63-121, 1-FCV-63-158, 1-FCV-63-163, 1-FCV-63-164, 1-FCV-63-165, 1-FCV-63-166, 1-FCV-63-167, 1-FCV-63-174. |

**APPENDIX M**
Page 1 of 1

## ODCM ACTIONS FOR INOPERABLE SHIELD BUILDING VENT FLOW RATE MONITOR
## ODCM 1.1.2.3.f ACTION 46

| Shield Building | ODCM Limits | Notes | Instrument No./Location | Units | 0630-1830 | 1830-0630 | Remarks |
|---|---|---|---|---|---|---|---|
| Vent Flow Rate Monitor (inoperable) | "Low Rng" is selected | 1,2 | 1-RI-90-400 M-30 | √ | | | |
| | Instrument Malfunction is clear | 1,3 | 1-XA-55-30 M-30 (Window 15) | √ | | | |
| | "Low Rng" reading obtained at least once per 24 hours | 1,4,5 | 1-RI-90-400 M-30 | μCi/cc | | | |
| | Flow greater than 2 cfm | 6 | 1-RM-90-400 M-30 Monitor Item #28 | 2 cfm | | | |
| | | | | UO/RO Review Initials | | | |

NOTES:

1. With any inoperable flow element on a discharge pathway where a fan is operating (Purge A, Purge B, ABGTS, or EGTS), effluent release may continue provided the actions of Appendix E are performed
2. **ENSURE** the "Low Range" button on 1-RI-90-400 has been selected (button will be lit).
3. **VERIFY** window 15 on 1-XA-55-30 is clear.
4. **RECORD** reading on digital display for 1-RI-90-400.
5. **VERIFY** Low Range value is less than or equal to 1.74E-03. (This maximum value is equivalent to 9.36% of the site release rate limit). **IF** the Low Range reading exceeds 1.74E-03, **THEN STOP** any gas release in progress and NOTIFY Chemistry to determine release rate in accordance with 0-SI-CEM-030-415.0
6. .Record reading on 1-RI-90-400 Monitor item #28 indication.

**APPENDIX N**
Page 1 of 1

[1] **IF** sump in leakage permits, **THEN**
**ENSURE** one Turbine Building Sump Pump in **OFF USING** 0-SO-40-4
**AND RECORD** 1,750 as estimated flow rate.

[2] **IF** sump in leakage requires both pumps in Auto, **THEN**
**RECORD** 3,500 as estimated flow rate.

[3] **WHEN** Turbine Building Sump Discharge Flow Rate Monitor returned operable, **THEN**
**ENSURE** Turbine Building Sump Pumps aligned normal per 0-SO-40-4.

### Turbine Building Sump Discharge

| Turbine Building Sump Discharge **Flow Rate Monitor inop estimated flow rate.** (Refer to 1-SI-OPS-000-003.D) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Estimated Flowrate (GPM) | Turbine Building Sump Discharge flow monitor estimated value. | | | | | | |
| | | 0800 | 1200 | 1600 | 2000 | 2400 | 0400 | Remarks |
| Turbine Building Sump Discharge (1 pump in off) | 1,750 | | | | | | | |
| Turbine Building Sump Discharge (Both pumps in Auto) | 3,500 | | | | | | | |
| UO/RO Review Initials | | | | | | | | |

## SOURCE NOTES



| REQUIREMENTS STATEMENT | SOURCE DOCUMENT | IMPLEMENTING STATEMENT |
|---|---|---|
| TVA will revise PORC approved procedures to add the requirement to test the existing circuitry once each shift prior to Unit 2 restart. Moved to 0-GO-14. | NCO 870361 065<br>L44 871229 810 | **[C.1]** |
| Following Systems Engineering's evaluation of available industry information, revise SI-2 accordingly to specify the most optimum operation range (temperature) necessary to minimize ice sublimation and frost buildup. | NCO 880410 010<br>S53 880409 831 | **[C.2]** |
| To ensure local readings will be taken in accordance with Technical Specifications if TR-61-138 P001 becomes inoperable. | S10 890911 811<br>Inspection Report 89-18<br>Violation No. 89-18-03,04,10 | **[C.3]** |
| To ensure that midscale/lowscale instrument failures on loss of power are not mistaken for operating points. | NER 820097005<br>INPO SOER 81-002 | **[C.4]** |
| This statement was modified by DCN F09221A. If ERCW strainer is out of service, ERCW temperature must be verified <80°F. | RIMS 38 950105 812 | **[C.5]** |

ADMIN A.2

# SEQUOYAH NUCLEAR PLANT
# JOB PERFORMANCE MEASURE

# JPM A.2

## Containment Closure Requirements

**PREPARED/**
**REVISED BY:** ______________________________ Date/ __________

**VALIDATED BY:** * ______________________________ Date/ __________

**APPROVED BY:** ______________________________ Date/ __________
(Operations Training Manager)

**CONCURRED:** ** ______________________________ Date/ __________
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.
** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

**NUCLEAR TRAINING**

**REVISION/USAGE LOG**

| REVISION NUMBER | DESCRIPTION OF REVISION | V | DATE | PAGES AFFECTED | PREPARED/ REVISED BY: |
|---|---|---|---|---|---|
| 0 | New JPM | Y | | All | |

V - Specify if the JPM change will require another validation (Y or N).
See cover sheet for criteria.

**SEQUOYAH NUCLEAR PLANT**
**RO/SRO**
**JOB PERFORMANCE MEASURE**

**Task:**
Containment Closure Requirements

**JA/TA task:**
**#342007302** (SRO)
**#342008302** (SRO)

**K/A Ratings:**
2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations. (CFR: 43.5 / 45.13) 3.6

**Task Standard:**
Candidate determines that the penetration can be opened and requires person responsible for closure be identified by name and instructs the required personnel remain on site to close the penetration by the estimated closure time.

**Evaluation Method** : Simulator ___X_____ In-Plant ___X____ Classroom __X_____

================================================================================

**Performer:** ______________________________________
NAME
Start Time ________

**Performance Rating :** SAT _____ UNSAT _____ Performance Time _____ Finish Time _______

**Evaluator:** ________________________________/________
SIGNATURE DATE

================================================================================

**COMMENTS**

**SPECIAL INSTRUCTIONS TO EVALUATOR:**

1. Sequenced steps identified by an "s"
2. Any UNSAT requires comments.
3. Ensure setting for performance has access to exam reference procedures that includes 0-GO-15.
4. Ensure operator performs the following required actions for **SELF-CHECKING;**
   a. Identifies the correct unit, train, component, etc.
   b. Reviews the intended action and expected response.
   c. Compares the actual response to the expected response.

**Validation Time: CR.** 18 min **Local** ___________

**Tools/Equipment/Procedures Needed:**

0-GO-15

**References:**

| | Reference | Title | Rev No. |
|---|---|---|---|
| 1. | 0-GO-15 | Containment Closure Control | 023 |

==========================================================================

**READ TO OPERATOR**

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 2 is in Mode 6.
2. Core reload complete.
3. Nozzle dams removed.
4. Preparing to set the reactor head on the vessel.
5. Refuel cavity water level is currently at El. 703'.
6. RHR inlet temperature is 101°F.
7. Containment air temperature is 86°F.
8. Decay heat is 4 MW(th).
9. Train B RHR is in service, Train A on standby.
10. A maintenance foreman has requested to open containment penetration X-88, Maintenance Access Penetration, in accordance with an approved work plan WO 07701357000.
11. If closure is necessary, the breach will be closed from inside containment and is estimated to take 35 minutes to close.

**INITIATING CUES:**

1. You are an SRO.
2. Calculate the maximum allowable closure time.
3. Determine the minimum requirements that must be met for the maximum allowable closure time to allow opening the penetration.
4. Complete the documentation.

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 1.: Obtain the appropriate procedure.<br><br>STANDARD: Operator identifies 0-GO-15 and uses Appendix F "Containment Closure Evaluation Process". | ___ SAT<br>___ UNSAT<br>Start Time____ |
| STEP 2.: [1] **RECORD** the following information:<br><br>Decay Heat (Data provided by Nuclear Fuels) ____________<br><br>RHR Inlet Temperature(1): _____ RCS water level(2): _______<br><br>STANDARD: Performer records the 3 data points from the turnover sheet<br>Decay Heat (Data provided by Nuclear Fuels) 4MWe<br>RHR Inlet Temperature(1): 101°F<br>RCS water level(2): EL 703'<br><br>COMMENTS: | ___ SAT<br>___ UNSAT |

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 3.: [2] **DETERMINE** the Allowable Closure Time from the following table: | ___ SAT<br>___ UNSAT<br>**Critical Step** |

| RCS Water Level | Inside Containment Closure Time Requirement (Minutes) | Outside Containment Closure Time Requirement (Minutes) |
|---|---|---|
| **Closed RCS with at least 2 steam generators with secondary side full** | | |
| Above RI | 120 | 120 |
| Below RI | N/A | N/A |
| **Open RCS with Core Decay Heat >15 MW(th)** | | |
| Above RI | Contact Engineering for closure time | Contact Engineering for closure time |
| Below RI | Contact Engineering for closure time | Contact Engineering for closure time |
| **Open RCS with Core Decay Heat <15 MW(th)** | | |
| Above RI | 28 | 60 |
| Below RI | 21 | 45 |
| **Open RCS with Core Decay Heat <6 MW(th)** | | |
| Above RI | 100 | 180 |
| Below RI | 60 | 165 |
| **Reactor Vessel Head and Upper Internals Removed/Reactor Cavity flooded to el. 712** | | |
| Above RI | 120 | 180 |
| Below RI | N/A | N/A |

STANDARD: Performer uses Inside Containment Column, Open RCS with Core Heat < 6 MW(th), Above Reduced Inventory to determine allowable Closure time to be 100 minutes

COMMENTS:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 4.: [3] **RECORD** the "Allowable Closure Time" from step **[2]**:<br>ACT = _______ | ___ SAT<br>___ UNSAT |

STANDARD: Performer records the Allowable Closure time equal to 100 minutes

COMMENTS:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 5.: [4] **ENSURE** the ACT transferred to Appendix A for each item<br><br>PERFORMED BY:__________________DATE:________<br><br>***Cue: After performer locates Appendix A, if asked, provide information below:***<br>***No other Containment closure exceptions exist***<br>***WO has closure Procedure step text included***<br><br>STANDARD: Performer refers to Appendix A to record information.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |
| *The next step enters Section B: Evaluation of Containment Closure Exceptions*<br>*1.0 Evaluation of Containment Closure Exceptions* | |
| STEP 6.: [5] **IDENTIFY** the containment closure exceptions.<br><br>***Cue: If asked state "There are no other containment closure exemptions in effect"***<br><br>STANDARD: Performer identifies this as a containment closure exception.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |
| STEP 7.: [6] **OBTAIN** from the person responsible for penetration closure the estimated amount of time to physically close the opening, **AND DOCUMENT** on Appendix A.<br><br>Estimated Closure Time (ECT): ___________ (minutes)<br><br>***Cue: If asked state "Review initial conditions"***<br><br>STANDARD: Performer determines from the turnover sheet that it is estimated to take 35 minutes to close the penetration or asks to determine the length of time estimated to close the penetration.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 8.: [7] **ENSURE** the work document has instructions to close the penetration on a loss of RHR, **AND**<br>**WRITE** the document number on Appendix A.<br><br>***Cue: If asked state " The Work Document has instructions to close the penetration on a loss of RHR"***<br><br>STANDARD: Performer verifies the work document has instructions to close the penetration on a loss of RHR.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |
| STEP 9.: [8] **EVALUATE** the margin to closure (Allowable closure time - Estimated closure time) to determine personnel requirements.<br>Margin = ________ - __________ = _________<br>ACT ECT<br><br>STANDARD: Performer determines the margin to closure to be 65 minutes.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |
| STEP 10.: [9] **IF** the margin is less than 15 minutes, **THEN**<br>[9.1] **ENSURE** closure capability by having the person responsible for closure - **STATION** personnel at the penetration. **OR**<br>[9.2] **ENSURE** an approved written action plan has been provided in which a timeline is documented demonstrating a successful task completion based on the estimated closure time, and the Operations Manager or designee has approved the use of the action plan.<br><br>______________________ ________<br>Operations Manager/ Designee Date<br><br>STANDARD: Performer NAs the step because the IF/THEN condition does not exist, i.e. Margin is greater than 15 minutes.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step** |

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 11.: [10] **ENSURE** closure capability by having the person responsible for closure-require personnel remain on site to close the penetration by the estimated closure time.<br><br>***Cue: When directed "Acknowledge the request"***<br><br>STANDARD: Performer determines the responsible person must have the individuals required for closure remain on site.<br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step** |
| STEP 12.: [11] **NOTIFY** the person responsible for closure of the type of coverage determined by steps1.1.1[9] and 1.1.1[10], **AND OBTAIN** names of individuals on each shift to contact should closure be required<br><br>***Cue: When asked for the names, state "Jim Smith on days / Bob Jones on nights" Both can be reached at phone 4108/ beeeper 20419***<br><br>STANDARD: Performer obtains the names of the individuals on each shift to contact to closure.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step** |
| STEP 13.: [12] **IF** the penetration cannot be closed within the ACT, and the margin is negative, **THEN**<br>[12.1] the breach SHALL be closed or not allowed to be opened. **OR**<br>[12.2] a written evaluation has been performed which documents the assumptions involved, and the Operations Manager or designee allows the penetration to be opened.<br><br>______________________ ________<br>Operations Manager/ Designee Date<br><br>STANDARD: Performer NAs the step becaue the IF/THEN condition does not exist, i.e. Margin is Not negative.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 14.: [13] **COMPLETE** Appendix A to document the open penetration.<br><br>STANDARD: Candidate records the information provided in the JPM on Appendix A<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>Stop Time____ |

**End of JPM**

**CANDIDATE CUE SHEET**
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

## DIRECTION TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

## INITIAL CONDITIONS:

1. Unit 2 is in Mode 6.
2. Core reload complete.
3. Nozzle dams removed.
4. Preparing to set the reactor head on the vessel.
5. Refuel cavity water level is currently at El. 703'.
6. RHR inlet temperature is 101°F.
7. Containment air temperature is 86°F.
8. Decay heat is 4 MW(th).
9. Train B RHR is in service, Train A on standby.
10. A maintenance foreman has requested to open containment penetration X-88, Maintenance Access Penetration, in accordance with an approved work plan WO 07701357000.
11. If closure is necessary, the breach will be closed from inside containment and is estimated to take 35 minutes to close.

## INITIATING CUES:

1. You are an SRO.
2. Calculate the maximum allowable closure time.
3. Determine the minimum requirements that must be met for the maximum allowable closure time to allow opening the penetration.
4. Complete the documentation.

KEY



**Appendix F**
**(Page 1 of 5)**

**CONTAINMENT CLOSURE EVALUATION PROCESS**

**Unit** 2 **Date** TODAY

**NOTES**

1) Perform Section A each day while in Modes 5 or 6. Also, perform Section A if plant conditions change which would decrease the "Allowable Closure Time" (ACT) calculated for that day. "Allowable Closure Time" may decrease if RCS temperature increases. Data required for completion of Section B Steps 1 through 3 can be obtained at any time. A conservative RCS temperature can be assumed to ensure all daily activities are bounded.

2) This Appendix may be maintained in spreadsheet form on a computer.

3) The containment penetration closure time requirements with an open RCS are based on an initial RCS water temperature and an initial upper compartment air temperature of 100°F. If either the RCS water or containment upper compartment temperature exceeds 105°F, Engineering must be contacted for closure time.

**Section A: Calculation of "Allowable Closure Time"**

[1] **RECORD** the following information:

Decay Heat (Data provided by Nuclear Fuels) 4 MWt

RHR Inlet Temperature(1): 101°F RCS water level(2): EL 703

(1) Two trains of RHR in service may be averaged to determine temperature.

(2) RCS water level is defined as Above Reduced Inventory (Above RI) or Below Reduced Inventory (Below RI).

KEY



Appendix F
(Page 2 of 5)

Unit 2 Date TODAY

[2] **DETERMINE** the Allowable Closure Time from the following table:

| RCS Water Level | Inside Containment Closure Time Requirement (Minutes) | Outside Containment Closure Time Requirement (Minutes) |
|---|---|---|
| **Closed RCS with at least 2 steam generators with secondary side full** | | |
| Above RI | 120 | 120 |
| Below RI | N/A | N/A |
| **Open RCS with Core Decay Heat >15 MW(th)** | | |
| Above RI | Contact Engineering for closure time | Contact Engineering for closure time |
| Below RI | Contact Engineering for closure time | Contact Engineering for closure time |
| **Open RCS with Core Decay Heat <15 MW(th)** | | |
| Above RI | 28 | 60 |
| Below RI | 21 | 45 |
| **Open RCS with Core Decay Heat <6 MW(th)** | | |
| Above RI | 100 | 180 |
| Below RI | 60 | 165 |
| **Reactor Vessel Head and Upper Internals Removed/Reactor Cavity flooded to el. 712** | | |
| Above RI | 120 | 180 |
| Below RI | N/A | N/A |

RI - Reduced Inventory

KEY



**Appendix F**
**(Page 3 of 5)**

**Unit** 2 **Date** TODAY

[3] **RECORD** the "Allowable Closure Time" from step **[2]**:

ACT= 100 MIN

[4] **ENSURE** the ACT transferred to Appendix A for each item

PERFORMED BY: ______________ DATE: TODAY
SRO

**Section B: Evaluation of Containment Closure Exceptions**

**1.0 Evaluation of Containment Closure Exceptions**

**NOTE**

This section shall be used to fill out Appendix A and evaluate open containment penetrations. This section does not have to be maintained (may be discarded) in the notebook for each penetration.

[5] **IDENTIFY** the containment closure exceptions. ☑

[6] **OBTAIN** from the person responsible for penetration closure the estimated amount of time to physically close the opening, **AND**

**DOCUMENT** on Appendix A. ☐

Estimated Closure Time (ECT): 35 (minutes)

[7] **ENSURE** the work document has instructions to close the penetration on a loss of RHR, **AND**

**WRITE** the document number on Appendix A. ☐

KEY



**Appendix F**
**(Page 4 of 5)**

**Unit** 2 **Date** TODAY

**1.0 Evaluation of Containment Closure Exceptions (continued)**

[8] **EVALUATE** the margin to closure (Allowable closure time - Estimated closure time) to determine personnel requirements. ☑

Margin = 100 (ACT) - 35 (ECT) = 65

| NOTE |
|---|
| Operations Manager or designee may allow a margin less than 15 minutes provided an approved written action plan has been provided in which a timeline is documented demonstrating a successful task completion based on the estimated closure time. |

[9] **IF** the margin is less than 15 minutes, **THEN** N/A

[9.1] **ENSURE** closure capability by having the person responsible for closure - **STATION** personnel at the penetration. ☐

**OR**

[9.2] **ENSURE** an approved written action plan has been provided in which a timeline is documented demonstrating a successful task completion based on the estimated closure time, and the Operations Manager or designee has approved the use of the action plan.

____________________ __________
Operations Manager/ Designee Date

KEY



**Appendix F**
**(Page 5 of 5)**

**Unit** 2 **Date** TODAY

**1.0 Evaluation of Containment Closure Exceptions (continued)**

[10] **ENSURE** closure capability by having the person responsible for closure- require personnel remain on site to close the penetration by the estimated closure time. ☑

[11] **NOTIFY** the person responsible for closure of the type of coverage determined by steps1.1.1[9] and 1.1.1[10], **AND**

**OBTAIN** names of individuals on each shift to contact should closure be required. ☑

| **NOTE** |
|---|
| Operations Manager or designee may allow the penetration to be opened when the margin is negative provided a written evaluation is performed which documents the assumptions involved and the justification for why opening the penetration is acceptable. |

N/A

[12] **IF** the penetration cannot be closed within the ACT, and the margin is negative, **THEN**

[12.1] the breach SHALL be closed or not allowed to be opened. ☐

**OR**

[12.2] a written evaluation has been performed which documents the assumptions involved, and the Operations Manager or designee allows the penetration to be opened.

_______________________ Operations Manager/ Designee _________ Date

[13] **COMPLETE** Appendix A to document the open penetration. ☑

KE



Appendix A
(Page 1 of 1)

Unit 2

## CONTAINMENT CLOSURE EXCEPTIONS

### NOTES

1) This Page may be substituted by a computer generated spreadsheet.

2) When notifying responsible groups to initiate containment closure, contact individual responsible for closure of containment hatch first. Subsequent notification should be made for those openings with the longest closure time.

| OPEN PENETRATION (DESCRIPTION & NUMBER) | CLOSURE RESPONSIBILITY | | | DATA FROM APPENDIX F (MINUTES) | | CLOSURE PROCEDURE | DATE OPENED | DATE CLOSED |
|---|---|---|---|---|---|---|---|---|
| | SHIFT | OWNER | PHONE/BEEPER | ACT | ECT | | | |
| X-88, MAINTENANCE ACCESS PENETRATION | DAYS | Jim Smith | 4108 / 20419 | 100 | 35 | WO 07701359000 | TODAY | |
| | NIGHTS | Bob Jones | 4108 / 20419 | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

ACT = ALLOWABLE CLOSURE TIME

ECT = ESTIMATED CLOSURE TIME

TVA

Sequoyah Nuclear Plant

**Unit 0**

General Operating Instructions

# 0-GO-15

# CONTAINMENT CLOSURE CONTROL

Revision 0023

Quality Related

Level of Use: Multiple

Effective Date: 09-20-2007

Responsible Organization: OPS, Operations

Prepared By: Judy R. Varner

Approved By: W. T. Leary

**Current Revision Description**

Incorporated requirements in Section 1.5.2 and 1.5.4 to verify that contingencies are in place for containment closure that have addressed adverse conditions such as loss of off-site power, loss of air, or loss of normal plant lighting. (PER126385) Expanded definition of Alternate Boundary to include devices. (07001195) Added text in existing note in App U to clarify that information is being provided in MW.(07001195) Minor editorial changes to App U (07001195)

## Table of Contents

Table of Contents (continued)

# 1.0 INTRODUCTION

## 1.1 Purpose

This procedure provides the requirements for Containment Closure Control (CCC) in event of loss of RHR shutdown cooling. It tracks Containment Closure Exceptions to ensure that they can and will be closed after a loss of RHR. Valve lineup appendices are performed periodically to verify CCC. A closed containment provides a barrier against radiological release **IF** RHR shutdown cooling is lost.

Several factors affect the severity of a loss of shutdown Cooling event. They include the time since shutdown (decay heat), Reactor Coolant System (RCS) water inventory, initial RCS temperature, the availability of AC/DC power, RCS integrity, makeup capability, reactivity control, and containment closure. Maintaining containment closure time requirements provides appropriate emphasis on containment closure actions for a loss of RHR shutdown cooling event.

## 1.2 Scope

### 1.2.1 Requirements Fulfilled

This procedure fulfills no Technical Specification Surveillance Requirements. It assures compliance with the Containment Closure administrative controls in Generic Letter 88-17 for Reduced Inventory and Midloop. This procedure contains administrative controls to meet the intent of NUMARC 91-06.

This procedure does <u>NOT</u> implement TS 3.9.4 containment closure for core alterations. Surveillance Requirements 4.9.4.a and b are satisfied by performance of 1(2)-SI-OPS-088-006.0 Containment Building Ventilation Isolation (18 month/100 hours/7 days).

### 1.2.2 Modes

Applicable Modes 5 and 6 with fuel in the vessel. Performance is generally started in mode 3 or 4 so that tags are in place and verifications are complete before mode 5. *Boundary tags which cannot be placed inside containment (because of current Unit mode) must be noted on the applicable appendix and attached as soon as practical following Mode 5 entry.*

### 1.2.3 Frequency/Condition

When in mode 5 or 6 for a Refueling Outage containment closure control shall be implemented.

When in a Forced Outage and RCS is planned to be opened then containment closure control shall be implemented.

## 1.3 Background

0-GO-7 initiates Containment Closure Controls as the plant enters mode 5. Containment Closure Exceptions shall be identified by operations personnel during work approval process. Operations (SRO) makes the determination if a penetration can be opened and the time required to be closed.

The containment closure control process identifies potential openings, evaluates the time to close, and tracks until closure. The most important part of this process is the identification of Containment Closure Exceptions. If open penetrations are identified and maintained in a central location then closing them can be accomplished in a timely manner. The second part is to evaluate the closing time. The allowable time for closure is based upon the type of opening (size, how closed, etc.), location of opening (Containment, Annulus, Auxiliary Building, etc.), and RCS conditions (before or after refueling, water inventory, water temperature, etc.). The time evaluation provides realistic assurance that if RHR shutdown cooling is lost, containment closure could be obtained before the location became uninhabitable. Each opening will be addressed on its own merit.

## 1.4 Special Requirements

None

## 1.5 Responsibilities

### 1.5.1 Operations Control Room Personnel - SM - US - UO

- Monitor Residual Heat Removal System for loss of decay heat removal then contacts the WCC - SRO to Close Containment.
- Maintains awareness of the containment configuration (i.e., what is open). Discuss status with WCC SRO periodically.
- Coordinate with WCC - SRO before changing plant parameters that affect containment closure. WCC SRO will verify that containment closure times are correct before plant conditions are changed.
- Monitor ongoing activities that could affect containment closure.

### 1.5.2 Operations Work Control Center (WCC) US

- Maintains active procedure in notebooks at his/her work station.
- Reviews work documents for containment configuration changes.
- Directs and evaluates results of performance of Containment Closure Control valve alignment appendices (Section 5.2).
- Evaluates the containment configuration changes based upon plant conditions and time to close after loss of RHR.
- Verify work documents contain emergency closure instructions for loss of RHR. These documents should address possible adverse conditions, such as loss of off-site power, loss of air, or loss of normal lighting.
- Communicates changes in containment breaches with the Unit Supervisor (SRO).
- Provides approval to open / breach containment.
- Notifies and provides a list of containment breaches to Outage Management daily during Modes 5 and 6. Updates this list as necessary. **IF** RHR cooling is lost the WCC SRO notifies Outage Management to contact the Work Director / Supervisor / Owner to ensure closure of containment.
- Should remain at WCC SRO Desk unless relieved by another qualified individual, or maintain communication with MCR and Outage Management (via radio or some other means), for required containment closure notifications.

### 1.5.3 Outage Manager / Director

- Notifies Work Director / Supervisor / Owner of containment breach to facilitate closure upon notification from WCC-SRO.
- Periodically evaluates to ensure adequate resources exist for containment closure.

### 1.5.4 Work Director / Supervisor / Owner

- Ensure instructions are included in work document to allow closure of containment breach after loss of RHR. These instructions should include contingencies that address possible Loss of Off-Site Power, loss of air, loss of normal lighting, or other adverse conditions.
- Ensure resources are available for containment closure including points of contact (individuals designated for continuous coverage).
- Ensure containment breach status changes are communicated with WCC - SRO.
- Close containment breach when notified by Outage manager or WCC - SRO on a loss of RHR.
- Notify Outage Management when breach has been closed on a loss of RHR.

### 1.5.5 Engineering

- Performs technical evaluations associated with containment closure.

## 2.0 REFERENCES

### 2.1 Performance References

A. 0-GO-7

B. 0-PI-OPS-000-673.W

### 2.2 Developmental References

A. Generic Letter 88-17, *Loss of Decay Heat Removal*

B. NUMARC 91-06, *Guidelines for Industry Actions to Access Shutdown Margin, December 1991.*

C. Independent Safety Engineering (ISE) Review Report No. ISE-SQN-91-R02 (L86910829 800).

D. Nuclear Engineering Calculation SQN-SQS2-0133 - Direct Design Output Calculation for Mid Loop.

E. EDC E21902 - Revises calculation SQN-SQS2-0133 to provide specific containment penetration closure time requirements.

F. WCAP 14089R1 Supplement 1 analyses to develop a basis for Surge Line Flood Response to Support Shutdown Operation.

G. DCN Q-11916A - Documents Vent Diameter used in Appendix L.

H. DCN S-12617A - Revises calculation SQN-SQS2-0133 per WCAP 14089R1 Supplement 1.

I. N2-88-400 System Description "Containment Isolation"

## 2.3 Definitions

A. **Mid-Loop -** The condition that exists whenever the RCS water level is lower than the top of the flow area at the junction of the hot legs with the Reactor Vessel (RV). (Elevation 696' - 2-1/2")

B. **Reduced Inventory or Reduced RCS Inventory -** An RCS inventory that results in a reactor vessel water level lower than three feet below the RV flange. (Elevation 699')

C. **Containment Closure -** establishment of at least one Integral Barrier to the release of radioactive material from the containment atmosphere to the outside environment. Any path between containment atmosphere and areas outside containment, including any process lines open to containment atmosphere, must be included.

D. **Containment Closure Exceptions -** A containment opening that does NOT satisfy definition for a Integral Barrier during mode 5 and 6.

E. **Available -** Ready for use within a short enough time to meet the intended need, but not necessarily operable because physical manipulations may be needed to realize an operable status.

F. **Harsh Environment -** This is defined as containment atmosphere on a loss of RHR 10 minutes after the core begins to boil with core decay heat greater than 6 MW or 20 minutes after the core begins to boil with core decay heat less than 6 MW.

**2.3 Definitions (continued)**

G. **Integral Barrier -** Piping systems, flanges, valves (**includes check valves**) or any device that prevents a direct path from the containment atmosphere to the environment. The following examples are an integral barrier.

1. An “Intact system”.

2. The equipment hatch door is closed and held in place by at least four bolts and no gaps exist in the sealing surface,

3. A minimum of one door in each airlock is closed,

4. Each penetration providing access from the containment atmosphere to the outside atmosphere closed by a valve, hatch, or blind flange. Closure by a valve, hatch, or blind flange used for containment isolation during power operation meets this specification. Boundaries tagged closed with Hold Orders can satisfy integral barrier.

    a. At least one operable automatic containment isolation valve is capable of being closed by operator action in the main control room or is in its failed closed position. The attendant test vents and/or drain valves located on the same side of containment are closed.

    b. At least one manual valve (including check valve) and attendant test vents and/or drain valves located on the same side of containment are closed.

5. The steam generator secondary side and main steam lines are intact inside containment. This includes manways, handholes, and instrument connections. If the secondary side for a steam generator is not intact (closed inside containment) then the MSIVs and steam line attendant vent and drain valves and atmospheric relief valves are closed and the stream generator safeties are verified installed.

6. Temporary devices may be used for containment closure. These may be constructed of standard steel materials and may be justified on the basis of either normal analysis methods or reasonable engineering judgment. However, justification is required based upon documented engineering judgment or by 10 CFR 50.59 process.

**2.3 Definitions (continued)**

H. **Intact System**- Any system that is "In Service" or known to have function integrity. An intact System meets the requirements for an integral barrier to fission product release and satisfies the requirement for containment closure.

Examples:

- Systems like RHR, CCS, and ERCW which have fluid flowing through open valves and piping from inside to outside containment meet this definition.
- The ECCS relief valve header from the auxiliary building to Pressurizer Relief Tank (X-24) with relief valves installed meets this definition.

I. **In Service -** Any system penetration that is pressurized, filled, vented, or otherwise capable of performing its intended function.

J. **Alternate Boundary -** An alignment of valves or devices which provides an Integral Barrier in place of valve positions listed in Appendices J through S.

## 3.0 PRECAUTIONS AND LIMITATIONS

### 3.1 General

A. In the event of loss of Residual Heat Removal (RHR) shutdown cooling AOP-R.03 will implement recovery actions as well as initiate containment closure.

B. WCC -SRO approval should be obtained before manipulating any valves on checklists.

C. Initial performance of valve alignment appendices requires Independent/Concurrent verification. Periodic performance does NOT require Independent/Concurrent verification.

D. Some of the listed valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

E. Containment Boundary Tags provide a barrier to prevent opening containment boundary without Operations approval. Tags are hung or verified in place during initial performance of Section 5.2.

F. If a loss of RHR capability is experienced for a sufficient duration, core boiling may occur. If core boiling occurs with an open RCS, containment conditions may become Harsh (high temperature, poor visibility, degrading radiological conditions). Plans for work to close penetrations inside containment which approaches the allowable closure time determined in Appendix A should include contingencies such as protective equipment. (SCBA, ice vests, fire protection suits, ear protection, etc.)

G. The valve alignment checklists are based upon having outboard containment isolation valves closed (or capable of auto closure). An alternate boundary may be established in accordance with Appendix I.

H. Refer to 0-TI-OXX-068-001.0 for specific requirements concerning hot leg vents when cold leg openings exist or when all hot legs are blocked by nozzle dams.

### 3.2 Mode 5 and Mode 6

A. The ability to close the Equipment Hatch shall be available upon loss of normal hoist when ever it is open. The requirements are contained in 0-MI-MXX-410-616.0.

B. The equipment hatch owner shall be notified first for closure following loss of RHR.

## 3.3 Reduced Inventory or Midloop (RI/M)

A. Containment Closure shall be implemented before entering RI/M. Penetrations should be closed if at all possible before RI/M. **[C.1]**

B. Adequate emergency removal provisions shall be in place if the fuel transfer cart is to be traversed into containment during reduced inventory or mid loop operations.

C. The containment equipment hatch shall either be closed or have personnel readily available for closure during RI/M with fuel in the core. If RI/M occurs prior to refueling, then the equipment hatch shall be closed (due to insufficient available time to close the hatch when decay heat rate is high).

D. During vacuum refill, time to boiling is less due to reduced RCS pressure. However, if RHR is lost, operating instructions restore RCS pressure to atmospheric conditions. Therefore, Allowable Closure Time (ACT) does not need to be recalculated for Vacuum fill.

**Unit______** **Date ________**

## 4.0 PREREQUISITE ACTIONS

**NOTES**

1) During performance of this Instruction, **IF-THEN** action steps should be marked **N/A** when the stated **IF** condition does not occur.

2) Additional copies of the appendices may be used to record information and all forms shall be maintained in the performance packages.

3) A Computer spreadsheet can be used to track containment exceptions. The spreadsheet can be printed and substituted for Appendix A.

### 4.1 Preliminary Actions

[1] **ENSURE** Instruction to be used is of latest revision. ☐

**NOTE**

Notebook may contain more information and organized in order desired by performers.

[2] **ASSEMBLE a** notebook(s) containing the following: ☐

- Working copy of Procedure
- Appendix A - List of Open Penetrations or spread sheet
- Appendix F - Evaluations or spread sheet
- Appendix I - Alternate Containment Boundary
- Copy of last performance of valve alignments Appendices J thru S.

[3] **IF** equipment hatch will be opened,
**THEN**
**ENSURE** equipment for emergency equipment hatch closure is available in accordance with 0-MI-MXX-410-616.0.

________________ ________
Refuel Floor Coordinator Date

**Unit_____** **Date _______**

**4.1 Preliminary Actions (continued)**

[4] **IF** time to reach 200° is requested for defense in depth,
**THEN**
**REFER** to APPENDIX U for INFORMATION ONLY. ☐

## 5.0 PERFORMANCE

### 5.1 Containment Penetration and Closure Control [C.1,C.2 and.C.3]

**NOTES**

1) A list of containment penetrations is available for reference in System Description N2-88-400. Located in EDMS.

2) Section 5.1 and 5.2 can be done simultaneously. Section 5.1 is done continuously and steps do not need to be checked-off after each performance.

3) Appendix A and F may be maintained on a computer database or spreadsheet. Whenever updates are made a printout shall be made and put in a notebook as a backup copy.

[1] **REVIEW** the Precautions and Limitations in Section 3.0 and Prerequisite Actions in Section 4.0 for any additional requirements due to a change in plant condition. ☐

[2] **PERFORM** Appendix F Containment Closure Evaluation for Containment Closure Exceptions. ☐

[3] **COMPLETE** Appendix A. ☐

[4] **MAINTAIN** Appendices A and F in individual notebook sections. ☐

[5] **RECORD** on Appendix A when Containment Closure Exceptions are closed by dating closed column. ☐

[6] **PERFORM** steps **[1]** through **[5]** for any changes in containment closure exceptions, **AND**

**COMPLETE** the applicable portions of Appendix F daily or when plant conditions change. ☐

Unit______ Date ________

**5.1 Containment Penetration and Closure Control [C.1,C.2 and.C.3] (continued)**

[7] **PROVIDE** Outage Management a copy of Appendix A, Containment Closure Exceptions, or spreadsheet daily during Modes 5 and 6. ☐

**NOTES**

1) Self contained breathing equipment (SCBA) is stored at RADCON outside the Work Control Center office and in the Fire Operations building.

2) Once initiated, containment closure must continue to completion or until RHR cooling is restored.

3) When notifying responsible groups to establish containment closure, contact individual responsible for closure of containment hatch first. Subsequent notification should then be made for those openings with the longest closure time.

[8] **WHEN** WCC-SRO is notified RHR shutdown cooling has been lost and cannot be immediately restored, **THEN**

**NOTIFY** Outage Management to contact responsible groups to establish containment closure **USING** Appendix A, Containment Closure Exceptions, or spreadsheet. ☐

**END OF SECTION**

Unit______ Date ________

## 5.2 Containment Boundary Valve and Penetration Verification

**NOTES**

1) 0-PI-OPS-068-673.W initiates performance of Appendices J thru S on a weekly basis.
2) Independent/Concurrent verification is required for initial performance and when the valves are manipulated to the correct position.
3) Step 5.2[1] need not be complete to continue with the subsequent steps. Step 5.2[1] appendices may be performed in any order desired. Items within the checklist may be performed out of sequence.

[1] **INITIATE** performance of the following appendices:

| AREA | VALVE ALIGNMENT | WCC-SRO √ |
|---|---|---|
| Main Control Room | Appendix J | ☐ |
| Auxiliary Building Gen Area | Appendix K | ☐ |
| Annulus | Appendix L | ☐ |
| 690 Gen Area | Appendix M | ☐ |
| Pipechases | Appendix N | ☐ |
| Airlock | Appendix O | ☐ |
| 714 Gen Area | Appendix P | ☐ |
| West Valve Room | Appendix Q | ☐ |
| East Valve Room | Appendix R | ☐ |
| Instrument Department | Appendix S | ☐ |

Unit______ Date _________

**5.2 Containment Boundary Valve and Penetration Verification (continued)**

**NOTES**

1) The Containment Closure tag is described in Appendix H.

2) Containment closure tags may be permanently attached. Only metal tags or other approved material will be permanently attached in valve vaults and containment.

[2] **ENSURE** Containment Closure tag attached to those locations noted on appendices. ☐

**NOTE**

Deviations on Appendices J through S which involve HS lights **NOT** illuminated only need to be addressed if valve is open.

[3] **WHEN** deviations from the checklist are found,
**THEN**

[3.1] **NOTIFY** WCC SRO of the discrepancy. ☐

[3.2] **PERFORM** review of Appendix A and Appendix I to see if deviation for containment closure is listed. ☐

[3.3] **IF** item is listed in Appendix A or Appendix I,
**THEN**
**INITIAL** item on valve alignment appendix. ☐

**Unit______** **Date ________**

**5.2 Containment Boundary Valve and Penetration Verification (continued)**

| NOTE |
|---|
| Foam used as a temporary sealant does not meet containment closure requirements. |

[3.4] **IF** item is not listed in Appendix A and Appendix I,
**THEN**
**PERFORM** one of the following actions:

- **RESTORE** deviation to the checklist condition (i.e close containment) ☐
- **ESTABLISH** alternate closure boundary and document condition **USING** Appendix I. ☐
- **LIST** deviation on Appendix A and **PERFORM** evaluation in accordance with Section 5.1. ☐

Unit______ Date ________

## 5.2 Containment Boundary Valve and Penetration Verification (continued)

**NOTE**

0-MI-EPM-079-049.0, Fuel Transfer Tube Equipment Checkout (Sys 79) includes a contingency plan for closing Fuel Transfer Tube.

[4] **IF** Fuel Transfer Tube Blind Flange/Flange Test Plug has been removed, **THEN**

**ENSURE** Transfer Tube Bleed Line (Vent Line) is configured as an OPEN penetration in accordance with Section 5.1. ☐

[5] **CHECK** the following valve checklists appendices as the Performance is COMPLETED prior to REDUCED INVENTORY / MIDLOOP:

| AREA | VALVE CHECKLIST | WCC-SRO √ |
|---|---|---|
| Main Control Room | Appendix J | ☐ |
| Auxiliary Building Gen Area | Appendix K | ☐ |
| Annulus | Appendix L | ☐ |
| 690 Gen Area | Appendix M | ☐ |
| Pipechases | Appendix N | ☐ |
| Airlock | Appendix O | ☐ |
| 714 Gen Area | Appendix P | ☐ |
| West Valve Room | Appendix Q | ☐ |
| East Valve Room | Appendix R | ☐ |
| Instrument Department | Appendix S | ☐ |

**Unit______** **Date ________**

**5.2 Containment Boundary Valve and Penetration Verification (continued)**

| NOTE |
|---|
| Step 5.2[6] may be N/A'ed if initial performance of checklists. |

[6] **WHEN** step 5.2[5] is COMPLETE,
**THEN**
**COMPARE** this performance to the latest performance for accuracy. ☐

[7] **IF** the latest performance was a Periodic Performance,
**THEN**
**FOWARD** previous performance in accordance with Section 7.0. ☐

**END OF SECTION 5.2**

Unit______ Date ________

## 6.0 POST PERFORMANCE ACTIVITIES

**NOTES**

1) Containment penetrations are aligned in accordance to meet TS 3.6.1.1 before entry into mode 4.

2) Containment Boundary tags may be picked up during the performance of 1,2-SI-OPS-088-014.0, *Verification of Containment Integrity* provided that the RCS is no longer in reduced inventory/midloop. *The scope of 1,2-SI-OPS-088-014.0 was greatly reduced as a result of Tech Spec Change TSC 01-05.*

3) Containment closure tags may be permanently attached. Only metal tags or other approved material will be permanently attached in valve vaults and containment.

[1] **REMOVE** any Containment Closure Boundary Tags NOT meeting requirements in NOTE **[3]** above by performing Appendices J through S and removing tags as applicable. ☐

[2] **PERFORM** Appendix T to verify as left position of valves NOT checked by other procedures. ☐

[3] **TERMINATE** this procedure after alignments for TS 3.6.1.1 for mode 4 have been completed **AND ENSURE** all sections of this GO are completed and ready for closure. ☐

## 7.0 RECORDS

A. Completed copies of Section 5.1, 5.2 and appendices shall be stored in notebooks and transmitted to System Engineering after termination of procedure.

## Appendix A
(Page 1 of 1)

## CONTAINMENT CLOSURE EXCEPTIONS

Unit ________

**NOTES**

1) This Page may be substituted by a computer generated spreadsheet.

2) When notifying responsible groups to initiate containment closure, contact individual responsible for closure of containment hatch first. Subsequent notification should be made for those openings with the longest closure time.

| OPEN PENETRATION (DESCRIPTION & NUMBER) | CLOSURE RESPONSIBILITY | | | DATA FROM APPENDIX F (MINUTES) | | CLOSURE PROCEDURE | DATE OPENED | DATE CLOSED |
|---|---|---|---|---|---|---|---|---|
| | SHIFT | OWNER | PHONE/BEEPER | ACT | ECT | | | |
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| | | | | | | | | |

**ACT** = ALLOWABLE CLOSURE TIME

**ECT** = ESTIMATED CLOSURE TIME

Appendix B
(Page 1 of 1)

DELETED

Appendix C
(Page 1 of 1)

DELETED

Appendix D
(Page 1 of 1)

DELETED

Appendix E
(Page 1 of 1)

DELETED

**Appendix F**
**(Page 1 of 5)**

**CONTAINMENT CLOSURE EVALUATION PROCESS**

**Unit______** **Date ________**

**NOTES**

1) Perform Section A each day while in Modes 5 or 6. Also, perform Section A if plant conditions change which would decrease the "Allowable Closure Time" (ACT) calculated for that day. "Allowable Closure Time" may decrease if RCS temperature increases. Data required for completion of Section B Steps 1 through 3 can be obtained at any time. A conservative RCS temperature can be assumed to ensure all daily activities are bounded.

2) This Appendix may be maintained in spreadsheet form on a computer.

3) The containment penetration closure time requirements with an open RCS are based on an initial RCS water temperature and an initial upper compartment air temperature of 100°F. If either the RCS water or containment upper compartment temperature exceeds 105°F, Engineering must be contacted for closure time.

**Section A: Calculation of "Allowable Closure Time"**

[1] **RECORD** the following information:

Decay Heat (Data provided by Nuclear Fuels) ____________________________

RHR Inlet Temperature(1): ______________ RCS water level(2): ____________

(1) Two trains of RHR in service may be averaged to determine temperature.

(2) RCS water level is defined as Above Reduced Inventory (Above RI) or Below Reduced Inventory (Below RI).

**Appendix F**
**(Page 2 of 5)**

**Unit______** **Date ________**

[2] **DETERMINE** the Allowable Closure Time from the following table:

| RCS Water Level | Inside Containment Closure Time Requirement (Minutes) | Outside Containment Closure Time Requirement (Minutes) |
|---|---|---|
| **Closed RCS with at least 2 steam generators with secondary side full** | | |
| Above RI | 120 | 120 |
| Below RI | N/A | N/A |
| **Open RCS with Core Decay Heat >15 MW(th)** | | |
| Above RI | Contact Engineering for closure time | Contact Engineering for closure time |
| Below RI | Contact Engineering for closure time | Contact Engineering for closure time |
| **Open RCS with Core Decay Heat <15 MW(th)** | | |
| Above RI | 28 | 60 |
| Below RI | 21 | 45 |
| **Open RCS with Core Decay Heat <6 MW(th)** | | |
| Above RI | 100 | 180 |
| Below RI | 60 | 165 |
| **Reactor Vessel Head and Upper Internals Removed/Reactor Cavity flooded to el. 712** | | |
| Above RI | 120 | 180 |
| Below RI | N/A | N/A |

RI - Reduced Inventory

**Appendix F**
**(Page 3 of 5)**

**Unit______** **Date ________**

[3] **RECORD** the "Allowable Closure Time" from step **[2]**:

ACT= ________ ________

[4] **ENSURE** the ACT transferred to Appendix A for each item

PERFORMED BY:________________________ DATE:_________
SRO

**Section B: Evaluation of Containment Closure Exceptions**

## 1.0 Evaluation of Containment Closure Exceptions

> **NOTE**
>
> This section shall be used to fill out Appendix A and evaluate open containment penetrations. This section does not have to be maintained (may be discarded) in the notebook for each penetration.

[5] **IDENTIFY** the containment closure exceptions. ☐

[6] **OBTAIN** from the person responsible for penetration closure the estimated amount of time to physically close the opening, **AND**

**DOCUMENT** on Appendix A. ☐

Estimated Closure Time (ECT): ____________ (minutes)

[7] **ENSURE** the work document has instructions to close the penetration on a loss of RHR, **AND**

**WRITE** the document number on Appendix A. ☐

**Appendix F**
**(Page 4 of 5)**

**Unit______** **Date ________**

**1.0 Evaluation of Containment Closure Exceptions (continued)**

[8] **EVALUATE** the margin to closure (Allowable closure time - Estimated closure time) to determine personnel requirements. ☐

Margin = ________ - ___________ = _________
ACT ECT

**NOTE**

Operations Manager or designee may allow a margin less than 15 minutes provided an approved written action plan has been provided in which a timeline is documented demonstrating a successful task completion based on the estimated closure time.

[9] **IF** the margin is less than 15 minutes, **THEN**

[9.1] **ENSURE** closure capability by having the person responsible for closure - **STATION** personnel at the penetration. ☐

**OR**

[9.2] **ENSURE** an approved written action plan has been provided in which a timeline is documented demonstrating a successful task completion based on the estimated closure time, and the Operations Manager or designee has approved the use of the action plan.

________________________________ ____________
Operations Manager/ Designee Date

**Appendix F**
**(Page 5 of 5)**

**Unit**______ **Date** ________

**1.0 Evaluation of Containment Closure Exceptions (continued)**

[10] **ENSURE** closure capability by having the person responsible for closure- require personnel remain on site to close the penetration by the estimated closure time. ☐

[11] **NOTIFY** the person responsible for closure of the type of coverage determined by steps1.1.1[9] and 1.1.1[10], **AND**

**OBTAIN** names of individuals on each shift to contact should closure be required. ☐

| NOTE |
|---|
| Operations Manager or designee may allow the penetration to be opened when the margin is negative provided a written evaluation is performed which documents the assumptions involved and the justification for why opening the penetration is acceptable. |

[12] **IF** the penetration cannot be closed within the ACT, and the margin is negative, **THEN**

[12.1] the breach SHALL be closed or not allowed to be opened. ☐

**OR**

[12.2] a written evaluation has been performed which documents the assumptions involved, and the Operations Manager or designee allows the penetration to be opened.

_______________________________ ____________
Operations Manager/ Designee Date

[13] **COMPLETE** Appendix A to document the open penetration. ☐

Appendix G
(Page 1 of 1)

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**Appendix H**
**(Page 1 of 2)**

## CONTAINMENT BOUNDARY TAGS

PURPOSE:

This appendix provides guidance and approximate format of Containment Closure Boundary Tags.

These tags serve to identify and inform personnel of components which must not be manipulated during periods when Containment Closure is required.

REQUIREMENTS;

The Containment Boundary tags will be attached/verified in place as noted on Valve Alignment Appendices during initial performance. If an alternate containment boundary is established, the tags will be attached to the equipment specified on Appendix I. Containment closure tags may be permanently attached. Only metal tags or other approved material will be permanently attached in valve vaults and containment. **Any** boundary tags not meeting these requirements will be removed during the final periodic performance of GO-15. If the unit is to enter Mode 4 prior to the final periodic performance, then any plastic or paper boundary tags inside containment MUST be removed before Mode 4 entry.

Containment Boundary tags may be picked up if desired during the performance of 1,2-SI-OPS-088-014.0, *Verification of Containment Integrity* provided the RCS is no longer in reduced inventory/midloop.

The Containment Boundary tag shall NOT be used to replace a hold order.

## Appendix H
(Page 2 of 2)

ATTACH a tag similar to the following illustration is installed on required components.

> **CNMT CLOSURE**
> **BOUNDARY**
>
> **DEVICES TAGGED WITH THIS NOTICE MUST NOT BE OPERATED WITHOUT PERMISSION FROM SM OR SRO**
>
> **APPENDIX H, 0-GO-15**

ATTACH a tag similar to the following illustration to handswitches controlling valves which are designated as a Containment Closure Boundary.

> **CNMT CLOSURE**
> **BOUNDARY**
>
> **DEVICES TAGGED WITH**
> **THIS NOTICE MUST NOT**
> **BE OPERATED WITHOUT**
> **PERMISSION FROM**
> **SM OR SRO**
> **APPENDIX H, 0-GO-15**

## Appendix I
(Page 1 of 2)

### Alternate Containment Boundary

Unit __________

An alternate boundary is established when applicable and prevents having to track the opening in Appendix A. An alternate boundary shall be specified and configured on Appendix I page 2. Containment boundary tags shall be placed on components designated as alternate containment boundaries. Concurrence to establish an alternate containment boundary shall be obtained from an SRO.

Section A of Appendix I, page 2, will be used to establish and return to normal all components required to establish the alternate containment boundary. Section B will be used to document the return of the normal containment boundary to the checklist configuration. Return to normal shall be reviewed by SRO.

## Appendix I
(Page 2 of 2)

### Alternate Containment Boundary

Unit __________

Section A:

Alternate Containment Boundary for:________ Penetration:________ Checklist App________

Prepared by:_______________ SRO Concurrence:____________________

| | | Alternate Boundary Alignment | | | | Return to Normal | | | |
|---|---|---|---|---|---|---|---|---|---|
| Alternate Component I.D. | Component Description | Required Position | Aligned & Tags Placed By | Verified By | | Required Position | Aligned & Tags Removed By | Verified By | Verification Type (1) |
| | | | | | | | | | |
| | | | | | | | | | |

Section B:

| Normal Component I.D. | Component Description | Required Position | Aligned By | Verified By | Verification Type (1) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

Remarks:____________________________________________________________

SRO Review:_______________

(1) Independent and Concurrent verifications are performed in accordance with SPP-10.3. Types of verifications shall be consistent with the type required in the appropriate SO/GO.

## Appendix J
(Page 1 of 20)

## Main Control Room

Purpose: Normal valve alignment for the Containment Closure Control for Control Room handswitches.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Steam and feedwater lines provide a containment release path when shell side of S/G are open inside containment. See Definition G -5.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks:Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

**Appendix J**
**(Page 2 of 20)**

**Main Control Room**

**Unit______** **Date ________**

Unit ___________

**TABLE 1**

| DESCRIPTION | HANDSWITCH L OCATION | PENETRATION | VALVE LOCATION | HANDSWITCH | REQUIRED POSITION NOTE 3 | INITIALS |
|---|---|---|---|---|---|---|
| FCV-1-4, S/G 1 Main Steam Isol Valve | M-4 | X-13A | West Valve Rm | HS-1-4A | CLOSED | ______ 1st ______ IV |
| FCV-1-11, S/G 2 Main Steam Isol Valve | M-4 | X-13B | East Valve Rm | HS-1-11A | CLOSED | ______ 1st ______ IV |
| FCV-1-22, S/G 3 Main Steam Isol Valve | M-4 | X-13C | East Valve Rm | HS-1-22A | CLOSED | ______ 1st ______ IV |
| FCV-1-29, S/G 3 Main Steam Isol Valve | M-4 | X-13D | West Valve Rm | HS-1-29A | CLOSED | ______ 1st ______ IV |
| FCV-1-147, S/G 1 MSIV Bypass | M-4 | X-13A | West Valve Rm | HS-1-147 | CLOSED | ______ 1st ______ IV |
| FCV-1-148, S/G 2 MSIV Bypass | M-4 | X-13B | East Valve Rm | HS-1-148 | CLOSED | ______ 1st ______ IV |
| FCV-1-149, S/G 3 MSIV Bypass | M-4 | X-13C | East Valve Rm | HS-1-149 | CLOSED | ______ 1st ______ IV |
| FCV-1-150, S/G 4 MSIV Bypass | M-4 | X-13D | West Valve Rm | HS-1-150 | CLOSED | ______ 1st ______ IV |

Appendix J
(Page 3 of 20)

**Main Control Room**

Unit ___________

**TABLE 1**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH NUMBER | VALVE NO. | REQUIRED POSITION NOTE 3 | INITIALS |
|---|---|---|---|---|---|---|
| SG Loop 1 Supply to TDAFWP | M-4 | X-13A | HS-1-15A | FCV-1-15 | CLOSED | ______ 1st ______ IV |
| SG Loop 4 Supply to TDAFWP | M-4 | X-13D | HS-1-16A | FCV-1-16 | CLOSED | ______ 1st ______ IV |
| SG-1 ATM Relief Valve | M-4 | X-13A | HS-1-6 | PCV-1-5 | CLOSED | ______ 1st ______ IV |
| SG-2 ATM Relief Valve | M-4 | X-13B | HS-1-13 | PCV-1-12 | CLOSED | ______ 1st ______ IV |
| SG-3 ATM Relief Valve | M-4 | X-13C | HS-1-24 | PCV-1-23 | CLOSED | ______ 1st ______ IV |
| SG-4 ATM Relief Valve | M-4 | X-13D | HS-1-31 | PCV-1-30 | CLOSED | ______ 1st ______ IV |

**Appendix J**
**(Page 4 of 20)**

**Main Control Room**

Unit ___________

**TABLE 1**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH NUMBER | VALVE NO. | REQUIRED POSITION NOTE 3 | INITIALS | |
|---|---|---|---|---|---|---|---|
| Main Feedwater Isolation Valve loop 1 | M-4 | X-12A | HS-3-33A | FCV-3-33 | CLOSED | ______ 1st | ______ IV |
| Main Feedwater Isolation Valve loop 2 | M-4 | X-12B | HS-3-47A | FCV-3-47 | CLOSED | ______ 1st | ______ IV |
| Main Feedwater Isolation Valve loop 3 | M-4 | X-12C | HS-3-87A | FCV-3-87 | CLOSED | ______ 1st | ______ IV |
| Main Feedwater Isolation Valve loop 4 | M-4 | X-12D | HS-3-100A | FCV-3-100 | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 4 | M-3 | X-12D | HS-3-175A | LCV-3-175 | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 4 | M-4 | X-12D | HS-3-171 | LCV-3-171 | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 4 | M-4 | X-12D | HS-3-171 | LCV-3-171A | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 1 | M-3 | X-12A | HS-3-174A | LCV-3-174 | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 1 | M-4 | X-12A | HS-3-164 | LCV-3-164 | CLOSED | ______ 1st | ______ IV |
| Aux Feedwater loop 1 | M-4 | X-12A | HS-3-164 | LCV-3-164A | CLOSED | ______ 1st | ______ IV |

## Appendix J
(Page 5 of 20)

### Main Control Room

Unit __________

TABLE 1

| DESCRIPTION | HANDSWITCH L OCATION | PENETRATION | HANDSWITCH NUMBER | VALVE NO. | REQUIRED POSITION NOTE 3 | INITIALS |
|---|---|---|---|---|---|---|
| Aux Feedwater loop 2 | M-3 | X-40A | HS-3-173A | LCV-3-173 | CLOSED | ______ 1st ______ IV |
| Aux Feedwater loop 2 | M-4 | X-40A | HS-3-156A | LCV-3-156 | CLOSED | ______ 1st ______ IV |
| Aux Feedwater loop 2 | M-4 | X-40A | HS-3-156A | LCV-3-156A | CLOSED | ______ 1st ______ IV |
| Aux Feedwater loop 3 | M-3 | X-40B | HS-3-172A | LCV-3-172 | CLOSED | ______ 1st ______ IV |
| Aux Feedwater loop 3 | M-4 | X-40B | HS-3-148A | LCV-3-148 | CLOSED | ______ 1st ______ IV |
| Aux Feedwater loop 3 | M-4 | X-40B | HS-3-148A | LCV-3-148A | CLOSED | ______ 1st ______ IV |

**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
| --- | --- | --- | --- | --- | --- |
| SG Loop 1 Blowdown Flow Control Isol FCV-1-7 | M-4 | X-14D | HS-1-7/181 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SG Loop 2 Blowdown Flow Control Isol FCV-1-14 | M-4 | X-14A | HS-1-14/182 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SG Loop 3 Blowdown Flow Control Isol FCV-1-25 | M-4 | X-14C | HS-1-25/183 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SG Loop 4 Blowdown Flow Control Isol FCV-1-32 | M-4 | X-14B | HS-1-32/184 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| PRT to Gas Analyzer Isol FCV-68-307 | M-5 | X-84A | HS-68-307 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Nitrogen Supply to PRT Iso FCV-68-305I | M-5 | X-39B | HS-68-305 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

Appendix J
(Page 7 of 20)

**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| Primary Water Makeup RCP Standpipes FCV-81-12 | M-5 | X-42 | HS-81-12A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Letdown Line Isol FCV-62-77 | M-6 | X-15 | HS-62-77A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SIS Test Line to Holdup Tank FCV-63-84 | M-6 | X-30 | HS-63-84 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Accumulator Fill Line FCV-63-23 | M-6 | X-30 | HS-63-23 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Inc Inst Rm Clg Isol FCV-313-222 | M-9 | X-64 | HS-313-222 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Inc Inst Rm Clg Isol FCV-313-224 | M-9 | X-65 | HS-313-224 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
**(Page 8 of 20)**

**Main Control Room**

Unit ___________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| Inc Inst Rm Clg Isol FCV-313-229 | M-9 | X-66 | HS-313-229 | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |
| Inc Inst Rm Clg Isol FCV-313-231 | M-9 | X-67 | HS-313-231 | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |
| Cntmt Vac Relief FCV-30-46 | M-9 | X-111 | HS-30-46A & HS-30-46B | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |
| Cntmt Vac Relief FCV-30-47 | M-9 | X-112 | HS-30-47A & HS-30-47B | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |
| Cntmt Vac Relief FCV-30-48 | M-9 | X-113 | HS-30-48A & HS-30-48B | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |
| Lower Compt Pressure Relief FCV-30-37 | M-9 | X-80 | HS-30-37 | PWR AVAILABLE(1) OR CLOSED (2) | _______ 1st _______ IV |

Appendix J
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**Main Control Room**

Unit ___________

**Table 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| Upper Compt Purge Air Supply Isol FCV-30-7 | M-9 | X-9A | HS-30-7 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Upper Compt Purge Air Exhaust Isol FCV-30-51 | M-9 | X-6 | HS-30-7 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Upper Compt Purge Air Supply Isol FCV-30-9 | M-9 | X-9B | HS-30-9 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| WDS Nitrogen to Accumulators FCV-63-64 | M-6 | X-39A | HS-63-64A | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Upper Compt Purge Air Supply Isol FCV-30-53 | M-9 | X-7 | HS-30-9 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Lower Compt Purge Air Supply Isol FCV-30-14 | M-9 | X-10A | HS-30-14 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |

## Appendix J
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## Main Control Room

Unit __________

Table 2

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| Lower Compt Purge Air Exhaust Isol FCV-30-57 | M-9 | X-4 | HS-30-15 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Lower Compt Purge Air Supply Isol FCV-30-16 | M-9 | X-10B | HS-30-16 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Lower Compt Purge Air Supply Isol FCV-30-19 | M-9 | X-11 | HS-30-19 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Lower Compt Purge Air Exhaust Isol FCV-30-59 | M-9 | X-5 | HS-30-20 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Cntmt Pressure PDI Isol FCV-30-135 | M-9 | X-97 | HS-30-135 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Lower Cntmt Air Monitor Inlet Flow Control FCV-90-107 | 0-M-12 | X-94 | HS-90-107 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
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**Main Control Room**

Unit ___________

**Table 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| Lower Cntmt Air Monitor Outlet Flow Control FCV-90-111 | 0-M-12 | X-94 | HS-90-111 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Lower Cntmt Air Monitor Outlet Flow Control FCV-90-113 | 0-M-12 | X-95 | HS-90-113 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Lower Cntmt Air Monitor Outlet Flow Control FCV-90-117 | 0-M-12 | X-95 | HS-90-117 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Cntmt Floor Sump Pump Discharge FCV-77-128 | M-15 | X-41 | HS-77-128A | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| RCDT Pump Discharge FCV-77-10 | M-15 | X-46 | HS-77-10A | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |
| Nitrogen to RCDT FCV-77-20 | M-15 | X-45 | HS-77-20 | PWR AVAILABLE(1) OR CLOSED (2) | _____ 1st _____ IV |

## Appendix J
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### Main Control Room

Unit ___________

**Table 2**

| DESCRIPTION | HANDSWITCH L OCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| RCDT and PRT to WDS Vent Header FCV-77-19 | M-15 | X-45 | HS-77-19 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Ice Condenser Glycol FCV-61-191 | M-23B | X-47A | HS-61-191 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Glycol to Ice Condenser Floor Coolers FCV-61-96 | M-23B | X-115 | HS-61-96 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Ice Condenser Glycol FCV-61-193 | M-23B | X-47B | HS-61-193A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| Glycol to Ice Condenser Floor Coolers FCV-61-110 | M-23B | X-114 | HS-61-110 | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCS to Excess Letdown Hx FCV-70-85 | M-27B | X-35 | HS-70-85A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
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**Main Control Room**

Unit ___________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| RCP Seal Water Return Isol FCV-62-63 | M-5 | X-44 | HS-62-63A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Inlet 2-FCV-67-130 | 0-M-27A | X-69* | 2-HS-67-130A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Inlet 2-FCV-67-138 | 0-M-27A | X-74* | 2-HS-67-138A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Inlet FCV-67-133 | 0-M-27A | X-75* | 2-HS-67-133A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Inlet FCV-67-141 | 0-M-27A | X-68* | 2-HS-67-141A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

* These penetrations have been spared for Unit 1.

Appendix J
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**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| ERCW Upper Compt Clrs Outlet 2-FCV-67-131 | 0-M-27A | X-73* | 2-HS-67-131A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Outlet 2-FCV-67-139 | 0-M-27A | X-70* | 2-HS-67-139A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Outlet FCV-67-134 | 0-M-27A | X-71* | 2-HS-67-134A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Upper Compt Clrs Outlet FCV-67-142 | 0-M-27A | X-72* | 2-HS-67-142A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Inlet FCV-67-107 | 0-M-27A | X-58 | HS-67-107A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

* These penetrations have been spared for Unit 1.

Appendix J
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**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| ERCW Lower Compt Clrs Inlet FCV-67-91 | 0-M-27A | X-60 | HS-67-91A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Inlet FCV-67-99 | 0-M-27A | X-62 | HS-67-99A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Inlet FCV-67-83 | 0-M-27A | X-56 | HS-67-83A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Outlet FCV-67-88 | 0-M-27A | X-59 | HS-67-88A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Outlet FCV-67-104 | 0-M-27A | X-61 | HS-67-104A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
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**Main Control Room**

Unit ___________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| ERCW Lower Compt Clrs Outlet FCV-67-96 | 0-M-27A | X-63 | HS-67-96A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| ERCW Lower Compt Clrs Outlet FCV-67-112 | 0-M-27A | X-57 | HS-67-112A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCS to RCP Oil Clrs FCV-70-140 | 0-M-27B | X-52 | HS-70-140A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCS to RCP Oil Clrs FCV-70-92 | 0-M-27B | X-29 | HS-70-92A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| RCP Thermal Barrier Return FCV-70-90 | 0-M-27B | X-50A | HS-70-90A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
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**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| RCP Thermal Barrier Supply FCV-70-134 | 0-M-27B | X-50B | HS-70-134A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCS to Excess Letdown Hx FCV-70-143 | 0-M-27B | X-53 | HS-70-143A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CNMT Spray Header A Isolation FCV-72-39 | M-6 | X-48A | HS-72-39A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CNMT Spray Header B Isolation FCV-72-2 | M-6 | X-48B | HS-72-2A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| RHR/CNMT Spray Header A Isolation FCV-72-40 | M-6 | X-49A | HS-72-40A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

## Appendix J
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## Main Control Room

Unit ___________

**TABLE 2**

| DESCRIPTION | HANDSWITCH LOCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| RHR/CNMT Spray Header B Isolation FCV-72-41 | M-6 | X-49B | HS-72-41A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCPIT Outlet Isolation FCV-63-25 | M-6 | X-22 | HS-63-25A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| CCPIT Outlet Isolation FCV-63-26 | M-6 | X-22 | HS-63-26A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| RHR/CNMT Sump Isolation FCV-63-72 | M-6 | X-19A | HS-63-72A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| RHR/CNMT Sump Isolation FCV-63-73 | M-6 | X-19B | HS-63-73A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| RHR Hot leg Isolation FCV-63-172 | M-6 | X-17 | HS-63-172A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

**Appendix J**
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**Main Control Room**

Unit __________

**TABLE 2**

| DESCRIPTION | HANDSWITCH L OCATION | PENETRATION | HANDSWITCH | REQUIRED POSTION | INITIALS |
|---|---|---|---|---|---|
| SIS Hot leg Isolation FCV-63-157 | M-6 | X-21 | HS-63-157A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SIS Cold leg Isolation FCV-63-22 | M-6 | X-33 | HS-63-22A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |
| SIS Hot leg Isolation FCV-63-156 | M-6 | X-32 | HS-63-156A | PWR AVAILABLE(1) OR CLOSED (2) | ______ 1st ______ IV |

(1) Light illuminated.

(2) May be tagged.

Appendix J
(Page 20 of 20)

**Main Control Room**

Unit ___________

**TABLE 3**

| DESCRIPTION | HANDSWITCH LOCATION | PENET | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| HS-43-309A PASF Isolation Valve | M-10 | X-23 | 48N406 45N643-3 | FSV-43-309/ 310 | BLOCK/ BOTH CLOSED | ______ 1st | ______ IV |
| HS-43-250A PASF Isolation Valve | M-10 | X-91 | 48N406 45N643-3 | FSV-43-250/ 251 | BLOCK/ BOTH CLOSED | ______ 1st | ______ IV |
| HS-43-318A PASF Isolation Valve | M-10 | X-101 | 48N406 45N643-3 | FSV-43-318/ 319 | BLOCK/ BOTH CLOSED | ______ 1st | ______ IV |
| HS-43-317A PASF Isolation Valve | M-10 | X-103 | 48N406 45N643-3 | FSV-43-317 | BLOCK/ CLOSED | ______ 1st | ______ IV |
| HS-43-287A PASF Isolation Valve | M-10 | X-116 | 48N406 45N643-3 | FSV-43-287/ 288 | BLOCK/ BOTH CLOSED | ______ 1st | ______ IV |
| HS-43-307A PASF Isolation Valve | M-10 | X-106 | 48N406 45N643-3 | FSV-43-307 | BLOCK/ CLOSED | ______ 1st | ______ IV |
| HS-43-341A PASF Isolation Valve | M-10 | X-103 | 48N406 45N643-3 | FSV-43-341 | BLOCK/ CLOSED | ______ 1st | ______ IV |
| HS-43-325A PASF Isolation Valve | M-10 | X-106 | 48N406 45N643-3 | FSV-43-325 | BLOCK/ CLOSED | ______ 1st | ______ IV |

## Appendix K
(Page 1 of 3)

**Auxiliary Building Gen Area**

Unit __________

Purpose: Normal valve alignment for the Containment Closure Control for general spaces in the Auxiliary Building.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________________________
______________________________________________________________
______________________________________________________________

| | Date |
|---|---|
| Alignment Started: | __________ |
| Alignment Completed: | __________ |
| Approved By: ______________________ SRO | __________ |

## Appendix K
(Page 2 of 3)

Unit ___________

### Table 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| Fuel Transfer Tube Wafer Valve | El 706 Inside PASF | X-3 | 47W855-1 | 78-610 | LOCKED CLOSED | ______ 1st | ______ CV |
| Cntmt Spray Pump Suction Relief Drain | El 653 A Cntmt Spray Pump Room | X-24 | 47W812-1 | 72-517 | CLOSED/ CAPPED | ______ 1st | ______ CV |
| Cntmt Spray Pump Suction Relief Drain | El 653 B Cntmt Spray Pump Room | X-24 | 47W812-1 | 72-518 | CLOSED/ CAPPED | ______ 1st | ______ CV |
| Drain on DI Line | 669 Penetration Rm Above Inc Chlrs on SB Wall | X-77 | 47W856-1 | 59-704 | LOCKED CLOSED/ CAPPED | ______ 1st | ______ CV |
| Pressure Test Conn on DI Line | 669 Penetration Rm Above Inc Chlrs on SB Wall | X-77 | 47W856-1 | 59-651 | LOCKED CLOSED/ CAPPED | ______ 1st | ______ CV |
| DI Supply to Inc Chlrs | 669 Penetration Rm Above Inc Chlrs on SB Wall | X-77 | 47W856-1 | 59-529 | LOCKED CLOSED | ______ 1st | ______ CV |
| Test Conn on Service Air to Cntmt | 669 Penetration Rm North Side of room at Ceiling by Cntmt Wall | X-76 | 47W846-2 | 1-33-212 | LOCKED CLOSED/ CAPPED | ______ 1st | ______ CV |
| Test Conn on Service Air to Cntmt | 669 Penetration Rm North Side of room at Ceiling by Cntmt Wall | X-76 | 47W846-2 | 2-33-211 | LOCKED CLOSED/ CAPPED | ______ 1st | ______ CV |

**Appendix K**
**(Page 3 of 3)**

Unit __________

**Table 1**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| CNMT Spray Suction Relief A train | CS A Train PMP RM | X-24 | 47W812-1 | VLV-72-512 | INSTALLED | ______ 1st | ______ IV |
| CNMT Spray Suction Relief B train | CS B Train PMP RM | X-24 | 47W812-1 | VLV-72-513 | INSTALLED | ______ 1st | ______ IV |

## Appendix L
(Page 1 of 6)

## Annulus

Unit __________

Purpose: Normal valve alignment for the Containment Closure Control for the Annulus.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________
______________________________________________
______________________________________________
______________________________________________
______________________________________________

| | Date |
|---|---|
| Alignment Started: | __________ |
| Alignment Completed: | __________ |
| Approved By: ______________________ SRO | __________ |

Appendix L
(Page 2 of 6)

Unit __________

Table 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Wet Layup Penetration | Annulus AZ 210 Bottom Elevation | X-118 | 48N406 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| Pressure Test Fire Protection | Annulus AZ 301 El 687 (Access from Bottom) | X-78 | 47W850-10 | 26-1293 | LOCKED CLOSED/ CAPPED | ______ 1st ______ CV |
| Loop 2 AFW Test Conn | Annulus AZ 235 El 705 4' Above Catwalk | X-104 | 48N406 | 3-351C | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 3 AFW Test Conn | Annulus AZ 237 El 705 4' Above Catwalk (Must Step Over) | X-102 | 48N406 | 3-352C | LOCKED CLOSED | ______ 1st ______ CV |
| Maintenance Access Hatch | Annulus AZ 280 El 711 10' Above Catwalk | X-88 | 48N406 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| Train A Air Bypass for 1-FCV-32-80 | Annulus AZ 280 El 706 Above Catwalk | X-90 | 47W848-1 | 1-32-285 | LOCKED CLOSED | ______ 1st ______ CV |
| Pressure Test Fire Protection | Annulus AZ 285 El 708 Above Catwalk | X-51 | 47W850-10 | 26-1258 | LOCKED CLOSED/ CAPPED | ______ 1st ______ CV |
| Train B Air Bypass for 1-FCV-32-102 | Annulus AZ 293 El 700 Below Catwalk | X-26 | 47W848-1 | 1-32-295 | LOCKED CLOSED | ______ 1st ______ CV |

## Appendix L
(Page 3 of 6)

Unit __________

### Table 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Non-essential Air Bypass for 1-FCV-32-110 | Annulus AZ 299 El 697 Below Catwalk | X-34 | 47W848-1 | 1-32-375 | LOCKED CLOSED | _____ 1st _____ CV |
| Train A Air Bypass for 2-FCV-32-81 | Annulus AZ 285 El 706 5' Above Catwalk | X-90 | 47W848-1 | 2-32-353 | LOCKED CLOSED | _____ 1st _____ CV |
| Train B Air Bypass for 2-FCV-32-103 | Annulus AZ 293 El 700 Below Catwalk | X-26 | 47W848-1 | 2-32-341 | LOCKED CLOSED | _____ 1st _____ CV |
| Non-essential Air Bypass for 2-FCV-32-111 | Annulus AZ 299 El 697 Below Catwalk | X-34 | 47W848-1 | 2-32-385 | LOCKED CLOSED | _____ 1st _____ CV |
| UHI Penetration (INBOARD) | Raceway El 687 AZ 215 | X-108 | 47W811-2 | N/A | BLIND FLANGE INSTALLED | _____ 1st _____ IV |
| UHI Penetration (INBOARD) | Raceway El 687 AZ 220 | X-109 | 47W811-2 | N/A | BLIND FLANGE INSTALLED | _____ 1st _____ IV |

**Appendix L**
**(Page 4 of 6)**

Unit __________

**Table 1**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| ILR Test Valve | Annulus AZ 290 El 697 Below Catwalk | X-27 | 47W600-178 | 52-505 | LOCKED CLOSED | ______ 1st ______ CV |
| ILR Test Valve | Annulus AZ 306 El 698 Below Catwalk | X-87 | 47W331-2 | 52-501 | LOCKED CLOSED | ______ 1st ______ CV |
| ILR Test Valve | Annulus AZ 306 El 698 Below Catwalk | X-87 | 47W331-2 | 52-503 | LOCKED CLOSED | ______ 1st ______ CV |
| Thimble Removal Penetration | Annulus AZ 90 El 717 Below Catwalk | X-54 | 48N406 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| ILR Test Connection | Annulus AZ 294 El 719 Below Catwalk and FSV-30-135 | X-98 | 48N406 | 52-507 | LOCKED CLOSED | ______ 1st ______ CV |
| Spare Penetration | Annulus AZ 298 El 735 (Access from Catwalk El 721) | X-117 | 48N406 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| Ice Blowing Penetration | Annulus AZ 290 El 785 7' Above Catwalk | X-79A | 47W814-1 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| Ice Blowing Penetration Negative Return | Annulus AZ 290 El 785 7' Above Catwalk | X-79B | 47W814-1 | N/A | BLIND FLANGED/ PLUGGED | ______ 1st ______ IV |
| Loop 2 AFW Vent | Annulus AZ 301 El 727 | X-40A | 47W803-2 | 3-899 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 3 AFW Vent | Annulus AZ 301 El 727 | X-40B | 47W803-2 | 3-842 | LOCKED CLOSED | ______ 1st ______ CV |

## Appendix L
(Page 5 of 6)

Unit __________

### Table 2

**NOTES**

1) Each of the test valves in the containment purge valve test panel are in series with a root valve located at the purge valve. This root valve has the same UNID as the valve in the test panel with the exception of TP suffix.

2) Containment Closure tag shall be attached only to Test Cover Panel.

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| Test Panel Valve | Inside Annulus Door El 690 | X-5 | 47W866-1 | 30-554TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-4 | 47W866-1 | 30-555TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-80 | 47W866-1 | 30-556TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-7 | 47W866-1 | 30-557TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-6 | 47W866-1 | 30-558TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-11 | 47W866-1 | 30-559TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-10B | 47W866-1 | 30-560TP | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-10A | 47W866-1 | 30-561TP | CLOSED/ CAPPED | ______ 1st | ______ IV |

Appendix L
(Page 6 of 6)

Unit __________

Table 2

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| Test Panel Valve | Inside Annulus Door El 690 | X-9B | 47W866-1 | 30-562TP | CLOSED/ CAPPED | ________ 1st | ________ IV |
| Test Panel Valve | Inside Annulus Door El 690 | X-9A | 47W866-1 | 30-563TP | CLOSED/ CAPPED | ________ 1st | ________ IV |
| Test Panel Cover | Inside Annulus Door El 690 | N/A | 47W866-1 | N/A | CLOSED/ LOCKED | ________ 1st | ________ CV |

## Appendix M
(Page 1 of 4)

### 690 Gen Area

Unit ___________

Purpose: Normal valve alignment for the Containment Closure Control for general spaces on EL 690 including Hot Sample Room.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.
2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.
3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________
______________________________________________
______________________________________________
______________________________________________
______________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

## Appendix M
(Page 2 of 4)

Unit __________

### Table 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| DI Water to Cntmt | 690 Pent Rm Behind RCP Seal Flow Indicators | X-77 | 47W856-1 | 59-522 | LOCKED CLOSED | ______ 1st | ______ CV |
| Service Air to Cntmt | 690 Pent Rm Behind RCP Seal Flow Indicators | X-76 | 47W846-2 | 2-33-739 | LOCKED CLOSED | ______ 1st | ______ CV |
| Service Air to Cntmt | 690 Pent Rm Behind RCP Seal Flow Indicators | X-76 | 47W846-2 | 1-33-740 | LOCKED CLOSED | ______ 1st | ______ CV |
| CNMT Isolation Valve Accumulator Sample | 690 Sample Room Box 2013 Unit 1 Box 2014 Unit 2 | X-93 | 47W881-5-1 | FSV-43-35* | CLOSED | ______ 1st | ______ IV |

* RI/M tags are placed on local handswitches and position verified by local indicating lights.

### TABLE 2

| DESCRIPTION | LOCATION | PENT | HANDSWITCH | HS LIGHTS ILLUMINATED | INITIALS | |
|---|---|---|---|---|---|---|
| Cntmt Standpipe Isol FCV-26-243 | 669 Penetration Rm | X-78 | HS-26-243 | YES | ______ 1st | ______ IV |

**Appendix M**
**(Page 3 of 4)**

Unit __________

**TABLE 3**

| **NOTE** |
|---|
| Two (2) of the RCP Seal Injection valves should be **CLOSED** and one (1) **OPEN** for lineup of RCP Seal Injection filter. Circle position required. |

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| RCP Seal Injection Filter Isol | El 690 Outside Filter Housing | X-43A-D | 47W809-1 | 62-546 | CLOSED<br>OPEN | _____ 1st _____ IV |
| RCP Seal Injection Filter Isol | El 690 Outside Filter Housing | X-43A-D | 47W809-1 | 62-549 | CLOSED<br>OPEN | _____ 1st _____ IV |
| RCP Seal Injection Filter Isol | El 690 Outside Filter Housing | X-43A-D | 47W809-1 | 62-550 | CLOSED<br>OPEN | _____ 1st _____ IV |

**Appendix M**
**(Page 4 of 4)**

Unit __________

**Table 4**

| DESCRIPTION | LOCATION | PENT | HANDSWITCH | HS LIGHTS ILLUMINATED | INITIALS |
|---|---|---|---|---|---|
| SG Blowdown Loop 1 Sample FCV-43-55 | Hot Sample Rm U1 BOX2016 U2 BOX 2017 | X-14D | HS-43-55 | Yes | ______ 1st ______ IV |
| SG Blowdown Loop 2 Sample FCV-43-58 | Hot Sample Rm U1 BOX 2016 U2 BOX 2017 | X-14A | HS-43-58 | Yes | ______ 1st ______ IV |
| SG Blowdown Loop 3 Sample FCV-43-61 | Hot Sample Rm U1 BOX 2016 U2 BOX 2017 | X-14C | HS-43-61 | Yes | ______ 1st ______ IV |
| SG Blowdown Loop 4 Sample FCV-43-64 | Hot Sample Rm U1 BOX 2016 U2 BOX 2017 | X-14B | HS-43-64 | Yes | ______ 1st ______ IV |
| Pressurizer Steam Space Sample FCV-43-3 | Hot Sample Rm U1 BOX 2013 U2 BOX 2014 | X-25A | HS-43-3 | Yes | ______ 1st ______ IV |
| Pressurizer Liquid Space Sample FCV-43-12 | Hot Sample Rm U1 BOX 2013 U2 BOX 2014 | X-25D | HS-43-12 | Yes | ______ 1st ______ IV |
| Reactor Coolant Outlet Sample FCV-43-23 | Hot Sample Rm U1 BOX 2013 U2 BOX 2014 | X-96C | HS-43-23 | Yes | ______ 1st ______ IV |

## Appendix N
(Page 1 of 4)

## Pipechases

Unit __________

Purpose: Normal valve alignment for the Containment Closure Control for the Pipechases.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

**Appendix N**
**(Page 2 of 4)**

Unit __________

**TABLE 1**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Test Conn on Nitrogen Supply to RCDT | Front of 690 Pipechase 5' off Floor on SB Wall | X-45 | 47W830-1 | 77-984 | CLOSED/ CAPPED | ______ 1st ______ IV |
| RCDT Pump Disch to Flood Mode Boration | Front of 690 Pipechase 10' off Floor on SB Wall | X-46 | 47W809-7 | 84-511 | LOCKED CLOSED | ______ 1st ______ CV |
| RWP Pump Suction from Refuel Cavity | 25' East of BIT near wall 4' off Floor (red handwheel) | X-82 | 47W855-1 | 78-561 | LOCKED CLOSED | ______ 1st ______ CV |
| Test Conn on RWP Pump Suction from Refuel Cavity | 25' East of BIT near wall 4' off Floor (red handwheel) | X-82 | 47W855-1 | 78-228A | LOCKED CLOSED/ CAPPED | ______ 1st ______ CV |
| RWP Filter to Refuel Cavity | Above BIT near wall 4' Above Seal Lines (blue handwheel) | X-83 | 47W855-1 | 78-557 | LOCKED CLOSED | ______ 1st ______ CV |
| Test Conn on RWP Filter Refuel Cavity | Above BIT near wall 4' Above Seal Lines (blue handwheel) | X-83 | 47W855-1 | 78-226A | LOCKED CLOSED/ CAPPED | ______ 1st ______ CV |
| Test Conn on Primary Water to Cntmt | Northwest Corner Behind BIT 7' off Floor | X-42 | 47W819-1 | 81-529 | LOCKED CLOSED/ CAPPED | ______ 1st ______ CV |

## Appendix N
(Page 3 of 4)

Unit ___________

### TABLE 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| Test Conn on Outlet of Excess Letdown HX | Northwest Corner Behind BIT 7' off Floor | X-35 | 47W859-2 | 70-702C | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Test Conn on Outlet of RCP Oil Coolers | 15' East of BIT 8' off Floor Close to SB Wall | X-29 | 47W859-2 | 70-735 | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Aux Charging Header Isol | Front of 690 Pipechase Northwest of BIT 17' up at Ceiling | X-16 | 47W809-7 | 84-500 | LOCKED CLOSED | ______ 1st | ______ CV |
| SIS Drain | 6' East of BIT Before FCV-63-84 | X-30 | 47W811-1 | 63-537 | CLOSED/ FLANGED | ______ 1st | ______ IV |
| SIS Drain | El 715 Across from Setpoff Pad | X-32 | 47W811-1 | 63-541 | CLOSED/ FLANGED | ______ 1st | ______ IV |
| SIS Drain | El 715 10' East of BIT | X-20A | 47W811-1 | 63-631 | CLOSED/ FLANGED | ______ 1st | ______ IV |
| SIS Drain | El 715 10' East of BIT | X-20B | 47W811-1 | 63-630 | CLOSED/ FLANGED | ______ 1st | ______ IV |
| SIS Vent | West of BIT Middle of Room at Ceiling | X-24 | 47W811-1 | 63-638 | CLOSED/ CAPPED | ______ 1st | ______ IV |
| RHR Spray A Drain | 10' Southwest of BIT 12' off Floor | X-49A | 47W812-1 | 72-552 | CLOSED/ CAPPED | ______ 1st | ______ IV |
| RHR Spray B Drain | Next to FCV-72-41 at North Wall 2' up | X-49B | 47W812-1 | 72-551 | CLOSED/ CAPPED | ______ 1st | ______ IV |

## Appendix N
(Page 4 of 4)

Unit __________

### TABLE 1

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| DP Test Conn Downstream of 63-25/-26 | Near CCPIT 15' off Floor | X-22 | 47W811-1 | 2-63-816 | CLOSED/ FLANGED | ______ 1st ______ IV |
| RCP Seal Injection Vent | East of BIT 2' Near Ceiling | X-43A-D | 47W809-1 | 62-555 | CLOSED/ FLANGED | ______ 1st ______ IV |
| Relief Valve CCP Suction | 669 Pipe Chase | X-24 | 47W811-1 | VLV-062-505 | INSTALLED | ______ 1st ______ IV |
| Relief Valve SIS Suction | 669 Pipe Chase | X-24 | 47W811-1 | VLV-063-511 | INSTALLED | ______ 1st ______ IV |
| Relief Valve SIS Discharge | 690 Pipe Chase | X-24 | 47W811-1 | VLV-063-534 | INSTALLED | ______ 1st ______ IV |
| Relief Valve SIS Discharge | 690 Pipe Chase | X-24 | 47W811-1 | VLV-063-535 | INSTALLED | ______ 1st ______ IV |
| Relief Valve SIS Discharge | 690 Pipe Chase | X-24 | 47W811-1 | VLV-063-536 | INSTALLED | ______ 1st ______ IV |

### TABLE 2

| DESCRIPTION | LOCATION | PENT | HANDSWITCH | HS LIGHTS ILLUMINATED. | INITIALS |
|---|---|---|---|---|---|
| Cntmt Standpipe Isol FCV-26-240 | 690 Pipechase | X-51 | HS-26-240 | Yes | ______ 1st ______ IV |

**Appendix O**
**(Page 1 of 3)**

**Airlock**

Unit ___________

Purpose: Normal valve alignment for the Containment Closure Control for Airlocks.

| **NOTES** |
|---|
| 1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.<br>2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.<br>3) Containment Closure tag is not required on this Appendix. |

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| _______________________________ | __________ |
| _______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number

______________________________________________________
______________________________________________________
______________________________________________________
______________________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | _______________________<br>SRO | __________ |

**Appendix O**
**(Page 2 of 3)**

Unit __________

**TABLE 1**

| REQUIRED COMPONENT POSITION | LOCAL PANEL/LOCATION | INITIALS |
|---|---|---|
| Pressure Indicator INSTALLED | 690 Airlock to the Left of the Top Left Hand Corner of the door | ______ 1st ______ IV |
| Plug INSTALLED in Hole | 690 Airlock Above and to the Left of the Pressure Indicator | ______ 1st ______ IV |
| Pressure Indicator Installed With Drain CLOSED | 690 Airlock Above Top Right Hand Corner of the door | ______ 1st ______ IV |
| Blind Flange With Test Plug INSTALLED | 690 Airlock to Right of Door 1/3 Way up the Airlock | ______ 1st ______ IV |
| "O" Ring Test Plug INSTALLED | 690 Airlock Facing Upper Right Hand Corner | ______ 1st ______ IV |
| Maintain at Least One Door CLOSED at All Times | 690 Airlock* | ______ 1st ______ IV |

* Door interlock can be inoperable if containment closure exceptions for open penetration is met (Appendix A)

## Appendix O
(Page 3 of 3)

Unit __________

### TABLE 1

| REQUIRED COMPONENT POSITION | LOCAL PANEL/LOCATION | INITIALS |
|---|---|---|
| Pressure Indicator INSTALLED | 734 Airlock to the Left of the Top Left Hand Corner of the door | ______ 1st ______ IV |
| Plug INSTALLED in Hole | 734 Airlock Above and to the Left of the Pressure Indicator | ______ 1st ______ IV |
| Pressure Indicator Installed With Drain CLOSED | 734 Airlock Above Top Right Hand Corner of the door | ______ 1st ______ IV |
| Blind Flange With Test Plug INSTALLED | 734 Airlock to Right of Door 1/3 Way up the Airlock | ______ 1st ______ IV |
| "O" Ring Test Plug INSTALLED | 734 Airlock Facing Upper Right Hand Corner | ______ 1st ______ IV |
| Maintain at Least One Door CLOSED at All Times | 734 Airlock* | ______ 1st ______ IV |

* Door interlock can be inoperable if containment closure exceptions for open penetration is met (Appendix A)

### Table 2

| REQUIRED COMPONENT POSITION | LOCAL PANEL/LOCATION | INITIALS |
|---|---|---|
| El 734 Equipment Hatch CLOSED | Penetration X-1 | ______ 1st ______ IV |

**Appendix P**
**(Page 1 of 5)**

**714 Gen Area**

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Purpose: Normal valve alignment for the Containment Closure Control for El 714.

Person(s) performing or verifying alignment

Print Name ______________________ Initials __________

______________________ __________

______________________ __________

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________

______________________________________________

______________________________________________

______________________________________________

Date

Alignment Started: __________

Alignment Completed: __________

Approved By: ______________________ __________
SRO

Appendix P
(Page 2 of 5)

Unit __________

TABLE 1

| DESCRIPTION | PENETRATION | LOCATION | HANDSWITCH | HS LIGHTS ILLUMINATED | INITIALS |
|---|---|---|---|---|---|
| Control Air Train A 1-FCV-32-80 | X-90 | U1 714 Pen Room | 1-HS-32-80A | Yes | ______ 1st ______ IV |
| Control Air Train B 1-FCV-32-102 | X-26 | U1 714 Pen Room | 1-HS-32-102A | Yes | ______ 1st ______ IV |
| Control Air Non-essential 1-FCV-32-110 | X-34 | U1 714 Pen Room | 1-HS-32-110A | Yes | ______ 1st ______ IV |
| Control Air Train A 2-FCV-32-81 | X-90 | U2 714 Pen Room | 2-HS-32-81A | Yes | ______ 1st ______ IV |
| Control Air Train B 2-FCV-32-103 | X-26 | U2 714 Pen Room | 2-HS-32-103A | Yes | ______ 1st ______ IV |
| Control Air Non-essential 2-FCV-32-111 | X-34 | U2 714 Pen Room | 2-HS-32-111A | Yes | ______ 1st ______ IV |

Appendix P
(Page 3 of 5)

Unit ___________

TABLE 2

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| AFW Loop 3 Drain Valve | LCVs outside the General Supply Fan Rm | X-40B | 47W803-2 | 3-851 | CLOSED | ______ 1st ______ IV |
| AFW Loop 3 Vent Valve | LCVs outside the General Supply Fan Rm | X-40B | 47W803-2 | 3-847 | CLOSED | ______ 1st ______ IV |
| AFW Loop 2 Drain Valve | LCVs outside the General Supply Fan Rm | X-40A | 47W803-2 | 3-852 | CLOSED | ______ 1st ______ IV |
| AFW Loop 2 Vent Valve | LCVs outside the General Supply Fan Rm | X-40A | 47W803-2 | 3-848 | CLOSED | ______ 1st ______ IV |
| AFW Loop 1 Drain Valve | LCVs outside the General Supply Fan Rm | X-12A | 47W803-2 | 3-853 | CLOSED | ______ 1st ______ IV |
| AFW Loop 1 Vent Valve | LCVs outside the General Supply Fan Rm | X-12A | 47W803-2 | 3-849 | CLOSED | ______ 1st ______ IV |
| AFW Loop 4 Drain Valve | LCVs outside the General Supply Fan Rm | X-12D | 47W803-2 | 3-854 | CLOSED | ______ 1st ______ IV |
| AFW Loop 4 Vent Valve | LCVs outside the General Supply Fan Rm | X-12D | 47W803-2 | 3-850 | CLOSED | ______ 1st ______ IV |
| AFW Terry Turbine Loop 2 Drain Valve | LCVs at Entrance to West Valve Room | X-40A | 47W803-2 | 3-888 | CLOSED | ______ 1st ______ IV |
| AFW Terry Turbine Loop 2 Vent Valve | LCVs at Entrance to West Valve Room | X-40A | 47W803-2 | 3-901 | CLOSED | ______ 1st ______ IV |

Appendix P
(Page 4 of 5)

Unit __________

**TABLE 2**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| AFW Loop 2 Drain Valve | LCVs at Entrance to West Valve Room | X-40A | 47W803-2 | 3-856 | CLOSED | ______ 1st | ______ IV |
| AFW Loop 2 Vent Valve | LCVs at Entrance to West Valve Room | X-40A | 47W803-2 | 3-900 | CLOSED | ______ 1st | ______ IV |
| AFW Terry Turbine Loop 3 Drain Valve | LCVs at Entrance to West Valve Room | X-40B | 47W803-2 | 3-887 | CLOSED | ______ 1st | ______ IV |
| AFW Terry Turbine Loop 3 Vent Valve | LCVs at Entrance to West Valve Room | X-40B | 47W803-2 | 3-897 | CLOSED | ______ 1st | ______ IV |
| AFW Loop 3 Vent Valve | LCVs at Entrance to West Valve Room | X-40B | 47W803-2 | 3-896 | CLOSED | ______ 1st | ______ IV |
| AFW Loop 3 Drain Valve | LCVs at Entrance to West Valve Room | X-40B | 47W803-2 | 3-855 | CLOSED | ______ 1st | ______ IV |
| Flange for 1or 2-33-Spoolpiece Service Air to Hydrogen Purge Connection | Behind GFFD Room | X-40D | 47W846-2 | N/A | INSTALLED/ PLUGGED | ______ 1st | ______ IV |
| Cntmt Spray Header A Drain | Behind GFFD Room 7' off Floor | X-48A | 47W812-1 | 72-543 | CLOSED/ CAPPED | ______ 1st | ______ IV |
| Cntmt Spray Header B Drain | Behind GFFD Room 7' off Floor | X-48B | 47W812-1 | 72-544 | CLOSED/ CAPPED | ______ 1st | ______ IV |

**Appendix P**
**(Page 5 of 5)**

Unit __________

**TABLE 2**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Wet Layup Water Fill | In Front of GFFD Room 5' off Floor | X-48A | 47W812-1 | 72-545 | LOCKED CLOSED | ______ 1st ______ CV |
| Wet Layup Water Fill | In Front of GFFD Room 5' off Floor | X-48B | 47W812-1 | 72-546 | LOCKED CLOSED | ______ 1st ______ CV |
| Wet Layup Water Fill | In Front of GFFD Room 5' off Floor | X-49A | 47W812-1 | 72-554 | LOCKED CLOSED | ______ 1st ______ CV |
| Wet Layup Water Fill | In Front of GFFD Room 5' off Floor | X-49B | 47W812-1 | 72-553 | LOCKED CLOSED | ______ 1st ______ CV |
| Test Conn on Supply to Thermal Barriers | Behind Front Side of GFFD Room | X-50B | 47W859-2 | 70-678B | CLOSED/ CAPPED | ______ 1st ______ IV |

## Appendix Q
(Page 1 of 7)

### West Valve Room

Unit __________

Purpose: Normal valve alignment for the Containment Closure Control for the West Valve Room.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.
2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.
3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.
4) Steam lines provide a containment release path when shell side of S/G are open inside containment. See Definition G -5.
5) Atmospheric relief isolation valves may be open if the shell side of the S/Gs are closed inside containment Atmospheric relief isolation valves shall be closed prior to opening shell side of S/Gs.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks :Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

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________________________________________________
________________________________________________
________________________________________________
________________________________________________
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________________________________________________
________________________________________________

**Appendix Q**
**(Page 2 of 7)**

Date

Alignment Started: ________________
Alignment Completed: ________________
Approved By: ______________________________ ________________
SRO

**Appendix Q**
**(Page 3 of 7)**

Unit __________

**TABLE 1**

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION (NOTE 4) | INITIALS | |
|---|---|---|---|---|---|---|
| PCV-1-5 PORV Isolation | X-13A | West Valve Room | 1-619 | CLOSED Note 5 | _____ 1st | _____ IV |
| PCV-1-30 PORV Isolation | X-13D | West Valve Room | 1-622 | CLOSED Note 5 | _____ 1st | _____ IV |
| PCV-1-5 PORV Test Conn Isolation | X-13A | West Valve Room | 1-926 | CLOSED | _____ 1st | _____ IV |
| PCV-1-30 PORV Test Conn Isolation | X-13D | West Valve Room | 1-929 | CLOSED | _____ 1st | _____ IV |
| SG Loop 1, PT-1-2A Rt Vlv | X-13A | West Valve Room | 1-276A | CLOSED | _____ 1st | _____ IV |
| SG Loop 1, PT-1-2B Rt Vlv | X-13A | West Valve Room | 1-277A | CLOSED | _____ 1st | _____ IV |
| SG Loop 1 PT-1-5 Rt Vlv | X-13A | West Valve Room | 1-282A | CLOSED | _____ 1st | _____ IV |

Appendix Q
(Page 4 of 7)

Unit ___________

TABLE 1

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION (NOTE 4) | INITIALS |
|---|---|---|---|---|---|
| SG Loop 1 PT-1-6 Rt Vlv | X-13A | West Valve Room | 1-283A | CLOSED | ______ 1st ______ IV |
| SG Loop 4 PT-1-27A Rt Vlv | X-13D | West Valve Room | 1-300A | CLOSED | ______ 1st ______ IV |
| SG Loop 4 PT-1-27B Rt Vlv | X-13D | West Valve Room | 1-301A | CLOSED | ______ 1st ______ IV |
| SG Loop 4 PT-1-30 Rt Vlv | X-13D | West Valve Room | 1-302A | CLOSED | ______ 1st ______ IV |
| SG Loop 4 PT-1-31 Rt Vlv | X-13D | West Valve Room | 1-303A | CLOSED | ______ 1st ______ IV |

**Appendix Q**
**(Page 5 of 7)**

Unit __________

**Table 2**

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|
| SG Loop 1 Safety Valve | X-13A | West Valve Room | 1-522 | INSTALLED | ______ 1st ______ IV |
| SG Loop 1 Safety Valve | X-13A | West Valve Room | 1-523 | INSTALLED | ______ 1st ______ IV |
| SG Loop 1 Safety Valve | X-13A | West Valve Room | 1-524 | INSTALLED | ______ 1st ______ IV |
| SG Loop 1 Safety Valve | X-13A | West Valve Room | 1-525 | INSTALLED | ______ 1st ______ IV |
| SG Loop 1 Safety Valve | X-13A | West Valve Room | 1-526 | INSTALLED | ______ 1st ______ IV |
| SG Loop 4 Safety Valve | X-13D | West Valve Room | 1-527 | INSTALLED | ______ 1st ______ IV |
| SG Loop 4 Safety Valve | X-13D | West Valve Room | 1-528 | INSTALLED | ______ 1st ______ IV |
| SG Loop 4 Safety Valve | X-13D | West Valve Room | 1-529 | INSTALLED | ______ 1st ______ IV |
| SG Loop 4 Safety Valve | X-13D | West Valve Room | 1-530 | INSTALLED | ______ 1st ______ IV |
| SG Loop 4 Safety Valve | X-13D | West Valve Room | 1-531 | INSTALLED | ______ 1st ______ IV |

**Appendix Q**
**(Page 6 of 7)**

Unit ___________

**TABLE 3**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|---|
| Nitrogen Supply to Loop 1 SG | Near MSIV Bypass Valve | X-13A | 47W801-1 | 1-536 | LOCKED CLOSED | ______ 1st | ______ CV |
| Nitrogen Supply to Loop 4 SG | Near MSIV Bypass Valve | X-13D | 47W801-1 | 1-538 | LOCKED CLOSED | ______ 1st | ______ CV |
| AFW Loop 4 Drain Valve | At the LCVs Platform | X-12D | 47W803-2 | 3-858 | LOCKED CLOSED | ______ 1st | ______ CV |
| AFW Loop 4 Vent Valve | At the LCVs Platform | X-12D | 47W803-2 | 3-906 | LOCKED CLOSED | ______ 1st | ______ CV |
| AFW Loop 4 Drain Valve | At the LCVs Platform | X-12D | 47W803-2 | 3-890 | LOCKED CLOSED | ______ 1st | ______ CV |
| AFW Loop 4 Vent Valve | At the LCVs Platform | X-12D | 47W803-2 | 3-907 | LOCKED CLOSED | ______ 1st | ______ CV |
| MFW Check Valve Bypass Loop 4 | At the LCVs Platform | X-12D | 47W803-1 | 3-612 | LOCKED CLOSED | ______ 1st | ______ CV |
| MFW Check Valve Bypass Loop 1 | At the LCVs Platform | X-12A | 47W803-1 | 3-609 | LOCKED CLOSED | ______ 1st | ______ CV |
| Loop 2 SGBD Test Conn | East Wall Under SGBD FCVs | X-14A | 47W801-2 | 1-825 | LOCKED CLOSED/ FLANGED | ______ 1st | ______ CV |

**Appendix Q**
**(Page 7 of 7)**

Unit ___________

**TABLE 3**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Loop 4 SGBD Test Conn | East Wall Under SGBD FCVs | X-14B | 47W801-2 | 1-827 | LOCKED CLOSED/ FLANGED | ______ 1st ______ CV |
| Loop 3 SGBD Test Conn | East Wall Under SGBD FCVs | X-14C | 47W801-2 | 1-826 | LOCKED CLOSED/ FLANGED | ______ 1st ______ CV |
| Loop 1 SGBD Test Conn | East Wall Under SGBD FCVs | X-14D | 47W801-2 | 1-824 | LOCKED CLOSED/ FLANGED | ______ 1st ______ CV |
| Loop 1 AFW Drain Valve | At the LCVs Platform | X-12A | 47W803-2 | 3-857 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 1 AFW Vent Valve | At the LCVs Platform | X-12A | 47W803-2 | 3-903 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 1 AFW Drain Valve | At the LCVs Platform | X-12A | 47W803-2 | 3-889 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 1 AFW Vent Valve | At the LCVs Platform | X-12A | 47W803-2 | 3-904 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 1 MFW Drain | East wall near floor about 10' back | X-12A | 47W803-1 | 2-3-505 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 4 MFW Drain | East wall near floor halfway back | X-12D | 47W803-1 | 2-3-507 | LOCKED CLOSED | ______ 1st ______ CV |

**Appendix R**
**(Page 1 of 5)**

**East Valve Room**

Purpose: Normal valve alignment for the Containment Closure Control for the East Valve Room.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.
2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.
3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.
4) Steam lines provide a containment release path when shell side of S/G are open inside containment. See Definition G -5.
5) Atmospheric relief isolation valves may be open if the shell side of the S/Gs are closed inside containment Atmospheric relief isolation valves shall be closed prior to opening shell side of S/Gs.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

**Appendix R**
**(Page 2 of 5)**

Unit ___________

**TABLE 1**

| DESCRIPTION | LOCATION | PENT | PRINT REFERENCE | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|---|
| Loop 2 MFW Drain | Near Floor Halfway Back | X-12B | 47W803-1 | 3-503 | LOCKED CLOSED | ______ 1st ______ CV |
| Loop 3 MFW Drain | Near Floor Halfway Back | X-12C | 47W803-1 | 3-501 | LOCKED CLOSED | ______ 1st ______ CV |
| Nitrogen Supply to Loop 2 SG | East Valve Room | X-13B | 47W801-1 | 1-534 | LOCKED CLOSED | ______ 1st ______ CV |
| Nitrogen Supply to Loop 3 SG | East Valve Room | X-13C | 47W801-1 | 1-532 | LOCKED CLOSED | ______ 1st ______ CV |
| MFW Check Valve Bypass Loop 2 | East Valve Room | X-12B | 47W803-1 | 3-610 | LOCKED CLOSED | ______ 1st ______ CV |
| MFW Check Valve Bypass Loop 3 | East Valve Room | X-12C | 47W803-1 | 3-611 | LOCKED CLOSED | ______ 1st ______ CV |

Appendix R
(Page 3 of 5)

Unit ___________

TABLE 1

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|
| SG Loop 2 Safety Valve | X-13B | East Valve Room | 1-517 | INSTALLED | ______ 1st ______ IV |
| SG Loop 2 Safety Valve | X-13B | East Valve Room | 1-518 | INSTALLED | ______ 1st ______ IV |
| SG Loop 2 Safety Valve | X-13B | East Valve Room | 1-519 | INSTALLED | ______ 1st ______ IV |
| SG Loop 2 Safety Valve | X-13B | East Valve Room | 1-520 | INSTALLED | ______ 1st ______ IV |
| SG Loop 2 Safety Valve | X-13B | East Valve Room | 1-521 | INSTALLED | ______ 1st ______ IV |
| SG Loop 3 Safety Valve | X-13C | East Valve Room | 1-512 | INSTALLED | ______ 1st ______ IV |
| SG Loop 3 Safety Valve | X-13C | East Valve Room | 1-513 | INSTALLED | ______ 1st ______ IV |
| SG Loop 3 Safety Valve | X-13C | East Valve Room | 1-514 | INSTALLED | ______ 1st ______ IV |
| SG Loop 3 Safety Valve | X-13C | East Valve Room | 1-515 | INSTALLED | ______ 1st ______ IV |
| SG Loop 3 Safety Valve | X-13C | East Valve Room | 1-516 | INSTALLED | ______ 1st ______ IV |

Appendix R
(Page 4 of 5)

Unit __________

TABLE 1

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION (NOTE 4) | INITIALS | |
|---|---|---|---|---|---|---|
| PCV-1-12 PORV Isolation | X-13B | East Valve Room | 1-620 | CLOSED Note 5 | ______ 1st | ______ IV |
| PCV-1-23 PORV Isolation | X-13C | East Valve Room | 1-621 | CLOSED Note 5 | ______ 1st | ______ IV |
| PCV-1-12 PORV Test Conn Isolation | X-13B | East Valve Room | 1-620A | CLOSED | ______ 1st | ______ IV |
| PCV-1-23 PORV Test Conn Isolation | X-13C | East Valve Room | 1-621A | CLOSED | ______ 1st | ______ IV |
| SG Loop 2 PT-1-9A Rt Vlv | X-13B | East Valve Room | 1-284A | CLOSED | ______ 1st | ______ IV |
| SG Loop 2 PT-1-9B Rt Vlv | X-13B | East Valve Room | 1-285A | CLOSED | ______ 1st | ______ IV |
| SG Loop 2 PT-1-12 Rt Vlv | X-13B | East Valve Room | 1-290A | CLOSED | ______ 1st | ______ IV |
| SG Loop 2 PT-1-13 Rt Vlv | X-13B | East Valve Room | 1-291A | CLOSED | ______ 1st | ______ IV |

Appendix R
(Page 5 of 5)

Unit __________

TABLE 1

| DESCRIPTION | PENETRATION | LOCATION | VALVE NO. | REQUIRED POSITION (NOTE 4) | INITIALS | |
|---|---|---|---|---|---|---|
| SG Loop 3 PT-1-20A Rt Vlv | X-13C | East Valve Room | 1-292A | CLOSED | 1st | IV |
| SG Loop 3 PT-1-20B Rt Vlv | X-13C | East Valve Room | 1-293A | CLOSED | 1st | IV |
| SG Loop 3 PT-1-23 Rt Vlv | X-13C | East Valve Room | 1-298A | CLOSED | 1st | IV |
| SG Loop 3 PT-1-24 Rt Vlv | X-13C | East Valve Room | 1-299A | CLOSED | 1st | IV |

**Appendix S**
**(Page 1 of 7)**

**Instrument Department**

Purpose: Normal valve alignment for the Containment Closure Control performed on equipment operated by the Instrument Department.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

3) Some of the valves are LOCKED CLOSED. This is normal Containment Integrity Configuration. For the purpose of determining if Containment Closure requirements are met, the primary concern should be the valve position. Verification of the valve being in the closed position will satisfy the Containment Closure requirements.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________
______________________________________________
______________________________________________
______________________________________________
______________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

## Appendix S
(Page 2 of 7)

Unit __________

### TABLE 1

| DESCRIPTION | LOCATION | PENETRATION | VALVE NO. | REQUIRED POSITION | IM INITIALS |
|---|---|---|---|---|---|
| RHR Spray Header A Flow Instrument Vlvs | 690 Pipechase, West End back of mezzanine on north wall 3 feet above mezzanine floor. | X-49A | TTIV-72-21 5E | CLOSED/ CAPPED | ______ 1st ______ IV |
| | | | DRIV-72-21 5F | LOCKED CLOSED | ______ 1st ______ CV |
| | 690 Pipechase, West End back of mezzanine on north wall 3 feet above mezzanine floor. | X-49-A | TTIV-72-21 6E | CLOSED/ CAPPED | ______ 1st ______ IV |
| | | | DRIV-72-21 6F | LOCKED CLOSED | ______ 1st ______ CV |
| RHR Spray Header B Flow Instrument Vlvs | 690 Pipechase, West End back of mezzanine on north wall 3 feet above mezzanine floor. | X-49-B | TTIV-72-21 7E | CLOSED/ CAPPED | ______ 1st ______ IV |
| | | | DRIV-72-21 7F | LOCKED CLOSED | ______ 1st ______ CV |
| | 690 Pipechase, West End back of mezzanine on north wall 3 feet above mezzanine floor. | X-49-B | TTIV-72-21 8E | CLOSED/ CAPPED | ______ 1st ______ IV |
| | | | DRIV-72-21 8F | LOCKED CLOSED | ______ 1st ______ CV |

**Appendix S**
**(Page 3 of 7)**

Unit __________

**TABLE 2**

| DESCRIPTION | LOCATION | PENT | VALVE NO. | REQUIRED POSITION | IM INITIALS |
|---|---|---|---|---|---|
| PI-63-74 Instrument Line Isol | 690 Pent Rm | X-30 | VTIV-63-344B | LOCKED CLOSED | _____ 1st _____ CV |
| PI-63-74 Instrument Line Isol | 690 Pent Rm | X-30 | DRIV-63-344D | LOCKED CLOSED | _____ 1st _____ CV |
| PI-63-74 Instrument Line Isol | 690 Pent Rm | X-30 | VTIV-63-344E | LOCKED CLOSED | _____ 1st _____ CV |

**Appendix S**
**(Page 4 of 7)**

Unit __________

**TABLE 3 UNIT 2 ONLY**

| INSTRUMENT | LOCATION | PENETRATION | VALVE NO. | REQUIRED POSITION | IM INITIALS |
|---|---|---|---|---|---|
| Train A Hydrogen Analyzer Valves | El 734 SW corner Personnel Airlock Room | X-99/100 | 2-43-423 | LOCKED CLOSED | ______ 1st ______ CV |
| | | | 2-43-419 | LOCKED CLOSED | ______ 1st ______ CV |
| Train B Hydrogen Analyzer Valves | NW corner of EGTS Room | X-92A/B | 2-43-421 | LOCKED CLOSED | ______ 1st ______ CV |
| | | | 2-43-417 | LOCKED CLOSED | ______ 1st ______ CV |

Appendix S
(Page 5 of 7)

Unit __________

TABLE 4

| INSTRUMENT | LOCAL PANEL/ LOCATION | PENETRATION | VALVE NO. | REQUIRED POSITION | IM INITIALS |
|---|---|---|---|---|---|
| PDT-30-45 | Annulus L-133 AZ 310 EL 701 | X-85 | DRIV-30-45-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-45-X | LOCKED CLOSED | ______ 1st ______ CV |
| PDT-30-44 | Annulus L-189 AZ 305 EL 701 | X-25 | DRIV-30-44-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-44-X | LOCKED CLOSED | ______ 1st ______ CV |
| PT-30-311 | Annulus L-189 AZ 305 EL 701 | X-25 | DRIV-30-311-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-311-X | LOCKED CLOSED | ______ 1st ______ CV |
| PDT-30-43 | Annulus L-188 AZ 295 EL 701 | X-26 | DRIV-30-43-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-43-X | LOCKED CLOSED | ______ 1st ______ CV |

## Appendix S
(Page 6 of 7)

Unit ___________

### TABLE 4

| INSTRUMENT | LOCAL PANEL/ LOCATION | PENETRATION | VALVE NO. | REQUIRED POSITION | IM INITIALS | |
|---|---|---|---|---|---|---|
| PT-30-310 | Annulus L-188 AZ 295 EL 701 | X-26 | DRIV-30-310-Y | LOCKED CLOSED | ______ 1st | ______ CV |
| | | | DRIV-30-310-X | LOCKED CLOSED | ______ 1st | ______ CV |
| PDT-30-42 | Annulus L-186 AZ 280 EL 701 | X-27 | DRIV-30-42-Y | LOCKED CLOSED | ______ 1st | ______ CV |
| | | | DRIV-30-42-X | LOCKED CLOSED | ______ 1st | ______ CV |
| PDT-30-30C | Annulus L-474 AZ 289 EL 722 | X-27 | DRIV-30-30C-Y | LOCKED CLOSED | ______ 1st | ______ CV |
| | | | DRIV-30-30C-X | LOCKED CLOSED | ______ 1st | ______ CV |
| PS-30-48A | Annulus L-146 AZ 240 EL 785 | X-113 | DRIV-30-48A-Y | LOCKED CLOSED | ______ 1st | ______ CV |
| | | | DRIV-30-48A-X | LOCKED CLOSED | ______ 1st | ______ CV |
| PS-30-48B | Annulus L-83 AZ 240 EL 785 | | DRIV-30-48B-Y | LOCKED CLOSED | ______ 1st | ______ CV |

**Appendix S**
**(Page 7 of 7)**

Unit __________

**TABLE 4**

| INSTRUMENT | LOCAL PANEL/ LOCATION | PENETRATION | VALVE NO. | REQUIRED POSITION | IM INITIALS |
|---|---|---|---|---|---|
| PS-30-46A | Annulus L-140 AZ 60 EL 785 | X-111 | DRIV-30-46A-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-46A-X | LOCKED CLOSED | ______ 1st ______ CV |
| PS-30-46B | Annulus L-142 AZ 60 EL 785 | | DRIV-30-46B-Y | LOCKED CLOSED | ______ 1st ______ CV |
| PS-30-47A | Annulus L-140 AZ 60 EL 785 | X-112 | DRIV-30-47A-Y | LOCKED CLOSED | ______ 1st ______ CV |
| | | | DRIV-30-47A-X | LOCKED CLOSED | ______ 1st ______ CV |
| PS-30-47B | Annulus L-142 AZ 60 EL 785 | | DRIV-30-47B-Y | LOCKED CLOSED | ______ 1st ______ CV |
| TRAIN A HYDROGEN ANALYZER VALVES | Annulus AZ 236 EL 705 | X-99/100 | 43-391(U-1 ONLY) | LOCKED CLOSED | ______ 1st ______ CV |
| | | | 43-388 (U-1 ONLY) | LOCKED CLOSED | ______ 1st ______ CV |
| TRAIN B HYDROGEN ANALYZER VALVES | Annulus AZ 346 EL 705 | X-92A/B | 43-386 (U-1 ONLY) | LOCKED CLOSED | ______ 1st ______ CV |
| | | | 43-383 (U-1 ONLY) | LOCKED CLOSED | ______ 1st ______ CV |

**Appendix T**
**(Page 1 of 3)**

## VALVE ALIGNMENT FOLLOWING OUTAGE

Unit __________

Purpose: Return to normal valve alignment following an outage.

**NOTES**

1) Independent/Concurrent verification required for initial performance and manipulation of valves to the required position.

2) Components without unit numbers are the same for both units. Components which have unit numbers are only to be performed for that unit. The opposite unit components shall be N/A'd.

Person(s) performing or verifying alignment

| Print Name | Initials |
|---|---|
| ______________________________ | __________ |
| ______________________________ | __________ |

Remarks: Indicate any component not in the **"REQUIRED"** position and note the reason. For component under clearance, provide clearance number.

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

| | | Date |
|---|---|---|
| Alignment Started: | | __________ |
| Alignment Completed: | | __________ |
| Approved By: | ______________________ SRO | __________ |

**Appendix T**
**(Page 2 of 3)**

**VALVE ALIGNMENT FOLLOWING OUTAGE**

Unit ___________

| DESCRIPTION | PENETRATION | LOCATION | VALVE | REQUIRED POSITION | INITIALS | |
|---|---|---|---|---|---|---|
| PCV-1-5 PORV Isolation | X-13A | West Valve Room | 1-619 | OPEN | ______ 1st | ______ IV |
| PCV-1-30 PORV Isolation | X-13D | West Valve Room | 1-622 | OPEN | ______ 1st | ______ IV |
| SG Loop 1, PT-1-2A Rt Vlv | X-13A | West Valve Room | 1-276A | OPEN | ______ 1st | ______ IV |
| SG Loop 1, PT-1-2B Rt Vlv | X-13A | West Valve Room | 1-277A | OPEN | ______ 1st | ______ IV |
| SG Loop 1, PT-1-5 Rt Vlv | X-13A | West Valve Room | 1-282A | OPEN | ______ 1st | ______ IV |
| SG Loop 1, PT-1-6 Rt Vlv | X-13A | West Valve Room | 1-283A | OPEN | ______ 1st | ______ IV |
| SG Loop 4, PT-1-27A Rt Vlv | X-13D | West Valve Room | 1-300A | OPEN | ______ 1st | ______ IV |
| SG Loop 4, PT-1-27B Rt Vlv | X-13D | West Valve Room | 1-301A | OPEN | ______ 1st | ______ IV |
| SG Loop 4, PT-1-31 Rt Vlv | X-13D | West Valve Room | 1-303A | OPEN | ______ 1st | ______ IV |
| SG Loop 4, PT-1-30 Rt Vlv | X-13D | West Valve Room | 1-302A | OPEN | ______ 1st | ______ IV |
| PCV-1-12 PORV Isolation | X-13B | East Valve Room | 1-620 | OPEN | ______ 1st | ______ IV |

## Appendix T
(Page 3 of 3)

## VALVE ALIGNMENT FOLLOWING OUTAGE

Unit ___________

| DESCRIPTION | PENETRATION | LOCATION | VALVE | REQUIRED POSITION | INITIALS |
|---|---|---|---|---|---|
| PCV-1-23 PORV Isolation | X-13C | East Valve Room | 1-621 | OPEN | ______ 1st ______ IV |
| SG Loop 2, PT-1-9A Rt Vlv | X-13B | East Valve Room | 1-284A | OPEN | ______ 1st ______ IV |
| SG Loop 2, PT-1-9B Rt Vlv | X-13B | East Valve Room | 1-285A | OPEN | ______ 1st ______ IV |
| SG Loop 2 PT-1-12 Rt Vlv | X-13B | East Valve Room | 1-290A | OPEN | ______ 1st ______ IV |
| SG Loop 2 PT-1-13 Rt Vlv | X-13B | East Valve Room | 1-291A | OPEN | ______ 1st ______ IV |
| SG Loop 3 PT-1-20A Rt Vlv | X-13C | East Valve Room | 1-292A | OPEN | ______ 1st ______ IV |
| SG Loop 3 PT-1-20B Rt Vlv | X-13C | East Valve Room | 1-293A | OPEN | ______ 1st ______ IV |
| SG Loop 3 PT-1-23 Rt Vlv | X-13C | East Valve Room | 1-298A | OPEN | ______ 1st ______ IV |
| SG Loop 3 PT-1-24 Rt Vlv | X-13C | East Valve Room | 1-299A | OPEN | ______ 1st ______ IV |

## Appendix U
(Page 1 of 2)

## TIME FOR RCS TO REACH 200°F (INFORMATION ONLY)

**NOTE**

These equations can be used to calculate the time to reach 200°F based upon RCS temperature (T) and Decay Heat (Power) in the reactor vessel. The decay heat values will be provided from Nuclear Fuels calculations in MWs. These times should **NOT** to be used for allowable closure times used in this procedure. It is intended to be INFORMATION ONLY for defense in depth.

**Equation 1** Reactor Vessel Water Level at Elevation < 697.75' and the Upper Internals Installed (midloop)

$$1460\left[\frac{200-\mathrm{T(deg\,F)}}{\mathrm{Power(KW)}}\right]=\mathrm{TIME(MIN.)}$$

$$1460\left[\frac{200-(\_\_\_\_\mathrm{F})}{(\_\_\_\_\mathrm{KW})}\right]=\_\_\_\_\_\_\ \mathrm{MINUTES}$$

**Equation 2** Reactor Vessel Water Level at Elevation 697.75' and above With the Upper Internals Installed.

$$1780\left[\frac{200-\mathrm{T(deg\,F)}}{\mathrm{Power(KW)}}\right]=\mathrm{TIME(MIN.)}$$

$$1780\left[\frac{200-(\_\_\_\_\mathrm{F})}{(\_\_\_\_\mathrm{KW})}\right]=\_\_\_\_\_\_\ \mathrm{MINUTES}$$

## Appendix U
## (Page 2 of 2)

**Equation 3** Reactor Vessel Water Level at Elevation 701' and the Upper Internals NOT Installed.

$$2390\left[\frac{200-\mathrm{T(deg\,F)}}{\mathrm{Power(KW)}}\right]=\mathrm{TIME(MIN.)}$$

$$2390\left[\frac{200-(\_\_\_\_\mathrm{F})}{(\_\_\_\_\mathrm{KW})}\right]=\_\_\_\_\_\ \mathrm{MINUTES}$$

**Equation 4** Reactor Vessel Head Off, Upper Internals NOT installed and Refueling Canal Flooded to Elevation 716'

$$17000\left[\frac{200-\mathrm{T(deg\,F)}}{\mathrm{Power(KW)}}\right]=\mathrm{TIME(MIN.)}$$

$$17000\left[\frac{200-(\_\_\_\_\mathrm{F})}{(\_\_\_\_\mathrm{KW})}\right]=\_\_\_\_\_\ \mathrm{MINUTES}$$

**Equation 5** Reactor Vessel Head Off, Upper Internals NOT Installed and Refueling Canal Flooded to Elevation 726'

$$27000\left[\frac{200-\mathrm{T(deg\,F)}}{\mathrm{Power(KW)}}\right]=\mathrm{TIME(MIN.)}$$

$$27000\left[\frac{200-(\_\_\_\_\mathrm{F})}{(\_\_\_\_\mathrm{KW})}\right]=\mathrm{MINUTES}$$

## Source Notes
(Page 1 of 1)

| Requirements Statement | Source Document | Implementing Statement |
|---|---|---|
| Before entry into a reduced inventory condition, establish procedures that will ensure Operations is cognizant of all penetrations during reduced inventory and that appropriate notice will be given to initiate closure actions following a loss of RHR. | NCO 890007008 | C.1 |
| Revise or develop procedures and administrative controls to reasonably ensure containment closure can be achieved within the time at which a core uncovery could result from a loss of RHR coupled with an inability to initiate alternate cooling or addition of water to the RCS inventory. | NCO 890007006 | C.2 |
| Control containment openings to allow closure after loss of RHR shutdown cooling. | NUMARC 91-06, Section 4.5 | C.3 |

ADMIN A.3

# SEQUOYAH NUCLEAR PLANT
# JOB PERFORMANCE MEASURE

## A.3
## JPM 166-1

Survey Map

**PREPARED/ REVISED BY:** ______________________ Date/ __________

**VALIDATED BY:** * ______________________ Date/ __________

**APPROVED BY:** ______________________ Date/ __________
(Operations Training Manager)

**CONCURRED:** ** ______________________ Date/ __________
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.
** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

## NUCLEAR TRAINING

## REVISION/USAGE LOG

| Revision Number | Description Of Revision | V | Date | Pages Affected | Prepared/ Revised By: |
|---|---|---|---|---|---|
| 0 | Initial Issue | Y | 03/07/07 | All | M Reese |
| | | | | | |
| 1 | To allow performance on Unit 1 | | | | |

V - Specify if the JPM change will require another Validation (Y or N).
See cover sheet for criteria.

**SEQUOYAH NUCLEAR PLANT**
**RO/SRO**
**JOB PERFORMANCE MEASURE**

**Task:**
Using a Survey Map

**JA/TA task # :** 3430290302 (**RO**)

**K/A Ratings:** 2.3.2 **(2.5/2.9)** 2.3.10 **(2.9/3.3)**

**Task Standard:**
Using a radiation survey map and an RWP, the examinee will determine:
- required anti-contamination clothing requirements;
- stay time for you to perform routine surveillance between the #3 RCP and the #3 SG without exceeding the Administrative or RWP limit

**Evaluation Method** : Simulator ___ _____ In-Plant ________

================================================================================

**Performer:** ________________________________________
NAME
Start Time________

**Performance Rating :** SAT _____ UNSAT _____ Performance Time _____ Finish Time _______

**Evaluator:** ________________________________/________
SIGNATURE DATE

================================================================================

**COMMENTS**

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

**SPECIAL INSTRUCTIONS TO EVALUATOR:**

1. Sequenced steps identified by an "s"
2. Any UNSAT requires comments
3. Provide Operator with a calculator and equation sheet if required.
4. The simulator is not needed to complete this JPM.

**Validation Time: CR.** 6 min **Local** 7 min.

**Tools/Equipment/Procedures Needed:**
Survey #01008-8, RWP # 07024020

**References:**

| | Reference | Title | Rev No. |
|---|---|---|---|
| 1. | SPP-5.1 | Radiological Controls | 5 |

==========================================================================

**READ TO OPERATOR**

**DIRECTIONS TO TRAINEE:**

I will explain the initial conditions and state the task to be performed. All steps of this JPM shall be simulated. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return, the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 1 is in Mode 5.
2. You have been assigned to perform routine surveillance inside the polar crane wall.
3. You have received 850 mrem this year and have approval to receive dose up to the normal administrative annual limit.

**INITIATING CUES:**

You are to review the radiological conditions for the area. Using the radiation survey map and RWP provided, determine:

1. minimum required anti-contamination clothing;
2. maximum available stay time for you to perform routine surveillance between the #3 RCP and the #3 SG without exceeding the Administrative or RWP limit.

**Inform the examiner when these determinations are complete.**

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 1.: Determine the required anti-contamination clothing requirements<br><br>STANDARD: Operator determines that work step 1 (Entry into Posted Contamination Area) of the RWP applies and determines the following clothing is required:<br>• one pair of cloth booties<br>• cloth inserts<br>• modesty clothing<br>• one pair shoe covers<br>• hood<br>• one pair of rubber gloves<br>• one pair of coveralls<br>• No personal outer clothing<br>• secure wraps for gloves and booties<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>Start Time____<br><br>**Critical Step** |
| STEP 2.: Determine the available stay time for an operator to perform routine surveillance in lower containment.<br><br>STANDARD: Operator determines that general area radiation inside the polar crane wall is 10 mrem/hr and the dose alarm is set at 100 mrem. Thus the available stay time is 10 hours.<br><br>Stay time = [100 mrem]/[10 mrem/hr] = 10 hrs.<br><br>COMMENTS: | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step**<br><br>Stop Time____ |

**END of JPM**

**CANDIDATE CUE SHEET**
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

## DIRECTIONS TO TRAINEE:

I will explain the initial conditions and state the task to be performed. All steps of this JPM shall be simulated. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return, the handout sheet I provided you.

## INITIAL CONDITIONS:

1. Unit 1 is in Mode 5.
2. You have been assigned to perform routine surveillance inside the polar crane wall.
3. You have received 850 mrem this year and have approval to receive dose up to the normal administrative annual limit.

## INITIATING CUES:

You are to review the radiological conditions for the area. Using the radiation survey map and RWP provided, determine:

1. minimum required anti-contamination clothing;
2. maximum available stay time for you to perform routine surveillance between the #3 RCP and the #3 SG without exceeding the Administrative or RWP limit.

**Inform the examiner when these determinations are complete.**

Sequoyah Nuclear Plant

Unit: 1
Permit Number: 07024020
Revision Number: 0
Page: 1

RADIOLOGICAL WORK PERMIT

UNIT 1 LOWER CONTAINMENT
BRIEFING REQUIRED QUARTERLY

NERAL DESCRIPTION

Status:ACTIVE
Start Date: 04-OCT-2007 00:00 End Date: 07-NOV-2007 00:00
Type:SPECIFIC MAP ID : Outage: Y Name: U1C14
Task:ROUTINE PLANT MAINTENANCE PSE: N
HP Coverage:INTERMITTENT Authorization Type: ALL
ALARA Review Number:2007-38 Primary WorkDoc:
Person-mrem Estimate:1690 Person-Hrs Estimate:920
Dose Alarm:100 Dose Rate Alarm:250
DAC-hrs Tracked:Y
Work Area Description:Lower Containment All Areas

DESCRIPTION OF WORK TO BE PERFORMED

U1 Lower/Upper CTMT, OPS Inspection and Valve Alignment ***OPERATIONS PERSONNEL ONLY***

ANTI-CONTAMINATION CLOTHING REQUIRMENTS

| | | | |
|---|---|---|---|
| 1 | BOOTIES, CLOTH, ONE PAIR | 1 | GLOVES, RUBBER, ONE PAIR |
| 1,2 | CLOTH INSERTS | 1,2 | COVERALLS, ONE PAIR |
| 1,2 | MODESTY CLOTHING | 1,2 | NO PERSONAL OUTER CLOTHING |
| 1,2 | SHOE COVERS, ONE PAIR | 1,2 | SECURE GLOVES/BOOTIES |
| 2 | HOOD | 2 | BOOTIES, CLOTH, TWO PAIR |
| | PAPER SUIT | 2 | GLOVES, RUBBER, TWO PAIR |

DOSIMETRY REQUIREMENTS

| | |
|---|---|
| ELECTRONIC DOSIMETER | TLD |

BRIEFING REQUIREMENTS

| | |
|---|---|
| PRE-JOB BRIEFING | |

EQUIS

| | | |
|---|---|---|
| | | |

WORK STEPS

| | |
|---|---|
| 1 | ENTRY INTO POSTED CONTAMINATION AREAS |
| 2 | ENTRY INTO POSTED HIGH CONTAMINATION AREAS |

RADIOLOGICAL WORK PERMIT

UNIT 1 LOWER CONTAINMENT
BRIEFING REQUIRED QUARTERLY

--- Continued ---

.ORKER INSTRUCTIONS

| | |
|---|---|
| 1 | REVIEW SURVEY DATA PRIOR TO ENTRY. |
| 2 | INFORM HP OF SPECIFIC WORK TO BE PERFORMED AND LOCATION PRIOR TO ENTRY. |
| 3 | AVOID WORK ON LOOPS WHEN S/G SECONDARY SIDE IS DRAINED AND DURING THE RCS MID-LOOP PERIOD. |
| 4 | ENTRY INTO THE S/G LAYDOWN AREAS REQUIRES PERMISSION FROM THE ROSS |
| 5 | PLASTIC/ESF SUITS MAYBE REQUIRED AS CONTIDTIONS WARRANT. |
| 6 | FACESHIELD,DISPOSABLE APRON AND SLEEVES MAY BE REQUIRED AT HP DISCRETION. |
| 7 | COORDINATE ANY ENTRIES INTO UPPER CONTAINMENT WITH THE UPPER CONTAINMENT CONTROL POINT. |
| 8 | ACCESS TO THIS RWP INDICATES THE WORKER CAN HEAR THE ED ALARM OR OTHER DOSE WARNING MEASURES HAVE BEEN PROVIDED. |
| 9 | DURING PERIODS WHEN HIS-20 IS IN LOCAL MODE, THE DEFAULT SETPOINT FOR THIE RWP IS 50 MREM DOSE ALARM AND 100 MREM/HOUR DOSE RATE ALARM. CONTACT RAD OPS BEFORE ENTERING IF HIS-20 IS IN THE LOCAL MODE. |

SPECIAL INSTRUCTIONS

| | |
|---|---|
| 1 | THIS RWP NOT VALID FOR ENTRY INTO POSTED LOCKED HIGH RADIATION AREAS<br>Coverage: None |

.PPROVAL

| | |
|---|---|
| Prepared By: | AJARNOLD |
| Approved By: | |
| Approved By: | |
| Final Approval: | LBCAMPBE |

End of RWP

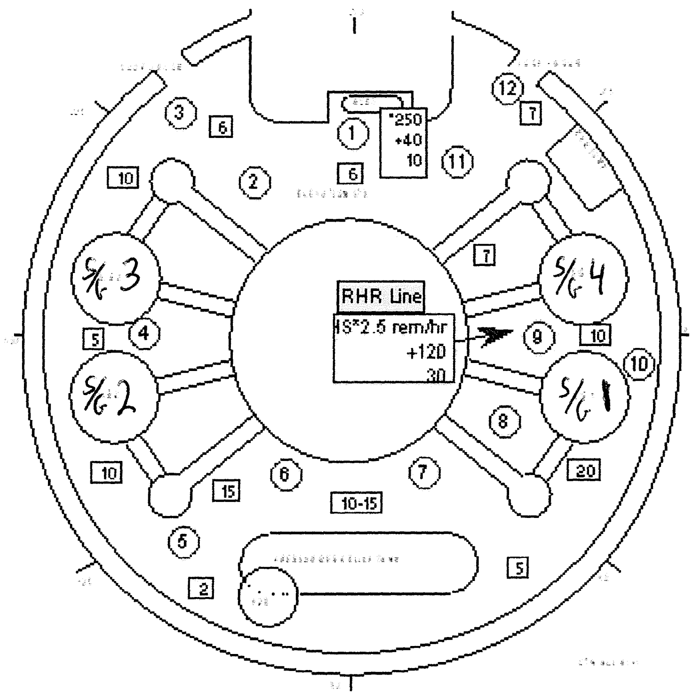
Map: 1R141.WMF - R141 U1 Inside Polar Crane Wall
Survey #: 101007-7 Surveyed by Powell Jr, William H. on 10/10/2007 at 00:30
Approved on: 10/11/2007 05:46

**Return to U-1 Ctmt Map List**
**Return to Main Map List**

| Summary of Highest Readings | |
|---|---|
| **Smears** | **Air Samples & Wipes** |
| 12) 3000 DPM/100 cm2 β/γ | |
| 6) 3000 DPM/100 cm2 β/γ | |
| 11) 1000 DPM/100 cm2 β/γ | |
| 10) 1000 DPM/100 cm2 β/γ | |
| 5) 1000 DPM/100 cm2 β/γ | |
| 1) 1000 DPM/100 cm2 β/γ | |
| 9) <1000 DPM/100 cm2 β/γ | |
| 8) <1000 DPM/100 cm2 β/γ | |
| 7) <1000 DPM/100 cm2 β/γ | |
| 4) <1000 DPM/100 cm2 β/γ | |
| 3) <1000 DPM/100 cm2 β/γ | |
| 2) <1000 DPM/100 cm2 β/γ | |

Symbol Legend (for example only)

Dose Rate
*150 Contact Reading
+75 30 cm Reading
20 General Area
HS-50 Hot Spot
RCA Posting
Drip Bag
15 Smear
15 Air Sample
0 RM
15 Wipe




Water can be found in most areas of IPCW around the general floor area.

ADMIN A.4

# SEQUOYAH NUCLEAR PLANT
# JOB PERFORMANCE MEASURE

## A.4

## JPM # 109

Classify the Event per the REP
(Degraded Core With Possible Loss of
Coolable Geometry and Likely Cntmt Failure)

**PREPARED/ REVISED BY:** ______________________ Date/ ________

**VALIDATED BY:** * ______________________ Date/ ________

**APPROVED BY:** ______________________ Date/ ________
(Operations Training Manager)

**CONCURRED:** ** ______________________ Date/ ________
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.
** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

## NUCLEAR TRAINING

## REVISION/USAGE LOG

| REVISION NUMBER | DESCRIPTION OF REVISION | V | DATE | PAGES AFFECTED | PREPARED/ REVISED BY: |
|---|---|---|---|---|---|
| 6 | EPIP-5 Rev chg. Also chgd critical time to notify ODS to 10 min per discussion w/ Nick Catron & Jerry Reynolds. Incorp previous minor pen/inks. | N | 5/12/98 | 4-8 | HJ Birch |
| pen/ink | Revision to EPIP-5 had no impact | N | 10/15/98 | 4 | JP Kearney |
| pen/ink | EPIP-1 Rev update only | N | 9/23/99 | 4 | SR Taylor |
| pen/ink | Clarified standard in step 2 to include Section 3.1, corrected page no. references steps 6, 7, & 9. Updated EPIP-5 rev. | N | 9/27/99 | 4,5,6,7 | SR Taylor |
| pen/ink | EPIP-1 Rev update only | N | 3/21/00 | 4 | SR Taylor |
| 7 | EPIP-5 revision changes sequencing of steps | Y | 9/5/00 | All | J P Kearney |
| pen/ink | EPIP-1 & 5 Rev update only | N | 12/21/00 | 4 | W. R. Ramsey |
| pen/ink | EPIP-1 & 5 Rev update, minor changes | N | 09/17/01 | ALL | W. R. Ramsey |
| pen/ink | Minor clarifications for to be consistent with other REP JPMs. | N | 12/28/01 | All | L. Pauley |
| 8 | Incorporated pen/ink changes; revised per recent changes to EPIPs; changes do not impact overall flow of JPM | N | 8/16/02 | All | J P Kearney |
| 9 | Incorporated latest EPIP revisions. | Y | 9/15/03 | All | MG Croteau |
| 10 | Incorporate EPIP- 5 Rev 37 | | | | |

V - Specify if the JPM change will require another Validation (Y or N).
See cover sheet for criteria.

**SEQUOYAH NUCLEAR PLANT**
**SRO**
**JOB PERFORMANCE MEASURE**

**Task:**

Classify the Event per the REP (Degraded Core With Possible Loss of Coolable Geometry and Likely Cntmt Failure)

**JA/TA task # :** 3440030302 (**SRO**)
3440190302 (**SRO**)

**K/A Ratings:**

| | | |
|---|---|---|
| 2.4.29 (2.6/4.0) | 2.4.38 (2.2/4.0) | 2.4.44 (2.1/4.0) |
| 2.4.30 (2.2/3.6) | 2.4.40 (2.3/4.0) | |
| 2.4.37 (2.0/3.5) | 2.4.41 (2.3/4.1) | |

**Task Standard:**

The event is classified as a GENERAL EMERGENCY based on Loss of any 2 of 3 fission product barriers with a potential loss of 3rd barrier.

**Evaluation Method** : Simulator ___X_____ In-Plant ________
* This JPM will be simulated

================================================================================

**Performer:** ________________________________________
NAME
Start Time ________

**Performance Rating :** SAT _____ UNSAT _____ Performance Time _____ Finish Time _______

**Evaluator:** _________________________________/________
SIGNATURE DATE

================================================================================

**COMMENTS**

________________________________________________________________________________

________________________________________________________________________________

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SPECIAL INSTRUCTIONS TO EVALUATOR:

1. Sequenced steps identified by an "s"
2. Any UNSAT requires comments
3. Initialize the simulator in IC-193, place in run to let ICS update and then place in FREEZE. Verify wind speed and direction as listed below.
4. If IC 193 not available then reset to IC-16 and set the following on ICS:

| | wind speed | and | direction. |
|---|---|---|---|
| **91 meter** | **2.3** | | **205** |
| **46 meter** | **5.0** | | **235** |
| **10 meter** | **4.0** | | **205** |

**Have printed copy of the ICS page for use if needed.**

5. Insure operator performs the following required actions for **SELF-CHECKING;**
   a. Identifies the correct unit, train, component, etc.
   b. Reviews the intended action and expected response.
   c. Compares the actual response to the expected response.
5. **Caution: DO NOT LET THE EXAMINEE FAX THE NOTIFICATION FORM**

**Validation Time: CR.** 19 mins **Local** ____________

Tools/Equipment/Procedures Needed:
EPIP-1 and EPIP-5

**References:**

| | Reference | Title | Rev No. |
|---|---|---|---|
| 1. | EPIP-1 | Emergency Plan Initiating Conditions Matrix | 39 |
| 2. | EPIP-5 | General Emergency | 37 |
| 3. | 1-FR-0 | Unit 1 Status Trees | 1 |

**READ TO OPERATOR**

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. All steps of this JPM shall be simulated. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.
**The simulator is NOT representative of the scenario you are about to address.**

**INITIAL CONDITIONS:**

1. The 1A-A D/G is tagged for maintenance on the generator, it is expected to be returned to service in the next 8 to 12 hours.
2. Unit 1 experienced a large break LOCA approximately 5 minutes ago.

**INITIATING CUES:**

At the time of the transition to E-1 from E-0 the STA reported that the following conditions exist:

1. RCPs are OFF
2. Core Exit temperature is 775°F and is increasing
3. RVLIS LOWER range level is 30%
4. The 1A-A 6.9KV SD Bd tripped out on "board differential" relay operation.
5. The OATC recognized that the 1B-B Containment Spray Pump failed to start. The pump will not start from the MCR or the switchgear.
6. Containment pressure is 7 psid and increasing.
7. No injuries or immediate hazards to employees have been reported.

You are the SED and are to classify this event **AND** perform all required actions according to the REP.

**This JPM contains Time Critical elements.**

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 1.: Refers to EPIP-1 to determine level of event.<br><br>STANDARD: Operator refers to EPIP-1, Section 1, Fission Product Barrier Matrix. Operator determines that they have met the conditions of:<br>1.1.1 Loss, "Core cooling Red Path"<br>1.2.2 Loss, "Subcooling less than 40 degrees"<br>1.2.4 Loss, "RVLIS level < 40%"<br>1.3.1 Potential Loss, "Actions of FR-C.1 are ineffective, (i.e.: Core TCs trending up"<br>1.3.2 Potential Loss, "Cntmt press >2.81 psig < one full train of containment spray"<br><br>Based on "Emergency Class Criteria", the Operator determines the need to declare a **General Emergency**, based on Loss of two barriers and potential loss of the third barrier. | **Task Start Time**<br>____________<br><br>___ SAT<br><br>___ UNSAT<br><br>**Critical Step** |
| STEP 2.: Implements EPIP-5 GENERAL EMERGENCY.<br><br>**Enter time Declaration made:________________**<br><br>**Time from Task Acceptance to Declaration:___________**<br><br>STANDARD: Operator implements a GENERAL EMERGENCY per EPIP-5, Section 3.1. Operator is required to classify the event **within 15 minutes** of the time the task was accepted. Declaration Time should be consistent with the time the examinee transitions from EPIP-1 to EPIP-5. | ___ SAT<br><br>___ UNSAT<br><br>**Time Critical** |
| STEP 3.:<br><br>NOTE: IF there are personnel injuries, THEN IMPLEMENT EPIP-10, "Emergency Medical Response" in parallel with this procedure.<br><br>NOTE: IF there are immediate hazards to plant personnel, THEN consider immediately implementing EPIP-8 "Personnel Accountability and Evacuation" in parallel with this procedure<br><br>Cue: ***If Operator seeks information on injuries, state " NO injuries have been reported"***<br><br>Cue: ***If Operator seeks information on immediate hazards, state " NO immediate hazards have been reported"***<br><br>STANDARD: Operator refers to the 2 notes. | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 4.: **3.1 GENERAL EMERGENCY DECLARATION BY THE MAIN CONTROL ROOM** Upon classifying events as a "GENERAL EMERGENCY", the SM/SED shall:<br>**[1] IF** TSC is OPERATIONAL, (SED transferred to TSC), **THEN GO TO** Section 3.2.<br>**[2] RECORD time of Declaration**<br><br>STANDARD: Operator determines the TSC is not operational and records the time of declaration | ___ SAT<br>___ UNSAT |
| STEP 5.: **[3] ACTIVATE** Emergency Paging System (EPS) as follows.<br>**[a] IF** EPS has already been activated, **THEN GO TO Step 4.**<br>**[b] IF** ongoing onsite Security events may present risk to the emergency responders, **THEN CONSULT** with Security to determine if site access is dangerous to the life and health of emergency responders.<br>**[c] IF** ongoing events makes site access dangerous to the life and health of emergency responders, **THEN SELECT** STAGING AREA button on the EPS terminal **INSTEAD** of the EMERGENCY button.<br>**[d] ACTIVATE** EPS using touch screen terminal. **IF** EPS fails to activate, **THEN** continue with step 4.<br><br>**Cue**: ***If Security contacted, state "No security event is in progress"***<br><br>**Cue**: ***If attempt is made to delegate the activation, state " No one is available to be delegated."***<br><br>STANDARD: Operator determines the EPS has not been activated and activates the EPS utilizing the 'Touch Screen'. | ___ SAT<br>___ UNSAT<br><br>**Critical Step** |
| STEP 6.: **[4] EVALUATE** Protective Action Recommendations using Appendix B.<br><br>***Cue: When release data addressed, state "Release data not available for Appendix B."***<br><br>STANDARD: Operator determines from page 14, logic chart in EPIP-5, that appropriate protective action recommendation is **RECOMMENDATION 2**. This should be identified on the notification form in the next JPM step. | ___ SAT<br>___ UNSAT<br><br>**Critical Step** |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 7.: **[5] COMPLETE** Appendix C (TVA Initial Notification for General Emergency).<br><br>a. This is a Drill<br>b. Their name, Shift Manager (SED) at SQN Plant.<br>c. General Emergency declared on UNIT 1<br>d. EAL No. (**LOSS 1.1.1) and (LOSS 1.2.2 or 1.2.4), and (Potential LOSS 1.3.1 or 1.3.2).**<br>e. Brief description of incident: **[Core cooling Red Path AND (Subcooling <40°F" or "RVLIS level <40%) AND (C1 ineffective, Core T/Cs trending up or Contmt press >2.81 psid with no spray operating)].**<br>f. Radiological Conditions **[Either Release information not known or Minor releases within federally approval limits]**<br>g. Event Declared: **[Time and Date]**<br>h. Wind direction at 46 meters **[Southwest at 235 degrees]** AND wind speed at 46 meters **[5 mph]**<br>i. Protective Action Recommendation: **[2 - Evacuate listed sectors (2 mile radius and 5 miles downwind) [A-1, B-1, C-1, D-1, B-2, B-5] and shelter all other non-listed sectors].** Ask the ODS to repeat the information he has received to ensure accuracy.<br><br>***Cue:*** ***1. When examinee on proper ICS screen, "Wind speed at 46 meters is 5 mph".***<br>***2. When examinee on proper ICS screen, "Wind direction at 46 meters is Southwest at* 235 degrees".**<br>***3. Role play as the ODS and acknowledge report.***<br><br>STANDARD: Operator completes appendix C with the information listed above in bold. The information in '*Brief description of incident*' can vary as long as a description is included. | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 8.: **[6] NOTIFY** ODS.<br><br>ODS: Ringdown Line or<br>5-751-1700 or 5-751-2495 or 9-785-1700<br><br>**[a] IF** EPS failed to activate from SQN, **THEN DIRECT** ODS to activate SQN EPS. **IF** ODS is also unable to activate EPS, **THEN** continue with step [5] [b].<br>**[b] READ** completed Appendix C to ODS.<br><br>STANDARD: Operator notifies ODS by telephone and provides the information on Appendix C. Notifies the ODS within **10** minutes after declaration is made and provides information from Appendix C.<br><br>**NOTE:** **Enter time call is made to the ODS:________________**<br><br>**Time from Declaration (step 2) to ODS Notification:____________** | ___ SAT<br><br>___ UNSAT<br><br>**Time Critical Step** |
| STEP 9.: **[c] FAX** completed Appendix C to ODS.<br><br>5-751-8620 (Fax)<br><br>***Cue:* After the operator demonstrates the fax will be sent, state "The support AUO will send the FAX for you.:**<br><br>***Evaluator Caution:* DO NOT LET THE EXAMINEE FAX THE FORM**<br><br>STANDARD: Operator addresses FAXing the Notification Form to the ODS. | ___ SAT<br><br>___ UNSAT |
| STEP 10.: **[d] MONITOR** for confirmation call from ODS that State/Local notifications complete: **RECORD** time State notified. ______________________<br>Notification Time<br><br>***Cue:* As the ODS, call back and report that the state has been notified.**<br><br>STANDARD: Operator records State notification time when ODS confirms state has been notified | ___ SAT<br><br>___ UNSAT |
| STEP 11.: [7] **IF** ODS **CANNOT** be contacted within **10 minutes** of declaration....<br><br>*Note to evaluator: Complete step text is lengthy and not repeated in this JPM step.*<br><br>STANDARD: Operator N/As this step and continues. | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 12.: **[8] ENSURE** MSS/WWM in the OSC ( x6427 ) is monitoring Emergency Response Organization **(**ERO) responses using printed report available in the OSC.<br>**[a] IF** any ERO positions are not responding, **THEN DIRECT** MSS to **CALL** personnel to staff TSC/OSC positions. (Use REP Duty Roster and Call List.)<br><br>***Cue:*** ***If the EPS touch screen is checked, report that the various positions are starting to respond.***<br><br>***Cue:*** ***When the MSS/WMM is contacted, report "The ERO response monitoring is in progress and personnel are reporting.***<br><br>STANDARD: Operator should contact the MSS/WWM or check the screen to ensure responses are being obtained. | ___ SAT<br><br>___ UNSAT |
| STEP 13.: **[9] NOTIFY** plant staff using Appendix A. (Delegate as needed.)<br><br>***Cue:*** ***If the appendix is delegated, then acknowledge the direction to perform - Appendix A.***<br><br>STANDARD: Operator should use Appendix A to notify plant staff or delegate the appendix to be performed. | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step unless JPM step 20 performmed** |
| **Evaluator Note: Following steps 14-20 are from EPIP-5 Appendix A. If the Operator delegates the appendix performance, then the step will not be performed.** | |
| STEP 14.: **[1] IF** there is a security threat, **THEN**<br>**[a] NOTIFY** Security Shift Supervisor to implement SSI-1, "Security Instructions For Members Of The Security Force" and EPIP-11 "Security and Access Control".<br><br>6144 or 6568<br><br>**[b] DETERMINE** if Security recommends implementing the "Two Person Line of Sight" Rule.<br>**[c] IF** Nuclear Security recommends establishing the "Two Person Line of Sight" Rule, **THEN INFORM** the SM/SED. ("Two Person Line of Sight" requires use of EPIP-8.)<br><br>***Cue:*** ***When security contacted state, "There have been no reports of a security threat."***<br><br>STANDARD: Operator determines this step should be N/A.'d | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 15.: **[2] NOTIFY** Radiation Protection Lead:<br>**[a] STATE:** "A **GENERAL EMERGENCY** HAS BEEN DECLARED, BASED UPON (*Describe the conditions*), AFFECTING UNIT(s) ____."<br>7865 (RP Lab) or 6417, (RP Lab)<br>Use Call List to Page RP Lead<br>**[b] DIRECT** Radiation Protection to implement EPIP-14, "Radiation Protection Response".<br>**[c] DIRECT** Radiation Protection to implement CECC EPIP-9, "Emergency Environmental Radiological Monitoring Procedures" which includes activation of the radiological monitoring van.<br><br>NOTE: **This notification may be delegated.**<br><br>***Cue:*** ***As the Radcon Shift Supervisor, acknowledge the report.***<br><br>***Cue:*** ***If delegated, report that the notification has been completed.***<br><br>STANDARD: Operator makes the notification and directs the Radcon Shift Supervisor to implement EPIP-14 **AND** CECC EPIP-9. | ___ SAT<br><br>___ UNSAT |
| STEP 16.: **[3] NOTIFY** personnel in the Chemistry Lab:<br>**[a] STATE:** "A **GENERAL EMERGENCY** HAS BEEN DECLARED, BASED UPON (*Describe the conditions*), AFFECTING UNIT(s) ____."<br><br>**[b] DIRECT** Chemistry to implement EPIP-14, "Radiation Protection Response."<br><br>NOTE: **This notification may be delegated to an extra SRO/RO.**<br><br>***Cue:*** ***As the Chemistry Shift Supervisor, acknowledge the report.***<br><br>***Cue:*** ***If delegated, report that the notification has been completed.***<br><br>STANDARD: Operator makes the notification and directs the Chemistry Shift Supervisor to implement EPIP-14. | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 17.: **[4] ANNOUNCE** to plant personnel on old plant PA and x4800:<br>**[a]** "ATTENTION PLANT PERSONNEL. ATTENTION PLANT PERSONNEL. A **GENERAL EMERGENCY** HAS BEEN DECLARED BASED ON ( *Describe the condition* ), AFFECTING UNIT(s) _____. *(if not already staffed, add)* STAFF THE TSC AND OSC."<br>**[b] REPEAT** Announcement.<br><br>**NOTE: This announcement may be delegated.**<br><br>STANDARD: Operator makes the announcement on both the old paging system and on x4800 bridge system or delegates the making of the announcement.<br><br>*Evaluator Note: x4800 bridge not active on simulator* | ___ SAT<br><br>___ UNSAT |
| STEP 18.: **[5] NOTIFY** Plant Management in accordance with SPP-3.5 **AND PROVIDE** General Emergency Information.<br><br>*Evaluator Note: Activation of the EPS will make the Plant Management aware of the REP actuation, however administrative procedures require notification.*<br><br>**NOTE: This notification may be delegated.**<br><br>***Cue: When operator references SPP-3.5, state "Another operator will make the SPP-3.5 notifications***<br><br>***Cue: If delegated, report that the notifications have been completed.***<br><br>STANDARD: Operator references SPP-3.5 to make the required notifications or delegates the making of the notifications. | ___ SAT<br><br>___ UNSAT |
| STEP 19.: **[6] NOTIFY** the "On Call" NRC Resident **AND PROVIDE** General Emergency Information.<br><br>**NOTE: This notification may be delegated.**<br><br>***Cue: When operator calls NRC resident, state "Another operator will make the SPP-3.5 notifications***<br><br>***Cue: If delegated, report that the notification has been completed.***<br><br>STANDARD: Operator makes the NRC resident notification or delegates the making of the notifications. | ___ SAT<br><br>___ UNSAT |

Job Performance Checklist:

| STEP/STANDARD | SAT/UNSAT |
|---|---|
| STEP 20.: **[7] NOTIFY** NRC of plan activation via ENS phone.<br><br>**The following Note precedes the step:**<br>NRC ENS notification should be made as soon as practicable, but within 1 hour of **"GENERAL EMERGENCY"** declaration. Whenever NRC requests, a qualified person must provide a continuous update to NRC Operations Center. Use EPIP-6, Appendix B as a briefing guide.<br><br>**NOTE: This notification may be delegated.**<br><br>***Cue: When NRC operations center contacted, acknowledge the report. If ENS number requested state "ENS number is 97745"***<br><br>***Cue: If delegated, report that the notifications have been completed.***<br><br>STANDARD: Operator references SPP-3.5 to make the required notifications or delegates the making of the notifications. | ___ SAT<br><br>___ UNSAT<br><br>**Critical Step** *if not delegated*<br><br>**Time of notification**<br><br>__________ |
| STEP 21.: **[10] GO TO** Section 3.3<br><br>***Cue: When the operator initiates section 3.3 , tell him "The TSC is staffed and will assume the implementation of EPIP-5".***<br><br>STANDARD: Operator should go to Section 3.3 to continue the performance of EPIP-5. | ___ SAT<br><br>___ UNSAT |

**End of JPM**

**READ TO OPERATOR**

**Directions to Trainee:**

I will explain the initial conditions, and state the task to be performed. All steps of this JPM shall be simulated. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**The simulator is NOT representative of the scenario you are about to address.**

**INITIAL CONDITIONS:**

1. The 1A-A D/G is tagged for maintenance on the generator, it is expected to be returned to service in the next 8 to 12 hours.
2. Unit 1 experienced a large break LOCA approximately 5 minutes ago.

**INITIATING CUES:**

At the time of the transition to E-1 from E-0 the STA reported that the following conditions exist:

1. RCPs are OFF
2. Core Exit temperature is 775°F and is increasing
3. RVLIS LOWER range level is 30%
4. The 1A-A 6.9KV SD Bd tripped out on "board differential" relay operation.
5. The OATC recognized that the 1B-B Containment Spray Pump failed to start. The pump will not start from the MCR or the switchgear.
6. Containment pressure is 7 psid and increasing.
7. No injuries or immediate hazards to employees have been reported.

You are the SED and are to classify this event **AND** perform all required actions according to the REP.

**This JPM contains Time Critical elements.**

METEOROLOGIAL DATA

Main Alarms cs Trends Points Zoom/Layers Print Help

15-JAN-2008 54:50

SELECT FUNC. KEY OR TURN-ON CODE METDATA >

S C H P Z I D M

# MET-TOWER LINK

DOSE CALC MET DATA

WIND DIRECTION

91 METER

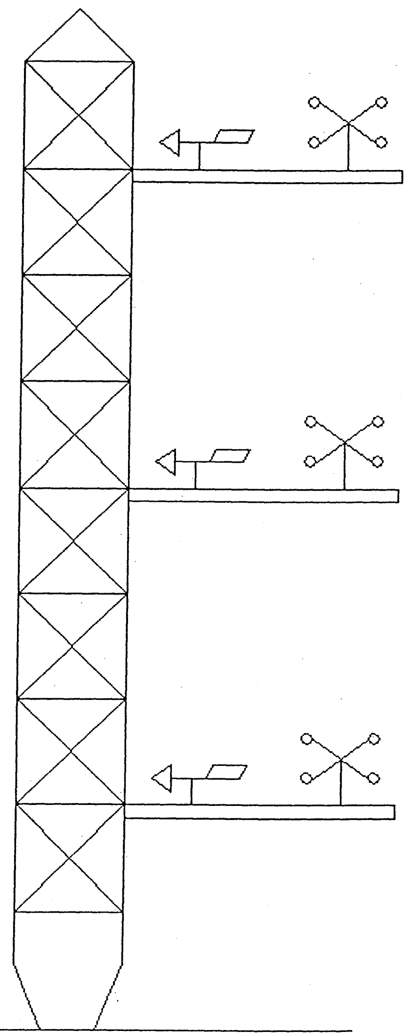
EL.1047'

46 METER

EL. 897'

10 METER

EL. 780'



| | INSTANTANEOUS | | 15 MIN AVG |
|---|---|---|---|
| AIR TEMPERATURE: | 67.80 | DEG F | 67.35 |
| WIND SPEED: | 2.3 | MPH | 2.3 |
| WIND DIRECTION FROM: | 205 | DEGREES | 205 |
| AIR TEMPERATURE: | 68.46 | DEG F | 68.01 |
| WIND SPEED: | 5.0 | MPH | 5.0 |
| WIND DIRECTION FROM: | 235 | DEGREES | 235 |
| AIR TEMPERATURE: | 70.00 | DEG F | 69.60 |
| WIND SPEED: | 4.0 | MPH | 4.0 |
| WIND DIRECTION FROM: | 205 | DEGREES | 205 |

RAINFALL
LAST HOUR: 0.25 INCHES
LAST 15 MIN: 0.00 INCHES

10 METER DEW POINT
(HOURLY AVG): 68.25 DEG F

SOLAR RADIATION
(HOURLY AVG): 0.00 LANGLEYS /MIN

RIVER

STABILITY DELTA-T's

PREVIOUS | CANCEL | F1=CLEAR | F2= | F3=HISTORY | F4= | F5= | F6=

10:54 AM

KEY

| SEQUOYAH | GENERAL EMERGENCY | EPIP-5 |
|---|---|---|

CRITICAL DATA CIRCLED
# ONE OF THE 2 BOXES should be CHECKED IN EACH COLUMN

Appendix C

## TVA INITIAL NOTIFICATION OF GENERAL EMERGENCY

1. ☒ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

2. This is NAME, **Sequoyah** has declared a **GENERAL EMERGENCY**
affecting: ☒ Unit 1 ☐ Unit 2 ☐ Both Unit 1 and Unit 2

3. **EAL Designator(s):** Loss (1.1.1) & Loss (1.2.2 OR 1.2.4) & POTENTIAL LOSS (1.3.1 OR 1.3.2

4. **Brief Description of the Event:** "WORDING CAN VARY"
LOCA with inadequate core cooling

5. **Radiological Conditions:** (Check one under both Airborne and Liquid column.)

**Airborne** Releases Offsite
#
☒ Minor releases within federally approved limits[1]
☐ Releases above federally approved limits[1]
☒ Release information not known
([1]Tech Specs)

**Liquid** Releases Offsite
#
☒ Minor releases within federally approved limits[1]
☐ Releases above federally approved limits[1]
☒ Release information not known
([1]Tech Specs)

6. **Event Declared:** Time: "TIME" Date: "DATE"

7. **The Meteorological Conditions are:** (Use 46 meter data from the Met Tower)
Wind Direction is FROM: 235 degrees Wind Speed: 5 m.p.h

8. **Provide Protective Action Recommendation:** (Check either 1 or 2 or 3.)

| ☐ **Recommendation 1**<br>• **EVACUATE** LISTED SECTORS (2 mile Radius and 10 miles downwind)<br>• **SHELTER** all other non-listed sectors.<br>• **CONSIDER** issuance of POTASSIUM IODIDE in accordance with the State Plan. | **REC 1** | **WIND FROM *DEGREES DIRECTION (item 7) (Mark)** | **REC 2** | ☒ **Recommendation 2**<br>• **EVACUATE** LISTED SECTORS (2 mile Radius and 5 mile downwind)<br>• **SHELTER** all other non-listed sectors.<br>• **CONSIDER** issuance of POTASSIUM IODIDE in accordance with the State Plan. |
|---|---|---|---|---|
| A-1, B-1, C-1, D-1, **C**-2, -6, -7, -8, **D**-2, -3, -5, -6 | | 12 - 49 | | A-1, B-1, C-1, D-1, **C**-2, **D**-2 |
| A-1, B-1, C-1, D-1, **D**-2, -3, -4, -5, -6 | | 50 - 70 | | A-1, B-1, C-1, D-1, **D**-2 |
| A-1, B-1, C-1, D-1, **A**-3, -4, **D**-2, -3, -4, -5 | | 71 - 112 | | A-1, B-1, C-1, D-1, **A**-3, **D**-2 |
| A-1, B-1, C-1, D-1, **A**-2, -3, -4, -5, -6, **D**-4 | | 113 - 146 | | A-1, B-1, C-1, D-1, **A**-2, A-3, |
| A-1, B-1, C-1, D-1, **A**-2, -3, -4, -5, -6, **B**-2 | | 147 - 173 | | A-1, B-1, C-1, D-1, **A**-2, A-3, **B**-2 |
| A-1, B-1, C-1, D-1, **A**-2, -5, -6, **B**-2, -3, -4 | | 174 - 214 | | A-1, B-1, C-1, D-1, **A**-2, **B**-2, |
| A-1, B-1, C-1, D-1, **B**-2, -3, -4, -5, -6, -7, -8 | | 215 - 258 | ☒ | A-1, B-1, C-1, D-1, **B**-2, B-5, |
| A-1, B-1, C-1, D-1, **B**-2, -3, -5, -6, -7, -8, **C**-2, -3, -4, -5, -6 | | 259 - 331 | | A-1, B-1, C-1, D-1, **B**-2, B-5, **C**-2 |
| A-1, B-1, C-1, D-1, **B**-5, **C**-2, -3, -4, -5, -6, -7, -8 | | 332 - 11 | | A-1, B-1, C-1, D-1, **B**-5, **C**-2 |

☐ **Recommendation 3**
- SHELTER all sectors.
- CONSIDER issuance of Potassium Iodide in accordance with the State Plan.

9. Please repeat back the information you have received to ensure accuracy. ☐

10. **When completed, FAX this information to the ODS.** ☐

| | | | |
|---|---|---|---|
| Facility: Sequoyah 1 & 2 | | Date of Examination: | 1/2008 |
| Exam Level (circle one): RO / SRO(I) / SRO (U) | | Operating Test No.: | NRC |

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. W/E14 High Containment Pressure (EA-1.1) 3.7 / 3.7<br>Respond to High Containment Pressure (JPM 057AP1) | D,A,S | 5 |
| b. 003 Reactor Coolant Pump System (A2.01) 3.5 / 3.9<br>Respond to a #1 RCP Seal Failure | N,L,S | 4P |
| c. 001 Control Rod Drive System (A3.05) 3.5 / 3.5<br>Shutdown Bank Withdrawal | M,A,L,S | 1 |
| d. 004 Chemical and Volume Control System (A4.06) 3.6 / 3.1<br>Fill and Vent Excess Letdown | N,L,S | 2 |
| e. 038 Steam Generator Tube Rupture (EA1.32 ) 4.6 / 4.7<br>SG tube rupture with MSIV fails to Close (JPM 075AP) | D,A,S | 3 |
| f. 015 Nuclear Instrumentation System (A1.01) 3.5 / 3.8<br>Calibrate Power Range Nuclear Instrumentation (JPM 22-AP2) | D,A,S | 7 |
| g. 064 Emergency Diesel Generator (ED/G) System (A4.06) 3.9 / 3.9<br>Shutdown the Diesel Generator (1A-A and 1B-B) (JPM 046-1) | M,D,S | 6 |
| h. | | |

In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| i. 061 Auxiliary / Emergency Feedwater System (A2.04) 3.4 / 3.8<br>Operate the TD AFW Pump Locally (JPM 74-2AP) | D,A,E,R | 4S |
| j. 004 Chemical and Volume Control System (A2.25) 3.8 / 4.3<br>Uncontrolled Dilution Flow Path Isolation (0-SI-OPS 063-214.0)) (JPM 40-2) | D,R | 1 |
| k. 062 AC Electrical Distribution (A2.10) 3.0 / 3.3<br>Transfer 480v SD Board 2A1-A from Normal to Alternate (JPM 061AP2) | D,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 | 4-6 / 4-6 / 2-3 6 |
| (C)ontrol room | |
| (D)irect from bank | ≤ 9 / ≤ 8 / ≤ 4 7 |
| (E)mergency or abnormal in-plant | ≥ 1 / ≥ 1 / ≥ 1 1 |
| (L)ow-Power / Shutdown | ≥ 1 / ≥ 1 / ≥ 1 3 |
| (N)ew or (M)odified from bank including 1(A) | ≥ 2 / ≥ 2 / ≥ 1 4 |
| (P)revious 2 exams | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) 0 |
| (R)CA | ≥ 1 / ≥ 1 / ≥ 1 ✓ |
| (S)imulator | |

**JPM Summary**

JPM A RHR spray will be established in accordance with FR-Z.1, High Containment Pressure. This is a Bank Alternate Path JPM.

JPM B An RCP seal failure will be diagnosed and the Abnormal Operating Instruction used to remove the pump from service. This is a new low power/shutdown JPM

JPM C A failure of the step counter will occur during the withdrawal of Shutdown Rods requiring a reactor trip. This is a new alternate path low power/shutdown JPM.

JPM D Excess letdown system will be filled and vented from the control room using the system operating instruction. This is a new low power/shutdown JPM.

JPM E A Main Steam Isolation valve will fail to close during the isolation of steam side of a ruptured steam generator will be isolated. . This is a Bank Alternate Path JPM.

JPM F Power Range nuclear instruments will be adjusted in accordance with the surveillance instruction 0-SI-OPS-092-078.0. This is a Bank Alternate Path JPM.

JPM G Unit 1 Diesel Generators will be shutdown per EA-82-1. This is a Bank modified JPM.

JPM I Plant JPM –The trip and throttle valve will not open electrically while TDAFW pump is being placed in service locally. This is an Alternate path Bank JPM using emergency abnormal procedure performed inside the RCA.

JPM J Dilution flow path will be isolated using 0-SI-OPS 062-214.0. This is a Bank JPM performed inside the RCA using an Appendix contains in a surveillance instruction.

JPM K Plant JPM - A breaker will fail to operate while a transfer of a 480v Shutdown Board is being attempted. This is a Bank Alternate Path JPM.

| | | | |
|---|---|---|---|
| Facility: Sequoyah 1 & 2 | | Date of Examination: | 1/2008 |
| Exam Level (circle one): RO / SRO(I) / SRO (U) | | Operating Test No.: | NRC |

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. W/E14 High Containment Pressure (EA-1.1) 3.7 / 3.7<br>Respond to High Containment Pressure (JPM 057AP1) | D,A,S | 5 |
| b. 003 Reactor Coolant Pump System (A2.01) 3.5 / 3.9<br>Respond to a #1 RCP Seal Failure | N,L,S | 4P |
| c. 001 Control Rod Drive System (A3.05) 3.5 / 3.5<br>Shutdown Bank Withdrawal | M,A,L,S | 1 |
| d. | | |
| e. | | |
| f. | | |
| g. | | |
| h. | | |

In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| i. 061 Auxiliary / Emergency Feedwater System (A2.04) 3.4 / 3.8<br>Operate the TD AFW Pump Locally (JPM 74-2AP) | D,A,E,R | 4S |
| j. ~~004 Chemical and Volume Control System (A2.25) 3.8 / 4.3~~<br>~~Uncontrolled Dilution Flow Path Isolation (0-SI-OPS 063-214.0)) (JPM 40-2)~~<br>Changed for proper coverage of Safety Functions. Discussed w/ Licensee. MB 01/23/2008 | ~~D,R~~ | ~~1~~ |
| k. 062 AC Electrical Distribution (A2.10) 3.0 / 3.3<br>Transfer 480v SD Board 2A1-A from Normal to Alternate (JPM 061AP2) | D, 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 | 4-6 / 4-6 / 2-3 3 |
| (C)ontrol room | |
| (D)irect from bank | ≤ 9 / ≤ 8 / ≤ 4 3 |
| (E)mergency or abnormal in-plant | ≥ 1 / ≥ 1 / ≥ 1 1 |
| (L)ow-Power / Shutdown | ≥ 1 / ≥ 1 / ≥1 2 |
| (N)ew or (M)odified from bank including 1(A) | ≥ 2 / ≥ 2 / ≥ 1 2 |
| (P)revious 2 exams | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) |
| (R)CA | ≥ 1 / ≥ 1 / ≥ 1 0 |
| (S)imulator | |

**JPM Summary**

JPM A RHR spray will be established in accordance with FR-Z.1, High Containment Pressure. This is a Bank Alternate Path JPM.

JPM B An RCP seal failure will be diagnosed and the Abnormal Operating Instruction used to remove the pump from service. This is a new low power/shutdown JPM

JPM C A failure of the step counter will occur during the withdrawal of Shutdown Rods requiring a reactor trip. This is a new alternate path low power/shutdown JPM.

JPM I Plant JPM –The trip and throttle valve will not open electrically while TDAFW pump is being placed in service locally. This is an Alternate path Bank JPM using emergency abnormal procedure performed inside the RCA.

JPM J Dilution flow path will be isolated using 0-SI-OPS 062-214.0. This is a Bank JPM performed inside the RCA using an Appendix contains in a surveillance instruction.