Draft Submittal

(Pink Paper)

1. ADMINISTRATIVE TOPICS OUTLINE (ES-301-1)
2. CONTROL ROOM SYSTEMS & FACILITY WALK-THROUGH TEST OUTLINE (ES-301-2)
3. ADMINISTRATIVE JPMS
4. IN-PLANT JPMS
5. CONTROL ROOM JPMS (SIMULATOR JPMS)

HARRIS JAN./FEB. 2006 EXAM

05000400/2006301

JANUARY 23 - FEBRUARY 2, 2006
FEBRUARY 6, 2006 (WRITTEN)

2/9/06

HARRIS INIITIAL LICENSE EXAM MATERIAL

January 2006 RO and SRO Exams

JPM BINDER

Facility: **Shearon Harris**		Date of Examination: ***1/23/2006***
Examination Level (circle one): **RO** / SRO		Operating Test Number: ***NRC***
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	Given a set of conditions, determine RCS sub-cooling with the monitor inoperable. (Bank CR-124) 2.1.25 Ability to obtain and interpret station reference material such as graphs, nomographs, and tables which contain performance data (2.8)
Conduct of Operations	P,R or S	Evaluate rod alignment using in-core thermocouples. (2002 NRC Exam – RO A1-1) 2.1.19 Ability to use plant computer to obtain and evaluate parametric information on system or component status (3.0)
Equipment Control	M,R	Perform the RCS Water Inventory Balance surveillance procedure. (Bank CR-014) 2.2.12 Knowledge of surveillance procedures (3.0)
Radiation Control	N,R	Given a specific work situation, determine maximum stay time and review the Radiation Work Permit. 2.3.1 Knowledge of 10CFR20 and related facility radiation control requirements (2.6)
Emergency Plan		NOT SELECTED
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, (S)imulator, or 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)		

Shearon Harris 2006 NRC RO EXAMINATION

CONDUCT OF OPERATIONS (A1)

Provided with a set of conditions, the candidate will calculate subcooling margin in accordance with the EOP USERS GUIDE. Modify Bank JPM CR-124 to change the calculated subcooling margin and allow completion in a classroom setting.

CONDUCT OF OPERATIONS (A2)

Randomly selected repeat from the 2002 NRC Examination (RO A1-1). The candidate will use AOP-001, Attachment 1, Indications of Misaligned Rod, and Attachment 2, Adjacent and Symmetric Thermocouple Locations, to evaluate a suspected control rod misalignment.

EQUIPMENT CONTROL (A3)

Given a set of conditions, the candidate will complete surveillance procedure OST-1026, REACTOR COOLANT SYSTEM LEAKAGE EVALUATION. Modify Bank JPM CR-014 to change the calculated RCS leak rate.

RADIATION CONTROL (A4)

The candidate will be presented with a situation requiring application of the existing ROUTINE OPERATIONS ACTIVITIES RWP in calculating the maximum stay time for performing a specific task. The calculation will require the candidate to determine the first facility administrative dose limit that applies. This is a new JPM.

Facility: **Shearon Harris**		Date of Examination: ***1/23/2006***
Examination Level (circle one): RO / **SRO**		Operating Test Number: ***NRC***
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	Given a set of conditions, determine RCS sub-cooling with the monitor inoperable. (Bank CR-124) 2.1.25 Ability to obtain and interpret station reference material such as graphs, nomographs, and tables which contain performance data (3.1)
Conduct of Operations	P,R or S	Review and approve the daily surveillance requirements log. (2002 NRC SRO A1-1) 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports (3.0)
Equipment Control	M,R	Given a set of conditions, perform the RCS Water Inventory Balance surveillance procedure and evaluate compliance with technical specifications. (Bank CR-014) 2.2.12 Knowledge of surveillance procedures (3.4)
Radiation Control	N,R	Given a specific work situation, determine maximum stay time and review the Radiation Work Permit. 2.3.1 Knowledge of 10CFR20 and related facility radiation control requirements (3.0)
Emergency Plan	M,R	Given a set of conditions, determine the Emergency Action Level (EAL). 2.4.41 Knowledge of the emergency action level thresholds and classifications (4.1)
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, (S)imulator, or 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)	

Shearon Harris 2006 NRC SRO EXAMINATION

CONDUCT OF OPERATIONS (A1)

Provided with a set of conditions, the candidate will calculate subcooling margin in accordance with the EOP USERS GUIDE. Modify Bank JPM CR-124 to change the calculated subcooling margin and allow completion in a classroom setting.

CONDUCT OF OPERATIONS (A2)

Randomly selected repeat from the 2002 NRC Examination (SRO A1-1). The candidate will be directed to review (for approval) the DAILY SURVEILLANCE REQUIREMENTS LOG. The log contains multiple errors.

EQUIPMENT CONTROL (A3)

Given a set of conditions, the candidate will complete surveillance procedure OST-1026, REACTOR COOLANT SYSTEM LEAKAGE EVALUATION. Modify Bank JPM CR-014 to change the calculated RCS leak rate. The SRO candidate will also be required to apply technical specifications.

RADIATION CONTROL (A4)

The candidate will be presented with a situation requiring application of the existing ROUTINE OPERATIONS ACTIVITIES RWP in calculating the maximum stay time for performing a specific task. The calculation will require the candidate to determine the first facility administrative dose limit that applies. This is a new JPM.

EMERGENCY PLAN (A5)

Given a set of conditions, the candidate will determine the EAL within the required time limit. There are a number of "classification JPMs" in the facility bank. One of those will be modified.

Facility: **Shearon Harris**	Date of Examination: **1/23/2006**
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. Perform OST-1005, CONTROL ROD AND ROD POSITION INDICATOR EXERCISE.	P,A,L,S	1
b. Take corrective action for failure of CSIP mini-flow valve(s) to re-position on demand in accordance with PATH-1.	***N,A,E,S***	***2***
c. Perform OST-1805, PZR PORV OPERABILITY.	D,L,S	3
d. Take an operating RHR loop out of service in accordance with OP-111, RESIDUAL HEAT REMOVAL SYSTEM, Section 7.1.	***N,L,S***	***4P***
e. Take corrective action for failure of the main turbine to trip in accordance with PATH-1.	D,A,E,S	4S
f. Take corrective action for improper Containment Spray alignment in accordance with PATH-1.	***P,A,E,S***	***5***
g. Remove a PRNIS Channel from service in accordance with OWP-RP, REACTOR PROTECTION.	D,S	7
h. Take corrective action for loss of vital instrument bus SIII in accordance with AOP-024, LOSS OF UNINTERRUPTIBLE POWER SUPPLY. **(Performed by RO applicants only)**	N,A,E,S	6
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. Manually control charging flow in accordance with AOP-017, LOSS OF INSTRUMENT AIR.	P,R,E	2
j. Inhibit both trains of SSPS in accordance with AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE.	***D,E***	***7***
k. Reset the TDAFW Pump mechanical overspeed trip in accordance with OP-137, AUXILIARY FEEDWATER SYSTEM.	***D,R***	***4S***

@	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3 9 / 8 / 4 1 / 1 / 1 1 / 1 / 1 2 / 2 / 1 3 / 3 / 2 (randomly selected) 1 / 1 / 1

Shearon Harris 2006 NRC EXAMINATION JPM SUMMARY DESCRIPTIONS

a. Perform OST-1005, CONTROL ROD AND ROD POSITION INDICATOR EXERCISE. While the testing is in progress two control rods will drop, requiring the candidate to initiate a reactor trip. Randomly selected repeat from the 2004 NRC Examination: 301-2, Item f.

b. Take corrective action for failure of CSIP mini-flow valve(s) to re-position on demand in accordance with PATH-1. While reducing ECCS flow, the common mini-flow valve will fail to open requiring the candidate to take alternative action to ensure adequate pump flow. New JPM. ***SRO upgrade applicants will also perform this task.***

c. Perform OST-1805, PZR PORV OPERABILITY. The candidate will perform the surveillance on one PORV with the unit in Mode 5. Facility Bank JPM CR-087.

d. Take an operating RHR loop in out of service in accordance with OP-111, RESIDUAL HEAT REMOVAL SYSTEM, Section 7.1. The candidate will shift from two RHR Loops in service to one RHR Loop in service while RCS cooling is in progress. New JPM. ***SRO upgrade applicants will also perform this task.***

e. Take corrective action for failure of the main turbine to trip in accordance with PATH-1. The candidate will verify a reactor trip and take alternative actions to isolate the main turbine from the steam supply. Facility Bank JPM CR-103.

f. Take corrective action for improper Containment Spray (CS) alignment in accordance with PATH-1. The candidate will evaluate containment pressure, manually start and align the CS Pumps, and stop the Reactor Coolant Pumps. Randomly selected repeat from the 2002 NRC Examination: 301-2, Item d. ***SRO upgrade applicants will also perform this task.***

g. Remove a PRNIS Channel from service in accordance with OWP-RP, REACTOR PROTECTION. The candidate will perform the switch manipulations to remove a failed PRNIS channel from service. Facility Bank JPM CR-019.

h. Take corrective action for loss of vital instrument bus SIII in accordance with AOP-024, LOSS OF UNINTERRUPTIBLE POWER SUPPLY. The candidate will be required to recognize failure of Instrument Bus SIII and to perform the associated immediate actions. New JPM. This task will only be performed by RO applicants.

i. Manually control charging flow in accordance with AOP-017, LOSS OF INSTRUMENT AIR. The candidate will simulate local control of charging flow. Randomly selected repeat from the 2002 NRC Examination: 301-2, Item i.

j. Inhibit both trains of SSPS in accordance with AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE. The candidate will locate the cabinets and simulate removal of the fuses for inhibiting SSPS. Facility Bank JPM IP-141. ***SRO upgrade applicants will also perform this task.***

k. Reset the TDAFW Pump mechanical overspeed trip in accordance with OP-137, AUXILIARY FEEDWATER SYSTEM. The candidate will simulate the actions for resetting the TDAFW Pump overspeed trip. Facility Bank JPM IP-001. ***SRO upgrade applicants will also perform this task.***

Facility: Shearon Harris | Task No.: 001001H201

Task Title: Perform Control Rod and Rod Position Indicator Exercise | JPM No.: 2006 NRC JPM A

K/A Reference: 001 A2.11 4.4/4.7

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is operating at 100% power.
OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3", is being performed. All prerequisites to perform the test have been met. A briefing has been conducted for the performance of Section 7.1. The Superintendent-Shift Operations has given permission to perform this OST.

Task Standard: The reactor has been manually tripped in response to two dropped rods.

Required Materials: OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3

General References: OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3, Revision 12
AOP-001, Malfunction of Rod Control and Indication System, Revision 24

Handout: OST-1005 marked up as if the Shutdown Banks have been completed.

Initiating Cue: Testing has been completed for the Shutdown Bank rods. Resume OST-1005, Section 7.1, commencing with Control Bank A. Another operator is standing by to report DRPI position, when requested.

Time Critical Task: NO

Validation Time: 10 minutes

SIMULATOR SETUP

- Initialize to IC-19 (100% power).
- Pre-load IMF RPS01B (n 00:00:00 00:00:00) 3 1, Failure of Reactor Trip Breakers to AUTO open.
- Trigger 1 to drop two control rods:
  - IMF CRF03a (1 00:00:00 00:00:00) 2 21
  - IMF CRF03b (1 00:00:00 00:00:00) 2 26
- FREEZE and SNAP.
- When Applicant is ready, place simulator in RUN.
- Launch Trigger 1 while Control Bank A is being withdrawn back to the original position.

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1	Obtain procedure.
Standard:	Reviews handout.
Evaluator's Cue:	**Provide the handout for NRC JPM A.**
Comment:	

Note before Step 7.1.1.a

Performance Step: 2	NOTE: Substeps 1.a through 1.g are to be signed off when testing of the components listed in Attachment 1 is completed.
Standard:	Initials NOTE.
Comment:	

Step 7.1.1.a

Performance Step: 3	For the rod bank being tested, record on Attachment 1 the rod heights as indicated by Group Step Counters and DRPI.
Standard:	On Attachment 1, for control Bank "A": • Records both Group Position indications as "225". • Requests/records all DRPI position indications as "228".
Evaluator Cue:	**If requested: DRPI indicating "228".**
Comment:	

Step 7.1.1.b

√ **Performance Step: 4** Rotate the Rod Bank Selector to the bank being tested.

Standard: Rotates the ROD BANK SELECTOR switch to the "CB A" position.

Comment:

Note before Step 7.1.1.c

Performance Step: 5 NOTE: When inserting rods, the Bank Low Insertion and Bank Low-Low Insertion Limit Alarm may be actuated.

Standard: Initials NOTE.

Comment:

Step 7.1.1.c

√ **Performance Step: 6** With the Rod Motion lever, drive the rod bank being tested IN 10 steps as indicated by Group Step Counters.

Standard: Places the ROD MOTION lever in the "IN" position and inserts Control Bank "A" rods 10 steps by observing Group Position indication.

Comment:

NOTE:

Step 7.1.1.d

Performance Step: 7 Record on Attachment 1, the rod heights for the bank being tested, as indicated by Group Step Counters and DRPI.

Standard: On Attachment 1, for control Bank "A":

- Records both Group Position indications as "215".
- Requests/records all DRPI position indications as "216".

Evaluator Cue: **If requested: DRPI indicating "216".**

Comment:

Caution before Step 7.1.1.e

Performance Step: 8 CAUTION: When withdrawing rods, ensure that any power limits in effect are not exceeded.

Standard: Initials CAUTION.

Evaluator Cue: **If candidate indicates that Unit SCO permission is required to withdraw rods: Restore rods to their original position.**

Comment:

Simulator Operator Instructions: **When rods have been withdrawn 2-3 steps, insert malfunctions for two dropped rods (per simulator setup instructions).**

Step 7.1.1.e

√ **Performance Step: 9** With the Rod Motion lever, pull the rod bank being tested OUT 10 steps as indicated by Group Step Counters.

Standard: Places the ROD MOTION lever in the "OUT" position and withdraws Control Bank "A" rods while observing Group Position indication.

Comment:

Performance Step: 10 Determine 2 Control Bank "A" rods have dropped into the core.

Standard: Determines 2 rods have dropped into the core by observing:

- Rod Bottom Lights
- Decreasing power
- Decreasing Tavg
- ALB-13-7-4, One Rod At Bottom
- ALB-13-7-3, Two or More Rods At Bottom
- ALB-13-7-1, Rod Control Urgent Alarm
- ALB-13-4-2, Power Range High Neutron Flux Rate Alert
- ALB-13-5-3, Power Range Upper Detector High Flux Dev or Auto Defeat
- ALB-13-5-4, Power Range Lower Detector High Flux Dev or Auto Defeat
- ALB-13-4-5, Power Range Channel Deviation
- ALB-13-8-5, computer Alarm Rod DEV/SEQ NIS PWR Range Tilts

Comment:

AOP-001 Immediate Action

√ **Performance Step:** Informs the Unit SCO of the multiple dropped rods and manually trips the reactor.

Standard:

- Informs the Unit SCO.
- Initiates a MANUAL Reactor trip. (√)

Evaluator's Cue: **Another Operator will complete the Immediate Actions of PATH-1.**

Comment:

Terminating Cue: **When the candidate begins the Immediate Actions of PATH-1: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The plant is operating at 100% power.

OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3", is being performed. All prerequisites to perform the test have been met. A briefing has been conducted for the performance of Section 7.1. The Superintendent-Shift Operations has given permission to perform this OST.

INITIATING CUE:

Testing has been completed for the Shutdown Bank rods. Resume OST-1005, Section 7.1, commencing with Control Bank A. Another operator is standing by to report DRPI position, when requested.

Handout JPM BA

Progress Energy

C
CONTINUOUS
USE

HARRIS NUCLEAR PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: OPERATION SURVEILLANCE TEST

NUMBER: **OST-1005**

TITLE: **CONTROL ROD AND ROD POSITION INDICATOR EXERCISE QUARTERLY INTERVAL MODES 1 - 3**

NOTE: This procedure has been screened per PLP-100 Criteria and determined to be CASE II. The level of management to be involved in the preparation conduct of this procedure is determined by a Superintendent with concurrence of Superintendent - Shift Operations (for CASE II or CASE II raised to CASE I) or a Senior Reactor Operator (for CASE II lowered to CASE III).

1.0 PURPOSE

This test verifies through freedom of movement the operability of each Control Rod Assembly, Control Rod Drive Mechanism and associated control circuit to satisfy Technical Specification Surveillance Requirement 4.1.3.1.2.

2.0 REFERENCES

2.1. Plant Operating Manual Procedures

1. OP-104

2.2. Technical Specifications

1. 3.1.3.1
2. 3.1.3.5
3. 3.1.3.6
4. 4.1.3.1.2

2.3. Final Safety Analysis Report

1. 3.9.4
2. 4.6.3
3. 7.7.1

2.4. Technical Manuals

1. VM-PKO, Westinghouse Rod Control System Technical Manual
2. VM-PKP, Westinghouse Digital Rod Position Indication Technical Manual

2.5. Other

1. SD-104

3.0 PREREQUISITES

1. **VERIFY** that the Rod Control System is aligned in a manner that will support the performance of this test.

2. The performance of this OST has been coordinated with other plant evolutions such that the minimum equipment operating requirements of Tech Specs are met.

3. Both A and B data trains are available on DRPI for the Shutdown Banks.

4. **ENERGIZE** additional Pressurizer heaters as desired to help minimize pressure transients while rods are manipulated.

5. Instrumentation needed for the performance of this test is free of deficiency tags that affect instrument indication.

CAUTION

This procedure involves an infrequent test or evolution with the potential to reduce margins of safety or introduce transients or accidents or introduce personnel safety or radiological hazards if performed incorrectly.

6. A PLP-100 Shift brief has been performed by the applicable level of management.

7. **OBTAIN** the Superintendent - Shift Operations permission to perform this OST.

Signature _____ Date _____

4.0 PRECAUTIONS AND LIMITATIONS

NOTE: With DRPI operating at either full or half accuracy, rod movement of 10 steps should ensure a DRPI indication change of at least 6 steps.

1. When testing Rod Control Assemblies in Modes 1 - 3, do not exceed 12 steps movement on any non-controlling Rod Control Assembly.

2. Each rod bank is to be moved a minimum of 10 steps as indicated on the group step counters and 6 steps as indicated on DRPI.

3. This test should not be used for Post Maintenance testing unless the Post Maintenance test is being performed in conjunction with normal rod exercising per Tech Spec. 4.1.3.1.2 since Tech Specs 3.1.3.5 and 3.1.3.6 allow suspension of their requirements only during the rod exercise surveillance.

4. When exercising Control Rod Assemblies, the action requirements for Rod Insertion Limits and associated annunciators for Shutdown and Control Bank rods per Technical Specifications 3.1.3.5 and 3.1.3.6 do not apply.

5. All rods must be returned to the initial Group Step Counter positions to ensure rod insertion limits and proper bank overlap are restored. If Control Bank D is tested with Rod Bank Selector in AUTO or MAN, then Control Bank D does not have to be returned to the initial position but must be kept above rod insertion limits.

6. When withdrawing rods, ensure that any power limitations in effect are not exceeded.

7. Minimize the time the rods in each bank are out of their normal position.

8. When rods are being withdrawn, caution must be used to prevent the step counters from exceeding the full out position of the rods. If this occurs, the P/A converter for the affected bank (Control Banks only) may need to be reset to match actual rod position.

5.0 TOOLS AND EQUIPMENT

None Applicable

6.0 ACCEPTANCE CRITERIA

This test will be completed satisfactorily if all of the following conditions are verified.

1. Each rod moves at least 10 steps in any one direction as indicated on the group step counters and 6 steps as indicated on DRPI.

NOTE: For cycles that have 225 steps as the "full rods out position", final DRPI indication is satisfactory if it is within 3 steps of the step counter indication.

NOTE: For Control Bank D, final DRPI indication within 3 steps of the step counters is satisfactory regardless of "full rods out position". This is within the allowable range due to accuracy of the DRPI indications.

2. Each rod is returned to its pre-test position on both group step counters and DRPI, except when performing section 7.3.

3. The individual rod positions as indicated by the DRPI are in agreement with the step counters within plus or minus 12 steps.

7.0 PROCEDURE

NOTE: If in Mode 1, testing of Control Bank D can be conducted during lowering of plant power per Section 7.3.

NOTE: If Control Bank D is less than 10 steps, then testing of Control Bank D rods can be conducted per Section 7.2.

7.1. Shutdown and Control Bank Testing

1. **REFER** to Attachment 1 and test all rod banks listed per the following instructions:

NOTE: Substeps 7.1.1.a through 7.1.1.g are to be signed off when testing of the components listed in Attachment 1 is completed.

a. For the rod bank being tested, **RECORD** on Attachment 1 the rod heights as indicated by Group Step Counters and DRPI. _____

b. **ROTATE** the Rod Bank Selector to the bank being tested. _____

NOTE: When inserting rods, the Bank Low Insertion and Bank Low-Low Insertion Limit Alarm may be actuated.

c. With the Rod Motion lever, **INSERT** the rod bank being tested IN 10 steps as indicated by Group Step Counters. _____

d. **RECORD** on Attachment 1, the rod heights for the bank being tested, as indicated by Group Step Counters and DRPI. _____

CAUTION

When withdrawing rods, ensure that any power limits in effect are not exceeded.

e. With the Rod Motion lever, **WITHDRAW** the rod bank being tested OUT 10 steps as indicated by Group Step Counters. _____

7.1 Shutdown and Control Bank Testing (continued)

f. **RECORD** on Attachment 1, the rod height for the bank being tested, as indicated by Group Step Counters and DRPI. _____

g. **REPEAT** Substeps 7.1.1.a through 7.1.1.f of above for all remaining rod banks to be tested. _____

NOTE: For cycles that have 225 steps as the "full rods out" position, DRPI indication is satisfactory if it is within 3 steps of the step counter indication. This is within the allowable range due to accuracy of the DRPI indications.

2. **REVIEW AND ENSURE** all Group Step Counter and DRPI positions recorded on Attachment 1 per Substep 7.1.1.f match the positions recorded in Substep 7.1.1.a. _____

7.2. Control Bank D Testing When Less Than 10 Steps

NOTE: This section can be marked N/A if not performed.

1. **REFER** to Attachment 1 and test Control Bank D per the following:

   a. **RECORD** on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

   b. **ROTATE** the Rod Bank Selector to CBD.

CAUTION

When withdrawing rods, ensure that any power limits in effect are not exceeded.

   c. With the Rod Motion lever, **WITHDRAW** Control Bank D OUT 10 steps as indicated by Group Step Counters.

   d. **RECORD** on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

   e. With the Rod Motion lever, **INSERT** Control Bank D IN 10 steps as indicated by Group Step Counters.

   f. **RECORD** on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

NOTE: Final Control Bank D DRPI indication is satisfactory for the next step if it is within 3 steps of the step counter indication. This is within the allowable range due to accuracy of the DRPI indications.

2. **REVIEW AND ENSURE** Control Bank D Group Step Counter and DRPI positions recorded on Attachment 1 Substep 7.2.1.f match the positions recorded in Substep 7.2.1.a.

7.3. Control Bank D Testing When Lowering Plant Power

NOTE: This section can be marked N/A if not performed.

1. **REFER** to Attachment 1 and test Control Bank D per the following:

   a. **RECORD** on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

   b. As power is reduced **VERIFY** that Control Bank D rods are inserted either automatically or manually.

   c. **WHEN** Control Bank D is inserted at least 10 Steps, **RECORD** on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

N/A

7.4. Test Completion

1. **VERIFY** the Rod Bank Selector is in AUTO or MAN as required by plant conditions. _____

R 2. **REVIEW** all data taken on Attachment 1 **AND VERIFY** all acceptance criteria in Section 6.0 has been met. (Reference 2.3.3). _____

3. **DOCUMENT** PM RQ 00022071-01 completion. _____

4. **COMPLETE** applicable sections of Attachment 2, Certifications and Reviews, and **INFORM** the Unit SCO when this OST is completed. _____

8.0 DIAGRAMS/ATTACHMENTS

Attachment 1 - Data Sheet

Attachment 2 - Certifications and Reviews.

Data Sheet

SHUTDOWN BANK A										
Section 7.1 Step	Step Counters		DRPI							
	SC-SBA1	SC-SBA2	G3	C9	J13	N7	J3	C7	G13	N9
7.1.1.a	225	225	228	228	228	228	228	228	228	228
7.1.1.d	215	215	216	216	216	216	216	216	216	216
7.1.1.f	225	225	228	228	228	228	228	228	228	228

SHUTDOWN BANK B										
Section 7.1 Step	Step Counters		DRPI							
	SC-SBB1	SC-SBB2	E5	E11	L11	L5	G7	G9	J9	J7
7.1.1.a	225	225	228	228	228	228	228	228	228	228
7.1.1.d	215	215	216	216	216	216	216	216	216	216
7.1.1.f	225	225	228	228	228	228	228	228	228	228

SHUTDOWN BANK C					
Section 7.1 Step	Step Counters	DRPI			
	SC-SBC1	E3	C11	L13	N5
7.1.1.a	225	228	228	228	228
7.1.1.d	215	216	216	216	216
7.1.1.f	225	228	228	228	228

Data Sheet

CONTROL BANK A										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBA1	SC-CBA2	F2	B10	K14	P6	K2	B6	F14	P10
7.1.1.a										
7.1.1.d										
7.1.1.f										

CONTROL BANK B										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBB1	SC-CBB2	F4	D10	K12	M6	K4	D6	F12	M10
7.1.1.a										
7.1.1.d										
7.1.1.f										

CONTROL BANK C										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBC1	SC-CBC2	D4	D12	M12	M4	H6	F8	H10	K8
7.1.1.a										
7.1.1.d										
7.1.1.f										

Data Sheet

CONTROL BANK D										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.1.1.a										
7.1.1.d										
7.1.1.f										

OR

CONTROL BANK D										
Section 7.2 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.2.1.a										
7.2.1.d										
7.2.1.f										

OR

CONTROL BANK D										
Section 7.3 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.3.1.a										
7.3.1.c										

Certifications and Reviews

This OST was performed as a: Periodic Surveillance Requirement: _____

Postmaintenance Operability Test: _____

Redundant Subsystem Test: _____

Plant Conditions: _____ Mode: _____

OST Completed By: _____ Date: _____

Time: _____

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
		PT	JEFF TROGDON

General Comments/Recommendation/Corrective Actions/Exceptions:

Pages Used: _____

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

_____ Date: _____
Unit SCO

Reviewed By: _____ Date: _____
Superintendent – Shift Operations

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

Revision Summary
PRR 112629

General

Revision to provide allowance for DRPI to be within 3 steps of Step Counter position when the Park position is 225 Steps. Due to being in the center of the range, the DRPI indication may be 222 or 228. This is within the accuracy of the DRPI indication.

Description of Changes

Page	Section	Change Description
All		Updated revision level. Restored auto cross referencing throughout procedure.
3	3.0	Removed reference to MCR Status file since that file is being deleted.
5	6.0.2	Added NOTE for clarifying information regarding when "rods full out" position is at 225 steps. DRPI accuracy could allow the 225 step position to indicate either 222 or 228 steps since it could toggle either way and still be within limits. Noted that for this case, DRPI indicating within 3 steps of the step counters is satisfactory to meet these acceptance criteria. For Control Bank D, this could occur regardless of "rods full out" position.
7	7.1.2	Added NOTE to state the above information.
8	7.2.2	Added NOTE to state "Final Control Bank D DRPI indication is satisfactory for the next step if it is within 3 steps of the step counter indication. This is within the allowable range due to accuracy of the DRPI indications."

Re: IPM A

1.0 PURPOSE

The purpose of this procedure is to provide actions to be taken for various malfunctions of the Rod Control and Indication System, including dropped or misaligned control rods.

2.0 ENTRY CONDITIONS

ANY of the ~~following~~:

- One or more dropped control rods
- ~~Continuous spurious control bank~~ withdrawal or insertion
- Failure of a control bank to respond properly to changes in demand
- One or more misaligned control rods
- Any malfunction of rod position indication

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

NOTE

Steps 1 through 3 are immediate actions.

☐ 1. **CHECK** that LESS THAN TWO control rods are dropped.	☒ 1. **TRIP** the Reactor **AND GO TO** EOP Path-1.
☐ 2. **POSITION** Rod Bank Selector Switch to MAN.	
☐ 3. **CHECK** Control Bank motion STOPPED.	☐ 3. **TRIP** the Reactor **AND GO TO** EOP Path-1.

☐ 4. **GO TO** the appropriate section:

- Section 3.1, Dropped Control Rod
- Section 3.2, Continuous Spurious Control Bank Motion
- Section 3.3, Failure of a Control Bank To Move
- Section 3.4, Misaligned Control Rod
- Section 3.5, Malfunctioning Rod Position Indicator

--END OF SECTION 3.0--

Facility: Shearon Harris | Task No.: 301135H601

Task Title: Take Corrective Action For Failure of CSIP Mini-Flow Valves to Re-Position | JPM No.: 2006 NRC JPM B

K/A Reference: 006 A4.07 4.4 / 4.4

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The unit was at 100% power when a technician error resulted in an SI.
- The operating crew has completed PATH-1, through Step 18.

Task Standard: Adequate flow through a running CSI Pump.

Required Materials: BOP to silence unrelated alarms.

General References: PATH-1 Board, Revision 18
EOP-GUIDE-1, Revision 17

Handouts: PATH-1 marked up through Step 18

Initiating Cue: You are the Reactor Operator. Beginning at Step 19, perform PATH-1. You may use either the PATH-1 Board or EOP-GUIDE-1. The BOP will respond to alarms unrelated to the evolution.

Time Critical Task: N/A

Validation Time: 5 minutes

SIMULATOR SETUP

- Initialize to I/C-19.
- Pre-load IDI XA2I162 (n 00:00:00 00:00:00) ASIS, 1CS-214 control switch failure.
- Insert:
  - SIS01A (1 00:00:00 00:00:00) INADVERTENT_INIT
  - SIS01B (1 00:00:00 00:00:00) INADVERTENT_INIT
- Perform/markup PATH-1 and EOP-GUIDE-1 through Step 18 (SI Termination Criteria).
- Set up ERFIS Plot to include RCS Pressure.
- Adjust AFW flow to approx. 80 KPPH/SG
- Secure TDAFWP by closing 1MS-70 and 1MS-72
- Energize 1A1 and 1B1.
- Silence and acknowledge alarms
- FREEZE (with PZR Level at approx. 60%)
- Note: IC-162 (password protected) captures this setup and may be used
  - The ERFIS plot for RCS pressure must be established after each reset.
  - Must reload 1CS-214 failure: "idi xa2i162 asis"

(Denote Critical Steps with a check mark)

START TIME: _____

√ **Performance Step: 1** Reset SI.
Standard: Resets each train of SI using the respective switch.

Comment:

Performance Step: 2 Manually realign Safeguards Equipment following a loss of off-site power.
Standard: Acknowledges continuous action requirement.

Comment:

√ **Performance Step: 3** Stop all but one CSIP.
Standard: One CSIP left in service.

Comment:

Performance Step: 4 Check RCS Pressure – STABLE OR INCREASING.
Standard: Verifies/reports RCS Pressure rising.

Comment:

Performance Step: 5 Isolate High Head SI Flow:

Open normal miniflow isolation valves:

- 1CS-182
- 1CS-196
- 1CS-210
- 1CS-214

Standard:

- Attempts to open each valve.
- Determines 1CS-214 will NOT OPEN
- Takes RNO Path: Observe NOTE prior to Step 24 and go to Step 24.

Comment:

NOTE prior to Step 24 **The following step contains an SI termination sequence for which CSIP normal mini-flow is not available. The charging flow control valve is opened a minimal amount prior to isolating the BIT to ensure the running CSIP is not deadheaded.**

Performance Step: 6 Establish Minimum Charging Flow and Isolate BIT Flow:

- Shut Charging Flow Control Valve FK-122.1

Standard:

- Reads NOTE prior to performing step.
- Places FK-122.1 in MANUAL and closes Charging Flow Control Valve

Comment:

√ **Performance Step: 7** Establish Minimum Charging Flow and Isolate BIT Flow:
Open Charging Line Isolation Valves
- 1CS-235
- 1CS-238

Standard: Both 1CS-235 and 1CS-238 indicate OPEN (RED light).

Comment:

√ **Performance Step: 8** Establish Minimum Charging Flow and Isolate BIT Flow:
- Set charging flow controller demand to 30%.

Standard: Adjusts FK-122.1 to 30 ± 5%.

Comment:

√ **Performance Step: 9** Establish Minimum Charging Flow and Isolate BIT Flow:
Shut BIT Outlet Valves:
- 1SI-3
- 1SI-4

Standard: Both 1SI-3 and 1SI-4 indicate CLOSED (GREEN light).

Comment:

Performance Step: 10 Establish Minimum Charging Flow and Isolate BIT Flow:

Verify cold leg and hot leg injection valves SHUT:

- 1SI-52
- 1SI-86
- 1SI-107

Standard: Verifies 1SI-52 and 1SI-86 and 1SI-107 indicate CLOSED (GREEN light).

Comment:

√ **Performance Step: 11** Establish Minimum Charging Flow and Isolate BIT Flow:

- Establish and maintain at least 60 gpm flow through CSIP.

Standard: Adjusts/verifies Charging Flow Controller maintaining ≥ 60 gpm.

Comment:

Terminating Cue: **When charging flow is maintained at ≥ 60 gpm: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit was at 100% power when a technician error resulted in an SI.
- The operating crew has completed PATH-1, through Step 18.

INITIATING CUE:

You are the Reactor Operator. Beginning at Step 19, perform PATH-1. You may use either the PATH-1 Board or EOP-GUIDE-1. The BOP will respond to alarms unrelated to the evolution.

Instructions	Response Not Obtained
START	
19. Reset SI.	
20. Manually Realign Safeguards Equipment Following A Loss Of Offsite Power. (Refer to Attachment 2.)	
21. Stop All But One CSIP.	
22. Check RCS Pressure - STABLE OR INCREASING	GO TO EPP-009, "POST LOCA COOLDOWN AND DEPRESSURIZATION", Step 1.
23. Isolate High Head SI Flow:	
a. Open normal miniflow isolation valves: 1CS-182 1CS-196 1CS-210 1CS-214 — NO	a. Observe NOTE prior to Step 24 AND GO TO Step 24.
b. Shut BIT outlet valves: 1SI-3 1SI-4	b. Locally shut OR isolate valves.
c. Verify cold leg AND hot leg injection valves - SHUT 1SI-52 1SI-86 1SI-107	c. Locally shut valves.
d. Observe CAUTION prior to Step 25 AND GO TO Step 25.	

FOLDOUT A

- RCP TRIP CRITERIA

  IF both of the following occur, THEN stop all RCPs:

  - SI flow - GREATER THAN 200 GPM
  - RCS pressure - LESS THAN 1400 PSIG

- AFW SUPPLY SWITCHOVER CRITERIA

  IF CST level decreases to less than 10%, THEN switch the AFW water supply to the ESW system using OP-137, "AUXILIARY FEEDWATER SYSTEM", Section 8.1.

- RHR RESTART CRITERIA

  IF RCS pressure decreases to less than 230 PSIG in an uncontrolled manner, THEN restart RHR pumps to supply water to the RCS.

- ALTERNATE MINIFLOW OPEN/SHUT CRITERIA

  - IF RCS pressure decreases to less than 1800 PSIG, THEN verify alternate miniflow isolation OR miniflow block valves - SHUT
  - IF RCS pressure increases to greater than 2200 PSIG, THEN verify alternate miniflow isolation AND miniflow block valves - OPEN

Instructions	Response Not Obtained

NOTE: The following step contains an SI termination sequence for which CSIP normal miniflow is not available. The charging flow control valve is opened a minimal amount prior to isolating the BIT to ensure the running CSIP is not deadheaded.

24. Establish Minimum Charging Flow AND Isolate BIT Flow:

a. Shut charging flow control valve:

FK-122.1

b. Open charging line isolation valves:

1CS-235
1CS-238

c. Set charging flow controller demand position to 30%.

d. Shut BIT outlet valves:

1SI-3
1SI-4

d. Locally shut OR isolate valves.

e. Verify cold leg AND hot leg injection valves - SHUT

1SI-52
1SI-86
1SI-107

e. Locally shut valves.

f. Establish and maintain at least 60 GPM flow through CSIP.

END

g. Observe CAUTION prior to Step 26 AND GO TO Step 26.

Facility: Shearon Harris Task No.: 002013H101

Task Title: Pressurizer PORV Operability Test JPM No.: 2006 NRC JPM C

K/A Reference: 010 A4.03 4.0 / 3.8

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Reactor is in Mode 5 with all equipment operating properly.
OST-1805 is to be performed to test the operability of 1RC-118, PRZ PORV, following maintenance.

Task Standard: Critical tasks of OST-1805 Section 7.1 completed.

Required Materials: Stopwatch

General References: OST-1805, Revision 12

Handout: OST-1805:

- Section 1.0 through 7.1, Attachments 2, 3, and 7
- Section 3.0 signed off
- Step 7.0.3 marked N/A
- Attachments 2, 3, 7 with all actions except those for 1RC-118 marked N/A

Initiating Cue: The SCO directs you to perform Section 7.1 of OST-1805 for 1RC-118.
An IV will only confirm observation of your actions.

Time Critical Task: NO

Validation Time: 12 minutes

SIMULATOR SETUP

- Initialize to IC-17
- Reduce charging flow to just below 40 GPM to prevent going solid
- FREEZE and SNAP for NRC JPM C

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1	Obtain procedure.
Standard:	Reviews handout.
Evaluator's Cue:	**Provide handout for NRC JPM C.**
Comment:	

Performance Step: 2	Refer to Attachment 3 and locally verify valve position indication agrees with stem indication per the instruction on Attachment 3 when stroking 1RC-117 and 1RC-118.
Standard:	Refers to Attachment 3 and determines that an AO is required at 1RC-118.
Evaluator's Cue:	**An AO has established communications at 1RC-118.**
Comment:	

Performance Step: 3	Verify 1RC-117, PRZ PORV isolation, is open
Standard:	Verifies 1RC-117 indicates OPEN (RED light).
Comment:	**NOTE: While not specifically required by the step, candidate will likely check 1RC-118 SHUT.**

Performance Step: 4

- Notify the Control Operator and the Unit SCO that 1RC-118 is inoperable.
- Record the time and date 1RC-118 is inoperable on Attachment 7.

Standard: Notifies the Control Operator and the Unit SCO that 1RC-118 is inoperable.

Records current time/date on Attachment 7.

Evaluator Cue: **Acknowledge report.**

Comment: **A procedure NOTE applies to this step: Shutting PORV Isolation 1RC-117, shutting both the N2 and IA supply to the accumulator, or taking the control switch for 1RC-118 out of AUTO, places PORV 1RC-118 in an inoperable status.**

√ **Performance Step: 5** Shut 1RC-117, PRZ PORV isolation.

Standard: Shuts 1RC-117 (GREEN light). (√)

Requests local position indication.

Evaluator Cue: Report RC-117 indicates closed.

Comment:

Performance Step: 5 Verify 1RC-118, PRZ PORV/PCV-445A SA, is aligned to the pretest shut position and initial the space provided on Attachment 2.

Standard: Verifies 1RC-118 indicates shut (GREEN light).

Initials the PRETEST ALIGNMENT/INIT space on Attachment 2.

Comment:

√ **Performance Step: 6**

- Simultaneously place the control switch for 1RC-118, PRZ PORV/PCV-445A SA, to OPEN and start the stopwatch.
- Stop the stopwatch when 1RC-118 indicates full open and record the stroke time on Attachment 2.

Standard: Starts the stopwatch as switch is placed in the OPEN position and stops the stopwatch when GREEN light goes OUT and RED remains ON.

Verifies the valve indicates open locally.

Records a time ≤1.4 seconds on Attachment 2.

Evaluator's Cue: **Respond as AO for any pre-opening communication.**

Report 1RC-118 indicates OPEN after the valve is stroked.

Comment: **Stopwatch action occurs very quickly. The valve strokes in <1 second.**

√ **Performance Step: 7**

- Simultaneously place the control switch for 1RC-118, PRZ PORV/PCV-445A SA, to SHUT and start the stopwatch.
- Stop the stopwatch when 1RC-118 indicates SHUT and record the stroke time on Attachment 2.

Standard: Starts the stopwatch as switch is placed in the SHUT position and stops the stopwatch when RED light goes OUT and GREEN remains ON.

Verifies the valve indicates shut locally.

Records a time ≤ 2.0 seconds on Attachment 2.

Evaluator's Cue: **Respond as AO for any pre-opening communication.**

Report 1RC-118 indicates SHUT after the valve is stroked.

Comment:

√ **Performance Step: 8** Place the control switch for 1RC-118 to the AUTO position.

Standard: Selects AUTO on 1RC-118 control switch.

Comment:

Performance Step: 9 Initial spaces for 1RC-118 on Attachment 2 for the following

- Verification of travel by indicating lights.
- 1RC-118 Fail-Safe Shut Position per Step 7.1.9.
- Post-test position.
- Post-test position verified.

Standard: Attachment 2 completed.

Comment: **Candidate may request an IV.**

√ **Performance Step: 10** Open 1RC-117, PRZ PORV Isolation

Standard: Opens 1RC-117 (RED Light)

Comment: **Candidate may request an IV.**

Performance Step: 11 Review all data for 1RC-118 on Attachment 2 and ensure all stroke times are within the stated acceptance criteria.

Standard: Ensures all data is entered on Attachment 2 and stroke times are within the specified limits.

Comment:

Performance Step: 12

- Notify the Control Operator and the Unit SCO that 1RC-118 is operable.
- Record the time and date 1RC-118 is operable on Attachment 7.

Standard: Notifies the Control Operator and the Unit SCO that 1RC-118 is operable.

Records current time/date on Attachment 7.

Evaluator Cue: **Acknowledge report.**

Comment:

Terminating Cue: **After the operable time/date is recorded: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

Reactor is in Mode 5 with all equipment operating properly.

OST-1805 is to be performed to test the operability of 1RC-118, PRZ PORV, following maintenance.

INITIATING CUE:

The SCO directs you to perform Section 7.1 of OST-1805 for 1RC-118.

An IV will only confirm observation of your actions.

HANDOUT JPM C

Progress Energy

C
CONTINUOUS
USE

HARRIS NUCLEAR PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: OPERATIONS SURVEILLANCE TEST

NUMBER: **OST-1805**

TITLE: **PRESSURIZER PORV OPERABILITY**
18 MONTH INTERVAL
MODE 5-6

NOTE: This procedure has been screened per PLP-100 Criteria and determined to be CASE III. No additional management involvement is required.

Table of Contents

1.0 PURPOSE

NOTE: This procedure should be scheduled for periodic performance when the plant is in Mode 6 with the Reactor Vessel Head removed or in Mode 5 with a 2.9 square inch vent other than a Pressurizer PORV established.

1. The purpose of this OST is as follows:

   a. To observe each PORV block valves remote position indicators to verify that valve position is accurately indicated per Inservice Testing Requirements.

   b. To demonstrate each PORV accumulator operable by isolating normal air and nitrogen to the accumulator and operating the valves through a complete cycle of full travel per Surveillance Requirement 4.4.4.3.

   c. To demonstrate acceptable backseating capability and leak tightness of accumulator air and nitrogen supply check valves (1RC-174, 1RC-176, 1SI-444, and 1SI-446) and relief valves (1RC-1003 and 1RC-1004) per Inservice Testing Requirements.

NOTE: This is a Cold Shutdown Frequency Test as defined by ISI-801.

   d. To demonstrate each PORV operable by operating the valve through one complete cycle of travel per Surveillance Requirement 4.0.5 and LTOP setpoint analysis in PCR-6723.

   e. To perform passive position Indication Test of SI Accumulator valves 1SI-295, 1SI-296 and 1SI-297 per IST requirements.

2.0 REFERENCES

2.1. Plant Operating Manual Procedures

1. OP-100
2. OP-110
3. ISI-801

2.2. Final Safety Analysis Report

1. 5.2.2.11
2. 5.4.13

2.3. Technical Specifications

1. 3.4.4
2. 3.4.9.4
3. 4.0.5
4. 4.4.4.3.

2.4. Drawings

1. 5-S-1301
2. 5-S-1309

2.5. Corrective Action Program (CAP) Items

1. 88H1167
2. 91H1143

2.6. Other

1. HNP-IST-002, HNP IST Program Plan - 2nd interval
2. File Number: SHF10/14506101, Letter Number: MS850166 (O), Fail-Safe Valve Testing (DIN 854860439)
3. NRC Generic Letter 89-04
4. FCR # SI-711, PORV Driver System
5. IE Report 50-400/88-34
6. PCR-6723, Reactor Vessel Heatup/Cooldown P-T Limits, Rates and LTOP Setpoints
7. SD-100.01
8. SD-100.03
9. SD-110

3.0 PREREQUISITES

1. **VERIFY** that the Reactor Coolant and Safety Injection systems are aligned in a manner that will support the performance of this OST.

2. **COORDINATE** the performance of this OST with other plant evolutions such that the LCO Action Statement for Tech Spec 3.4.9.4 may be entered if the RCS is pressurized.

3. **OBTAIN** any tools and equipment required per Section 5.0.

4. **VERIFY** Maintenance support is available for the following:

   - Venting Instrument Air at the tubing connections for 1SI-444, IA Ck Vlv to PORV Accumulator 1A-SA
   - Venting Instrument Air at the tubing connections for 1SI-446, IA Ck Vlv to PORV Accumulator 1C-SB,
   - Installing the Digital Heise Pressure Gauge.

5. **COMPLETE** the Calibration Data Sheet **AND VERIFY** instrumentation is within calibration.

6. **VERIFY** the plant is in Mode 5 or 6.

7. **OBTAIN** Unit SCO permission to perform this OST.

Signature

Date

4.0 PRECAUTIONS AND LIMITATIONS

1. Shutting 1RC-113, PRZ PORV ISOLATION, or 1RC-117, PRZ PORV ISOLATION, causes entry into an LCO per Tech Spec 3.4.9.4 when the RCS is pressurized. Ensure only one cold overpressure protection PRZ PORV is isolated at a time.

2. Isolating a PRZ PORV when the RCS is depressurized may isolate a vent path required by Tech Spec 3.4.9.4. An alternate vent path must be provided prior to isolating the existing path.

3. Do not pressurize or vent the SI accumulator tanks during the performance of this OST.

4. Report all alarms received to the Unit SCO and evaluate the impact on the current plant status.

5. If the RCS is pressurized when testing the PORVs, ensure the associated block valve is shut prior to opening the PORV in order to prevent RCS depressurization.

6. If the RCS is pressurized when testing the PORV block valves, ensure the associated PORV is shut prior to opening the block valve in order to prevent RCS depressurization.

7. If any valve stroke time falls outside its Code Criteria, the valve will be immediately retested per the retest instructions or declared inoperable.

5.0 TOOLS AND EQUIPMENT

1. Calibrated Stopwatch

2. Contact pyrometer

3. Digital Heise Pressure Gauge (Model #710A or equivalent, 0-200 psi, .1% accuracy)

6.0 ACCEPTANCE CRITERIA

1. This OST will be completed satisfactorily when the following are verified:

   a. PORV Stroke Times are found to be within the limits listed on Attachment 2 and each PORV fails to its Fail-Safe Position upon loss of power as required per Attachment 2.

   b. PORV and PORV Block Valve Remote Position Indication Testing is determined to be satisfactory by position indicator lights in agreement with local valve stem position as required per Attachment 3.

   c. Each PORV operates through a complete travel cycle with instrument air and nitrogen isolated as listed on Attachment 4.

   d. Check valve Stroke Close and relief valve Leakage Test demonstrates no abnormal leakage per Attachment 4. The thirty minute pressure hold test on the PORV accumulator indicates a temperature compensated pressure change of less than or equal to 1 psi.

2. For Cold Shutdown Testing, PORV Stroke Times are found to be within the limits listed on Attachment 2 and each PORV fails to its Fail-Safe Position upon loss of power as required per Attachment 2.

7.0 PROCEDURE

NOTE: Sections 7.1, 7.2 and 7.3 may be performed in any order while observing Step order within each Section.

CAUTION

If the RCS is pressurized, cycling a PORV with the associated block valve open will cause an RCS depressurization to occur.

1. **IF**, during the performance of this test, a valve stroke time exceeds its Code Criteria,
   THEN IMMEDIATELY RETEST the valve per Attachment 5. _____

2. **IF**, during the performance of this test, a valve exhibits abnormal or erratic action,
   THEN DOCUMENT the condition in the comments section of Attachment 7. _____

3. **IF** this test is being performed for Cold Shutdown Testing only as required by the Surveillance schedule,
   THEN PERFORM the following:

   a. **MARK** Sections 7.4, 7.5 and Attachment 3 N/A. N/A

   Verified

   b. **MARK** Steps 7.1.1, 7.2.1, and 7.3.1 N/A _____

   Verified

7.1. Testing 1RC-118, PRZ PORV/PCV 445A SA, and Block Valve 1RC-117

1. **REFER** to Attachment 3 **AND LOCALLY VERIFY** valve position indication agrees with stem indication per the instruction on Attachment 3 when stroking 1RC-117 and 1RC-118. _____

2. **VERIFY** 1RC-117, PRZ PORV ISOLATION, is open. _____

7.1 Testing 1RC-118, PRZ PORV/PCV 445A SA, and Block Valve 1RC-117 (continued)

NOTE: Shutting PORV Isolation 1RC-117, shutting both the Nitrogen supply and Instrument Air supply to the accumulator, or taking the control switch for 1RC-118 out of Automatic, places PORV 1RC-118 in an inoperable status.

3. **NOTIFY** the Control Operator and the Unit SCO that 1RC-118 is inoperable. _____

4. **RECORD** the time and date 1RC-118 is inoperable on Attachment 7. _____

5. **SHUT** 1RC-117, PRZ PORV ISOLATION. _____

6. **VERIFY** 1RC-118, PRZ PORV/PCV 445A SA, is aligned to the pretest SHUT position **AND INITIAL** the space provided on Attachment 2. _____

7. **SIMULTANEOUSLY PLACE** the control switch for 1RC-118, PRZ PORV/PCV 445A SA, to OPEN **AND START** the stopwatch. _____

8. **STOP** the stopwatch when 1RC-118 indicates full open **AND RECORD** the stroke time on Attachment 2. _____

9. **SIMULTANEOUSLY PLACE** the control switch for 1RC-118, to the SHUT position **AND START** the stopwatch. _____

10. **STOP** the stopwatch when 1RC-118 indicates full shut **AND RECORD** the stroke time on Attachment 2. _____

11. **PLACE** the control switch for 1RC-118 to the AUTO position. _____

12. **INITIAL** spaces for 1RC-118 on Attachment 2 for the following:

    a. Verification of Travel by Ind Lights. _____

    b. Fail Safe SHUT position per Step 7.1.9 above. _____

    c. Posttest Position. _____

    d. Posttest Position verified. _____

13. **OPEN** 1RC-117, PRZ PORV ISOLATION. _____

_____
Verified

NOTE: 1RC-118, PRZ PORV/PCV 445A SA, may be reopened as necessary to comply with Tech Spec 3.4.9.4 vent path requirement when the RCS is depressurized.

14. **REVIEW** all data for 1RC-118 on Attachment 2 **AND ENSURE** all stroke times are within the stated Acceptance Criteria. _____

15. **NOTIFY** the Control Operator and the Unit SCO that 1RC-118 is operable. _____

16. **RECORD** the time and date 1RC-118 is operable on Attachment 7. _____

Attachment 2 - Valve Test Data
Sheet 1 of 1

* Valve may be opened if being used as RCS vent path to comply with Specification 3.4.9.4.

PRETEST ALIGNMENT			FULL STROKE TEST			FAIL SAFE TEST		POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (SEC)					
											CODE CRITERIA				LIMITING VALUE	
											OPEN		SHUT			
Valve Number	Pretest Position	Init	Verification of Travel by Ind Lights (INIT)	Stroke Time (SEC) OPEN	Stroke Time (SEC) SHUT	Fail Safe Position	Position Verified	Posttest Position	Pos Init	Verf Init	Low	High	Low	High	OPEN	SHUT
1RC-114	SHUT	N/A				~~SHUT~~		~~AUTO/~~ SHUT*			N/A	≤ 1.40	N/A	≤ 2.00	1.40	2.00
1RC-116	SHUT	N/A				~~SHUT~~		AUTO/ SHUT*			N/A	≤ 2.00	N/A	≤ 2.00	2.00	2.00
1RC-118	SHUT					SHUT		AUTO/ SHUT*			N/A	≤ 1.40	N/A	≤ 2.00	1.40	2.00

Comments: _____

Attachment 3 - Remote Position Indication Verification
Sheet 1 of 1

INSTRUCTIONS:

1. Station an operator at the valve being tested to observe stem travel.

2. Establish communications between the operator at the valve and the Main Control Room.

3. When stroking valves in Sections 7.1, 7.2 and 7.3 observe that the singular green shut indication and singular red open indication lights indicate proper valve stem position.

4. For valves 1SI-295, 1SI-296 and 1SI-297, verify the green shut indication agrees with valve shut stem indication.

6. Initial the light column and stem column below for the required position of each valve being tested.

7. Record in the comments section of Attachment 7, any valve that does not perform properly and briefly explain what is malfunctioning.

Component Number	Valve Position	Indication Verification		Valve Position	Indication Verification	
		Stem	Light		Stem	Light
1RC-113	OPEN	NA		~~SHUT~~		
1RC-115	OPEN	NA		~~SHUT~~		
1RC-117	OPEN			SHUT		
1RC-114	OPEN	NA		~~SHUT~~		
1RC-116	OPEN	NA		~~SHUT~~		
1RC-118	OPEN			SHUT		
1SI-295	OPEN	N/A	N/A	SHUT	NA	NA
1SI-296	OPEN	N/A	N/A	SHUT	↓	↓
1SI-297	OPEN	N/A	N/A	SHUT	↓	↓

Attachment 7 - Certifications and Reviews
Sheet 1 of 2

This OST was performed as a:

Periodic Surveillance Requirement: _________

Postmaintenance Operability Test: _________

Redundant Subsystem Test: _________

Plant Conditions: ____________________ Mode: _________

OST Completed By: ____________________ Date: _________

Time: _________

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
		JT	JEFF TROGDON

General Comments/Recommendation/Corrective Actions/Exceptions:

Step 7.1.4	1RC-118 inoperable	Time:		Date:	
Step 7.1.16	1RC-118 operable	Time:		Date:	
Step 7.3.4	1RC-114 inoperable	Time:	NA	Date:	NA
Step 7.3.16	1RC-114 operable	Time:	↓	Date:	↓
Step 7.4.4	1RC-118 inoperable	Time:		Date:	
Step 7.4.15	1RC-118 operable	Time:		Date:	
Step 7.4.26	1RC-114 inoperable	Time:		Date:	
Step 7.4.37	1RC-114 operable	Time:		Date:	
Step 7.5.4	1RC-118 inoperable	Time:		Date:	
Step 7.5.38	1RC-118 operable	Time:		Date:	
Step 7.5.40	1RC-114 inoperable	Time:		Date:	
Step 7.5.74	1RC-114 operable	Time:	↓	Date:	↓

General Comments/Recommendations/Corrective Actions: (continued)

Pages Used: _____

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

_____ Date: _____
Unit SCO

Reviewed By: _____ Date: _____
Responsible Engineer (IST)

Reviewed By: _____ Date: _____
ANII

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

Facility: Shearon Harris | Task No.: 005012H101

Task Title: Place an RHR Loop in Standby | JPM No.: 2006 NRC JPM D

K/A Reference: 005 A4.01 3.6 / 3.4

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The Unit is in Mode 5.
- RHR Loop "A" and "B" are providing RCS cooling.
- Letdown is aligned to RHR Loop A

Task Standard: RHR Loop "B" in standby.

Required Materials: None

General References: OP-111, Residual Heat Removal System, Revision 33

Handouts: OP-111:
- Section 3.0
- Section 4.0 with PRECAUTIONS AND LIMITATIONS not applicable to the task crossed out
- Section 7.0
- Attachment 6

Initiating Cue: Place the RHR Loop "B" in standby in accordance with OP-111, Section 7.0. For the purpose of maintaining a timely examination schedule the PRECAUTIONS AND LIMITATIONS not applicable to this specific task have been crossed out in the handout. During the evolution, maintain temperature ± 5 °F around the current temperature.

Time Critical Task: N/A

Validation Time: 16 minutes

SIMULATOR SETUP

- Initialize to IC-17
- Lower Charging Flow to approx. 40 GPM
- Stop RCP "A" and RCP "C"
- Close PRZ Spray Loop "A" (PK-444C.1)
- Adjust both RHR HX BYP Flow Controller (FK-605A1 and B1) setpoints to between 50-55%
- Decrease output on 1RH-30, RHR HX "A" FCV, to approximately 38% then adjust as necessary to stabilize RCS temperature.
- Decrease output on 1RH-66, RHR HX "B" FCV, to approximately 14% then adjust as necessary to stabilize RCS temperature.
- Re-dedicate SPDS from SSCON1 to SSCON7 (STA Desk) using DED function (OP-163)
- On ERFIS Screen at RHR (SSCON1), call up plots for RHR:
  - QP A RHR
  - QP RHRB
- FREEZE and SNAP for NRC Sim JPM D

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews handout and verifies Initial Conditions.

Evaluator's Cue: **Provide handout for JPM D.**

Comment:

√ **Performance Step: 2** Place the RHR Loop in standby:

- Transfer temperature control from the RHR loop being removed from service to the remaining RHR loop or SG PORVs.

Standard: Adjusts 1RH-30, RHR HX A OUT FLOW CONT HC-603 A1, and 1RH-66, RHR HX B OUT FLOW CONT HC-603 B1, until HC-603B1 indicates 0%.

Comment: **Recovery of an error on this critical step can be accomplished in either of the next two steps.**

Performance Step: 3 Place the RHR Loop in standby:

- Verify output for 1RH-66, RHR HX B OUT FLOW CONT HC-603 B1 at 0%.

Standard:

- Verifies HC-603 B1 indicates 0%.
- Refers to Attachment 6 and determines no limits apply at this temperature.

Comment: **Procedure CAUTION applies to this step: Even though 1RH-30 (1RH-66) is shut, there is still some leakby flow that will lead to continued RHR cooldown. Attachment 6 cooldown rates must be monitored and maintained within limits.**

Performance Step: 4 Place the RHR Loop in standby:

- Verify 1RH-66, RHR HX B OUT FLOW CONT, is closed by observing either of the following: (sub-step not performed is N/A)
- MLB 3B-SB for RHR HX OUT SHUT HCV-603 B light lit.
- Local position of 1RH-66, RHR HX B OUT FLOW CONT.

Standard: Verifies RHR HX OUT SHUT HCV-603 B light lit on MLB 3B-SB.

Marks local position verification N/A.

Comment:

Performance Step: 5 Place the RHR Loop in standby:

- Place controller for 1RH-58, RHR HX B Bypass Flow Control FK-605B1, in MANUAL.

Standard: Depresses MANUAL pushbutton on FK-605B1.

Comment:

Performance Step: 6 Place the RHR Loop in standby:

- Adjust the output of FK-605B1 to 50-55%.

Standard: Adjusts FK-605B1 until meter reads 50-55%.

Comment:

√ **Performance Step: 7** Place the RHR Loop in standby:

- Shut 1SI-341 SB, LOW HEAD SI TRAIN B TO COLD LEG.

Standard: Selects shut on 1SI-341 SB and verifies indication change.

Comment:

Performance Step: 8 Place the RHR Loop in standby:

- Verify no flow as indicated on FI-605B1.

Standard: Verifies no flow indicated on FI-605B1.

Comment:

Performance Step: 9 Place the RHR Loop in standby:

- Verify open 1RH-69 SB, RHR PUMP B-SB MINI FLOW.

Standard: Verifies 1RH-69 indicates open.

Comment:

Performance Step: 10 Place the RHR Loop in standby:

- Prior to initiating further cooldown in the next step, verify additional cooldown will not result in Attachment 6 limits being exceeded.

Standard: Previously determined that no limits apply at this temperature.

Comment:

Performance Step: 11 Place the RHR Loop in standby:

- Adjust output of 1RH-66, RHR HX B OUT FLOW CONT HC-603B1 to 10% open.

Standard: Adjusts HC-603B1 to ≥5% ≤15% open.

Comment:

√ **Performance Step: 12** Place the RHR Loop in standby:

To start cooldown of the RHR loop perform the following:

Monitor RHR Pump cooldown rate using:

- TRH0604B, RHR Pump B Disch Temp or TR-606 red pen, RHRP B Disch Temp
- Maintain RHR Pump B cooldown rate per Attachment 6 limits.
- Station an operator at FIS-602B, Resid Ht Rem Pmp 1B Flow, to monitor RHR Pump B SB flow.
- Slowly shut 1RH-58, RHR HX B BYP FLOW CONT FK-605B1.

Standard:

- Monitors TRH0604B and/or TR-606 but there is no cooldown limit.
- Stations an operator to report RHR Pump B flow.
- Adjusts FK-605B1 to slowly close 1RH-58 while maintaining ≥500 GPM flow. (√)

Evaluator Cue: **The simulator operator can report RHR flow by estimation based on valve position: Flow = 890 gpm @ 53% and Flow = 700 gpm @ 0%.**

Comment: **Procedure CAUTION applies to this step: RHR Pump flow must be maintained greater than 500 GPM by FIS-602B indication while throttling shut on 1RH-58.**

Performance Step: 13 Place the RHR Loop in standby:

- Verify letdown is aligned to the train remaining in service as follows:

Standard: Initial conditions indicate letdown aligned to Loop A.

Evaluator's Cue: **If necessary: Letdown is aligned to Loop A.**

Comment:

Performance Step: 14 Place the RHR Loop in standby:

- Verify RHR Pump B-SB Discharge Temp is less than 150°F as indicated by TRH0604B or TR-606 red pen.

Standard: Reads NOTE prior to the step.

Verifies either TRH0604B or TR-606 red pen indicate ≤150°F.

Evaluator Cue: **After the NOTE has been read: For the purpose of this JPM, continue with the next procedure step when the indicated temperature reaches the specified value.**

Comment: **Procedure NOTE applies to this step:**

It may take a couple of hours for the metal to cool to less than 150°F after the RHR loop temperatures indicate that the system is cool. If the RHR loop is cooled to less than 150°F in an hour or less then it may be necessary to cool the piping longer before stopping the RHR Pump.

√ **Performance Step: 15** Place the RHR Loop in standby:

- Stop RHR Pump B-SB.

Standard: Stops RHR Pump B-SB with either TRH0604B or TR-606 red pen indicating ≤150°F.

Comment:

Terminating Cue: **When RHR Pump B-SB is stopped: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The Unit is in Mode 5.
- RHR Loop "A" and "B" are providing RCS cooling.
- Letdown is aligned to RHR Loop A

INITIATING CUE:

Place the RHR Loop "B" in standby in accordance with OP-111, Section 7.0. For the purpose of maintaining a timely examination schedule the PRECAUTIONS AND LIMITATIONS not applicable to this specific task have been crossed out in the handout. During the evolution, maintain temperature ± 5 °F around the current temperature.

HANDOUT JPM D

3.0 PREREQUISITES

1. The AC Electrical Distribution System is energized and aligned for normal operation per OP-156.02.

2. The DC Electrical Distribution System is energized and aligned for normal operation per OP-156.01.

3. The Reactor Coolant System is aligned per OP-100 as necessary to support RHR System Operation.

4. The Component Cooling Water System is in operation and aligned per OP-145.

5. The Boron Recycle System is aligned per OP-109 as necessary to support RHR System Operation.

6. The Compressed Air System is pressurized and aligned per OP-151.01.

7. The Sampling System is aligned per OP-101.

4.0 PRECAUTIONS AND LIMITATIONS

1. The following conditions must be met before placing the RHR System in operation and during RHR System operation:

   - RCS temperature less than 350°F.
   - RCS pressure less than 360 psig as indicated by PI-402 and PI-403.

2. Before placing the RHR System in operation, the boron concentration in the RHR System should be greater than or equal to the required SDM or the required refueling concentrations per CRC-160. The boron concentration requirements will be dependent on the intended use of the RHR System. Using the RHR system for cooldown purposes requires that the boron concentration be greater than or equal to the required shutdown margin (SDM). Using the RHR system to support refueling operations requires that the boron concentration be greater than or equal to the refueling concentration. (Reference PLP-106)

3. To avoid thermal shock of the RHR Pumps during normal operations, flow through the RHR System must be initiated slowly and RHR Pump discharge temperature monitored closely per Attachment 6, Acceptable RHR Pump Temperature Transients. (Reference ESBU-TB-96-03)

4.0 PRECAUTIONS AND LIMITATIONS (Cont.)

4. 1RH-26 and 1RH-64, RHR Header A (B) To CVCS Letdown Isol Vlvs, should not both be open at the same time, except when shifting letdown from one train of RHR to the other. 1RH-26 and 1RH-64 should be opened only if the idle loop suctions from the RCS are open or running RHR Loop discharge is less than 425 psig. This is to prevent lifting the idle loop suction relief.

R 5. Whenever the plant is water solid and RCS pressure is being maintained by low pressure letdown from RHR, the normal letdown flow path should be maintained lined up with all three orifice isolation valves open. (Reference 85H0635)

6. RHR should not be placed in service (aligned to RCS as a suction/discharge path or aligned to RCS through letdown) until proper reducing conditions are met. Placing RHR in service prior to achieving proper reducing conditions could result in higher personnel dose rates within the RAB. Also, reducing conditions provide the proper corrosion controls within the RHR system.

7. The following guidelines on RHR Pump starting duty should not be exceeded:

   a. Motor Cold - 2 attempted starts.

   b. Motor At Operating Temperature - 1 attempted restart.

      (1) Subsequent restart attempts are allowed after one of the following requirements:

         (a) Motor has been running for greater than 15 minutes;

         <u>OR</u>

         (b) Motor has been standing idle for greater than 45 minutes.

8. Monitor RCS boron concentration to ensure adequate shutdown margin is maintained.

9. During cooldown, limit the cooldown rate not to exceed the cooldown limits specified in Tech Spec 3.4.9.

10. Mechanical seal leakage on the RHR pump is limited to 10 drops per minute. Leakage in excess of this limit requires an Engineering review for possible seal replacement. (Reference 2.7.17)

4.0 PRECAUTIONS AND LIMITATIONS (Cont.)

11. Anytime RHR flow is reduced to less than 2000 gpm, log RHR Pump vibration hourly. The acceptable maximum vibration limit is .003 inches peak to peak.

R 12. When the RCS water level is being lowered to drain the SG tubes, RHR flow should be throttled to less than 2500 gpm to minimize the possibility of losing RHR Pump suction. (Reference QEF 86-181, SER 23-86)

13. Do not run an RHR Pump without CCW flow to the Seal Water Heat Exchanger if the suction water temperature is greater than 225°F. (Reference ESR 97-00769)

14. When running RHR Pumps on recirculation, ensure flow is greater than or equal to 500 gpm.

R 15. If any function required for either hot or cold shutdown is completely lost, initiate the SHNPP Emergency Plan, or the upgrading of response for a previously declared emergency. Accordingly, relay information concerning the loss of this system to the Superintendent - Shift Operations and when the Emergency Plan is activated, the Site Emergency Coordinator. Classification of the Emergency is per the EAL Network. (Reference SHF/10-11720)

16. Any alteration of normal RHR System lineup may require entry into a limiting condition for operation, ensure compliance with Tech Specs before system changes.

17. Maximum full load running amps for an RHR pump is 338 amps. (Reference ESR 97-00338)

R 18. All RCPs and/or RHR Pumps may be de-energized for up to 1 hour provided: (Reference Tech Spec 3.4.1.3, 3.4.1.4.1, and 3.4.1.4.2)

a. No operations are permitted that would cause dilution of the RCS boron concentration;

AND

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

R 19. During the performance of core alterations and core loading verification in the vicinity of the Reactor Vessel Hot Legs, RHR loops may be removed from operation for up to 1 hour per 2 hour period. (Reference Tech Spec 3.9.8.1 and 3.9.8.2)

4.0 PRECAUTIONS AND LIMITATIONS (Cont.)

R 20. When on RHR cooling and the RCS is partially drained (RCS water level greater than 36 inches below the vessel flange), ensure the running RHR Pump is stopped before starting the standby RHR Pump to prevent possibility of losing suction to RHR Pumps due to low RCS level. (Reference OEF 86-181, SER 23-86)

R 21. Do not operate RHR Pumps with RCS water level less than the centerline of the Reactor Vessel outlet (greater than 82 inches below Reactor Vessel Head Flange). (Reference OEF 85-182, SOER 85-04)

R 22. Normally, whenever the RCS is water solid, the RHR Pump Suction Valves 1RH-1, 1RH-2, 1RH-39 and 1RH-40 should remain open to insure that there is a flow path from the RCS to the RHR Suction Reliefs (Reference 85H0635). There are times when emergent items may require that one train of RHR Loop Suction valves be shut. This is permissible due the over pressure protection provided by LTOPs and the remaining RHR loop suction relief.

23. Prior to opening the RHR loop suction valves, all but one CSIP should be removed from service to preclude RHR system over pressurization should an inadvertent SI occur with only one RHR loop suction relief available. The over pressurization concern is also applicable when isolating the RHR loop suction relief. (Reference ESR 01-00025)

R 24. Whenever the reactor coolant is above 160°F, at least one RCP should be in operation. (Reference 85H0635)

R 25. Ensure system is filled and vented before system operation. (Reference 86H0404)

26. During the RHR system fill and venting operations, consideration should be given to the relative height differences between the cavity and the RWST levels. The potential for shifting water from one source to the other should be evaluated prior to the start of the evolution. (AR 142011 CAPR)

R 27. When the RCS pressure is being maintained by 1CS-38, LTDN PRESSURE PK-145.1, changes to the flow rate through the RHR loop by throttling of valves or operating pumps will result in changes in RCS pressure. (Reference 85H0635)

28. During normal operation, CCW Temperature should be maintained less than 105°F. During cooldown on RHR, CCW Heat Exchanger outlet may be permitted to increase to 125°F.

29. During Outages, refer to OMP-003 for further restrictions as to when RHR loops must be operable. (Reference NRC Information Notice 95-35)

4.0 PRECAUTIONS AND LIMITATIONS (Cont.)

30. When placing RHR into service, PRT level should be monitored for indication of RCS\RHR leakage through the RHR suction reliefs.

31. The following requirements are specified to meet the RHR Technical Specifications:

    a. 3.5.2 - Each RHR pump is aligned for cold leg injection upon receipt of an SIAS, and all automatic functions for switch over to cold leg recirculation are operable. CCW and ESW flowpaths for the RHR heat exchanger and the pump seal cooler must be operable, with CCW alignable to the RHR heat exchanger from the MCB. The surveillance testing and ISI testing is required, except that the interlocks for the RHR hot leg suction valves may be inoperable provided the valves are closed and the power supply breaker is open.

    b. 3.5.3 - The requirements for 3.5.2, specified above, must be met with the following exceptions allowed. The RHR loop may be aligned to the RCS for shutdown cooling provided it can be manually realigned for cold leg injection from the MCB (the automatic functions for switch over to cold leg recirculation are still required). The operable ECCS train (including high pressure injection components) must be of the same safety train (SA or SB).

    c. 3.4.1.3 / 3.4.1.4.1 / 3.4.1.4.2 / 3.7.3 / 3.7.4 / 3.9.8.1 / 3.9.8.2 - For operability, an RHR loop must be capable of being manually aligned to the RCS and started from the MCB, including functional CCW and ESW pumps and flowpaths. ISI testing of the RHR pump is required to be performed but the pump is operable provided it can provide sufficient flow to remove decay heat, or as specified in the minimum flow surveillance requirements. To meet the requirement that an RHR loop be operating, the loop must be aligned in the shutdown cooling mode controlling RCS temperature. While ESW is required to be functional, NSW may be in operation rather than ESW.

32. The use of OSI-PI is acceptable as a tool to trend or calculate computer points used in this procedure.

33. During **HEATUP** and **COOLDOWN** modes of operation, time in recirculation mode should be minimized to prevent thermal binding of 1RH-31 (1RH-69) RHR pump 1A-SA (1B-SB) mini flow valves. (AR 143794)

7.0 SHUTDOWN

7.1. Placing an RHR Loop in Standby

NOTE: This procedure section provides direction for cooling down and placing a running RHR loop in standby with the RHR to RCS loop return valves shut. If a standby loop needs to be depressurized the guidance is provided in Section 8.3.

7.1.1. Initial Conditions

1. Both RHR Loops are in service for RCS cooling and one loop is no longer required. (Otherwise this step is N/A) WL

OR

2. The SGs are available to accept the RCS temperature load. (Otherwise this step is N/A) N/A

7.1.2. Procedural Steps

NOTE: The following procedure evolutions describe system operations of RHR Train A components. If system operation of RHR Train B components are required, use component nomenclature that is in parentheses.

1. **TRANSFER** temperature control from the RHR loop being removed from service to the remaining RHR loop or SG PORVs. _____

CAUTION

Even though 1RH-30(1RH-66) is shut, there is still some leakby flow that will lead to continued RHR cooldown. Attachment 6 cooldown rates must be monitored and maintained within limits. (Ref. AR 93682)

2. **VERIFY** output for 1RH-30 (1RH-66), RHR HEAT XCHG A(B) OUT FLOW CONT HC-603 A1(B1) at 0%. _____

7.1.2 Procedural Steps (continued)

3. **VERIFY** 1RH-30 (1RH-66), RHR HEAT XCHG A(B) OUT FLOW CONT is closed **BY OBSERVING EITHER** of the following: (sub-step not performed is N/A)

   - MLB 3A-SA (3B-SB) for RHR HX OUT SHUT HCV-603 A(B) light lit. _____
   - Local position of 1RH-30 (1RH-66), RHR HEAT XCHG A(B) OUT FLOW. _____

4. **PLACE CONTROLLER** for 1RH-20 (1RH-58), RHR HEAT XCHG A (B) BYP FLOW CONT FK-605A1 (B1), in **MANUAL**. _____

5. **ADJUST OUTPUT** of FK-605A1 (B1) to 50-55%. _____

6. **SHUT** 1SI-340 SA (1SI-341 SB), LOW HEAD SI TRAIN A (B) TO COLD LEG. _____

7. **VERIFY** no flow as indicated on FI-605A1 (B1). _____

8. **VERIFY OPEN** 1RH-31 (1RH-69), RHR PUMP A-SA (B-SB) MINI FLOW. _____

9. **PRIOR** to intiating further cooldown in the next step, **VERIFY** additional cooldown will not result in Attachment 6 limits are being exceeded. _____

10. **ADJUST OUTPUT** of 1RH-30 (1RH-66), RHR HEAT XCHG A (B) OUT FLOW CONT HC-603A1 (B1) to 10% OPEN. _____

11. To start cooldown of the RHR loop **PERFORM** the following:

    a. **MONITOR** RHR pump cooldown rate using TRH0604A (TRH0604B), RHR Pump A (B) Disch Temp **OR** TR-604 (TR-606) red pen, RHRP-A (B) Disch Temp. _____

    b. **MAINTAIN** RHR Pump A(B) cooldown rate per Attachment 6 limits. _____

CAUTION

RHR pump flow must be maintained greater than 500 gpm by FIS-602A (B) indication while throttling shut on 1RH-20 (1RH-58).

c. **STATION** an operator at FIS-602A (B), Resid Ht Rem Pmp 1A (1B) Flow, to **MONITOR** RHR Pump A SA (B SB) flow. _____

d. **SLOWLY SHUT** 1RH-20 (1RH-58), RHR HEAT XCHG A (B) BYP FLOW CONT FK-605A1 (B1). _____

12. **VERIFY** letdown is aligned to the train remaining in service as follows:

a. **SLOWLY OPEN** 1RH-64 (1RH-26), RHR Header B (A) To CVCS Letdown Isol Vlv. (N/A if securing the last loop) _____

b. **SLOWLY SHUT AND LOCK** 1RH-26 (1RH-64), RHR Header A (B) To CVCS Letdown Isol Vlv. _____

NOTE: It may take a couple of hours for the metal to cool to less than 150°F after the RHR loop temperatures indicate that the system is cool. If the RHR loop is cooled to less than 150°F in an hour or less then it may be necessary to cool the piping longer before stopping the RHR Pump.

13. **VERIFY** RHR Pump A-SA(B-SB) Discharge Temp is less than 150°F, as indicated by TRH0604A(TRH0604B) **OR** TR-604(TR-606) red pen. _____

14. **STOP** RHR PUMP A-SA (B-SB). _____

15. **SECURE** CCW to the standby RHR Heat Exchanger per OP-145. _____

16. **VERIFY** sampling aligned to the RHR loop that is to remain running per OP-101. _____

Acceptable RHR Pump Temperature Transients

NOTE: This Table applies to normal operation only and is intended to be degrees in any one hour period.

TRANSIENT DESCRIPTION	RESTRICTIONS ON TRANSIENT RATE
50°F to 235°F	NONE
235°F to 350°F	100°F/Hour
350°F to 235°F	100°F/Hour
235°F to 50°F	NONE

Facility: Shearon Harris | Task No.: 301143H601

Task Title: Take Corrective Action For Failure Of The Main Turbine To Trip In Conjunction With A Reactor Trip. | JPM No.: 2006 NRC JPM E

K/A Reference: EPE 007 EA1.01 (3.7/3.4)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The unit is at 100% power.
- All equipment and controllers are in the normal full power alignment.

Task Standard: Main Turbine isolated from steam supply (from memory).

Required Materials: None

General References: EOP-GUIDE-1, Rev. 17

Handouts: None

Initiating Cue: You are the control board operator. Maintain current plant conditions.

Time Critical Task: N/A

Validation Time: 2 minutes

SIMULATOR SETUP

- Initialize to IC-19
- Pre-load IMF TUR02, AUTO Turbine Trip failure (n 00:00:00 00.00.00) true
- Pre-load IDI XB2I029 NORMAL, Turbine fails to trip from MCB Switch
- Pre-load IMF ZRPK504A, MSIV AUTO closure failure (n 00:00:00 00:00:00) FAIL_ASIS
- Pre-load IMF ZRPK504B, MSIV AUTO closure failure (n 00:00:00 00:00:00) FAIL_ASIS
- Trigger 1: IMF RPS01A, Inadvert Reactor Trip, (1 00:00:00 00:00:00) BOTH_BREAKER
- FREEZE and SNAP
- 10-15 seconds after the candidate assumes the watch, launch Trigger 1

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Verify reactor trip.

Standard: Determines/verifies:

- Trip breakers RTA and BYA – OPEN.
- Trip breakers RTB and BYB – OPEN.
- Rod Bottom lights lit.
- Neutron flux decreasing.

Comment:

Performance Step: 2 Verify Turbine Trip.

Standard: Determines all main turbine throttle and governor valves OPEN.

Comment:

Performance Step: 3 Manually trip turbine from MCB.

Standard: Attempts turbine trip using MANUAL TRIP switch.

Continues RNO immediate actions.

Comment:

√ **Performance Step: 4** If the turbine will not trip then perform any of the following (listed in order of preference):

Manually runback the turbine:

- Place both Turbine DEH pumps in Pull-to-Lock.
- Shut governor valves using fast action.

Standard:

- Places both Turbine DEH Pumps in Pull-to-Lock. (√)
- Shifts DEH control to MANUAL. (√)
- Closes governor valves using GV LOWER pushbutton. (√)
- Verifies/reports governor valves closed.

Comment: **It is acceptable for the candidate to close all MSIV's as the first preference and not runback the turbine if an AUTO SIAS actuation occurs (rapidly decreasing steam pressure). AUTO closure of the MSIV's is blocked.**

The critical task is satisfied if the main turbine is isolated from the steam supply (using either method) during performance of the immediate actions. Performance of both actions is not required.

Performance Step: 5 If the turbine will not trip then perform any of the following (listed in order of preference):

- Shut all MSIV's and Bypass valves.

Standard: Manually closes each MSIV using the respective MCB switches.

Comment: **See Comment in Performance Step 4. After closing the governor valves, the candidate may also choose to close the MSIV's because they should have AUTO closed if an SIAS actuation occurred.**

Performance Step: 6 1A-SA and 1B-SB Buses energized by off-site power or EDG's.

Standard: Verifies/reports both buses energized by off-site power.

Comment:

Performance Step: 7 SI actuation.

Standard: Determines/reports SI actuated.

Comment: **Depending on the speed of response, SI may not actuate. The report should reflect the actual status.**

Terminating Cue: **When the PATH-1 Immediate Actions are complete (SI Actuation determination): This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit is at 100% power.
- All equipment and controllers are in the normal full power alignment.

INITIATING CUE:

You are the control board operator. Respond as necessary to indications and/or alarms.

Re: JPM E

Instructions	Response Not Obtained

NOTE: Steps 1 through 4 are immediate action steps.

1. Verify Reactor Trip:

a. Automatic OR manual reactor trip - SUCCESSFUL:

   b) Check for any of the following:

   - Trip breakers RTA AND BYA - OPEN
   - Trip breakers RTB AND BYB - OPEN

   c) Rod bottom lights - LIT

   d) Neutron flux - DECREASING

b. GO TO Step 2.

c. Manual reactor trip - SUCCESSFUL

   (Either Switch)

a. Manually trip reactor.

   (MCB switch #1 AND/OR switch #2 as required)

   GO TO Step 1c.

c. GO TO FRP S.1, "RESPONSE TO NUCLEAR POWER GENERATION/ATWS", Step 1.

Instructions	Response Not Obtained

2. Verify Turbine Trip:

   a. Check for any of the following:

      - All turbine throttle valves - SHUT
      - All turbine governor valves SHUT

   NO ⇒ a. Manually trip turbine from MCB.

   IF the turbine will NOT trip, THEN perform any of the following (listed in order of preference): WILL NOT

   1) Manually run back the turbine:

      (a) Place both turbine DEH pumps in Pull-To-Lock.

      (b) Shut governor valves using fast action.

   END

   2) Shut all MSIVs AND bypass valves.

OK to perform but not required

Facility: Shearon Harris Task No.: 301135H601

Task Title: Manually Align Containment Spray JPM No.: 2006 NRC JPM F

K/A Reference: 026 A4.01 4.3 / 4.5

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: An RCS break has occurred inside containment.
A reactor trip and SI have been initiated.
PATH-1 has been completed through Step 9.

Task Standard: Containment Spray actuated and all RCPs stopped.

Required Materials: None

General References: EOP-PATH-1, Rev. 18
EOP-GUIDE-1, Rev. 17

Handout: PATH-1 marked up through Step 9.

Initiating Cue: Starting at Step 10 - CNMT PRESSURE REMAINED BELOW 10 PSIG, perform PATH-1. You may use the PATH-1 Board or EOP-GUIDE-1.

Time Critical Task: NO

Validation Time: 3 minutes

SIMULATOR SETUP

- Initialize to IC-19.
- Pre-load:
  - ZRPK519A (n 00:00:00 00:00:00) FAIL_ASIS, Defeat AUTO CSAS Tr A
  - ZRPK519B (n 00:00:00 00:00:00) FAIL_ASIS, Defeat AUTO CSAS Tr B
  - ZRPK505A (n 00:00:00 00:00:00) FAIL_ASIS, Defeat MANUAL CSAS Tr A
  - ZRPK505B (n 00:00:00 00:00:00) FAIL_ASIS, Defeat MANUAL CSAS Tr B
- Insert IMF RCS18A (1 00:00:00 00:00:00) 80 00:00:00, SBLOCA
- Perform and markup PATH-1 and GUIDE-1 through Step 9
- Maintain RCPs operating.
- Place simulator in FREEZE and SNAP when CNTMT Pressure is approx. 13 PSIG.

(Denote Critical Steps with a check mark)

START TIME: _____

Step 10

Performance Step: 1 CNMT pressure has remained less than 10 psig.

Standard: Checks CNMT pressure on MCB indicators, ERFIS, or Recorder Panel and determines pressure has exceeded 10 psig.

Comment:

Step 10.a (RNO)

Performance Step: 2 Verify Containment Spray actuated.

Standard: Determines Containment Spray Pumps A-SA and B-SB NOT running and/or checks ALB-001/4-1 Containment Spray Actuation NOT lit.

Comment:

Step 10.a (RNO)

Performance Step: 3 Manually actuate Containment Spray.

Standard: Places two (2) Containment Spray Actuation Hand Switches in ACTUATE position.

Evaluator's Cue:

Comment: **May attempt both sets of hand switches, two at a time.**

Step 10.a (RNO)

√ **Performance Step: 4** Manually actuate Containment Spray.

Standard: Places pumps in START:

- Containment Spray Pump A-SA
- Containment Spray Pump B-SB

Comment: **The candidate will likely start a pump, open the valves in that flowpath and then start the second pump, etc. No specific order of operations is required by the procedure.**

- **CSP-A-SA, 1CT-50, 1CT-12**
- **CSP-B-SB, 1CT-88, 1CT-11**

Step 10.a (RNO)

√ **Performance Step: 5** Manually actuate Containment Spray.

Standard: Places valves in OPEN:

- 1CT-50, Containment Spray Pump A-SA Discharge
- 1CT-88, Containment Spray Pump B-SB Discharge
- 1CT-12, Containment Spray Chemical Addition
- 1CT-11, Containment Spray Chemical Addition

Comment:

Step 10.b (RNO)

√ **Performance Step: 6** Stop all RCPs.

Standard: Places all RCP control switches in STOP.

Comment: **The candidate may choose to verify Phase B Isolation actuation but that is not required by this step.**

Terminating Cue: **When the candidate begins Step 11 – AFW Status: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

An RCS break has occurred inside containment.

A reactor trip and SI have been initiated.

PATH-1 has been completed through Step 9.

INITIATING CUE:

Starting at Step 10 - CNMT PRESSURE REMAINED BELOW 10 PSIG, perform PATH-1. You may use the PATH-1 flowchart or GUIDE-1.

Rev JPM F

Instructions	Response Not Obtained
9. Check Main Steam Isolation:	
a. Main steam isolation - ACTUATED	a. Check main steam isolation actuation criteria by observing any of the following: o Steam line pressure - LESS THAN 601 PSIG o CNMT pressure - GREATER THAN 3.0 PSIG o Manual closure of all MSIVs AND bypass valves is desired. GO TO Step 9c.
b. GO TO Step 9d.	
c. Main steam isolation - REQUIRED	c. GO TO Step 10.
d. Verify all MSIVs and bypass valves - SHUT	
START 10. Check CNMT Pressure - HAS REMAINED LESS THAN 10 PSIG	Perform the following: NO ⇒ a. Verify CNMT spray - ACTUATED b. Stop all RCPs.

END

Facility: Shearon Harris Task No.: 015005H401

Task Title: Place An Excore NI Channel Out Of Service JPM No.: 2006 NRC JPM G

K/A Reference: 012 A4.05 3.6/3.6

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is at 100 percent power.
NI-44 has failed low

Task Standard: NI-44 removed from service.

Required Materials: None

General References: OWP-RP-26, NUCLEAR INSTRUMENTATION, Rev. 13

Handout: OWP-RP-26

Initiating Cue: The SCO has directed you to remove NI-44 from service per the OWP.

Time Critical Task: NO

Validation Time: 6 minutes

SIMULATOR SETUP

- Initialize to IC-19
- Insert IMF NIS08D 0.0, PRNIS Channel 44 failed low.
- FREEZE and SNAP for NRC JPM G.

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Obtains OWP-RP-Section 26.

Evaluator Cue: **Provide handout for NRC JPM G.**

Comment: **Procedure steps must be performed in order.**

√ **Performance Step: 2** On Main Control Board:

- Rod Bank Selector switch - MANUAL
- FW Reg BYP Valve Controllers:
  - FK-479.1 – MANUAL
  - FK-489.1 – MANUAL
  - FK-499.1 - MANUAL

Standard: Places Rod Bank Selector Switch in MANUAL. (√)

Verifies FK-479.1, FK-489.1, and FK-499.1 controllers all in MANUAL.

Comment:

√ **Performance Step: 3** On Detector Current Comparator Drawer:

- Upper Section Switch – PR N44
- Lower Section Switch – PR N44

Standard: Selects PR N44 on UPPER SECTION SWITCH.

Selects PR N44 on LOWER SECTION SWITCH.

Comment: **Channel Defeat lights on drawer will illuminate.**

√ **Performance Step: 4** On Miscellaneous Control and Indication Panel:

- Rod Stop Bypass Switch – Bypass PR N44
- Power Mismatch Bypass Switch PR44.

Standard: Selects BYPASS PR N44 on ROD STOP BYPASS SWITCH.

Selects BYPASS PR N44 on POWER MISMATCH BYPASS SWITCH.

Comment:

√ **Performance Step: 5** On Comparator and Rate Drawer:

- Comparator Channel Defeat Switch – N44.

Standard: Selects N44 on the COMPARATOR CHANNEL DEFEAT switch.

Comment: **Defeat light on drawer illuminates.**

PR CH DEV annunciator alarm clears.

Performance Step: 6 On Power Range Drawer N44A:

- Sign stating "Bistables Tripped – OWP-RP in Affect" – INSTALLED.

Standard: Locates sign in OWP book.

Evaluator's Cue: **The sign is installed.**

Comment:

Terminating Cue: **When the candidate indicates maintenance must be contacted to lift leads: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is at 100 percent power. NI-44 has failed low. All other parameters are normal.

INITIATING CUE: The SCO has directed you to remove NI-44 from service per OWP-RP.

HANDOUT JPM G

EIR Number: _____
W/O Number: _____
Clearance Number: _____

1. OWP - RP-26

2. System: Nuclear Instrumentation

3. Component: POWER RANGE N-44

4. Scope: LCO action required due to inoperable Channel 4 Power Range Nuclear Instrumentation

5. Applicable Requirements: 3.3.1 (Modes 1 and 2), 4.2.1.1 and 4.2.4.2 (Mode 1 above 50% RATED THERMAL POWER)

6. Precautions: 1) Ensure only one channel out of service at a time. 2) This procedure does not alter the input to the P-8 or P-10 permissives. (3) The ERFIS continuous calorimetric is inoperable.

7. Component lineups completed per attached sheet(s). _____ / _____ Signature Date

8. Testing required on redundant equipment while the component is inoperable. Perform EST-915 once per 12 hrs if Rx power is greater than 75% with one PR Channel inoperable. Perform OST-1039 once per 12 hrs if Rx power is greater than 50%.

9. Testing/Action required to restore operability. (N/A if tracked on EIR)

- OST-1021, 1022 or 1033 _____ / _____
- OST-1004 _____ / _____
- OST-1039 (above 50% RTP) _____ / _____
- MST-I0047 _____ / _____

Signature Date

10. Component lineups restored per attached sheet(s) _____ / _____ Signature Date

11. Remarks: _____

12. Reviewed By: _____ _____ Superintendent - Shift Operations Date

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

Bistable/Status Light Lineup

Component ID or Number	Position for Inoperability	Initial/Verified	Restored Position	Initial/Verified
NOTE: This OWP must be performed in order to prevent possible spurious rod motion or level control swings.				
Begin				
On MAIN CONTROL BOARD:				
ROD BANK SELECTOR Switch	MANUAL	_____/_____	MANUAL	_____/_____
FW Reg Byp Valve Controllers:				
FK-479.1	MANUAL	_____/_____	MANUAL	_____/_____
FK-489.1	MANUAL	_____/_____	MANUAL	_____/_____
FK-499.1	MANUAL	_____/_____	MANUAL	_____/_____
On DETECTOR CURRENT COMPARATOR Drawer:				
UPPER SECTION Switch	PR N44	_____/_____	NORMAL	_____/_____
LOWER SECTION Switch	PR N44	_____/_____	NORMAL	_____/_____
On MISCELLANEOUS CONTROL AND INDICATION PANEL:				
ROD STOP BYPASS Switch	BYPASS PR N44	_____/_____	OPERATE	_____/_____
POWER MISMATCH BYPASS Switch	BYPASS PR N44	_____/_____	OPERATE	_____/_____
On COMPARATOR AND RATE Drawer:				
COMPARATOR CHANNEL DEFEAT Switch	N44	_____/_____	NORMAL	_____/_____
On Power Range Drawer N44A				
NOTE: The purpose of the sign installed below is to alert personnel of tripped bistables that may not be obvious at the NI drawer. The wording in quotations is the recommended wording, but similar words may also be used.				
Sign stating "Bistables Tripped - OWP-RP in Affect"	Installed	_____/_____	Removed	_____/_____
END				

Bistable/Status Light Lineup

Component ID or Number		Position for Inoperability Initial/Verified		Restored Position Initial/Verified
In POWER RANGE N44:				
NOTE: Concurrent verification is preferred when lifting leads.				
Direct Maintenance to lift the following leads in the back of the NIS cabinet. This will place the below listed bistables in the tripped condition.				
NC 44P High Flux Low Setpt Trip on TB-424 Wires 1&2	LIFTED	_____/_____	CONNECTED	_____/_____
NC 44R High Flux High Setpt Trip on TB-423 Wires 11&12	LIFTED	_____/_____	CONNECTED	_____/_____
NC 44K High Neg Rate Trip on TB-424 Wires 9&10	LIFTED	_____/_____	CONNECTED	_____/_____
NC 44U High Pos Rate Trip on TB-424 Wires 5&6	LIFTED	_____/_____	CONNECTED	_____/_____
(On completion of the above lineup, check the following.)				
On TSLB-4:				
* Circle required state as determined by present plant conditions.				
PR LO PWR HI FLUX NC 44P (Window 5-4)	ENERGIZED	_____/_____	*ENERGIZED OR DE-ENERGIZED	_____/_____
PR HI PWR HI FLUX NC 44R (Window 6-4)	ENERGIZED	_____/_____	DE-ENERGIZED	_____/_____
**May require manual reset of rate trips locally at drawer.				
PR HI FLUX RATE NC 44U/K (Window 7-4)	ENERGIZED	_____/_____	** DE-ENERGIZED	_____/_____
On BYPASS PERMISSIVE LIGHTS Panel:				
PR OVERPWR ROD WTHDRWL BLK BYPASS CHAN IV (Window 3-8)	ENERGIZED	_____/_____	DE-ENERGIZED	_____/_____

Bistable/Status Light Lineup

Component ID or Number	Position for Inoperability Initial/Verified	Restored Position Initial/Verified

ON ERFIS Computer:

(After status lights have been checked, perform the following using the DR function.)

ANM0123M - PWR RNG CHANNEL N44 Q3 1-MIN AVG	DELETED FROM PROCESSING	_____/_____	RESTORED TO PROCESSING	_____/_____

On MAIN CONTROL BOARD:

+ Circle appropriate position as determined by plant conditions.

ROD BANK SELECTOR Switch	MAN/AUTO+	_____/_____	MAN/AUTO+	_____/_____

FW Reg Byp Valve Controllers:

+ Circle appropriate position as determined by plant conditions.

FK-479.1	MAN/AUTO+	_____/_____	MAN/AUTO+	_____/_____
FK-489.1	MAN/AUTO+	_____/_____	MAN/AUTO+	_____/_____
FK-499.1	MAN/AUTO+	_____/_____	MAN/AUTO+	_____/_____

Facility: Shearon Harris Task No.: 301089H401

Task Title: Respond to Loss of Instrument Bus SIII JPM No.: 2006 NRC JPM H

K/A Reference: APE 057 AA1.06 3.5 / 3.5

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The unit is at 100% power.
- All major equipment and controllers are in their normal full power alignment.

Task Standard: Immediate manual actions performed correctly.

Required Materials: None

General References: AOP-024, Loss of Uninterruptible Power Supply, Revision 26

Handouts: None

Initiating Cue: You are the reactor operator. Maintain current plant conditions.

Time Critical Task: N/A

Validation Time: 2 minutes

SIMULATOR SETUP

- Initialize to I/C-19.
- 10-15 seconds after the candidate assumes the watch: Insert IMF EPS02 1A-SIII (Loss of Instrument Bus III)

(Denote Critical Steps with a check mark)

START TIME: _____

	Performance Step: 1	Responds to alarms
	Standard:	• Acknowledges alarm. • Recognizes/reports loss of an instrument bus
	Evaluator Cue:	**Acknowledge any reports.**
	Comment:	**Immediate actions must be completed from memory.**
	Performance Step: 2	Recognizes AOP-024, LOSS OF UNINTERRUPTIBLE POWER SUPPLY, applies.
	Standard:	From memory, begins performing the AOP-024 immediate actions.
	Comment:	
√	**Performance Step: 3**	Place Rod Control in MANUAL.
	Standard:	Selects Rod Control Selector Switch to MANUAL.
	Comment:	
	Performance Step: 4	Check Instrument Bus SIII ENERGIZED.
	Standard:	Per alarm ALB-15-4-5, and/or bistable alignment; answers NO.
	Comment:	

√ **Performance Step: 5** Place Main FW Regulator Valves in MANUAL.

Standard: Selects MANUAL on each Main FW Regulator Valve.

Comment: **Performs action from memory.**

Performance Step: 6 Verify Main FW Regulator Bypass Valves in MANUAL.

Standard: Verifies each Main FW Regulator Bypass Valve in MANUAL.

Comment: **Performs action from memory.**

√ **Performance Step: 7** Control SG levels between 52% and 62%.

Standard: Maintains each SG level between the reactor trip and turbine trip setpoints while establishing a controlled trend to restore level to between 52% and 62%.

Comment: **Performs action from memory.**

Terminating Cue: **When SG levels are on a controlled trend to the control band: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit is at 100% power.
- All major equipment and controllers are in their normal full power alignment.

INITIATING CUE: You are the reactor operator. Maintain current plant conditions.

Re: JPM H

1.0 PURPOSE

Provides actions to respond to and recover from a loss of an Instrument Bus or an Uninterruptible Power Supply.

2.0 ENTRY CONDITIONS

2.1 Indication of loss of any Instrument Bus.

2.2 One row of bistable lights simultaneously energize.

2.3 ANY of the following alarms present:

- ALB-15-1-4, 60 KVA UPS TROUBLE
- ALB-15-1-5, 7.5 KVA UPS TROUBLE
- ALB-15-2-2, PIC 1-2-3-4-9-10-13-14 POWER FAILURE
- ALB-15-2-5, CHANNEL I UPS TROUBLE
- ALB-15-3-2, PIC 5-6-7-8-11-12-15-16 POWER FAILURE
- ALB-15-3-5, CHANNEL II UPS TROUBLE
- ALB-15-4-3, PIC 17-18 POWER FAILURE
- ALB-15-4-5, CHANNEL III UPS TROUBLE
- ALB-15-5-3, PIC 19 POWER FAILURE
- ALB-15-5-5, CHANNEL IV UPS TROUBLE

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

START

NOTE

Steps 1 and 2 are immediate actions.

☑ **1.** **PLACE** Rod Control in MANUAL.

☐ **2.** **CHECK** Instrument Bus SIII ENERGIZED.

NO ⇒

2. **PERFORM** the following:

☑ **a.** **PLACE** Main FW Regulator Valves in MANUAL.

☑ **b.** **VERIFY** Main FW Regulator Bypass Valves in MANUAL.

☑ **c.** **CONTROL** SG levels between 52% and 62%.

END

NOTE

Loss of electrical power may require initiation of the SHNPP Emergency Plan. **[C.1 & 2]**

☐ **3.** **REFER TO** PEP-110, Emergency Classification and Protective Action Recommendations, AND **ENTER** the EAL Network at entry point X.

Facility: Shearon Harris | Task No.: 301064H401

Task Title: Manual Control of Charging Flow Due to Loss of Instrument Air (IA) | JPM No.: 2006 NRC JPM I

K/A Reference: 2.1.30 3.9 / 3.4

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: X | Actual Performance: _____

Classroom _____ Simulator _____ | Plant X

READ TO THE EXAMINEE

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

Initial Conditions:
- The plant is at 100 percent power.
- A ruptured instrument air header has been isolated on the RAB 236-foot elevation.
- FCV-122, Charging Flow Control Valve, is failed open.
- The Control Room has isolated charging by closing isolation valves 1CS-235 and 1CS-238.
- Pressurizer level is 55 percent.

Task Standard: Charging flow is being controlled using 1CS-227.

Required Materials: Normal safety equipment and dosimetry

General References: AOP-017, Loss of Instrument Air, Revision 25

Handout: AOP-017, Step 6 (pages 10 and 11)

Initiating Cue: You have been directed to locally control charging flow per AOP-017, "Loss of Instrument Air," Section 3.1, Step 6.b (RNO).

Time Critical Task: NO

Validation Time: 10 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Step 6.b.(1) (RNO)

Performance Step: 1 Locally control charging flow by shutting at least one of the following:

- 1CS-235, Charging Line Isolation
- 1CS-238, Charging Line Isolation

Standard: Information provided in Initial Conditions.

May simulate contacting Control Room to verify 1CS-235 and /or 1CS-238 position.

Evaluator's Cue: **Provide handout for NRC JPM I.**

If necessary: The Control Room confirms both 1CS-235 and ICS-238 are CLOSED.

Comment:

Step 6.b.(2) (RNO)

√ **Performance Step: 2** Locally shut 1CS-228, Charging Line FCV Inlet Isolation Valve.

Standard:

- Locates 1CS-228 and rotates valve handwheel in clockwise direction until no further movement is obtained.
- Informs Control Room that 1CS-228 is closed.

Evaluator's Cue: **1CS-228 is seated.**

Comment:

Step 6.b.(3) (RNO)

√ **Performance Step: 3** Verify open the following:

- 1CS-235, Charging Line Isolation
- 1CS-238, Charging Line Isolation

Standard: Simulates contacting Control Room and requests the following valves both be opened:

- 1CS-235
- 1CS-238

Evaluator's Cue: **The Control Room reports both 1CS-235 and 1CS-238 are OPEN.**

Comment:

Step 6.b.(4) (RNO)

√ **Performance Step: 4** (CONTINUOUS ACTION) Locally throttle 1CS-227, Norm Charging Line FCV Bypass, to obtain desired charging flow.

Standard: Should contact the Control Room prior to opening the valve or may perform that communication when the control room reports 1CS-235 and 1CS-238 have been opened.

Locates and throttles open 1CS-227 by rotating the handwheel in the counter-clockwise direction for two turns (using some point of reference) (√) and contacts the Control Room.

Evaluator's Cue: **If Control Room is contacted prior to opening 1CS-227: Open 1CS-227 two turns and we will have you adjust it from that position.**

When the valve is being opened: 1CS-227 is off of the seat and has been rotated two turns.

After the control room has been informed that 1CS-227 is open two turns: Maintain the current position.

If the Control Room was NOT contacted prior to initiating the opening operation of the valve then provide a simulated Page or Radio communication: The Control Room directs you to stop opening 1CS-227 and to maintain the present position.

Comment:

Terminating Cue: **When the 1CS-227 throttling sequence is complete: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The plant is at 100 percent power.

A ruptured instrument air header has been isolated on the RAB 236-foot elevation.

FCV-122, Charging Flow Control Valve, is failed open.

The Control Room has isolated charging by closing isolation valves 1CS-235 and 1CS-238.

Pressurizer level is 55 percent.

INITIATING CUE:

You have been directed to locally control charging flow per AOP-017, "Loss of Instrument Air," Section 3.1, Step 6.b (RNO).

HANDOUT JPM I

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.1 Loss of Air When Reactor is Critical

NOTE

Most air valves in the direct letdown path require 85 psig for full stroke, and may begin to fail to mid-position as pressure falls below that value. To simplify recovery from a long-term loss of air, letdown should be maintained as long as possible.

✸☐ **5.** **CHECK** normal letdown flow and pressure MAINTAINED.

5. **SHUT** letdown orifice isolations to isolate letdown:

- ☐ • 1CS-7, 45 GPM Letdown Orifice A
- ☐ • 1CS-8, 60 GPM Letdown Orifice B
- ☐ • 1CS-9, 60 GPM Letdown Orifice C

START

CAUTION

When charging flow is stopped, Regenerative Heat Exchanger cooling is lost. If normal letdown is in service, erratic letdown system behavior can result.

✸☐ **6.** **CONTROL** charging flow and pressure as necessary to maintain desired PRZ level.

6. **PERFORM** ONE of the following to control charging flow: **[A.2]**

✸☐ **a.** **CYCLE** ONE of the following as necessary to maintain PRZ level:

- 1CS-235, Charging Line Isol
- 1CS-238, Charging Line Isol

OR

(Continued on Next Page)

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.1 Loss of Air When Reactor is Critical

6. **(continued)**

b. **Locally CONTROL** charging flow by performing the following:

SATISFIED by MCR crew per initial conditions

☑ **(1) SHUT** at least ONE of the following:

- ☑ 1CS-235, Charging Line Isolation
- ☑ 1CS-238, Charging Line Isolation

☑ **(2) Locally SHUT** 1CS-228, Charging Line FCV Inlet Isolation Valve.

By MCR crew

(3) VERIFY OPEN the following:

- ☑ 1CS-235, Charging Line Isolation
- ☑ 1CS-238, Charging Line Isolation

✸☑ **(4) Locally THROTTLE** 1CS-227, Norm Charging Line FCV Bypass, to obtain desired charging flow.

END

✸☐ **7. CHECK** normal seal injection flow MAINTAINED.

7. CONTROL seal injection flow, as follows: **[A.2]**

☐ **a. Locally OPEN** 1CS-239, Seal Injection FCV Bypass Valve.

☐ **b. SHUT** 1CS-240, Seal Water Injection Isolation.

☐ **c. Locally THROTTLE** 1CS-239 to obtain 8-13 gpm seal injection to each RCP.

Facility: Shearon Harris | Task No.: 301116H401

Task Title: Inhibit Both Trains of SSPS | JPM No.: 2006 NRC JPM J

K/A Reference: 2.1.30 3.9 / 3.4

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: X | Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: A major fire has occurred on RAB 286' elevation in Cable Spread Room A (FIRE AREA 1-A-CSRA).
The reactor is tripped and both RTBs are verified open.
The operating crew is implementing AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE.

Task Standard: Removal of all listed fuses simulated.

Required Materials: SSPS cabinet key
Standard safety equipment

General References: AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE, Rev. 37

Handout: AOP-036.05, Section 3.1

Initiating Cue: The SCO has directed you to defeat both trains of SSPS per AOP-036.05, Section 3.1, Step 1.

Time Critical Task: No

Validation Time: 9 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1	Obtain procedure.
Standard:	Reads CAUTION statement preceding the step. Reviews applicable step.
Evaluator Cue:	**Provide handout for NRC JPM J.**
Comment:	

Performance Step: 2	Defeat both trains of SSPS as follows: • Verify Reactor Trip Breakers are OPEN.
Standard:	Information provided in Initial Conditions.
Evaluator Cue:	**If necessary: Both Reactor Trip Breakers are OPEN.**
Comment:	

Performance Step: 3	Defeat both trains of SSPS as follows: • Obtain SSPS Key 40, 41, 94, 95, 96, or 97 (MCR or ACP key locker).
Standard:	Describes the method/location for obtaining the key.
Evaluator Cue:	**Provide SSPS Cabinet key.**
Comment:	

Performance Step: 4 Defeat both trains of SSPS as follows:

- Remove the following fuses: (In the front of the SSPS Output cabinets).
  - Train A, Output Cabinet No. 1, Output Relay Power Fuses.

Standard: Locates and simulates removal of the Train A Output Cabinet No. 1 Output Relay Power fuses.

Evaluator Cue: **Train A Output Cabinet No. 1 Output Relay Power fuses are removed.**

Comment: **Each cabinet should be closed and locked after the simulated action(s).**

Performance Step: 5 Defeat both trains of SSPS as follows:

- Remove the following fuses: (In the front of the SSPS Output cabinets).
  - Train A, Output Cabinet No. 2, Fuses 61 and 62.

Standard: Locates and simulates removal of Train A Output Cabinet No. 2 fuses 61 and 62.

Evaluator Cue: **Train A Output Cabinet No. 2 fuses 61 and 62 are removed.**

Comment:

Performance Step: 6 Defeat both trains of SSPS as follows:

- Remove the following fuses: (In the front of the SSPS Output cabinets).
  - Train B, Output Cabinet No. 1 Output Relay Power Fuses.

Standard: Locates and simulates removal of Train B Output Cabinet No. 1 Output Relay Power fuses.

Evaluator Cue: **Train B Output Cabinet No. 1 Output Relay Power fuses are removed.**

Comment:

Performance Step: 7 Defeat both trains of SSPS as follows:

- Remove the following fuses: (In front of the SSPS Output cabinets).
  - Train B, Output Cabinet No. 2, Fuses 61 and 62.

Standard: Locates and simulates removal of Train B Output Cabinet No. 2 fuses 61 and 62.

Evaluator Cue: **Train B Output Cabinet No. 2 fuses 61 and 62 are removed.**

Comment:

Performance Step: 8 Notify Control Room of step completion.

Standard: Simulates report of step completion.

Evaluator Cue: **Control Room acknowledges step completion.**

Comment:

Terminating Cue: **Control Room notified of step completion: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

A major fire has occurred on RAB 286' elevation in Cable Spread Room A (FIRE AREA 1-A-CSRA).

The reactor is tripped and both RTBs are verified open.

The operating crew is implementing AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE.

INITIATING CUE:

The SCO has directed you to defeat both trains of SSPS per AOP-036.05, Section 3.1, Step 1.

HANDOUT JPM J

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.1 Fire Area: 1-A-CSRA

START

CAUTION

- The following step will inhibit all automatic and manual safeguards functions since a fire in this area could cause spurious actuations as well as disable controls for resetting SI.
- Removal of Output Relay Power Fuses from both trains of SSPS will generate a Reactor Trip signal. The Reactor should be shut down prior to performing the following step.

1. **DEFEAT** BOTH Trains of SSPS, as follows:

☑ a. **VERIFY** Reactor Trip Breakers are OPEN.

SATISFIED BY INITIAL CONDITIONS

◆ a. **PERFORM** ONE of the following:

☐ **(1) DIRECT** an operator to contact **OR REPORT** to the main control room (to receive instructions to locally trip the reactor).

(2) SHUTDOWN the Rod Drive MG Sets.

(a) TRIP the Rod Drive MG sets breakers:

☐ • 1D2-6D, Rod Drive MG Set 1A

☐ • 1E2-2A, Rod Drive MG Set 1B

(Continued on Next Page)

(Continued on Next Page)

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.1 Fire Area: 1-A-CSRA

1. (Continued)

☑ **b. OBTAIN** SSPS Key 40, 41, 94, 95, 96 or 97. (MCR or ACP Key locker)

c. REMOVE the following fuses: (in the front of the SSPS Output Cabinets)

☑ • Train A, Output Cabinet No. 1, Output Relay Power fuses

☑ • Train A, Output Cabinet No. 2, fuses 61 and 62

☑ • Train B, Output Cabinet No. 1, Output Relay Power fuses

☑ • Train B, Output Cabinet No. 2, fuses 61 and 62

END

1. (Continued)

(b) REMOVE Control Power Fuses from the Rod Drive MG sets breakers:

☐ • 1D2-6D, Rod Drive MG Set 1A

☐ • 1E2-2A, Rod Drive MG Set 1B

Facility: Shearon Harris | Task No.: 061012H104

Task Title: Reset the Turbine-Driven AFW Pump Mechanical Overspeed | JPM No.: 2006 NRC JPM K

K/A Reference: 2.1.30 (3.9/3.4)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: X | Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions:
- The unit tripped from 100 percent power.
- The turbine-driven AFW pump tripped on overspeed.
- The cause of the overspeed trip has been identified and corrected.
- Isolation valves 1MS-70 and 1MS-72 are shut.

Task Standard: The turbine-driven AFW pump turbine trip and throttle valve is latched.

Required Materials: Standard safety equipment

General References: OP-137, AUXILIARY FEEDWATER SYSTEM, Rev. 24

NOTE: The Probabilistic Safety Assessment for HNP identifies these actions as important to reduction of core damage frequency.

Handout:
- OP-137, Section 8.4
- OP-137, Attachment 6

Initiating Cue:	The USCO has directed you to reset the turbine-driven AFW pump mechanical overspeed trip linkage in accordance with OP-137, Section 8.4. The Trip and Throttle Valve will be reopened from the Control Room. All Initial Conditions are met.
Time Critical Task:	YES
Validation Time:	7 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1	Obtain procedure.
Standard:	Reviews Section 8.4 Initial Conditions.
Evaluator's Cue:	**Provide handout for NRC JPM K.** **Assume that the Mechanical Overspeed Trip Linkage is currently in the tripped position.**
Comment:	

Performance Step: 2	Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage Verify the following valves are shut: • 1MS-70 SA, MAIN STEAM B TO AUX FW TURBINE • 1MS-72 SB, MAIN STEAM C TO AUX FW TURBINE
Standard:	Status provided in Initial Conditions.
Evaluator's Cue:	**If necessary: 1MS-70 and 1MS-72 are shut.**
Comment:	

Performance Step: 2	Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage • Verify the flat side of the tappet nut is aligned toward the tappet lever.
Standard:	Verifies flat side of the tappet nut aligned toward the tappet lever.
Evaluator's Cue:	**The flat side of tappet nut is aligned toward the tappet lever.**
Comment:	

√ **Performance Step: 3** Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage

- Pull the connecting rod toward the trip and throttle valve until the rod locks in place.

Standard: Locates connecting rod and pulls it toward the trip/throttle valve.

Verifies rod locked in place.

Evaluator's Cue: **The connecting rod is locked in place.**

Comment:

Performance Step: 4 Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage

- Verify the trip and throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB.

Standard: Verifies trip/throttle valve operator is shut by observing indicating lights on local panel 1X-SAB.

Evaluator's Cue: **The green shut light is ON and the red open light is OFF.**

If necessary: Valve stem indication is at the shut position.

Comment:

Performance Step: 5 Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage

- Verify the flat side of the tappet nut is against the tappet lever.

Standard: Verifies flat side of the tappet nut against the tappet lever.

Evaluator's Cue: **The flat side of tappet nut is against the tappet lever.**

Comment:

Performance Step: 6 Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage

- Verify the latch lever is being held up by the trip hook.

Standard: Verifies latch lever is being held up by the trip hook.

Evaluator's Cue: **The latch is being held up by the trip hook.**

Comment:

Performance Step: 7 Resetting the Turbine-Driven AFW Pump Mechanical Overspeed Linkage

- Verify the TURBINE OVERSPEED TRIP light is extinguished on the AFW Control Panel 1X-SAB

Standard: Verifies TURBINE OVERSPEED TRIP light status on Panel 1X-SAB.

Evaluator's Cue: **The TURBINE OVERSPEED TRIP light is extinguished.**

Comment:

Performance Step: 8 Notify the Control Room that the mechanical overspeed linkage is reset.

Standard: Simulates notifying the Control Room.

Evaluator's Cue: **Acknowledge report.**

Comment:

Terminating Cue: **After the Control Room acknowledges the report: This JPM is complete.**

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The unit tripped from 100 percent power.

The turbine-driven AFW pump tripped on overspeed.

The cause of the overspeed trip has been identified and corrected.

Isolation valves 1MS-70 and 1MS-72 are shut.

INITIATING CUE:

The USCO has directed you to reset the turbine-driven AFW pump mechanical overspeed trip linkage in accordance with OP-137, Section 8.4. The Trip and Throttle Valve will be reopened from the Control Room.

START HANDOUT JPM K

8.4. Resetting the Turbine-Driven AFW Pump Mechanical Over Speed Trip Linkage

8.4.1. Initial Conditions

met per initiating cue

1. Mechanical Over speed Trip Linkage in the tripped position. ✓

2. During normal operations, the cause of any over speed trip of the turbine-driven AFW pump has been investigated and corrected prior to resuming the operation of the pump. ✓

8.4.2. Procedural Steps

NOTE:	Attachment 6 diagram may be used as a reference for nomenclature.
NOTE	If any of the following information is changed, Attachment 6 and local pump information should also be changed.

met per initial conditions

1. **VERIFY** the following valves are shut ✓
   - 1MS-70 SA, MAIN STEAM B TO AUX FW TURBINE ✓
   - 1MS-72 SB, MAIN STEAM C TO AUX FW TURBINE ✓

2. **VERIFY** the flat side of the tappet nut is aligned toward the tappet lever. ✓

3. **PULL** the connecting rod toward the Trip and Throttle valve until the rod locks in place. ✓

4. **VERIFY** the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB. ✓

5. **VERIFY** the flat side of the tappet nut is against the tappet lever. ✓

6. **VERIFY** the latch lever is being held up by the trip hook. ✓

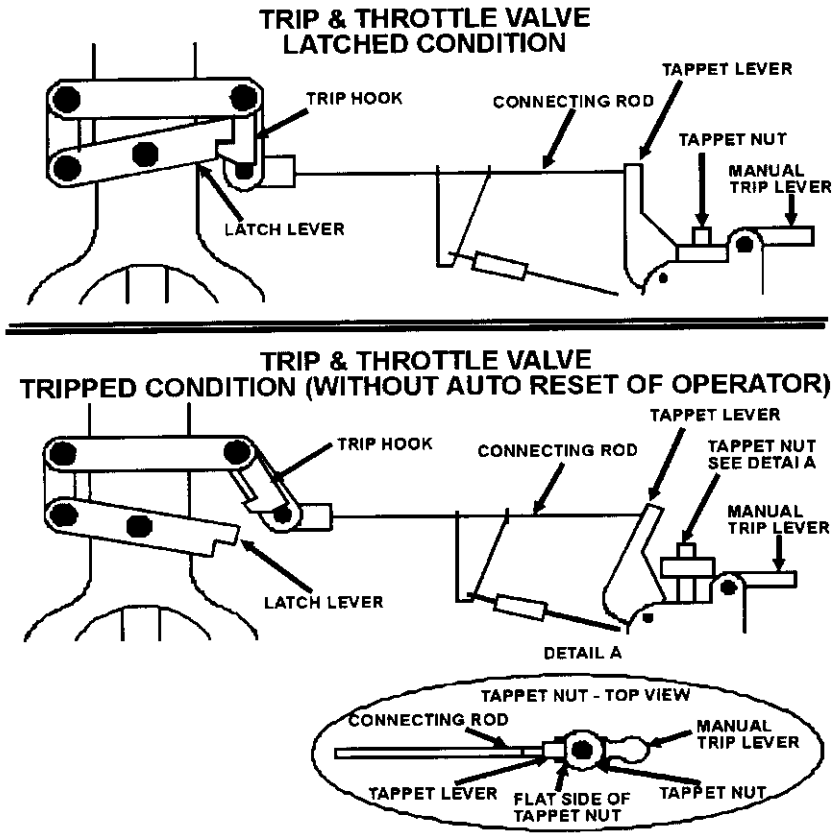
7. **VERIFY** the TURBINE OVERSPEED TRIP light is extinguished on the AFW Control Panel 1X-SAB. ✓

Request report

8. **OPEN** the Trip and Throttle valve from the MCB. ← END

9. **IF** TDAFW pump operation is desired,
   THEN GO TO Section 5.5.

Resetting the TDAFW Pump Mechanical Overspeed Trip Linkage



Note: This Attachment is an approved operator aid posted locally at TDAFW pump & may be used to implement section 8.4 instructions

1. Verify shut 1MS-70 and 1MS-72.
2. Verify the flat side of the tappet nut is aligned towards the tappet lever.
3. Pull the connecting rod toward the Trip and Throttle valve until the rod locks in place.
4. Verify the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB.
5. Verify the flat side of the tappet nut is against the tappet lever
6. Verify the latch lever is being held up by the trip hook.
7. Verify the TURBINE OVERSPEED TRIP light is extinguished on the Aux Feedwater Control Panel 1X-SAB.

NOTE: If any of the above information is changed, also change Section 8.4 and local pump information.

Facility:	SHNPP	Task No.:	301135H601
Task Title:	Determine subcooling with the Subcooling Margin Monitor unavailable.	JPM No.:	2006 NRC RO-SRO Common A1-1
K/A Reference:	2.1.25 (2.8/3.1)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- An RCS break has occurred inside containment
- SI is actuated
- PATH-1 is in progress
- Containment pressure is 6.1 PSIG
- All RCP's are stopped due to a loss of off-site power
- The Subcooling Margin Monitor is not available
- The hottest CET is reading 571 °F
- ERFIS Pt. TRC9300 (Average of the five hottest CET's) is reading 568 °F
- Loop Thot's are reading as follows:
  TI-413 = 563 °F; TI-423 = 563 °F; TI-433 = 564 °F
- All Loop Tcolds are reading 556 °F.
- Pressurizer Pressure Channels are reading as follows (PSIG):
  PI-457 = 1750; PI-456 = 1730; PI-455 = 1735.
- RCS Wide Range Pressure Channels are reading as follows (PSIG): PI-402 = 1670; PI-403 = 1655.

Task Standard: Subcooling margin determined within specified range.

Required Materials:

- Calculator
- Steam Tables

General References: EOP USER'S GUIDE, Rev. 20

Handouts:

- EOP USER'S GUIDE, Table of Contents
- EOP USER'S GUIDE, Section 6.2 (pgs. 33 and 34)

Initiating Cue: The CRS has directed you to determine and report subcooling margin.

Time Critical Task: N/A

Validation Time: 12 minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a √)

Performance Step: 1 Refers to EOP User's Guide.

Standard: Determines Section 6.2 applies.

Evaluator Cue:

- **Provide EOP USER'S GUIDE Table of Contents if candidate determines procedure use is required.**
- **Provide Section 6.2, if requested. If a different section or the wrong procedure is requested then have the candidate locate the document and make a copy of the applicable section.**

Comment: **The candidate is not required to complete the task in discrete steps. Guidance for performing the task is provided in the EOP USER's GUIDE but procedure steps are not specified. The specified parameters must be selected for the subcooling calculation to be correct.**

Performance Step: 2 Evaluate plant conditions:

- RCS temperature

Standard: Determines TRC9300 reading is the preference and chooses 568 °F.

Comment:

Performance Step: 3 Evaluate plant conditions:

- RCS Pressure

Standard: Determines adverse containment conditions exist and chooses the lowest reading of PI-402 and PI-403.

- PI-403 = 1655 PSIG

Comment:

√ **Performance Step: 4** Determine saturation temperature.

Standard: Convert to PSIA: 1655 + 15 = 1670 PSIA

Interpolates between 1650 and 1700 PSIA and determines saturation temperature to be ≥ 610 °F but ≤ 611 °F:

- [20/50 (613.13 – 609.05)] = 1.632 + 609.05 = 610.7 °F

Comment: **Candidate can use the Steam Tables, CSFST Graphs or EXCEL Program (accessible from any facility computer) to determine saturation temperature.**

√ **Performance Step: 5** Determine subcooling.

Standard: Calculates and reports subcooling to be ≥ 41 °F but ≤ 44 °F (610.7 °F - 568 °F = 42.7 °F).

Comment:

Terminating Cue: **After the candidate has reported his/her calculated subcooling margin: This JPM is complete.**

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC RO-SRO Common A1-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- An RCS break has occurred inside containment
- SI is actuated
- PATH-1 is in progress
- Containment pressure is 6.1 PSIG
- All RCP's are stopped due to a loss of off-site power
- The Subcooling Margin Monitor is not available
- The hottest CET is reading 571 °F
- ERFIS Pt. TRC9300 (Average of the five hottest CET's) is reading 568 °F
- Loop Thot's are reading as follows:
  TI-413 = 563 °F; TI-423 = 563 °F; TI-433 = 564 °F
- All Loop Tcolds are reading 556 °F.
- Pressurizer Pressure Channels are reading as follows (PSIG):
  PI-457 = 1750; PI-456 = 1730; PI-455 = 1735.
- RCS Wide Range Pressure Channels are reading as follows (PSIG):
  PI-402 = 1670; PI-403 = 1655.

INITIATING CUE: The CRS has directed you to determine and report subcooling margin.

HANDOUT RO+SRO A1-1

Table of Contents

Table of Contents (continued)

6.0 GENERAL INFORMATION

6.1 Background and Basis for EOP Network

During the verification and validation of the EOP network, and during Operator simulator training, many questions are frequently asked concerning the EOP network. The background and basis for the SHNPP EOP network is found in detail in the background documents of the WOG ERGs and the EOP Step Deviation Documents. The following sections contain clarification of certain procedural requirements that are frequently questioned by the operators.

6.2 RCS Subcooling

The ERFIS plant computer functions as the plant "subcooling monitor". RCS subcooling will normally be obtained from the top level Safety Parameter Display System (SPDS) screen (Turn-on-code: "SPTOP", Parameter: "SUBCOOL (DEGF)", ERFIS point: TRC9400). If for some reason the subcooling monitor is not available, the operators will manually determine subcooling using one of the following (Reference 2.2.2.2):

- Graph provided on the CSFSTs
- "Subcooling Margin Calc. Program" - Version 1.0
- Steam Tables

Subcooling values are generally presented in the following format:

$10^{\circ}F$ [$40^{\circ}F$] - C
$20^{\circ}F$ [$50^{\circ}F$] - M

The top set of values is normally used when the subcooling monitor is available (designated by C). The bottom set of numbers is used only when the subcooling monitor is not available (designated by M for manual). The subcooling values used in the procedure were determined based on specific instrument inaccuracies. Should it be necessary to manually determine subcooling, the following conventions apply:

1. Primary temperature is obtained using one of the following based on availability of the indications (listed in order of preference):

   - Core exit TC reading on SPDS (Turn-on-code: "SPTOP", Parameter: "T EXIT (DEGF)", ERFIS point: TRC9300). This reading is the average of ~~the five~~ hottest core exit TCs and is the input used for the Subcooling Monitor. → Retained parameter

   - Highest core exit TC reading from the Inadequate Core Cooling Monitor (ICCM).

6.2 RCS Subcooling (continued)

- o Highest active loop wide range T-hot (TI-413, 423, 433). An active loop is defined as one that has forced or natural circulation flow. If any RCPs are running, all loops will be active (backflow is available in loops where RCPs are not running). A classic example of a non-active loop would be a loop that has a SGTR since it is isolated and natural circulation flow in this loop would not be available.

2. Primary pressure is obtained using one of the following based on the range and availability of RCS and PRZ pressure indication:

- o If ERFIS is available, then use the RCS pressure reading on SPDS (Turn-on-code: "SPTOP", Parameter: "PRZ PRES (PSIG)", ERFIS point PRC9455L). If PRZ pressure is above 1700 PSIG, this reading is the lowest of the three PRZ pressure channels (PT-457, PT-456, and PT-455). IF PRZ pressure is below 1700 PSIG, this reading is the lowest of the two RCS wide range pressure channels: PT-402 (ERFIS point PRC0402) and PT-403 (ERFIS point PRC0403).

- o If PRZ pressure is greater than 1700 PSIG and CNMT conditions are normal, then use the lowest PRZ pressure indication (PI-457, PI-456, or PI-455.1).

- o If PRZ pressure is off scale low or adverse CNMT conditions exist, then use the lowest of the two RCS wide-range pressure indications PI-402.1 or PI-403. Only PT-402 and PT-403 are used since these transmitters are located outside containment.

- o When RCS pressure is less than 700 PSIG, PI-402A should be used. PI-402A receives input from qualified instrument PT-402 and its narrow range scale provides a more precise indication of pressure.

Facility:	Shearon-Harris	Task No.:	301005H401
Task Title:	Evaluate control rod alignment using In-core Thermocouples	JPM No.:	2006 NRC JPM RO A1-2
K/A Reference:	2.1.19 (3.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is operating at 100% power.
The operating crew has entered AOP-001, MALFUNCTION OF ROD CONTROL AND INDICATION SYSTEM, in response to indication that Shutdown Bank A Rod C9 may be misaligned.

Task Standard: Rod determined to be misaligned.

Required Materials: Calculator

General References: AOP-001, MALFUNCTION OF ROD CONTROL AND INDICATION SYSTEM, Rev. 24

Handouts:
- AOP-001, Attachments 1 and 2
- In-Core Thermocouple temperature readings sheet (Attached Pg. 5)

Initiating Cue: You have been directed to evaluate Core Exit Thermocouple indication using AOP-001, Attachment 1, to determine whether the rod is actually misaligned or the individual rod position indication is faulty.

Time Critical Task: No

Validation Time: 10 minutes

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 Obtain/review procedure.

Standard: Reviews Attachment 1.

Evaluator Cue:
- **Provide AOP-001, Attachment 1.**
- **When the candidate determines that Attachment 2 is required, provide Attachment 2.**

Comment:

√ **Performance Step: 2** Determine thermocouple location(s) adjacent to the misaligned rod using core grid map (Sheet 1), and circle locations(s) in Table above.

Standard:
- Using core grid map, determines thermocouple adjacent to Rod C9 is C8.
- Circles C8 on table.

Comment:

Performance Step: 3

Record the following in the Table below:
- Adjacent TC number
- Adjacent TC value using RVLIS console, ERFIS or OS-PI.
- Symmetric TC numbers (not including adjacent TC's)
- Symmetric TC values for all operable TC's using RVLIS console, ERFIS or OS-PI.

Standard:

Records the following TC numbers and values on Attachment 2, Sheet 3:
- C08 (Adj) – 598 °F
- H13 (Sym) – 606 °F
- N08 (Sym) – 608 °F
- H03 (Sym) – 611 °F

Evaluator Cue:

Provide the In-Core Thermocouple Temperature readings handout (Pg. 5) after the need for TC values is determined.

Comment:

√ **Performance Step: 4**

Determine the average of symmetric thermocouples, for each adjacent thermocouple.

Standard:

Determines average of symmetric thermocouples is ≥608 but ≤609 °F.

Comment:

√ **Performance Step: 5**

Compare each adjacent thermocouple listed to the symmetric thermocouple average for indication of a misaligned rod. (Refer to Attachment 1)

Standard:

Applies Attachment 1 criteria and informs the Unit SCO that thermocouples indicate the rod is misaligned (Adjacent >10 °F different than the symmetric average).

Comment:

Terminating Cue:

After the Attachment 1 criteria has been applied: This JPM is complete.

Job Performance Measure No.: 2006 NRC JPM RO A1-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

NRC JPM RO-A1.2 HANDOUT

INCORE THERMOCOUPLE TEMPERATURES

(Thermocouples are listed in alphanumeric order)

THERMOCOUPLE LOCATION	TEMP (°F)		THERMOCOUPLE LOCATION	TEMP (°F)
A08	ABANDONED		H09	622
B05	590		H11	618
B10	588		H13	606
C08	598		H15	603
C12	605		J02	604
D03	608		J10	615
D05	611		J12	ABANDONED
E04	606		K03	604
E07	610		K05	611
E08	619		K08	615
E10	618		K11	ABANDONED
E12	614		L06	615
E14	604		L08	614
F03	ABANDONED		L12	609
F05	614		L14	ABANDONED
F09	614		M03	606
F11	615		M09	618
F13	608		M11	617
G01	ABANDONED		N04	609
G02	604		N06	610
G06	611		N08	608
G08	621		N10	608
G15	603		P07	607
H03	611		P08	604
H05	616		R07	613

INITIAL CONDITIONS:

The plant is operating at 100% power.

The operating crew has entered AOP-001, MALFUNCTION OF ROD CONTROL AND INDICATION SYSTEM, in response to indication that Shutdown Bank A Rod C9 may be misaligned.

INITIATING CUE:

You have been directed to evaluate Core Exit Thermocouple indication using AOP-001, Attachment 1, to determine whether the rod is actually misaligned or the individual rod position indication is faulty.

HANDOUT RO A1-2

Attachment 1
Sheet 1 of 1

Indications of Misaligned Rod

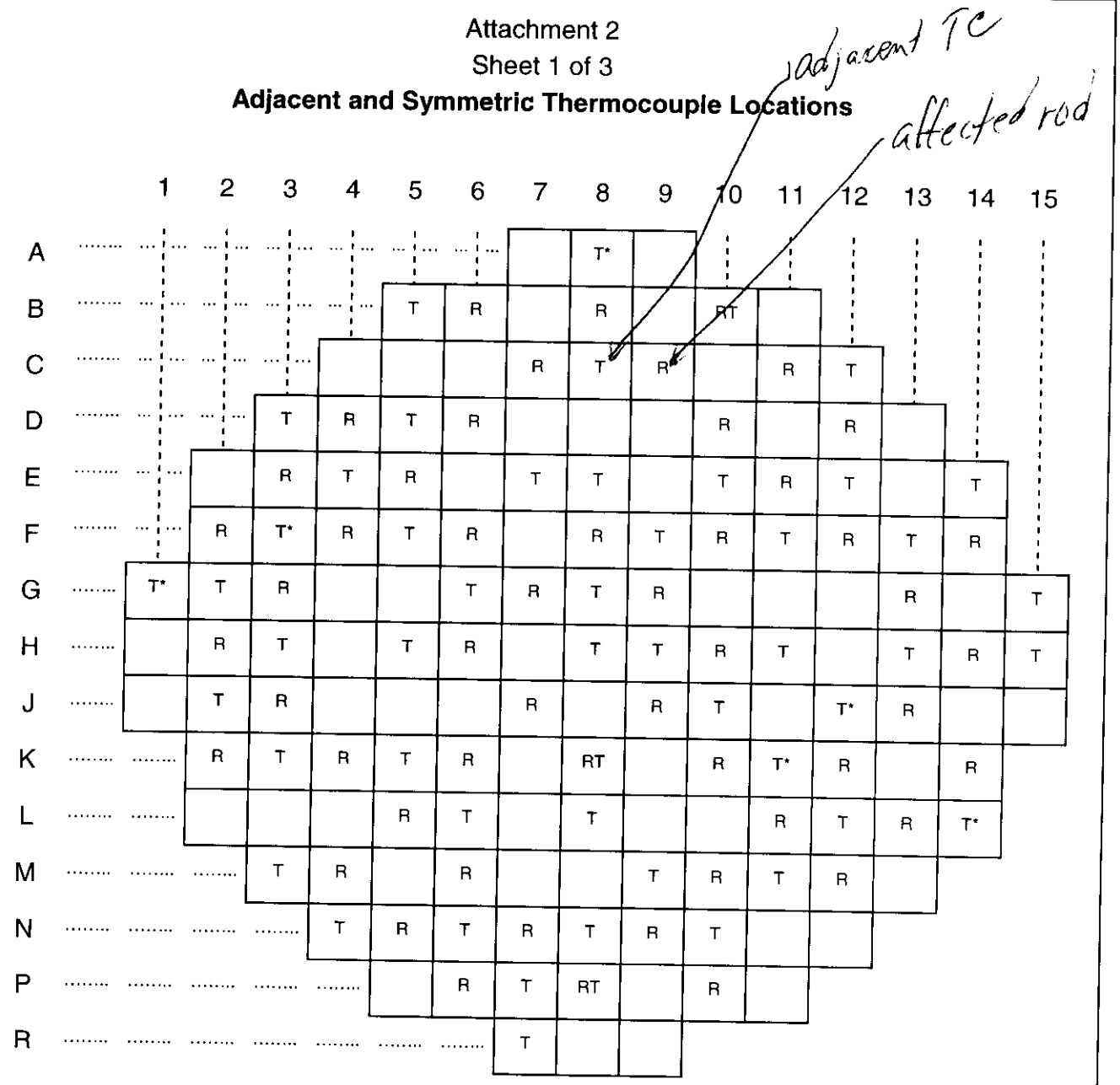
The table below indicates the variation in plant parameters which may be indicative of rod misalignment. This variation refers to relative changes in indication from a reference condition at which the suspect rod's position was known to be properly aligned. The reference case may be taken from prior operating records, or it may be updated each time the proper rod positioning is verified by in-core measurements. In general, greater misalignment will cause larger variations. Variations in NI channel indication are also affected by the core location of the suspect rod. For example, a misaligned rod that is closest to the N-44 detector should indicate that N-44 flux parameters are abnormal when compared with flux parameters of the other Power Range NI channels. If the parameters below exhibit no abnormal variations with an individual DRPI differing from its group step counter demand position by more than 12 steps, it is probably a rod position indication problem.

PLANT PARAMETER	VALUE INDICATIVE OF ROD MISALIGNMENT
Quadrant Power Tilt Ratio (QPTR)	Greater than 1.02
Power Range Instrumentation	Greater than 2% difference between any two channels (**REFER TO** Attachment 4)
Delta Flux Indicators	Greater than 2% difference between any two channels (**REFER TO** Attachment 4)
START Core Outlet Thermocouples	Greater than 10°F difference between thermocouples adjacent to the misaligned rod and the average of symmetric thermocouples (**PERFORM** Attachment 2)
Axial Flux Traces (in-core movable detector)	**CONSULT** Reactor Engineering **AND EVALUATE** using in-core movable detectors per EST-922, Control Rod Position Determination Via Incore Instrumentation

--END OF ATTACHMENT 1--

Attachment 2
Sheet 1 of 3

Adjacent and Symmetric Thermocouple Locations



R - Control Rod

T - Thermocouple

T* - Thermocouples abandoned by EC 47997

Thermocouples

Attachment 2
Sheet 2 of 3

Adjacent and Symmetric Thermocouple Locations

NOTE

- B10, E07, K08, and P08 have no symmetric locations.
- Symmetric thermocouples are those in the same row.

GRID	I		II		III		IV	
TRAIN	A	B	A	B	A	B	A	B
	A08*				H15			
		G01*		G15			R07	
S L	B05			E14		L14*		
Y O		C08	H13				N08	H03
M C		D03	C12				N04	M03
M A	E04	D05		E12	M11	L12		
E T			H11	E08		L08		H05
T I		F05	F11	E10	K11*		K05	L06
R O		F03*	F13			N10	N06	K03
I N	G06		F09			J10		
C S		G08			H09			
	G02						J02	P07
					M09	J12*		

* Thermocouples abandoned by EC 47997

1. **DETERMINE** thermocouple location(s) adjacent to the misaligned rod using core grid map (Sheet 1), **AND CIRCLE** location(s) in Table above.

Attachment 2
Sheet 3 of 3

Adjacent and Symmetric Thermocouple Locations

2. **RECORD** the following in the table below:
   - Adjacent TC number
   - Adjacent TC value using the RVLIS Console, ERFIS, or OSI-PI
   - Symmetric TC numbers (not including adjacent TCs)
   - Symmetric TC values for all OPERABLE TCs using the RVLIS Console, ERFIS, or OSI-PI

3. **DETERMINE** the average of symmetric thermocouples, for each adjacent thermocouple.

Adjacent TC		Symmetric TC		Symmetric TC Average
Number	Value	Number	Value	
C08	598	H13	606	(608-609 req'd) 608.3
		N08	608	
		H03	611	

>10°F Δ

4. **COMPARE** each adjacent thermocouple value listed to its symmetric thermocouple average for indication of a misaligned rod. (**REFER TO** Attachment 1.)

--END OF ATTACHMENT 2-- END

Facility:	Shearon-Harris	Task No.:	341010H302
Task Title:	Perform Review of Daily Surveillance Requirements Log	JPM No.:	2006 NRC JPM SRO A1-2
K/A Reference:	2.1.18 (3.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is operating at 100% power.
The Daily Surveillance Logs (OST-1021, Attachment 4) for 0300 have been completed.

Task Standard: All errors identified.

Required Materials: None

General References: OST-1021, DAILY SURVEILLANCE REQUIREMENTS, DAILY INTERVAL, MODE 1 AND 2

Handouts:

- OST-1021, Attachment 4, for the 0300 readings using values expected at 100% power.
- Substitute the following incorrect data:
  - Accumulator CLAB Previous Day Level @ 68% (both 924 and 926) with 0300 readings at 78% and 79%, while indicating sampling is NOT required.
  - RWST Level Channel 993 @ 91%.
  - Pressurizer Pressure channels 455 @ 2220.2 psig, 456 @ 1960.0 psig, 457 @ 2230.1 psig while indicating acceptance criteria is met and channel check is SAT.
  - Containment Temperature channel TCV97540 as "NA", 7542 @ 121°F, 7541 @ 116°F while indicating acceptance criteria is met.
  - EDG Room Temperature channel TDG6903A @ @ 118°F and TDG6903B @ 121°F

Initiating Cue: You are the USCO. Review the completed logs.

Time Critical Task: No

Validation Time: 20 minutes

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 Obtain completed log.

Standard: Reviews handout.

Evaluator Cue: **Provide handout for NRC JPM SRO A1-2 after the Initial Conditions are reviewed and the Initiating Cue is provided.**

Comment: **Evaluator NOTE: Only the incorrect items in the logs are identified in the JPM Steps.**

√ **Performance Step: 2** Review OST-1021, Attachment 4 for approval.

Standard: Identifies that Cold Leg Accumulator CLA B level has increased more than 9% and therefore requires sampling. (Sheet 1)

Comment:

√ **Performance Step: 3** Review OST-1021, Attachment 4 for approval.

Standard: Identifies RWST Level Channel 993 is below the minimum required level of 92% AND Channel Check is UNSAT. (Sheet 2)

Comment:

√ **Performance Step: 4** Review OST-1021, Attachment 4 for approval.

Standard: Identifies Pressurizer Pressure Channel 456 is reading below the minimum and the others are within specifications. (Sheet 3)

After the Evaluator Cue: Specifies channel should be logged as N/A.

Evaluator Cue: **After the reading is identified as an error: Pressurizer Pressure Channel 456 is inoperable.**

It may be necessary to ask the candidate how an inoperable channel is logged.

√ **Performance Step: 5** Review OST-1021, Attachment 4 for approval.

Standard: Identifies Containment Temperature Channel TI-7542 exceeds limit of 120°F. (Sheet 8)

Comment:

√ **Performance Step: 6** Review OST-1021, Attachment 4 for approval.

Standard: Identifies Diesel Generator Room 261 temperature TDG6903B exceeds limit of 120°F. (Sheet 10)

Comment:

Terminating Cue: **After all log sheets have been reviewed: This JPM is complete.**

Stop Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM SRO A1-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is operating at 100% power.

The Daily Surveillance Logs (OST-1021, Attachment 4) for 0300 have been completed.

INITIATING CUE: You are the USCO. Review the completed logs.

Handout SRO - IPM A1-2

Daily Surveillance Requirements Log

TECH SPEC	4.5.1.1.a.1, a.2								
PARAMETER	ECCS ACCUMULATORS								
	CLA A PRESSURE		CLA B PRESSURE		CLA C PRESSURE		ISOLATION VALVES		
INSTRUMENT	PI - 921	PI - 923	PI -925	PI - 927	PI - 929	PI - 931	CLA A 1SI-246	CLA B 1SI-247	CLA C 1SI-248
ACCEPTANCE CRITERIA	Between 585 and 665 psig						OPEN		
MODE	1, 2 AND 3 WITH RCS PRESSURE ABOVE 1000 PSIG								
0300									
0900									
1500									
2100									

TECH SPEC	4.5.1.1.a.1, 4.5.1.1. b (partial)								
PARAMETER	ECCS ACCUMULATORS								
	CLA A LEVEL			CLA B LEVEL			CLA C LEVEL		
INSTRUMENT	LI - 920	LI - 922	Sampling Not Required per Att 6	LI - 924	LI - 926	Sampling Not Required per Att 6	LI - 928	LI - 930	Sampling Not Required per Att 6
ACCEPTANCE CRITERIA	between 66 and 96 % indicated level with less than 9% cumulative level increase (excluding makeup from operable RWST) since last satisfactory sample								
MODE	1, 2 AND 3 WITH RCS PRESSURE ABOVE 1000 PSIG								
Previous Days Level									
0300									
0900									
1500									
2100									

TECH SPEC	4.4.6.2.1.b						4.3.2.1.1c, 2c, 3a3, 3b3, 3c3, 4c, 5c, 6d, 6g; 4.3.3.6.1a; 4.6.1.4				
PARAMETER	CNMT SUMP FLOW MONITORING		SUMP LEAK RATE		CNMT SUMP LEVEL		CONTAINMENT PRESSURE				
INSTRUMENT	ALB 1 6-1	ERFIS	URE 9001	URE 9002	LCT 7161A	LCT 7161B	PI 950	PI 952	PI 951	PI 953	N/A
ACCEPTANCE CRITERIA	NO ALARM	PROGRAM CHECKS PER OP-163	N/A		N/A		LESS THAN 1.6 PSIG				CHAN. CHECK
MODE	1, 2, 3 and 4						1, 2, 3 and 4				
0300											
0900											
1500											
2100											

Daily Surveillance Requirements Log

TECH SPEC	4.1.2.6.a.2; 4.5.4.a.1; 4.3.2.1.7b, 8b; 4.3.3.6.9					4.1.2.6.a.2, a.3		
PARAMETER	RWST LEVEL					BORIC ACID TANK		
INSTRUMENT	LI-990	LI-991	LI-992	LI-993	N/A	LI-106	LI-161.1 SB	TCS7240
ACCEPTANCE CRITERIA	GREATER THAN OR EQUAL TO 92%				CHANNEL CHECK	GREATER THAN OR EQUAL TO 74%		GREATER THAN OR EQUAL TO 65°F
MODE	1, 2, 3, and 4					1, 2, 3 and 4		
0300								
0900								
1500								
2100								

TECH SPEC	4.5.2.a						4.4.9.3
PARAMETER	ECCS VALVE ALIGNMENT						PRZ SPRAY ΔT
INSTRUMENT	1SI-340	1SI-341	1SI-359	1SI-86	1SI-52	1SI-107	TI-123 TI-454.1
ACCEPTANCE CRITERIA	OPEN AND PULLED TO LOCK WITH CONTROL POWER OFF		SHUT AND PULLED TO LOCK WITH CONTROL POWER OFF				LESS THAN OR EQUAL TO 625°F
MODE	1, 2, and 3						DURING AUX SPRAY OPS
0300							
0900							
1500							
2100							

TECH SPEC	4.4.3.1; 4.3.1.1.11; 4.3.3.6.5			
PARAMETER	PRESSURIZER LEVEL			
INSTRUMENT	LI-460	LI-461.1	LI-459A.1	N/A
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 90%			CHANNEL CHECK
MODE	1, 2, and 3			1
0300				
0900				
1500				
2100				

Daily Surveillance Requirements Log

TECH SPEC	4.2.5.1; 4.3.1.1.9, 10; 4.3.2.1.1d, 3a3, 3c3, 5c, 6d						
PARAMETER	PRESSURIZER PRESSURE						
INSTRUMENT (MCB OR ERFIS)	PRC0457 PI-457	PRC0456 PI-456	PRC0455 PI-455	CALCULATION COMPLETED	INDEPENDENT VERIFICATION COMPLETED	ACCEPTANCE CRITERIA MET	N/A
ACCEPTANCE CRITERIA	SEE BELOW			N/A	N/A	N/A	CHANNEL CHECK
MODE	1						1, 2, 3
0300							
0900							
1500							
2100							

INSTRUCTIONS

NOTE: Calculations must be done with either the MCB Indicators OR ERFIS indications, NOT a combination.

NOTE: If all operable channels are greater than or equal to the acceptance criteria, calculations are not required.

CALCULATIONS FOR PRESSURIZER PRESSURE

0300: _____ (PRC0457 PI-457) + _____ (PRC0456 PI-456) + _____ (PRC0455 PI-455) = _____ ÷ (# Operable Channels used Normally 3) = _____ PRESSURIZER PRESSURE

0900: _____ (PRC0457 PI-457) + _____ (PRC0456 PI-456) + _____ (PRC0455 PI-455) = _____ ÷ (# Operable Channels used Normally 3) = _____ PRESSURIZER PRESSURE

1500: _____ (PRC0457 PI-457) + _____ (PRC0456 PI-456) + _____ (PRC0455 PI-455) = _____ ÷ (# Operable Channels used Normally 3) = _____ PRESSURIZER PRESSURE

2100: _____ (PRC0457 PI-457) + _____ (PRC0456 PI-456) + _____ (PRC0455 PI-455) = _____ ÷ (# Operable Channels used Normally 3) = _____ PRESSURIZER PRESSURE

ACCEPTANCE CRITERIA FOR PRESSURIZER PRESSURE (must meet one of the following):

1. Average of operable MCB indicator channels greater than or equal to 2205 psig.
2. Average of operable ERFIS points greater than or equal to 2202 psig.
3. If three MCB indicators are not available, then the lowest channel should be greater than or equal to 2220 psig.
4. If three ERFIS points are not available, then the lowest channel should be greater than or equal to 2211 psig.

Daily Surveillance Requirements Log

TECH SPEC	4.2.5.1					
PARAMETER	RCS LOOP TAVG					
INSTRUMENT (MCB OR ERFIS)	TRC0412D TI-412D	TRC0422D TI-422D	TRC0432D TI-432D	CALCULATION COMPLETED	INDEPENDENT VERIFICATION COMPLETED	ACCEPTANCE CRITERIA MET
ACCEPTANCE CRITERIA	SEE BELOW			N/A	N/A	N/A
MODE	1					
0300						
0900						
1500						
2100						

INSTRUCTIONS

NOTE: Calculations must be done with either the MCB Indicators OR ERFIS indications, NOT a combination.

NOTE: If all operable channels are less than or equal to the acceptance criteria, calculations are not required.

CALCULATIONS FOR RCS LOOP TAVG

0300: _____ (TRC0412D TI-412D) + _____ (TRC0422D TI-422D) + _____ (TRC0432D TI-432D) = _____ ÷ (# Operable Channels used Normally 3) = _____ RCS LOOP TAVG

0900: _____ (TRC0412D TI-412D) + _____ (TRC0422D TI-422D) + _____ (TRC0432D TI-432D) = _____ ÷ (# Operable Channels used Normally 3) = _____ RCS LOOP TAVG

1500: _____ (TRC0412D TI-412D) + _____ (TRC0422D TI-422D) + _____ (TRC0432D TI-432D) = _____ ÷ (# Operable Channels used Normally 3) = _____ RCS LOOP TAVG

2100: _____ (TRC0412D TI-412D) + _____ (TRC0422D TI-422D) + _____ (TRC0432D TI-432D) = _____ ÷ (# Operable Channels used Normally 3) = _____ RCS LOOP TAVG

ACCEPTANCE CRITERIA FOR RCS LOOP TAVG (must meet one of the following):

1. Average of operable MCB indicator channels must be less than or equal to 592.5°F.
2. Average of operable ERFIS points less than or equal to 593.1°F.
3. If three MCB indicators are not available, then the highest channel should be less than or equal to 591.3°F.
4. If three ERFIS points are not available, then the highest channel should be less than or equal to 592.3°F.

Daily Surveillance Requirements Log

TECH SPEC	4.3.2.1		4.4.6.2.1.e	4.3.1.1.7, 8		
PARAMETER	RCS PRESSURE		FLANGE LEAKOFF TEMP	OTΔT	OPΔT	PROTECTION ΔT
INSTRUMENT	PI-403.1	PI-402.1	TI-401	TI-412C, TI-422C, TI-432C	TI-412B, TI-422B, TI-432B	TI-412A, TI-422A, TI-432A
ACCEPTANCE CRITERIA	CHANNEL CHECK		N/A	CHANNEL CHECK		
MODE	1, 2, 3 and 4		1, 2, 3 and 4	1, 2		
0300						
0900						
1500						
2100						

INSTRUCTION

If RCS flow acceptance criteria is not met, perform EST-708, RCS Flow Determination.

TECH SPEC	4.2.5.1								
PARAMETER	RCS LOOP FLOWS								
INSTRUMENT	FRC0414 FI-414	FRC0415 FI-415	FRC0416 FI-416	FRC0424 FI-424	FRC0425 FI-425	FRC0426 FI-426	FRC0434 FI-434	FRC0435 FI-435	FRC0436 FI-436
ACCEPTANCE CRITERIA	≥ 98.3%			≥ 98.3%			≥ 98.3%		
MODE	1			1			1		
0300									
0900									
1500									
2100									

TECH SPEC	4.3.1.1.2.a	4.4.6.2.1.d
PARAMETER INSTRUMENT	OST-1000 or OST-1004 or OST-1204	OST-1026 or OST-1226
ACCEPTANCE CRITERIA	COMPLETED	COMPLETED (Typically on Night Shift)
MODE	1 above 15% Power	1, 2, 3, and 4
0300		Date/Time ____/____

Daily Surveillance Requirements Log

TECH SPEC	4.4.1.1; 4.3.1.1.12									
PARAMETER	RCS LOOP FLOWS									
INSTRUMENT	FRC0414 FI-414	FRC0415 FI-415	FRC0416 FI-416	RCP A	N/A	FRC0424 FI-424	FRC0425 FI-425	FRC0426 FI-426	RCP B	N/A
ACCEPTANCE CRITERIA	POSITIVE INDICATION OF FLOW WITH RCP RUNNING INDICATION				CHANNEL CHECK	POSITIVE INDICATION OF FLOW WITH RCP RUNNING INDICATION				CHANNEL CHECK
MODE	1, 2				1	1, 2				1
0300										
0900										
1500										
2100										

TECH SPEC	4.4.1.1; 4.3.1.1.12					4.3.1.1.2a, 2b, 5, 6		
PARAMETER	RCS LOOP FLOWS					POWER RANGE	INTERMEDIATE RANGE	SOURCE RANGE
INSTRUMENT	FRC0434 FI-434	FRC0435 FI-435	FRC0436 FI-436	RCP C	N/A	NI-41, NI-42 NI-43, NI-44	NI-35 NI-36	NI-31 NI-32
ACCEPTANCE CRITERIA	POSITIVE INDICATION OF FLOW WITH RCP RUNNING INDICATION				CHANNEL CHECK	CHANNEL CHECK		
MODE	1, 2				1	1, 2	1 (<P-10), 2	2 (<P-6), 3, 4, 5
0300								
0900								
1500								
2100								

TECH SPEC	4.3.2.1.1e, 3a3, 3c3, 4d, 5c, 6d, 6g 4.3.3.6.6			4.3.1.1.14					
PARAMETER	STEAM LINE PRESSURE			SG FEED FLOW			SG STEAM FLOW		
INSTRUMENT	PI-474.1, PI-475, PI-476	PI-484.1 PI-485, PI-486	PI-494 PI-495, PI-496.1	FI-476 FI-477	FI-486 FI-487	FI-496 FI-497	FI-474 FI-475	FI-484 FI-485	FI-494 FI-495
ACCEPTANCE CRITERIA	CHANNEL CHECK			CHANNEL CHECK					
MODE	1, 2, 3 and 4			1, 2					
0300									
0900									
1500									
2100									

Daily Surveillance Requirements Log

TECH SPEC	4.3.1.1.13; 4.3.1.1.14; 4.3.2.1.5b, 6c, 10d; 4.3.3.6.7			4.7.1.3.1	
PARAMETER	SG LEVEL			CST LEVEL	
INSTRUMENT	LI-473, LI-474 LI-475, LI-476	LI-483, LI-484 LI-485, LI-486	LI-493, LI-494 LI-495, LI-496	LI-9010A1 SA	LI-9010B1 SB
ACCEPTANCE CRITERIA	CHANNEL CHECK			GREATER THAN OR EQUAL TO 62%	
MODE	1, 2, and 3			1, 2, and 3	
0300					
0900					
1500					
2100					

TECH SPEC	4.7.1.3.2			
PARAMETER	ESW TO AFW			
INSTRUMENT	1SW-121 1SW-123	1SW-124 1SW-126	1SW-127 1SW-129	1SW-130 1SW-132
ACCEPTANCE CRITERIA	OPEN (only when supplying AFW pumps)			
MODE	1, 2, and 3			
0300				
0900				
1500				
2100				

Daily Surveillance Requirements Log

INSTRUCTIONS

1. ERFIS is the preferred source for verifying CNTMT AVG TEMP.

2. Verify TCV97540 computer point quality code is acceptable. If acceptable, record the ERFIS value for CNTMT AVG TEMP and verify less than or equal to 120°F.

3. If computer point TCV97540 is not available, verify both MCB indicators for CNTMT AVG TEMP less than or equal to 120°F.

TECH SPEC	PLP-114		4.6.1.5	N/A		4.6.1.4		PLP-114	
PARAMETER	A EDG ELEC ROOM 261	B EDG ELEC ROOM 261	CNMT AVG TEMP			CONTAINMENT PRESSURE		CONTROL ROOM ENVELOPE 305	
INSTRUMENT	ALB 27/1-3		TCV97540	TI-7542 SA	TI-7541 SB	PDI-7680 A SA	PDI-7680 B SB	TI-7837 A1SA	TI-7837 B1SB
ACCEPTANCE CRITERIA	NO ALARM (≤ 116°F) LOCAL TEMP IS NEEDED IF ALARM IS PRESENT		LESS THAN OR EQUAL TO 120°F			GREATER THAN -1.0 INWG		LESS THAN OR EQUAL TO 85 F	
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE		1, 2, 3, and 4			1, 2, 3, and 4		WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE	
0300									
0900									
1500									
2100									

TECH SPEC	PLP-114						
PARAMETER	FHB EMER EXH AREA		ROD CNTRL CAB AREA 305	STEAM TUNNEL	SA ELECT PENET AREA 261	SB ELECT PENET AREA 261	1A35SA, 1B35SB 261
INSTRUMENT	TI-6537A1SA	TI-6537B1SB	ALB 23/3-5	ALB 23/2-11	ALB 23/2-8		ALB 23/2-5
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 104°F		NO ALARM (≤ 104°F)	NO ALARM (≤ 122°F)	NO ALARM (LESS THAN OR EQUAL TO 104°F)		
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE		WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE (LOCAL TEMP MUST BE TAKEN IF ALARM IS PRESENT)				
0300							
0900							
1500							
2100							

Daily Surveillance Requirements Log

TECH SPEC	PLP-114						
PARAMETER	CHILLER, AFW PIPE & VALVE AREA 261	CCW PUMPS & HX AFW PUMPS 236	A-SA CSIP ROOM 236	B-SB CSIP ROOM 236	1C-SAB CSIP ROOM 236	SW BSTR B-SB PUMP 236	MECH & ELEC PENET AREA 236
INSTRUMENT	ALB 23/2-6 ALB 23/2-7	ALB 23/1-6 ALB 23/1-7	ALB 23/1-5		ALB 23/1-4	ALB 23/1-11	ALB 23/2-9 ALB 23/2-10
ACCEPTANCE CRITERIA	NO ALARM (LESS THAN OR EQUAL TO 104°F)						
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE (LOCAL TEMP MUST BE TAKEN IF ALARM IS PRESENT)						
0300							
0900							
1500							
2100							

TECH SPEC / COMMITMENT	PLP-114				4.9.11			
PARAMETER	CSAT & HVAC EQUIP RM 216	WPB HVAC EQUIP RM 236	A-SA CS, RHR, HVAC 190	B-SB CS, RHR, HVAC 190	FUEL POOLS			
					SPENT FP	NEW FP	SFP C	SFP D
INSTRUMENT	ALB 23/1-8	ALB 23/1-9	ALB 23/1-10		ALB 23/4-17	ALB 23/5-17	ALB 23/4-18	ALB 23/5-18
ACCEPTANCE CRITERIA	NO ALARM (LESS THAN OR EQUAL TO 104°F)				NO ALARM (GREATER THAN 23 FT)			
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE (LOCAL TEMP MUST BE TAKEN IF ALARM IS PRESENT)				WHEN IRRADIATED FUEL IS IN THE POOL (LOCAL LEVEL MUST BE TAKEN IF ALARM IS PRESENT)			
0300								
0900								
1500								
2100								

Daily Surveillance Requirements Log

TECH SPEC / COMMITMENT	ESR 97-00272	ESR 95-00425		ESR 97-00272
PARAMETER	SPENT FUEL POOL HIGH TEMPERATURE ALARM	SPENT FUEL POOL HIGH TEMPERATURE ALARM		NEW FUEL POOL HIGH TEMPERATURE ALARM
INSTRUMENT	ALB 23/4-16	ALB 23/4-15	ALB 23/5-15	ALB 23/5-16
ACCEPTANCE CRITERIA	NO ALARM	NO ALARM		NO ALARM
MODE	1,2,3,4,5 and 6	1, 2, 3, 4, 5 and 6		1,2,3,4,5 and 6
0300				
0900				
1500				
2100				

TECH SPEC	PLP-114					
	ESW ELEC EQUIP ROOM 261		ESW PUMP ROOM 261		EDG ROOM 261	
PARAMETER	A-SA	B-SB	A-SA	B-SB	A-SA	B-SB
INSTRUMENT	TEV6588A	TEV6588B	TEV6592A	TEV6592B	TDG6903A	TDG6903B
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 116°F		LESS THAN OR EQUAL TO 122°F		LESS THAN OR EQUAL TO 120°F	
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE					
0300						
0900						
1500						
2100						

Daily Surveillance Requirements Log

NOTE 1: If a reservoir level computer point and local transmitter is bad, manual reservoir level determination can be performed per OP-163.

NOTE 2: If a reservoir temperature computer point is bad, manual reservoir temperature readings can be performed per OP-163.

INSTRUCTION

1. Due to a 3°F instrument inaccuracy associated with the permanently installed reservoir TSWs, if TSW9114/TSW9115 indicate ≥91°F, obtain local temperature readings per OP-163.

TECH SPEC	4.1.2.6b 4.5.4.b	4.7.5					
PARAMETER	RWST TEMP	AUX RSVR LEVEL		AUX RSVR TEMP	MAIN RSVR LEVEL		MAIN RSVR TEMP
INSTRUMENT	TCT7110	LSC8752A	LSC8752B	TSW9114	LSC8750A	LSC8750B	TSW9115
ACCEPTANCE CRITERIA	≥ 40°F AND ≤ 125°F	GREATER THAN OR EQUAL TO 250 FT NOTE 1		94°F NOTE 2	GREATER THAN OR EQUAL TO 215 FT NOTE 1		94 F NOTE 2
MODE	1, 2, 3 and 4						
0300							
0900							
1500							
2100							

INSTRUCTION

1. The ECCS leakage outside RABEES reading is only required every 72 hours. Perform on Sunday, Wednesday, and Friday (mark as N/A on other days).

2. If any ECCS leakage outside RABEES is measured, record the cumulative leakrate on Attachment 7, along with the locations leaking.

TECH SPEC	PLP-114
PARAMETER	ECCS leakage outside RABEES
INSTRUMENT	N/A
ACCEPTANCE CRITERIA	LESS THAN 2 GPH (125 cc/min) cumulative
MODE	1, 2, 3 and 4
0300	
0900	
1500	
2100	

Daily Surveillance Requirements Log

NOTE 1: Meteorological Channel check includes: (1) Initialing for a acceptable quality code if using ERFIS or verifying data quality is consistent with actual weather conditions if using a Personal Computer(PC) to access the meteorological tower, and (2) Recording present values and verifying trend appears normal.

NOTE 1: During calm wind conditions (approximately 2 mph or less) it is normal to see disagreement between the upper and lower wind direction indicators. At times the vanes may actually rotate in opposite directions.

NOTE 1: The following shall be used for performing the daily channel check of the meteorological instrumentation channels:

- On ERFIS observe the points for wind speed, wind direction, and differential temperature.

OR

- Using a PC , access the meteorological tower and observe upper and lower wind speed, upper and lower wind direction, and differential temperature (or stability class).

The meteorological instrumentation should only be considered inoperable if both of the above methods are unavailable.

NOTE 2: MIMS Channel check should include, as a minimum, both a Self Test an Audio Monitoring Test of all operable channels. (Reference 2.6.4)

TECH SPEC	PLP-114												PLP-114
PARAMETER	METEOROLOGICAL												MIMS
	LOWER WIND SPEED		UPPER WIND SPEED		LOWER WIND DIRECTION		UPPER WIND DIRECTION		AIR ΔT				
INSTRUMENT	MMT1008		MMT1010		MMT1014		MMT1013		MMT1004		MMT1005		ALL CHANNELS
ACCEPTANCE CRITERIA	CHANNEL CHECK NOTE 1												CHANNEL CHECK NOTE 2
	Value	Init	Value	Init	Value	Init	Value	Init	Value	Init	Value	Init	
MODE	AT ALL TIMES												1, 2
0300													
0900													
1500													
2100													

Daily Surveillance Requirements Log

LOCAL TEMPERATURES

TECH SPEC	PLP-114				
PARAMETER	SFP PUMP & HX ROOM	TANK AREA 236	E-6 ROOMS 261		
			A-SA	B-SB	
INSTRUMENT	LOCAL THERMOMETER				
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 115.5 °F	LESS THAN OR EQUAL TO 104 °F			VERIFIED
MODE	AT ALL TIMES	WHENEVER THE EQUIPMENT IN AN AFECTED AREA IS REQUIRED TO BE OPERABLE			
0100-0400					
1300-1600					

TECH SPEC	PLP-114					
PARAMETER	EDG HVAC ROOM 280		EDG HVAC ROOM 292		DFOST BLDG 242	
	A-SA	B-SB	A-SA	B-SB		
INSTRUMENT	LOCAL THERMOMETER					
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 118°F		LESS THAN OR EQUAL TO 122°F		LESS THAN OR EQUAL TO 122°F	VERIFIED
MODE	WHEN THE EQUIPMENT IN THE AFFECTED AREA IS REQUIRED TO BE OPERABLE					
0100-0400						
1300-1600						

Daily Surveillance Requirements Log

LOCAL TEMPERATURES

INSTRUCTION

1. If battery room temperature is less than 71°F, perform Step 7.0.5.

TECH SPEC	PLP-114							
PARAMETER	ELECT PENETRATION AREA 286		SWITCHGEAR ROOM 286		BATTERY ROOM 286		ACP 286	
	A-SA	B-SB	A-SA	B-SB	A-SA	B-SB		
INSTRUMENT	LOCAL THERMOMETER							
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 104°F		LESS THAN OR EQUAL TO 90°F		≥ 71°F AND ≤ 85°F		LESS THAN OR EQUAL TO 90°F	VERIFIED
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE							
0900-1200								
2100-2400								

TECH SPEC	PLP-114				
PARAMETER	AUX TRANSFER PANEL ROOM 286		PIC ROOMS 286		
	A-SA	B-SB	17, 19	18	
INSTRUMENT	LOCAL THERMOMETER				
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 104°F		LESS THAN OR EQUAL TO 85°F		
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE				VERIFIED
0900-1200					
2100-2400					

TECH SPEC	PLP-114			
PARAMETER	PIC ROOM 305	ARP ROOM 305	AH-15 VENTILATION ROOM	
INSTRUMENT	LOCAL THERMOMETER			
ACCEPTANCE CRITERIA	LESS THAN OR EQUAL TO 85°F		LESS THAN OR EQUAL TO 104°F	VERIFIED
MODE	WHENEVER THE EQUIPMENT IN AN AFFECTED AREA IS REQUIRED TO BE OPERABLE			
0900-1200				
2100-2400				

Daily Surveillance Requirements Log

NOTE 1: These readings are only required on Sundays. These readings may be marked N/A on other days.

TECH SPEC	4.1.2.2.a				
PARAMETER	VCT VALVE GALLERY	BAT ROOM	BORIC ACID XFER PUMP VALVE GALLERY	EMER BORATION VALVE RM	BORIC ACID XFER PUMP ROOM
INSTRUMENT	LOCAL THERMOMETER				
ACCEPTANCE CRITERIA	GREATER THAN OR EQUAL TO 65°F				
MODE	1, 2 and 3				
1300-1600 (NOTE 1)					

TECH SPEC	4.1.2.2.a					
PARAMETER	BAT TO CSIP SUCTION HEADER PIPE TEMPERATURE (IF ANY OF THESE INSTRUMENTS FAIL, INITIATE CORRECTIVE ACTION AND NOTE IN COMMENTS SECTION. USE SECONDARY INSTRUMENTS TO SATISFY THE SURVEILLANCE REQUIREMENT)					
INSTRUMENT	HT-18753C C2-1	HT-18753C C2-2	HT-18753B C1-9	HT-18753B C1-13	HT-18753B C2-3	HT-18753B C2-5
ACCEPTANCE CRITERIA	GREATER THAN OR EQUAL TO 65°F					
MODE	1, 2 and 3					
1300-1600 (NOTE 1)						

TECH SPEC	4.1.2.2.a					
PARAMETER	BAT TO CSIP SUCTION HEADER PIPE TEMPERATURE (THESE ARE SECONDARY INSTRUMENTS. THESE SHOULD BE USED WHEN PRIMARY INSTRUMENTS FAIL. (N/A IF NOT BEING USED.)					
INSTRUMENT	HT-18753CC C2-1	HT-18753CC C2-2	HT-18753BB C1-9	HT-18753BB C1-13	HT-18753BB C2-3	HT-18753BB C2-5
ACCEPTANCE CRITERIA	GREATER THAN OR EQUAL TO 65°F					
MODE	1, 2 and 3					
1300-1600 (NOTE 1)						

Facility:	Shearon-Harris	Task No.:	002001H201
Task Title:	Perform the RCS Water Inventory Balance surveillance	JPM No.:	2006 NRC RO A2
K/A Reference:	G2.2.12 (3.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: Any setting with OST-1026 program on a computer.

Simulated Performance: ____ Actual Performance: X

Classroom X Simulator ____ Plant ____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is at 100 percent power.
An automatic makeup to the VCT just completed.
The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.

Task Standard: RCS leakage calculated within required range

Required Materials:
- PC with OST-1026 Version 4.3 Program installed.
- If this JPM is not done in the Simulator or the Control Room then it will be necessary to provide the candidate with a printer number/designation for printing.

General References: OST-1026, RCS LEAKAGE EVALUATION, Rev. 26

Handouts:
- OST-1026 with Prerequisites and Steps 7.0.1 – 7.0.7 signed
- Start Data Sheet (Attached)
- End Data Sheet (Attached)

Initiating Cue: The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION. Assume that Steam Generator Tube Leakage and Miscellaneous Identified Leakage is ZERO. All prerequisites are met and the procedure has been completed through Step 7.0.7. Begin at Step 7.0.8.

For the purpose of the examination, there will be no independent verification of your data entry.

Time Critical Task: No

Validation Time: 10 minutes

(Denote Critical Steps with a √)

Start Time _____.

Performance Step: 1	Obtain procedure.
Standard:	Reviews procedure.
Evaluator Cue:	**Provide handout for RO JPM A2.** **Inform candidate that all Prerequisites are met and that steps 7.0.1 through 7.0.7 have already been completed. Begin at Step 7.0.8.**
Comment:	
Performance Step: 2	Obtain Leak Rate data by performing one of the following steps: Collect data on Attachment 1 using ERFIS Group Display, or OSI-PI Group Trend.
Standard:	Reviews START Data Sheet.
Evaluator Cue:	**Provide "START" Data handout.** **Inform candidate that the data was collected from the ERFIS Group Display in accordance with step 7.0.8.a.**
Comment:	
Performance Step: 3	RECORD "START" DATA on Attachment 1.
Standard:	Transcribes "START" data onto Attachment 1.
Evaluator Cue:	**After the "START" data is transcribed: "30 minutes has elapsed" and then provide the "END" Data handout.**
Comment:	
Performance Step: 4	RECORD "END" DATA on Attachment 1.
Standard:	Transcribes "END" data onto Attachment 1.
Comment:	**Candidate should verify START and END Tavg within .2 °F.**

Performance Step: 5 MARK all of ATTACHMENT 2 N/A.

Standard: Lines through and marks ATTACHMENT 2 as N/A.

Comment:

Performance Step: 6 Perform the following to calculate RCS leakage using computer program OST-1026:

Verify the computer program is version 4.3.

Standard: Accesses OST-1026 computer program and verifies Version 4.3.

Comment:

Performance Step: 7 Perform the following to calculate RCS leakage using computer program OST-1026:

Enter data as prompted by the computer program.

Standard: Enters data from Attachment 1 and performs operations as prompted by the computer program.

Comment:

√ **Performance Step: 8** Perform the following to calculate RCS leakage using computer program OST-1026:

Sign the computer printout.

Standard: Prints and signs a copy of the computer printout:

- Total Leakage >10 gpm <13.5 gpm (Actual is 11.74 gpm)
- Identified Leakage >10 gpm <12.25 gpm (Actual is 11.14 gpm)
- Unidentified Leakage >.5 gpm <1 gpm (Actual is .60 gpm)

Evaluator NOTE: **NOTE: If this JPM is not done in the Simulator or the Control Room then it will be necessary to provide the candidate with a printer number/designation for printing.**

Comment:

	Performance Step: 9	Perform the following to calculate RCS leakage using computer program OST-1026: Independently verify the input data on the computer printout is correct.
	Standard:	Candidate may elect to review printout again.
	Evaluator Cue:	**As indicated in the Initiating Cue, there will be no independent verification of your data entry.**
	Comment:	
	Performance Step: 10	Perform the following to calculate RCS leakage using computer program OST-1026: Attach the computer printout to this procedure.
	Standard:	Provides printout with the procedure, when returned.
	Comment:	
√	**Performance Step: 11**	Verify calculated leak rates are within the Acceptance Criteria listed in Section 6.0.
	Standard:	Informs USCO that Acceptance Criteria 6.0.1 is exceeded - Identified Leakage >10 GPM or completes Attachment 4 (Certifications and Reviews) noting same in the "GENERAL COMMENTS" section.
	Comment:	
	Terminating Cue:	**After USCO is informed or Attachment 4 is completed: This JPM is complete.**

End Time: _____.

Job Performance Measure No.: 2006 NRC RO A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

START DATA

SHEARON HARRIS NUCLEAR PLANT

TODAY
TIME: ZERO

TREND GROUP ASSIGNMENT SUMMARY

GROUP NAME OST-1026 POINT ID	GROUP DESCRIPTION RCS LEAK RATE (OPS/DON=T DELETE) DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
1. LRC0460	PRZ LVL-2	59.45	GOOD	PCNT
2. PRC0455	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
3. TRC0408Z	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
4. LRC0470	PRT LEVEL	40.0	GOOD	PCNT
5. LCS0115	VCT LEVEL	52.0	GOOD	PCNT
6. LSI0920	ACCUM TANK A LEVEL	79.0	GOOD	PCNT
7. LSI0920	ACCUM TANK B LEVEL	81.0	GOOD	PCNT
8. LSI0930	ACCUM TANK C LEVEL	82.0	GOOD	PCNT

RADWASTE REPORTS RCDT LEVEL IS 50.4%

END DATA

SHEARON HARRIS NUCLEAR PLANT

TODAY
TIME: 30 minutes later

TREND GROUP ASSIGNMENT SUMMARY

GROUP NAME OST-1026 POINT ID	GROUP DESCRIPTION RCS LEAK RATE (OPS/DON=T DELETE) DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
1. LRC0460	PRZ LVL-2	59.46	GOOD	PCNT
2. PRC0455	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
3. TRC0408Z	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
4. LRC0470	PRT LEVEL	43.0	GOOD	PCNT
5. LCS0115	VCT LEVEL	26.8	GOOD	PCNT
6. LSI0920	ACCUM TANK A LEVEL	79.0	GOOD	PCNT
7. LSI0920	ACCUM TANK B LEVEL	81.0	GOOD	PCNT
8. LSI0930	ACCUM TANK C LEVEL	82.0	GOOD	PCNT

RADWASTE REPORTS RCDT LEVEL IS 51.5%

INITIAL CONDITIONS:

The plant is at 100 percent power.

An automatic makeup to the VCT just completed.

The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.

INITIATING CUE:

The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION. Assume that Steam Generator Tube Leakage and Miscellaneous Identified Leakage is ZERO. All prerequisites are met and the procedure has been completed through Step 7.0.7. Begin at Step 7.0.8.

For the purpose of the examination, there will be no independent verification of your data entry.

Handout RO & SRO JPM A2

Progress Energy

C
CONTINUOUS
USE

HARRIS NUCLEAR PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: OPERATIONS SURVEILLANCE TEST

NUMBER: **OST-1026**

TITLE: **REACTOR COOLANT SYSTEM LEAKAGE EVALUATION, COMPUTER CALCULATION, DAILY INTERVAL, MODES 1-2-3-4**

NOTE: This procedure has been screened per PLP-100 Criteria and determined to be CASE III. No additional management involvement is required.

1.0 PURPOSE

The purpose of this OST is to determine the IDENTIFIED and UNIDENTIFIED LEAKAGE portions of the allowed REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE. This is accomplished by the performance of a Reactor Coolant System water inventory balance as required by Technical Specification 4.4.6.2.1.d. This OST is required every 72 hours and should not interfere with plant evolutions (heatup, cooldown, power changes).

This OST is the preferred method for performing the RCS leakrate calculation. In the event RCS Real-Time Continuous Leakrate or OST-1026 computer programs are not available, this surveillance can be performed using OST-1226, Reactor Coolant System Leakage Evaluation, Manual Calculation, Daily Interval, Modes 1-2-3-4.

2.0 REFERENCES

2.1. Plant Operating Manual Procedures

1. OP-100
2. OP-107
3. OP-120.08
4. OP-163
5. OST-1226

2.2. Technical Specifications

1. 3.4.6.2
2. 4.4.6.2.1.d.

2.3. Final Safety Analysis Report

1. Section 5.2.5, Detection of Leakage through Reactor Coolant Pressure Boundary

2.4. Drawings

1. 5-S-1301
2. 5-S-1305
3. 5-S-1313

2.5. Corrective Action Program (CAP) Items

1. 90H0916
2. 94H0559

2.6. Other

1. ASME Steam Tables.
2. OEF Feedback Item 94H0559.
3. Software Documentation, OST-1026 Rev. 4.3, Reactor Coolant System Leakrate Calculation; November, 2001. (Filed under CSP-NGGC-2507)
4. License Amendment #85.
5. WNEP-9517, Thermal and Hydraulic Design Data Report For Shearon Harris Nuclear Station.
6. SD-100.1
7. SD-100.3
8. SD-107
9. SD-120.8
10. EC 52490

3.0 PREREQUISITES

NOTE: Performance of this OST does not require entry into any LCO action statements. N

1. The performance of this OST has been **COORDINATED** with other plant evolutions such that the minimum operability requirements of Technical Specifications will continue to be satisfied during the performance of this OST or appropriate action statements have been met. N

2. Instrumentation needed for the performance of this test is free of deficiency tags that affect instrument indication. N

3. **OBTAIN** Unit SCO permission to perform this OST.

Signature

TODAY
Date

4.0 PRECAUTIONS AND LIMITATIONS

1. **IF** an RCDT pump down or a VCT makeup is required during this OST, **THEN** take the "End" data prior to the pump down/makeup.

2. **IF** test data is manually recorded,
THEN an effort should be made to maximize the test accuracy by taking start and end test data accurately and with a minimal time delay between individual data points.

3. Do not allow RCS sampling or other evolutions that would result in a reduction of RCS or Cold-Leg Accumulator water inventories during the performance of this OST.

4. With proper notice given to the Unit SCO, this test may be canceled and systems returned to normal at any time.

5. To minimize the effects of RCS temperature changes, the following is the recommended minimum time between the start and end data.

CHANGE IN RCS T_{AVG} (EF)	MINIMUM TIME (MINUTES)
Less than 0.1	15
0.1 - 0.2	30

6. To minimize the effect of normal steady state oscillations in indicated RCS T_{AVG}, attempt to record the end data with RCS T_{AVG} equal to T_{AVG} at the beginning of the test interval.

7. **IF** Cold-Leg Accumulators are drained below 0% indicated level,
THEN the leakrate calculation will only be valid if CLA valve stem leakoff valves to the RCDT are shut.

8. The RCS Leakrate Program is an Excel spreadsheet that uses real-time data from OSI-PI to perform the RCS Leakrate calculation. This data is updated at a frequency specified by the Recalculation Function found under the Tools menu. Typically a 30 second update rate is sufficient. The filename is HNP_SWQL_B_OPS-RCS_RT_Cont_Leakrate_2.0.xls and is located in the P:\Corp\NGG PI Displays folder. Upon opening the program, the user must select "Enable Macros" for the program to function. Worksheet names, within the program, are shown at the bottom of the Excel program screen.

4.0 PRECAUTIONS AND LIMITATIONS (Cont.)

9. Component leakage (valve packing, pump seal, fitting leakage, etc.) may only be treated as identified leakage if the source has been identified **AND** the actual value of the leakage is obtained by a measurement taken at the start or during the data taking interval for the surveillance test. In other words, you must measure the leakage each time you run the OST if you wish to credit the leakage towards identified leakage. Each component leak must have an active Work Order. (Ref. AR 151486)

10. **IF** the component leakage source is located but is inaccessible such that it cannot be measured each time the surveillance is performed,
THEN it must be measured and determined to be constant,
AND Engineering must provide justification to treat the unidentified leakage as identified. (Ref. AR 151486)

5.0 TOOLS AND EQUIPMENT

None Applicable

6.0 ACCEPTANCE CRITERIA

NOTE: There is a large uncertainty associated with the calculated leak rates due to random instrument variability of the input parameters. This uncertainty can be minimized by use of time averaged ERFIS values.

This OST will be completed satisfactorily when the following conditions are verified:

1. The IDENTIFIED LEAKAGE portion of the allowed RCS Operational Leakage is less than or equal to 10 gpm.

2. The UNIDENTIFIED LEAKAGE portion of the allowed RCS Operational Leakage is less than or equal to 1.0 gpm.

3. STEAM GENERATOR TUBE LEAKAGE, if suspected, is less than or equal to 1 gpm total through all steam generators and 150 gallons per day through any one steam generator (obtained from plant daily chemistry report).

NOTE: Negative leak rates between 0.0 and -0.1 gpm are set equal to zero by computer program OST-1026.

4. Calculated RCS leakages (Identified or Unidentified) more negative than -0.1 gpm are not acceptable.

7.0 PROCEDURE

1. **INFORM** Chemistry that this OST is to be performed and verify they have suspended RCS chemistry operations that affect RCS inventory until the test is complete. _____

> **NOTE:** Measurement of leakage for Step 7.0.2 may be performed immediately prior to or during the duration of this test.

2. **IF** there are any components that have known leakage where the source is identified and can be treated as identified leakage per P&L 4.0.9, **THEN** list the component, measured leakage, and Work Order number on Attachment 3. _____

3. **VERIFY** the Radwaste Control Room Operator is prepared to provide support and has suspended any operations that affect RCDT inventory. _____

> **NOTE:** WO's written against 1ED-121 or 1ED-125 need to be evaluated for operability of the components.

4. **DIRECT** the Radwaste Control Room Operator to:

   a. **CHECK SHUT** 1ED-138, RCDT PUMPS A/B to PRESSURIZER RELIEF TANK. _____

   b. **IF** there is a WO against 1ED-121, RCDT LCV/IRC ISOLATION or 1ED-125, RCDT PMP DISCH for suspected leakby, **THEN STOP** the running RCDT Pump. (Circle pump secured A/B) _____

   c. **POSITION** controller LK-1-1003 to manual and **SHUT** 1ED-121, RCDT LCV/IRC ISOLATION. _____

5. At AEP-1, **SHUT** 1ED-125, RCDT PUMP DISCH. _____

6. **CHECK SHUT** 1RC-135, PRT DRAIN. _____

7. **PLACE** the control switch for LCV-115A LETDOWN TO VCT/HOLD UP TANK in the **VCT** position. _____

NOTE: The ERFIS points listed in Attachment 1 are time averaged RCS parameters. If the reactor is critical and RCS pressure is greater than 1700 psig, use of these values is preferred. Data may be obtained from an ERFIS Group Display, or OSI-PI.

NOTE: The RCS Real-Time Continuous Leakrate Program uses time averaged RCS parameters and performs the necessary calculations. This is the preferred method for obtaining Leak rate data in the following step.

8. **OBTAIN** Leak Rate data by performing **ONE** of the following substeps. (Mark the substeps not performed N/A)

   a. **COLLECT** data on Attachment 1 using ERFIS Group Display, or OSI-PI Group Trend.

      (1) **RECORD** "START" data on Attachment 1. _____

      (2) **RECORD** "END" data on Attachment 1. _____

      (3) **MARK** all of Attachment 2 N/A _____

NOTE: Any instrument listed on Attachment 2 may be used for data collection. If any of the instruments listed on Attachment 2 are out of service, an equivalent instrument may be used, provided a note is made on Attachment 4.

   b. **COLLECT** data on Attachment 2 using ERFIS Group Display, OSI-PI, or alternate instruments listed.

      (1) **RECORD** "START" data on Attachment 2. _____

      (2) **RECORD** "END" data on Attachment 2. _____

      (3) **MARK** all of Attachment 1 N/A. _____

7.0 Procedure (Cont.)

c. **PERFORM** the following to collect data from ERFIS GD or OSI-PI OST-1026.

(1) **COLLECT** and **PRINT** "START" data. _____

(2) **RECORD** RCDT level at the beginning of the test interval on the "START" printout. _____

(3) **COLLECT** and **PRINT** "END" data. _____

(4) **RECORD** RCDT level at the end of the test interval on the "END" printout. _____

(5) **ATTACH** printouts to this procedure. _____

(6) **MARK** all of Attachment 1 and 2 N/A. _____

CAUTION

Computer points TRC0408M and TRC0408ZM represent time averaged values of RCS Tavg. Use of these points when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation. These points should **NOT** be used to calculate RCS leak rate when RCS temperature is **NOT** stable.

d. **PERFORM** the following to collect data from the RCS Real-Time Continuous Leakrate Program:

(1) **START** the RCS Real-Time Continuous Leakrate Program. _____

(2) **WAIT** until the "Benchmark Test progress" indicates SAT in Cell L18. _____

(3) **VERIFY** Excel is recalculating values by **SELECTING** the "Tools" menu item. A recommended setting is 15 seconds and **UPDATE** the entire workbook. _____

(4) **SELECT** the "RCS Leakrate Results" worksheet tab at the bottom of the screen. _____

7.0 Procedure (Cont.)

(5) **UPDATE** the RCS Leakrate user data:

- "Leakrate Time Duration" _____
- Any known "Misc Leakage Identified" _____
- Any known "Steam Generator Tube Leakage" _____

(6) **CLICK** on the "Start RCS Leakrate" button. _____

NOTE: A minimum of 50 data sets are required to be collected to perform a satisfactory leakrate.

NOTE: Data collection will be prevented until a time delay equal to the user setting for Leakrate Time Duration. Following this time delay, data collection will commence automatically and be displayed on the RCS Leakrate Results.

(7) **VERIFY** the "Number of Data Sets" in Cell I26 is greater than or equal to 50 before continuing. _____

(8) **VERIFY** the "Tave Change" in Cell I4 is acceptable for the "Leakrate Time Duration" entered in Cell E4.
REFERENCE P&Ls #5 and 6. _____

NOTE: If the Data Quality Check is less than 100.00, the program may be allowed to run until the Data Quality Check is 100.00. If a Data Quality Check of 100.00 cannot be obtained, then the OST should be closed out as UNSAT and another method used to perform the OST.

(9) **VERIFY** the "Data Quality Check" in Cell I24 indicates 100.00. _____

(10) **CLICK** the "Print RCS Leakrate Report" button to generate the printout. _____

(11) **ATTACH** RCS Leakrate results printout to this procedure. _____

(12) **MARK** all of Attachment 1 and 2 N/A. _____

(13) **MARK** Step 7.0.10 N/A. _____

9. **IF** RCS T_{AVG} at the end of the test interval differs by more than 0.2°F from T_{AVG} at the start of the test,
OR,
IF an automatic VCT makeup has occurred during the data collection,
THEN perform the following:

   a. **MARK** this test void in the comments section. _____

   b. **COMPLETE** steps 14 through 15.b below, and step 21 below to close out this test. _____

   c. **MARK** all remaining steps N/A. _____

NOTE : The basis for any pre-calculated Steam Generator Tube Leakage or Miscellaneous Identified Leakage must be documented on Attachment 4.

NOTE: Level changes in the SI Cold Leg Accumulators (CLAs) are treated by the program as Unidentified RCS leakage. Not counting CLA in/out leakage as Identified prevents CLA level changes from masking possible Unidentified RCS leakage elsewhere in the system.

10. **PERFORM** the following to calculate RCS leakage using computer program OST-1026.

   a. **VERIFY** the computer program is version 4.3. _____

CAUTION

Computer points TRC0408M and TRC0408ZM represent time averaged values of RCS Tavg. Use of these points when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation. These points should **NOT** be used to calculate RCS leak rate when RCS temperature is **NOT** stable.

   b. **ENTER** data as prompted by the computer program. _____

7.0 Procedure (Cont.)

c. **SIGN** the computer printout. _____

d. **INDEPENDENTLY VERIFY** the input data on the computer printout is correct. _____

e. **ATTACH** the computer printout to this procedure. _____

11. **VERIFY** calculated leak rates are within the Acceptance Criteria listed in Section 6.0. _____

NOTE: OP-163 provides guidance on sump pump backleakage.

CAUTION

The ERFIS "Baseline" function should not be updated on an unsatisfactory completion of this OST OR when sump pump check valve leakage is suspected.

12. Upon satisfactory completion of this OST, **PERFORM** one of the following (Entire Step is N/A for UNSAT completions of this OST or when sump pump back leakage is suspected) (Substep not used is N/A).

a. **PROMPTLY UPDATE** the CNMT sump leakrate setpoint in the ERFIS computer by **ENTERING** the turn-on-code "BASELINE". _____

OR

b. **UPDATE** the SUMP LEAK RATE LIMIT on the MANUAL CNMT SUMP INLEAKAGE LOG. _____

13. **RECORD** both ERFIS sump leakrates (URE9001 and URE9002) in the CO's log. These values are used for manual CNMT sump logging in AOP-005 Attachments 10 and 11, and in AOP-016 Attachments 18 and 19. (Step is N/A if ERFIS is inoperable) _____

14. **ALIGN** the control switch for LCV-115A, LETDOWN TO VCT/HOLD UP TANK as desired. (Circle one)

(VCT, AUTO, RHT). _____

_____
Verified

7.0 Procedure (Cont.)

15. **PERFORM** the following to realign RCDT valves:

    a. **OPEN** 1ED-125 RCDT PUMP DISCH. _____

    _____
    Verified

    b. **IF** an RCDT pump was secured in Step 7.0.4.b, **THEN DIRECT** the Radwaste Control Room Operator to **START** the RCDT pump that was secured. (Initial when action has been confirmed completed by the Radwaste CR Operator) _____

    c. **DIRECT** the Radwaste Control Room Operator to place LK-1-1003 to automatic. If RCDT Level is high, flow should be established slowly. (Initial when action has been confirmed completed by the Radwaste CR Operator) _____

16. **INFORM** chemistry that normal RCS chemistry operations may resume. _____

17. **UPDATE** the Status Board. _____

18. **UPDATE** the Control Chart on the STA's computer. _____

NOTE: It is the expectation of Operations Management that, upon calculation of UNIDENTIFIED LEAKAGE greater than anticipated values based on previously recorded leakrates, action will be initiated to investigate the cause of the elevated leakage and corrective actions taken as appropriate. This expectation acknowledges that additional personnel exposure may be necessary due to walkdowns in elevated dose areas. The Unit SCO may use discretion as to the extent of this investigation when RCS parameters are known to be unstable and elevated leakrates are calculated and expected.

19. **REVIEW** the Control Chart historical data for the established mean value (CEN) and the standard deviation for unidentified leakage. _____

20. **IF** any of the following trigger points are reached,
THEN perform the indicated actions:
(Mark any trigger points **NOT** reached as N/A)

a. **TRIGGER POINT ONE** – Nine consecutive measurements above the mean value (CEN):

(1) **TAKE ACTIONS** to find the leak

- o System Walkdowns
- o Inspections
- o System realignments

(2) **DOCUMENT** actions taken in Autolog _____

b. **TRIGGER POINT TWO** – Two of three consecutive measurements exceed two standard deviations above the mean:

(1) **TAKE ACTIONS** in previous trigger point if not already done.

(2) **CHECK** additional parameters such as:

- o Containment temperature, humidity
- o Sump inleakage
- o Radiation monitor trends
- o Air samples

(3) **PERFORM** additional surveillances to confirm leakage rate _____

c. **TRIGGER POINT THREE** – One measurement exceeds 3 standard deviations (UCL) above the mean (CEN):

(1) **TAKE ACTIONS** in previous trigger points if not already done

(2) **IMPLEMENT** a formal troubleshooting plan if not already done

(3) **INITIATE** an NCR if not already done

(4) **PERFORM** a Containment entry and conduct visual inspections of accessible equipment for evidence of unidentified or pressure boundary leakage. _____

21. **COMPLETE** Attachment 4, Certifications and Reviews. _____

22. **INFORM** the Unit SCO when this test is completed or found to be unsatisfactory. _____

8.0 DIAGRAMS AND ATTACHMENTS

Attachment 1 – Time Averaged Leak rate Data Collection Form

Attachment 2 – Leak rate Data Collection Form

Attachment 3 - Components with Known Measured Leakage

Attachment 4 - Certifications and Reviews

Attachment 1 - Time Averaged Leak Rate Input Data Table

Sheet 1 of 1

CAUTION

This attachment should **NOT** be used when RCS temperature is **NOT** stable. Computer point TRC0408M represents a time averaged value of RCS Tavg. Use of this point when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation.

NOTE: This attachment should only be used when the reactor is critical and RCS pressure is greater than 1700 psig.

PARAMETER	START	END	DURATION
TIME			min
PRZ Level (LRC0460M)	%	%	
PRZ Pressure (PRC0455M)	psig	psig	
RCS T_{avg} (TRC0408M)	°F	°F	
PRT Level (LRC0470M)	%	%	
RCDT Level (LI-1003, LA020)	%	%	
VCT LEVEL (LCS0115M)	%	%	
* A Accumulator Level (LSI0920M)	%	%	
* B Accumulator Level (LSI0924M)	%	%	
* C Accumulator Level (LSI0930M)	%	%	

* If CLA isolation valve stem leakoff valves to the RCDT are shut, it is not necessary to account for CLA level changes. In this case, CLA starting and ending levels can be entered as zero. A note documenting the entry should be made on Attachment 4.

Attachment 2 - Leak Rate Data Collection Form

Sheet 1 of 2

CAUTION

Computer point TRC408ZM for time averaged RCS Tavg should **NOT** be used when RCS temperature is **NOT** stable. Use of this point when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation.

NOTE: If any instruments listed below are out of service, the use of an equivalent instrument is allowed, provided a note is made on Attachment 4.

NOTE: If the reactor is critical, only use Tavg for RCS Temperature.

NOTE: If the reactor is shutdown, Tc or Th may be used for RCS Temperature.

NOTE: If RCS Pressure is greater than 1700 psig use RCS Narrow Range Pressure Indication.

NOTE: ERFIS is the preferred source of accumulator level inputs. Ensure that the same instrument is used for both Start and End level values.

Attachment 2- Leak Rate Input Data Table

Sheet 2 of 2

(Circle indicator used)

PARAMETER	START	END	DURATION
TIME			min
PRZ Level (LI-460, LRC0460)	%	%	
PRZ Pressure (PI-455, PRC0455) **OR** WR RCS Pressure (PI-440, PRC0440)	psig	psig	
RCS T_{avg} (TR-408, TRC0408Z, TRC408ZM), **OR** WR T_{cold} (TRC0410), or WR T_{hot} (TRC0423)	°F	°F	
PRT Level (LI-470.1, LRC0470)	%	%	
RCDT Level (LI-1003, LA020)	%	%	
VCT LEVEL (LI-115.1, LCS0115)	%	%	
* A Accumulator Level (LI-920, LI-922 or LSI0920)	%	%	
* B Accumulator Level (LI-924, LI-926, or LSI0924)	%	%	
* C Accumulator Level (LI-928, LI-930, or LSI0930)	%	%	

* If CLA isolation valve stem leakoff valves to the RCDT are shut, it is not necessary to account for CLA level changes. In this case, CLA starting and ending levels can be entered as zero. A note documenting the entry should be made on Attachment 4.

Attachment 3 - Components with Known Measured Leakage

Sheet 1 of 1

NOTE: Any Component leakage that will be treated as identified leakage must be measured at the start or during the interval of this surveillance test and must be measured each time the OST is run. Each component leak must have an active Work Order. (Ref. AR 151486)

Component	Measured Leakage (gpm)	Active Work Order Number

Attachment 4 - Certifications and Reviews

Sheet 1 of 1

This OST was performed as a:

Periodic Surveillance Requirement: ____
Postmaintenance Operability Test: ____
Redundant Subsystem Test: ____

Plant Conditions: _____ MODE: ____
OST Completed By: _____ Date: ____
Time: ____

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)

General Comments/Recommendations/Corrective Actions/Exceptions:

Pages used: _____

OST Completed with NO EXCEPTIONS/EXCEPTIONS

Reviewed By: _____ _____
Unit SCO Date

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

Revision Summary
(PRR-169477)

General

This revision is performed to add an Attachment that can list any components that have been determined to have leakage that was measured and can be treated as identified leakage in the RCS leakrate calculation per P&L 4.0.9.

Page	Section	Description of Change
All		Updated revision level.
5	4.0.9	Changed Work Request to Work Order.
7	7.0.2	Added new NOTE and step to Record the components, measured leakage, and Work Order numbers on new Attachment 3 for components that will be treated as identified leakage.
16	8.0	Updated list of Attachments with new Attachment 3.
20	Attachment 3	New Attachment to record Components with Known leakage that can be measured and treated as identified leakage. Renumbered Certifications and Reviews Attachment to Attachment 4 due to Addition of new attachment throughout procedure.

Rev. 26

Editorial Correction to correct the units on Attachment 3 from (gpm/min) to (gpm).

Facility:	Shearon-Harris	Task No.:	002001H201
Task Title:	Perform the RCS Water Inventory Balance surveillance	JPM No.:	2006 NRC SRO A2
K/A Reference:	G2.2.12 (3.4)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: Any setting with OST-1026 program on a computer.

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is at 100 percent power.
An automatic makeup to the VCT just completed.
The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.

Task Standard: RCS leakage calculated within required range

Required Materials:
- PC with OST-1026 Version 4.3 Program installed.
- If this JPM is not done in the Simulator or the Control Room then it will be necessary to provide the candidate with a printer number/designation for printing.
- Copy of Harris Plant Technical Specifications

General References: OST-1026, RCS LEAKAGE EVALUATION, Rev. 26
Technical Specification 3.4.6.2

Handouts:
- OST-1026 with Prerequisites and Steps 7.0.1 – 7.0.7 signed
- Start Data Sheet (Attached)
- End Data Sheet (Attached)

Initiating Cue:	The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION. Assume that Steam Generator Tube Leakage and Miscellaneous Identified Leakage is ZERO. All prerequisites are met and the procedure has been completed through Step 7.0.7. Begin at Step 7.0.8. For the purpose of the examination, there will be no independent verification of your data entry.
Time Critical Task:	No
Validation Time:	10 minutes

(Denote Critical Steps with a √)

Start Time _____.

Performance Step: 1	Obtain procedure.
Standard:	Reviews procedure.
Evaluator Cue:	**Provide handout for RO JPM A2.** **Inform candidate that all Prerequisites are met and that steps 7.0.1 through 7.0.7 have already been completed. Begin at Step 7.0.8.**
Comment:	
Performance Step: 2	Obtain Leak Rate data by performing one of the following steps: Collect data on Attachment 1 using ERFIS Group Display, or OSI-PI Group Trend.
Standard:	Reviews START Data Sheet.
Evaluator Cue:	**Provide "START" Data handout.** **Inform candidate that the data was collected from the ERFIS Group Display in accordance with step 7.0.8.a.**
Comment:	
Performance Step: 3	RECORD "START" DATA on Attachment 1.
Standard:	Transcribes "START" data onto Attachment 1.
Evaluator Cue:	**After the "START" data is transcribed: "30 minutes has elapsed" and then provide the "END" Data handout.**
Comment:	
Performance Step: 4	RECORD "END" DATA on Attachment 1.
Standard:	Transcribes "END" data onto Attachment 1.
Comment:	**Candidate should verify START and END Tavg within .2 °F.**

Performance Step: 5 MARK all of ATTACHMENT 2 N/A.

Standard: Lines through and marks ATTACHMENT 2 as N/A.

Comment:

Performance Step: 6 Perform the following to calculate RCS leakage using computer program OST-1026:

Verify the computer program is version 4.3.

Standard: Accesses OST-1026 computer program and verifies Version 4.3.

Comment:

Performance Step: 7 Perform the following to calculate RCS leakage using computer program OST-1026:

Enter data as prompted by the computer program.

Standard: Enters data from Attachment 1 and performs operations as prompted by the computer program.

Comment:

√ **Performance Step: 8** Perform the following to calculate RCS leakage using computer program OST-1026:

Sign the computer printout.

Standard: Prints and signs a copy of the computer printout:

- Total Leakage >10 gpm <13.5 gpm (Actual is 11.74 gpm)
- Identified Leakage >10 gpm <12.25 gpm (Actual is 11.14 gpm)
- Unidentified Leakage >.5 gpm <1 gpm (Actual is .60 gpm)

Evaluator NOTE: **NOTE: If this JPM is not done in the Simulator or the Control Room then it will be necessary to provide the candidate with a printer number/designation for printing.**

Comment:

	Performance Step: 9	Perform the following to calculate RCS leakage using computer program OST-1026: Independently verify the input data on the computer printout is correct.
	Standard:	Candidate may elect to review printout again.
	Evaluator Cue:	**As indicated in the Initiating Cue, there will be no independent verification of your data entry.**
	Comment:	
	Performance Step: 10	Perform the following to calculate RCS leakage using computer program OST-1026: Attach the computer printout to this procedure.
	Standard:	Provides printout with the procedure, when returned.
	Comment:	
√	**Performance Step: 11**	Verify calculated leak rates are within the Acceptance Criteria listed in Section 6.0.
	Standard:	Informs USCO that Acceptance Criteria 6.0.1 is exceeded - Identified Leakage >10 GPM or completes Attachment 4 (Certifications and Reviews) noting same in the "GENERAL COMMENTS" section.
	Evaluator Cue:	**If the SRO candidate has calculated that Identified Leakage is >10 gpm then state: Assume now that you are the Unit SCO and have just been handed this completed procedure.**
	Comment:	
√	**Performance Step: 12**	Evaluate Technical Specification compliance.
	Standard:	Refers to Technical Specification 3.4.6.2.d and determines Action b must be entered.
	Comment:	

Terminating Cue: **After the TSAS is identified: This JPM is complete.**

End Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC SRO A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

START DATA

SHEARON HARRIS NUCLEAR PLANT

TODAY
TIME: ZERO

TREND GROUP ASSIGNMENT SUMMARY

	GROUP NAME OST-1026 POINT ID	GROUP DESCRIPTION RCS LEAK RATE (OPS/DON=T DELETE) DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
1.	LRC0460	PRZ LVL-2	59.45	GOOD	PCNT
2.	PRC0455	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
3.	TRC0408Z	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
4.	LRC0470	PRT LEVEL	40.0	GOOD	PCNT
5.	LCS0115	VCT LEVEL	52.0	GOOD	PCNT
6.	LSI0920	ACCUM TANK A LEVEL	79.0	GOOD	PCNT
7.	LSI0920	ACCUM TANK B LEVEL	81.0	GOOD	PCNT
8.	LSI0930	ACCUM TANK C LEVEL	82.0	GOOD	PCNT

RADWASTE REPORTS RCDT LEVEL IS 50.4%

END DATA

SHEARON HARRIS NUCLEAR PLANT **TODAY**
TIME: 30 minutes later

TREND GROUP ASSIGNMENT SUMMARY

	GROUP NAME OST-1026 POINT ID	GROUP DESCRIPTION RCS LEAK RATE (OPS/DON=T DELETE) DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
1.	LRC0460	PRZ LVL-2	59.46	GOOD	PCNT
2.	PRC0455	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
3.	TRC0408Z	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
4.	LRC0470	PRT LEVEL	43.0	GOOD	PCNT
5.	LCS0115	VCT LEVEL	26.8	GOOD	PCNT
6.	LSI0920	ACCUM TANK A LEVEL	79.0	GOOD	PCNT
7.	LSI0920	ACCUM TANK B LEVEL	81.0	GOOD	PCNT
8.	LSI0930	ACCUM TANK C LEVEL	82.0	GOOD	PCNT

RADWASTE REPORTS RCDT LEVEL IS 51.5%

INITIAL CONDITIONS:

The plant is at 100 percent power.

An automatic makeup to the VCT just completed.

The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.

INITIATING CUE:

The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION. Assume that Steam Generator Tube Leakage and Miscellaneous Identified Leakage is ZERO. All prerequisites are met and the procedure has been completed through Step 7.0.7. Begin at Step 7.0.8.

For the purpose of the examination, there will be no independent verification of your data entry.

Re: SRO JPM A-2

NOTE:

Handout for SRO A2 (OST-1026) is the same as for RO A2

Reference Tech Spec attached for SRO only

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 1 gpm total reactor-to-secondary leakage through all steam generators and 150 gallons per day through any one steam generator,

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 31 gpm CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. The maximum allowable leakage of any Reactor Coolant System Pressure Isolation Valve shall be as specified in Table 3.4-1 at a pressure of 2235 ± 20 psig.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the limit specified in Table 3.4-1, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least two closed manual or deactivated automatic valves, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Test pressures less than 2235 psig but greater than 150 psig are allowed. Observed leakage shall be adjusted by multiplying the observed leakage by the square root of the quotient of 2235 divided by the test pressure.

Facility: Shearon-Harris | Task No.:

Task Title: Determine stay time and exit requirements for working in a High Radiation Area. | JPM No.: 2006 NRC JPM RO-SRO A3

K/A Reference: 2.3.1 (2.6/3.0)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: ____ | Actual Performance: X

Classroom X Simulator ____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: The unit is in Mode 5.
A primary system leak has occurred.
Several valves must be operated to isolate the leak.
The valves to be operated are located in the RAB, within an uncontaminated High Radiation Area where the general area radiation level is 160 mR/hour.
Your accumulated TEDE dose for this year is 200 mR.
HP has authorized entry under the requirements of the ROUTINE OPERATIONS ACTIVITIES RWP (00001771 02).

Task Standard: TEDE limit calculation correct.

Required Materials: Calculator

General References: AP-535, PERFORMING WORK IN RADIOLOGICAL CONTROL AREAS, Rev. 17
NGGM-PM-0002, RADIATION CONTROL AND PROTECTION MANUAL, Rev. 34
HPS-NGGC-0014, RADIATION WORK PERMITS, Rev. 3

Handouts: ROUTINE OPERATIONS ACTIVITIES RWP (00001771 02)

Initiating Cue: You have been assigned to operate the valves to isolate the leak. This is NOT considered to be an emergency action. Determine your maximum stay time before the first administrative limit requires you to exit the area.

Time Critical Task: NO

Validation Time: 6 minutes

(Denote Critical Steps with a √)

Start Time: _____.

	Performance Step: 1	Determine radiological requirements.
	Standard:	Requests or locates RWP 00001771 02.
	Evaluator Cue:	**Provide handout for NRC JPM RO-SRO A3 if the JPM is not performed at the control point.**
	Comment:	
√	**Performance Step: 2**	Determine first administrative limit.
	Standard:	Determines accumulated dose alarm (ED DOSE ALARM) for this RWP is set at 32 mrem.
	Comment:	**Accumulated dose alarm requires exiting the area. (RWP, pg. 3).**
√	**Performance Step: 3**	Calculate maximum stay time before exit is required.
	Standard:	(32 mR/160 mR)(60) = 12 minutes.
	Comment:	
	Terminating Cue:	**After stay time has been calculated: This JPM is complete.**

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM RO-SRO A3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The unit is in Mode 5.

A primary system leak has occurred.

Several valves must be operated to isolate the leak.

The valves to be operated are located in the RAB, within an uncontaminated High Radiation Area where the general area radiation level is 160 mR/hour.
Your accumulated TEDE dose for this year is 200 mR.

HP has authorized entry under the requirements of the ROUTINE OPERATIONS ACTIVITIES RWP (00001771 02).

INITIATING CUE:

You have been assigned to operate the valves to isolate the leak. This is NOT considered to be an emergency action. Determine your maximum stay time before the first administrative limit requires you to exit the area.

Handout RO #SRO JPM A3

PASSPORT - TOTAL EXPOSURE SYSTEM

RADIATION WORK PERMIT

REPORT ID : TIPH900 **RWP Number: 00001771 02** **ALARA Task**
Page : 1 **Facility : HNP** **00490854 01 01**

RWP Title : ROUTINE OPERATIONS ACTIVITIES
Type : LR Status : ACTIVE Date : 06/20/2005 14:31
Area : GENERAL FACILITY Location :

Work Begin Date: 12/15/2003 00:00 Work End Date : 12/31/2010 23:59
Extention Date : By :
Initiated Date : 06/20/2005 14:31 By : KIVETP KIVETT PER
Approved Date : 06/20/2005 14:31 By : KIVETP KIVETT PER

ALARA TASK

ALARA Task : 00490854 01 01 Status: READY TO WORK
ALARA Desc : OPS ACTIVITIES

Radiological Conditions

ED Time Alarm: 900
(in minutes)

Administrative Dose Limit: 40 (mrem)

ED DOSE ALARM: 32 (mrem) ED Dose Rate Alarm: 200 (mrem/hr)

Radiological Hazards

Radiological Hazard	|--Distance--|	|------Reading-------|	
SEE HOLD POINT INST	N/A	N/A	N/A

Radiation Protection Requirements

Dosimetry Type : S STANDARD (DRD/TLD)
Multi-Pack Type:

Type	Code	Description
SPCL	SPCL	SEE SPECIAL INSTRUCTIONS

Hold Points and Special Instructions

Nbr Hold Point Description

10 ENTRY ALLOWED TO ALL AREAS EXCEPT AREAS POSTED:
10 VERY HIGH RADIATION AREAS (VHRA)
20 AIRBORNE RADIATION AREAS (ARA),

PASSPORT - TOTAL EXPOSURE SYSTEM

RADIATION WORK PERMIT

REPORT ID : TIPH900 **RWP Number: 00001771 02** **ALARA Task**
Page : 2 **Facility : HNP** **00490854 01 01**

Hold Points and Special Instructions

```
30      HOT PARTICLE AREAS (HPA),
30      CONTAINMENT WHEN REACTOR CRITICAL
30      NO ENTRY INTO DOSE FIELDS > 1000 MREM/HR

Nbr     Special Instructions
10      ************ WORK DESCRIPTION*************
10      ROUNTINE OPERATIONS ACTIVITIES
10      ------------------------------------------------
10      .
10      1.REVIEW AREA SURVEY MAPS AND/OR CONTACT RADIATION
10      CONTROL FOR SPECIFIC WORK AREA RADIOLOGICAL
10      CONDITIONS PRIOR TO START OF WORK.
10      2.IF RADIOLOGICAL CONDITIONS ARE SIGNIFICANTLY HIGHER
10      THAN CURRENT SURVEYS OR HISTORICAL SURVEY DATA
10      THEN WORK IS NOT ALLOWED TO CONTINUE ON THIS RWP
10      WITHOUT APPROVAL FROM RC SUPERVISION.
10      3.NOTIFY RADIATION CONTROL PRIOR TO CLIMBING IN
10      THE OVERHEAD.
10      4.FOR HIGH NOISE AREAS EVALUATE THE USE OF THE
10      FOLLOWING:
10      - LED LIGHT
10      - VIBRATING DOSIMETRY
10      - TELEMETRY
10      - STAY TIMES
10      5.IF ACCUMULATED DOSE ALARM OR UNANTICIPATED DOSE
10      RATE ALARM SOUNDS, LEAVE THE AREA AND CONTACT
10      RADIATION CONTROL.
10      .
20      ********LOCKED HIGH RADIATION AREA ENTRIES*****
20      ------------------------------------------------------
20      1.PRE-JOB BRIEFING REQUIRED.
20      2.RC SUPERVISOR APPROVAL REQUIRED PRIOR TO ENTRY.
20      3.CONTINUOUS RADIATION CONTROL COVERAGE REQUIRED
20      4.WHEN PROVIDING CONTINUOUS COVERAGE, RP PERSONNEL
20      SHALL NOT ENGAGE IN ANY ACTIVITIES WHICH COULD
20      DISTRACT THEM FROM MONITORING THE WORKERS AND THE
20      WORK ENVIRONMENT.
20      .
40      **** CONTAMINATED SYSTEM BREACH (LINES > 1 INCH) ***
40      ------------------------------------------------------
40      1.CONTINUOUS RC COVERAGE REQUIRED FOR INITIAL
40      SYSTEM BREACH.
40      2.FULL PROTECTIVE CLOTHING (TYPE W) W/HOOD
40      REQUIRED FOR WET WORK, AND ADDITIONAL DRESS
40      CONTROLS MAY BE REQUIRED BASED ON RC INSTRUCTIONS.
40      3.GLOVES AND A CONTAINMENT DEVICE ARE REQUIRED AS A
40      MINIMUM IN CLEAN AREAS.
40      4.ENGINEERING CONTROLS AS PER RADIATION CONTROL.
40      5.PROVIDE PATH OR CONTAINMENT FOR SYSTEM DRAINAGE,
```

40 IF NEEDED TO CONTAIN LIQUIDS.

PASSPORT - TOTAL EXPOSURE SYSTEM

RADIATION WORK PERMIT

REPORT ID : TIPH900	**RWP Number: 00001771 02**	**ALARA Task**
Page : 3	**Facility : HNP**	**00490854 01 01**

Hold Points and Special Instructions

```
40      .
60      ***********CONTAMINATED AREA ENTRIES*************
60      ------------------------------------------------
60      1.GLOVES AND SHOECOVERS REQUIRED AS A MINIMUM
60      FOR INSPECTIONS ACTIVITIES.
60      2.FULL PROTECTIVE CLOTHING AND HOOD (TYPE D) REQUIRED
60      FOR CLIMBING IN OVERHEAD ABOVE 8 FEET AND/OR
60      CRAWLING.
60      3.FULL PROTECTIVE CLOTHING (TYPE D) REQUIRED FOR HANDS
60      ON WORK.
60      4.DOUBLE SURGEONS GLOVES MAY BE SUBSTITUTED FOR
60      RUBBER GLOVES WITH RADIATION CONTROL APPROVAL.
60      5.FULL PROTECTIVE CLOTHING (TYPE W) REQUIRED FOR WET
60      WORK AND ADDITIONAL DRESS CONTROLS MAY BE REQUIRED
60      BASED ON RC INSTRUCTIONS.
60      6.INTERMITTENT RC COVERAGE, UNLESS OTHERWISE
60      INSTRUCTED.
60      .
```

Facility:	Shearon-Harris	Task No.:	345001H602
Task Title:	Given a set of conditions, determine the EAL within the required time.	JPM No.:	2006 NRC JPM SRO A4 (Bank JPM 193 modified)
K/A Reference:	2.4.41 (4.1)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM can be conducted in any setting with the required references/materials available.**

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Per attached handout.

Task Standard: Correct EAL identified within 15 minutes.

Required Materials:
- PEP-110 EAL Flowpath
- PEP-110 Background Document

General References:
- PEP-110, Emergency Classification and Protective Action Recommendations, Rev. 13
- PEP-110 Background Document

Handouts:
- Attached set of Initial Conditions
- PEP-110 and EAL Flowpath

Initiating Cue: Review the Initial Conditions and determine the EAL. This is a time critical JPM. The clock starts when you inform me that you are ready to begin.

Time Critical Task: Yes – 15 minutes

Validation Time: 10 minutes

(Denote Critical Steps with a √)

	Performance Step: 1	Determine Initial Conditions
	Standard:	Reviews handout and informs evaluator when ready to begin.
	Evaluator Cue:	**Provide Initial Conditions attachment.**
	Comment:	**When the candidate states that he/she is ready to begin: Mark the START Time _____.**
	Performance Step: 2	Refers to PEP-110.
	Standard:	Locates EAL Flowchart.
	Evaluator Cue:	**Provide a clean copy of the EAL Flowchart.**
	Comment:	
√	**Performance Step: 3**	Utilize EAL Flowchart to determine classification.
	Standard:	Determines two FPB's breeched. Classifies as SAE (2-1-3) within 15 minutes from start time.
	Comment:	**When the candidate has declared the EAL: Mark END Time _____.**
	Terminating Cue:	**After the EAL has been declared: This JPM is complete.**

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2006 NRC JPM SRO A4 (Bank JPM 193 modified)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: See attached sheet.

INITIATING CUE: Review the Initial Conditions and determine the EAL. This is a time critical JPM. The clock starts when you inform me that you are ready to begin.

2006 NRC JPM SRO A4 Plant Conditions

The reactor was at 100% power with RHR Pump "B" cleared and tagged when the following sequence of events occurred:

- A SGTL of 12 gpm was diagnosed on SG "A".
- The operating crew began a reactor shutdown per AOP-038, Rapid Downpower.
- At 70% power, RCP "B" tripped but the reactor did not trip automatically. The RO successfully initiated a MANUAL reactor trip.
- 6.9 KV Bus 1A-SA is locked out on overcurrent.
- 6.9 KV Bus 1B-SB is powered from off-site power.
- While in EPP-4, REACTOR TRIP, SG "A" tube leakage escalated rapidly. The crew initiated a MANUAL SI.
- SG "A" PORV failed OPEN and has been isolated by closing the manual isolation valve.
- The operating crew is now performing PATH-2.
- MSIV Status:
  - MSIV "A" is OPEN
  - MSIV "B" is SHUT
  - MSIV "C" is SHUT
- Main Steamline Radiation Monitor RM-1MS-3591-SB is reading 12 mR/hr, rising slowly.

HARRIS JAN/FEB 2006 EXAM

05000400/2006301

JANUARY 23 - FEBRUARY 2, 2006
FEBRUARY 6, 2006 (WRITTEN)

DRAFT JPMs

Re: SRO JPM A3 - Side 1 and Side 2 - not added to adams