Final Submittal

BROWNS FERRY EXAM
50-259, 50-260, & 50-296/2004-301

April 23 - 30, 2004

1. Administrative Questions/JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)

Final

Admin

(Browns Ferry 2004-301)

Final Submittal

Facility: BFN Examination Level (circle one): RO / SRO	Date of Examination:_____ Operating Test Number:____
Administrative Topic See Note:	**Describe Activity to be Performed**
Conduct of Operations	Review the Primary Containment Nitrogen Consumption SI and make appropriate ITS call based on results. Readings will be given to candidates and they will perform leakage calculation and determine appropriate actions.
Conduct of Operations	Review the SRM operability SR during refueling and determine the quadrants in which fuel handling is allowed. Candidate reviews Signal/Noise ratio SR and when failure is found, determines allowed quadrants for core alterations.
Equipment Control	Candidate must determine correct actions for a Control Rod with a leaking scram inlet valve. Determine appropriate valves for isolation and the required PMT after maintenance is complete.
Radiation Control	Review a Radiological Survey map. Candidate will use a survey map and expected times for performance of a valve lineup to determine if the lineup can be completed without exceeding exposure limits.
Emergency Plan	Classify the event per the REP. Candidate will be given plant conditions detailed enough to allow the declaration of a specific REP event and perform the appropriate notifications and recommendations as required by the EPIP.
Note: All items (5 total) are required for SRO's. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **537 Admin Radiation Control**

TITLE: **REVIEW A RADIOLOGICAL SURVEY MAP**

TASK NUMBER: N/A

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	02/28/2004	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO ____ SRO ____ DATE:_____

JPM NUMBER: 537

TASK NUMBER: ADMIN

TASK TITLE: N/A

K/A NUMBER: 2.3.10 K/A RATING: RO 2.9 SRO: 3.3

****

TASK STANDARD: REVIEW A RADIOLOGICAL SURVEY MAP TO DETERMINE IF A TASK CAN BE COMPLETED WITHOUT EXCEEDING EXPOSURE LIMITS.

****

LOCATION OF PERFORMANCE: SIMULATOR __ PLANT __ CONTROL ROOM __

REFERENCES/PROCEDURES NEEDED: None

VALIDATION TIME: CONTROL ROOM: 10 min LOCAL: ____

MAX. TIME ALLOWED: ____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM ___ LOCAL ___

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES ___ NO ___

RESULTS: SATISFACTORY _____ UNSATISFACTORY ____

EXAMINER SIGNATURE:_____ DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

STUDENT HANDOUT

INITIAL CONDITIONS: You are performing the duties of the Work Control SRO and a clearance is scheduled to be placed on system 69 (RWCU) during your shift. You have two (2) AUO's available to assign this clearance for placement.

INITIATING CUES: Given the attached survey map, DETERMINE if the assigned AUO's can complete this task without exceeding the TVA administrative annual exposure limit.

The clearance requires closure and tagging of 2 valves in a high radiation area. Each valve requires both AUOs to close and tag.

Valve 69-16 will require thirty (30) minutes for both AUOs to close and tag.

Valve 69-14 will require fifteen (15) minutes for both AUOs to close and tag.

AUO A has received 750 mrem YTD.
AUO B has received 830 mrem YTD.

The map of the room has radiological survey information you must interpret to successfully complete this JPM. Determine if both the AUOs can complete the clearance activity without exceeding TVA Administrative Annual exposure limit.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

EXAMINER'S KEY

****

I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are performing the duties of the Work Control SRO and a clearance is scheduled to be placed on system 69 (RWCU) during your shift. You have two (2) AUO's available to assign this clearance for placement.

INITIATING CUES: Given the attached survey map, DETERMINE if the assigned AUO's can complete this task without exceeding the TVA administrative annual exposure limit.

The clearance requires closure and tagging of 2 valves in a high radiation area. Each valve requires both AUOs to close and tag.

Valve 69-16 will require thirty (30) minutes for both AUOs to close and tag.

Valve 69-14 will require fifteen (15) minutes for both AUOs to close and tag.

AUO A has received 750 mrem YTD.
AUO B has received 830 mrem YTD.

The map of the room has radiological survey information you must interpret to successfully complete this JPM. Determine if both the AUOs can complete the clearance activity without exceeding the TVA administrative annual exposure limit.

EXAMINER KEY

ANSWER

AUO A- This AUO will not exceed TVA Administrative Annual Exposure Limit of 1000 mrem. Total expected for this job is 210 mrem + 750 mrem = 960 mrem total for the year.

AUO B- This AUO will exceed the TVA Administrative Annual Exposure limit of 1000 mrem. Total expected for this job is 210 mrem + 830 mrem = 1040 mrem total for the year.

NOTE:
Job total of 210 mrem is total for closure of both valves is derived from the following. Valve 69-16 dose rate at valve handwheel is 60 mrem/hr and requires 30 minutes to close and tag. Valve 69-14 dose rate is 720 mrem/hr and requires 15 minutes to close and tag.

Valve 69-16
60 mrem/hr x .5 hr = 30 mrem to close

Valve 69-14
720 mrem/hr x .25 hr = 180 mrem to close

Total is 210 mrem to close both valves.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **535 Admin Conduct of Operations**

TITLE: **REVIEW 2-SR-3.3.1.2.4 Source Range Monitor System Count Rate and Signal to Noise Ratio Check (SRO ONLY)**

TASK NUMBER:

SUBMITTED BY: _____ DATE:

VALIDATED BY: _____ DATE:

APPROVED: _____ DATE:
TRAINING

PLANT CONCURRENCE: _____ DATE:
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	02/24/2004	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR: _____

RO _____ SRO _____ DATE:

JPM NUMBER: 535

JPM TITLE: REVIEW 2-SR-3.3.1.2.4 Source Range Monitor System Count Rate and Signal to Noise Ratio Check

TASK NUMBER:

TASK TITLE: Determine available Quadrants for Core Alterations.

K/A NUMBER: 2.1.12 K/A RATING: RO 2.9 SRO: 4.0

****
*
TASK STANDARD: Upon reviewing 2-SR-3.3.1.2.4, determine Core Alterations are not allowed in Quadrant B.

LOCATION OF PERFORMANCE: SIMULATOR x PLANT x CONTROL ROOM x

REFERENCES/PROCEDURES NEEDED: 2-SR-3.3.1.2.4 Source Range Monitor System Count Rate and Signal to Noise Ratio Check (filled out), Tech Specs section 3.3

VALIDATION TIME: CONTROL ROOM: 12:00 LOCAL:

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL

COMMENTS: _____

Additional comment sheets attached? YES _____ NO

RESULTS: SATISFACTORY _____ UNSATISFACTORY

EXAMINER SIGNATURE: _____ DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

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INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. Unit 2 is in mode 5 with refueling scheduled to begin this shift. The Board Unit Operator has completed the required performance of 2-SR-3.3.1.2.4 and given to you for review.

INITIATING CUES: Review this SR and approve if appropriate. Determine if Core Alterations can commence and explain your answer.

****

Performance Step: Critical X Not Critical

Review the SR.

Standard:

Reviews SR and determines that step 7.6.9 and 7.14 do not meet Acceptance Criteria. (Critical).

SAT UNSAT N/A COMMENTS:

****
****

Performance Step: Critical X Not Critical

Reference Tech Specs section 3.3 and determines that core alterations are not allowed in Quadrant B.

Standard:

Candidate refers to Tech Specs section 3.3.1.2 and determines that Core Alterations must be stopped in Quadrant B immediately. Candidate may determine that core alterations must be suspended in all quadrants. (Critical)

SAT UNSAT N/A COMMENTS:

SR 3.3.1.2.2----------NOTES---------- 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. ---------- Verify an OPERABLE SRM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	12 hours

E. One or more required SRMs inoperable in MODE 5.	E.1	Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	AND		
	E.2	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

Student Handout

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

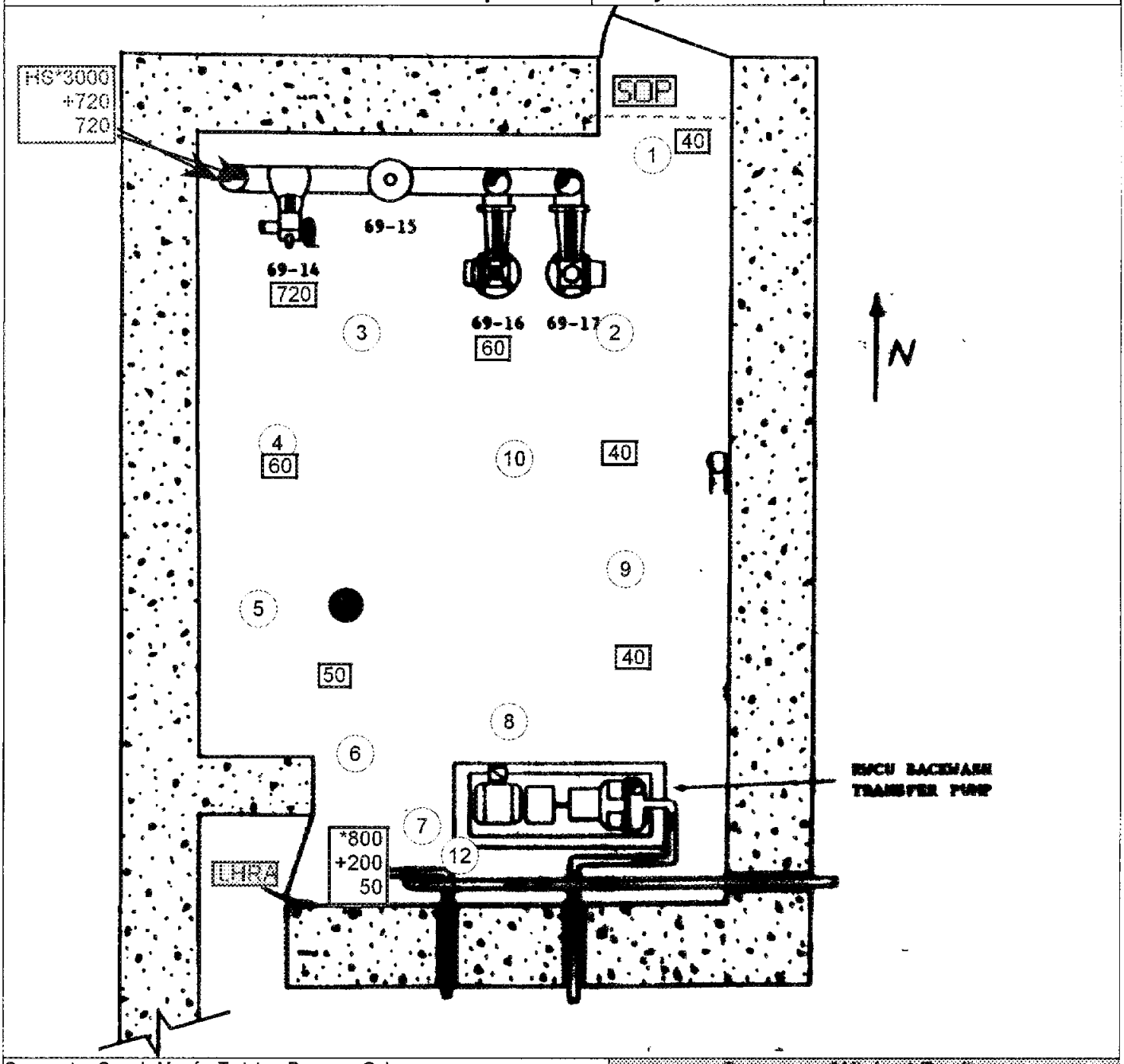
****
*

INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. Unit 2 is in mode 5 with refueling scheduled to begin this shift. The Board Unit Operator has completed the required performance of 2-SR-3.3.1.2.4 and given to you for review.

INITIATING CUES: Review this SR and approve if appropriate. Determine if Core Alterations can commence and explain your answer.

Browns Ferry Radiological Survey

M0142.tif - Unit 1 RXB 593' RWCU Transfer Pump Room	Survey # 032404-22	Date/Time: 3/24/2004 17:12



Comments: Sample Map for Training Purposes Only.

Summary of Highest Readings

Smears	Air Samples & Wipes
2) 4000 DPM/100 cm2 β/γ	
3) 3000 DPM/100 cm2 β/γ	
12) 2000 DPM/100 cm2 β/γ	
10) <1000 DPM/100 cm2 β/γ	
9) <1000 DPM/100 cm2 β/γ	
8) <1000 DPM/100 cm2 β/γ	
7) <1000 DPM/100 cm2 β/γ	
6) <1000 DPM/100 cm2 β/γ	
5) <1000 DPM/100 cm2 β/γ	
4) <1000 DPM/100 cm2 β/γ	
1) <1000 DPM/100 cm2 β/γ	

Symbol Legend (for example only)

Dose Rate
*150 Contact Reading
+ 75 30 cm Reading
20 General Area

HS-50 Hot Spot
RCA Posting
Drip Bag
15 Smear 15 Air Sample Rad 15 Wipe

Type: Job Coverage
RWP: 03111070
Reactor Power = 0%

Beta Correction Factor (BCF) = 5.0

Surveyor: Keller, Joe E.

SURVEY NOT APPROVED

Survey printed on: 3/24/2004 at: 17:14

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SURVEILLANCE REQUIREMENT

2-SR-3.3.1.2.4

SOURCE RANGE MONITOR SYSTEM COUNT RATE AND SIGNAL TO NOISE RATIO CHECK

REVISION 6

QUALITY RELATED

PREPARED BY: TELISSA KEY EXT.2512

RESPONSIBLE ORGANIZATION: OPS-RE, OPERATIONS-REACTOR ENGR

APPROVED BY: MIKE KECK

EFFECTIVE DATE: 12/17/2002

LEVEL OF USE: **CONTINUOUS USE**

PAGES AFFECTED: 4

REVISION DESCRIPTION: IC-07

Incorporated requirements from 0-GOI-100-3C into the frequency section as requirements to perform this SR. These steps ensure that the Surveillance Requirement is performed at least 8 hours prior to fuel movement initialization or after a 8 hour or more delay.

Repagination.

1.0 INTRODUCTION

1.1 Purpose

This procedure is performed to demonstrate the operability of the Source Range Monitor System during MODES 2, 3, 4, and 5 in conformance with the requirements specified in Technical Specifications 3.3.1.2.4 and 3.3.1.2.2.

1.2 Scope

This procedure verifies the operability of the Source Range Monitoring System during core alterations by performing a neutron flux response check of each Source Range Monitor (SRM) or Fuel Loading Chamber (FLC). This procedure also verifies the operability of the SRM system by performing a signal to noise and count rate check with each SRM. The performance of SRM functional test 2-SR-3.3.1.2.5&6, prior to the start of initial core alterations in conjunction with this procedure fully implements the requirements of Technical Specifications 3.3.1.2.4.

The count rate check of each SRM (FLC) consists of verifying the count rate is greater than or equal to 3 counts per second. This requirement does not have to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.

The signal to noise ratio check of each SRM consists of either 1) retracting and reinserting the SRM and comparing the count rate with the SRM retracted to the count rate with the SRM inserted or 2) disconnecting the high voltage from the SRM drawer and comparing the count rate with the count rate when the high voltage is connected.

During core alterations, per Technical Specification 3.3.1.2.2, it must be verified that an operable SRM is located in 1) the fueled region, 2) the core quadrant where core alterations are being performed, when the associated SRM is included in the fueled region, and 3) a core quadrant adjacent to where core alterations are being performed, when the associated SRM is included in the fueled region.

In MODE 5, during a spiral offload or reload, an SRM outside the fueled region will no longer be required to be OPERABLE, since it is not capable of monitoring neutron flux in the fueled region of the core. Thus, CORE ALTERATIONS are allowed in a quadrant with no OPERABLE SRM in an adjacent quadrant provided the requirement that the bundles being spiral reloaded or spiral offloaded are all in a single fueled region containing at least one OPERABLE SRM is met. Spiral reloading and offloading encompass reloading and offloading a cell on the edge of a continuous fueled region (the cell can be reloaded or offloaded in any sequence).

When core alterations are not taking place, once per 24 hour count rate and signal to noise checks will be required until the count rate has diminished below 3 counts per second with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.

1.3 Frequency

NOTE:

The Shift Manager (SM) may perform a count rate and signal to noise ratio check by this procedure at any time. The following are minimum frequency requirements from Technical Specifications and plant approved instructions.

	Frequency	Surveillance Requirement
a.	Once per 24 hours while required to be operable when not performing core alterations (Not required with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant).	Count rate and signal to noise ratio. (T.S. - 3.3.1.2.4)
b.	Once per 12 hours while required to be operable when performing core alterations.	Count rate and signal to noise ratio. (T.S. - 3.3.1.2.4)
c.	Once per 12 hours while required to be operable when performing core alterations.	Operable SRM detector location. (T.S. - 3.3.1.2.2)
d.	Within 8 hours prior to beginning initial core alterations in which SRM/FLC operability is required.	N/A
e.	Immediately prior to resumption of fuel loading/unloading after a greater than 8 hour delay.	N/A

2.0 REFERENCES

2.1 Technical Specifications

Section 3.3.1.2, SRM Instrumentation

2.2 Final Safety Analysis Report

Section 7.5, Neutron Monitoring System.

Section 13.9, Refueling Operations.

2.3 Plant Instructions

0-GOI-100-3, Refueling Operations.

2-OI-92, Source Range Monitors Operating Instructions.

2-SR-3.3.1.2.5&6, Instrumentation that Initiates Rod Block/Scrams Source Range Monitor (SRM) Functional Test with Reactor Mode Switch Not in Run Mode.

2.3 Plant Instructions (cont.)

SII-2-XX-92-095, Fuel Loading Chamber Instruction.

2.4 Other

Memo from Dale Porter to Greg Pierce, "Alternate Method for SRM Surveillance for Browns Ferry Nuclear Plant", dated November 16, 1995, (RIMS W79 951116-001).

3.0 PRECAUTIONS AND LIMITATIONS

3.1 To prevent SRM detector drive damage, the CRD service platform should be locked in the stored position with the key removed to allow free movement of the SRMs.

3.2 The time required to drive a detector from full out to full in is approximately 3 minutes.

3.3 The Response Check Neutron Source may be moved per this procedure if it is needed to test SRMs.

3.4 If an FLC is moved to a new location, the FLC count rate and signal to noise ratio check may be performed as the chamber is being lowered into the neutron field in its new location.

3.5 While an SRM or FLC is bypassed for this test, it shall be considered inoperable.

3.6 This test can be performed during core alterations only with the Unit Supervisor's permission and under the supervision and coordination of the Refuel Floor SRO. The Refuel Floor SRO will ensure that the requirements for SRM operability per Technical Specifications and 0-GOI-100-3 are satisfied or core alterations suspended.

Date 4-26-04

4.0 PREREQUISITES — INITIALS

4.1 This copy of this Surveillance Procedure is verified to be the most current revision including all urgent changes. R

4.2 Prior to the start of core alterations, 2-SR-3.3.1.2.5&6 is verified to be within 7 day periodicity. Otherwise, **N/A**. R

4.3 If used, FLCs are connected to normal SRM circuits. Otherwise, **N/A**. N/A

4.4 Qualified personnel as listed below are required to perform this Surveillance Procedure.

UO 1 — 1 Refuel Floor SRO (**N/A** unless this SR performed in conjunction with core alterations)

2 Instrument Maintenance Technicians (**N/A** if testing is performed by withdrawing SRMs) R

5.0 SPECIAL TOOLS AND EQUIPMENT

5.1 Portable Neutron Source to change neutron flux (**N/A** if fuel has been loaded around each detector). N/A

5.2 Temporary short for BNC cable (**N/A** if testing is performed by withdrawing SRMs) N/A

6.0 ACCEPTANCE CRITERIA

6.1 Responses which fail to meet the acceptance criteria as stated herein shall constitute unsatisfactory surveillance procedure results and require immediate notification of the Shift Manager and Unit Supervisor at the time of failure.

6.1.1 The minimum signal to noise ratio required for SRM (or FLC) operability to be demonstrated is 3:1.

6.1.2 An SRM (or FLC) shall have a minimum of 3 cps when more than 4 fuel assemblies are in the associated core quadrant.

6.1.3 An operable SRM detector must be located in 1) the fueled region, 2) the core quadrant where core alterations are being performed when the associated SRM is included in the fueled region, 3) and a core quadrant adjacent to where core alterations are being performed, when the associated SRM is included in the fueled region.

6.2 Steps which determine the above criteria are designated by (AC) next to the initial blank.

Date 4-26-04

7.0 PROCEDURE STEPS INITIALS

7.1 **CHECK** that the following initial conditions are satisfied:

7.1.1 Precautions and Limitations in Section 3.0 have been reviewed. R

7.1.2 Prerequisites listed in Section 4.0 are met. R

7.2 **OBTAIN** permission from the Unit Supervisor (US) to perform this Surveillance Procedure. TB
US

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

NOTE:

The Unit Supervisor should initial Step 7.2.1 or 7.2.2 and **N/A** the other.

7.2.1 Core alterations (except for FLC or portable neutron source movement) shall be suspended during performance of this test. TB US

7.2.2 This test can be performed during core alterations while under the supervision of the Refuel Floor SRO. N/A US

7.2.3 **REQUEST** the Refuel Floor SRO to suspend core alterations **OR** supervise the test performance as directed by the Unit Supervisor. R

7.3 [NRC/C] **NOTIFY** Unit Operator (UO) that this test is commencing. [NRC/C RPT 82-16, LER 259/8232] R

7.4 **RECORD** the date and time started, reason for test, and plant condition on Attachment 1, Surveillance Procedure Review Form. R

NOTE:

Sections 7.5, 7.6, 7.7 and 7.8 may be performed in any order and utilize moving the detector position or neutron source to conduct the check.

NOTE:

If disconnecting the high voltage power supply from the SRM drawer to conduct the check, **N/A** steps 7.5 - 7.8 and continue with step 7.9.

7.5 SRM A Count Rate and Signal to Noise Ratio Check

7.5.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM (or FLC) A. (**N/A** if core alterations have been suspended.) N/A

7.5.2 **BYPASS** SRM (or FLC) A. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.5.3 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to PLACE portable neutron source adjacent to SRM (or FLC) A. R

NOTE:

It is not necessary to fully retract the SRMs if the required change in SRM count rate (< 25% of original count rate) is observed before the SRM is fully retracted.

7.5.4 **RETRACT** SRM A (or withdraw FLC A). R

NOTE:

If SRM is indicator is downscale, record the lowest scale reading of 0.1 cps.

NOTE:

If response check is being performed during a change in FLC location, record initial count rate while FLC is out of the neutron field Just prior to lowering it into its new location.

7.5.5 **RECORD** SRM (or FLC) A count rate from indicator (Panel 2-9-5) 20 cps. R

NOTE:

Reinserting the SRM may cause an SRM period alarm.

7.5.6 **REINSERT** SRM A fully (or MOVE FLC A into desired location). R

7.5.7 **RECORD** SRM (or FLC) A count rate from indicator (Panel 2-9-5) 90 cps. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.5.8 **COMPUTE** the signal to noise ratio as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.5.7 - Reading in Step 7.5.5}}{\text{Reading in Step 7.5.5}}$$

$$\frac{(\ 90\ ) - (\ 20\ )}{(\ 20\ )}$$

The signal to noise ratio is 3.5. R

7.5.9 **VERIFY** signal to noise ratio is greater than 3. R (AC)

7.5.10 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to REMOVE neutron source from Step 7.5.3 and **PLACE** it adjacent to SRM (or FLC) B or **PLACE** as directed by the Reactor Engineer. R

7.5.11 **UNBYPASS** SRM (or FLC) A. R

7.5.12 **VERIFY** that SRM (or FLC) A has ≥ 3 cps, OR **VERIFY** that less than or equal to 4 fuel assemblies are adjacent to the SRM and no other fuel assemblies in the associated core quadrant. R (AC)

7.5.13 **NOTIFY** the Refuel Floor SRO that SRM (or FLC) A has been unbypassed. (**N/A** if core alterations have been suspended.) N/A

7.6 SRM B Count Rate and Signal to Noise Ratio Check

7.6.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM (or FLC) B. (**N/A** if core alterations have been suspended.) N/A

7.6.2 **BYPASS** SRM (or FLC) B. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.6.3 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to PLACE portable neutron source adjacent to SRM (or FLC) B. R

NOTE:

It is not necessary to fully retract the SRMs if the required change in SRM count rate (< 25% of original count rate) is observed before the SRM is fully retracted.

7.6.4 **RETRACT** SRM B (or withdraw FLC B). R

NOTE:

If response check is being performed during a change in FLC location, record initial count rate while FLC is out of the neutron field just prior to lowering it into its new location.

7.6.5 **RECORD** SRM (or FLC) B count rate from indicator (Panel 2-9-5) 16 cps. R

NOTE:

Reinserting the SRM may cause an SRM period alarm.

7.6.6 **REINSERT** SRM B fully (or MOVE FLC B into desired location). R

7.6.7 **RECORD** SRM (or FLC) B count rate from indicator (Panel 2-9-5) 60 cps. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.6.8 **COMPUTE** the signal to noise ratio as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.6.7 - Reading in Step 7.6.5}}{\text{Reading in Step 7.6.5}}$$

$$\frac{(\ 60\ ) - (\ 16\ )}{(\ 16\ )}$$

The signal to noise ratio is 2.75. R

7.6.9 **VERIFY** signal to noise ratio is greater than 3. R (AC)

7.6.10 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to REMOVE neutron source from Step 7.7.3 and **PLACE** it adjacent to SRM (or FLC) C or **PLACE** as directed by the Reactor Engineer. R

7.6.11 **UNBYPASS** SRM (or FLC) B. R

7.6.12 **VERIFY** that SRM (or FLC) B has ≥ 3 cps, OR **VERIFY** that less than or equal to 4 fuel assemblies are adjacent to the SRM and no other fuel assemblies in the associated core quadrant. R (AC)

7.6.13 **NOTIFY** the Refuel Floor SRO that SRM (or FLC) B has been unbypassed. (**N/A** if core alterations have been suspended.) N/A

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.7 SRM C Response Check and Signal to Noise Ratio

7.7.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM (or FLC) C. (**N/A** if core alterations have been suspended.) N/A

7.7.2 **BYPASS** SRM (or FLC) C. R

7.7.3 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to PLACE portable neutron source adjacent to SRM (or FLC) C. R

NOTE:

It is not necessary to fully retract the SRMs if the required change in SRM count rate (< 25% of original count rate) is observed before the SRM is fully retracted.

7.7.4 **RETRACT** SRM C (or withdraw FLC C). R

NOTE:

If response check is being performed during a change in FLC location, record initial count rate while FLC is out of the neutron field just prior to lowering it into its new location.

7.7.5 **RECORD** SRM (or FLC) C count rate from indicator (Panel 2-9-5) 22 cps. R

NOTE:

Reinserting the SRM may cause an SRM period alarm.

7.7.6 **REINSERT** SRM C fully (or MOVE FLC C into desired location). R

7.7.7 **RECORD** SRM (or FLC) C count rate from indicator (Panel 2-9-5) 98 cps. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.7.8 **COMPUTE** the signal to noise ratio as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.7.7 - Reading in Step 7.7.5}}{\text{Reading in Step 7.7.5}}$$

$$\frac{(98)-(22)}{(22)}$$

The signal to noise ratio is 3.45. R

7.7.9 **VERIFY** signal to noise ratio is greater than 3. R (AC)

7.7.10 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to REMOVE neutron source from Step 7.7.3 and **PLACE** it adjacent to SRM (or FLC) D or **PLACE** as directed by the Reactor Engineer. R

7.7.11 **UNBYPASS** SRM (or FLC) C. R

7.7.12 **VERIFY** that SRM (or FLC) C has ≥ 3 cps, OR **VERIFY** that less than or equal to 4 fuel assemblies are adjacent to the SRM and no other fuel assemblies in the associated core quadrant. R (AC)

7.7.13 **NOTIFY** the Refuel Floor SRO that SRM (or FLC) C has been unbypassed. (**N/A** if core alterations have been suspended.) N/A

7.8 SRM D Response Check and Signal to Noise Ratio

7.8.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM (or FLC) D. (**N/A** if core alterations have been suspended.) N/A

7.8.2 **BYPASS** SRM (or FLC) D. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.8.3 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to PLACE portable neutron source adjacent to SRM (or FLC) D. R

NOTE:

It is not necessary to fully retract the SRMs if the required change in SRM count rate (< 25% of original count rate) is observed before the SRM is fully retracted.

7.8.4 **RETRACT** SRM D (or withdraw FLC D). R

NOTE:

If response check is being performed during a change in FLC location, record initial count rate while FLC is out of the neutron field just prior to lowering it into its new location.

7.8.5 **RECORD** SRM (or FLC) D count rate from indicator (Panel 2-9-5) 15 cps. R

NOTE:

Reinserting the SRM may cause an SRM period alarm.

7.8.6 **REINSERT** SRM D fully (or MOVE FLC D into desired location). R

7.8.7 **RECORD** SRM (or FLC) D count rate from indicator (Panel 2-9-5) 105 cps. R

7.8.8 **COMPUTE** the signal to noise ratio as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.8.7 - Reading in Step 7.8.5}}{\text{Reading in Step 7.8.5}}$$

$$\frac{(105) - (15)}{(15)}$$

The signal to noise ratio is 6. R

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.8.9 **VERIFY** signal to noise ratio is greater than 3. R (AC)

7.8.10 **IF** applicable, **THEN**

REQUEST the Refueling Floor SRO to REMOVE neutron source from Step 7.8.3 and **PLACE** as directed by the Reactor Engineer. R

7.8.11 **UNBYPASS** SRM (or FLC) D. R

7.8.12 **VERIFY** that SRM (or FLC) D has ≥ 3 cps, OR **VERIFY** that less than or equal to 4 fuel assemblies are adjacent to the SRM and no other fuel assemblies in the associated core quadrant. R (AC)

7.8.13 **NOTIFY** the Refuel Floor SRO that SRM (or FLC) D has been unbypassed. (**N/A** if core alterations have been suspended.) N/A

NOTE:

Sections 7.9, 7.10, 7.11 and 7.12 may be performed in any order and utilize the removal of the high voltage power supply from the SRM drawer to conduct the check.

NOTE:

If detector repositioning is used to conduct the check, **N/A** steps 7.9 - 7.12.

7.9 SRM A Response Check and Signal to Noise Ratio

7.9.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM A. (**N/A** if core alterations have been suspended.) N/A

7.9.2 **REQUEST** UO place SRM A in BYPASS at panel 2-9-5.

7.9.3 **DISCONNECT** the high voltage cable from J7 at the back of the SRM A drawer at panel 2-9-12 .

IM

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) INITIALS

7.9.4 **PLACE** a temporary short between the center conductor and the shield of the disconnected high voltage cable to discharge the residual energy stored in the high voltage cable . N/A IM

NOTE:

If SRM A indicator is downscale, record the lowest scale reading of 0.1 cps. It may take several minutes for the SRM count rate to stabilize.

7.9.5 **RECORD** SRM A count rate from indicator (Panel 2-9-12) _____ cps. IM

7.9.6 **RECONNECT** the high voltage cable to J7 at the back of the SRM A drawer at panel 2-9-12. IM/2nd

7.9.7 **RECORD** SRM A count rate from indicator on Panel 2-9-12 after it is stable _____ cps. IM

7.9.8 **COMPUTE** the signal to noise ratio for SRM A as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.9.7 - Reading in Step 7.9.5}}{\text{Reading in Step 7.9.5}}$$

$$\frac{(\quad) - (\quad)}{(\quad)}$$

The signal to noise ratio for SRM A is _____. IM

7.9.9 **VERIFY** signal to noise ratio for SRM A is greater than 3. (AC) IM

7.9.10 **RESET** alarms on SRM A. IM

7.9.11 **REQUEST** UO REMOVE SRM A from BYPASS at panel 2-9-5.

Date 4-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

7.9.12 **VERIFY** that SRM A has ≥ 3 cps, OR **VERIFY** that less than 4 fuel assemblies are adjacent to the SRM and on other assemblies are in the associated core quadrant.

N/A (AC)

7.9.13 **NOTIFY** the Refuel Floor SRO that SRM A has been unbypassed. (**N/A** if core alterations have been suspended.)

7.10 SRM B Response Check and Signal to Noise Ratio

7.10.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM B. (**N/A** if core alterations have been suspended.)

7.10.2 **REQUEST** UO place SRM B in BYPASS at panel 2-9-5.

7.10.3 **DISCONNECT** the high voltage cable from J7 at the back of the SRM B drawer at panel 2-9-12 .

IM

7.10.4 **PLACE** a temporary short between the center conductor and the shield of the disconnected high voltage cable to discharge the residual energy stored in the high voltage cable .

IM

NOTE:

If SRM B indicator is downscale, record the lowest scale reading of 0.1 cps. It may take several minutes for the SRM count rate to stabilize.

7.10.5 **RECORD** SRM B count rate from indicator (Panel 2-9-12) _____ cps.

IM

7.10.6 **RECONNECT** the high voltage cable to J7 at the back of the SRM B drawer at panel 2-9-12.

IM/2nd

Date 4-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

7.10.7 **RECORD** SRM B count rate from indicator on Panel 2-9-12 after it is stable _____ cps.

N/A
IM

7.10.8 **COMPUTE** the signal to noise ratio for SRM B as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.10.7 - Reading in Step 7.10.5}}{\text{Reading in Step 7.10.5}}$$

$$\frac{(\quad) - (\quad)}{(\quad)}$$

The signal to noise ratio for SRM B is _____.

IM

7.10.9 **VERIFY** signal to noise ratio for SRM B is greater than 3.

(AC)
IM

7.10.10 **RESET** alarms on SRM B.

IM

7.10.11 **REQUEST** UO **REMOVE** SRM B from BYPASS at panel 2-9-5.

7.10.12 **VERIFY** that SRM B has ≥ 3 cps, OR **VERIFY** that less than 4 fuel assemblies are adjacent to the SRM and on other assemblies are in the associated core quadrant.

(AC)

7.10.13 **NOTIFY** the Refuel Floor SRO that SRM B has been unbypassed. (**N/A** if core alterations have been suspended.)

7.11 SRM C Response Check and Signal to Noise Ratio

7.11.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM C. (**N/A** if core alterations have been suspended.)

7.11.2 **REQUEST** UO place SRM C in BYPASS at panel 2-9-5.

✓

Date 1-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

7.11.3 **DISCONNECT** the high voltage cable from J7 at the back of the SRM C drawer at panel 2-9-12 . N/A IM

7.11.4 **PLACE** a temporary short between the center conductor and the shield of the disconnected high voltage cable to discharge the residual energy stored in the high voltage cable . IM

NOTE:

If SRM C indicator is downscale, record the lowest scale reading of 0.1 cps. It may take several minutes for the SRM count rate to stabilize.

7.11.5 **RECORD** SRM C count rate from indicator (Panel 2-9-12) _____ cps. IM

7.11.6 **RECONNECT** the high voltage cable to J7 at the back of the SRM C drawer at panel 2-9-12. / IM/2nd

7.11.7 **RECORD** SRM C count rate from indicator on Panel 2-9-12 after it is stable _____ cps. IM

7.11.8 **COMPUTE** the signal to noise ratio for SRM C as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.11.7 - Reading in Step 7.11.5}}{\text{Reading in Step 7.11.5}}$$

$$\frac{(\quad) - (\quad)}{(\quad)}$$

The signal to noise ratio for SRM C is _____. IM

7.11.9 **VERIFY** signal to noise ratio for SRM C is greater than 3. (AC) IM

7.11.10 **RESET** alarms on SRM C. IM

7.11.11 **REQUEST** UO REMOVE SRM C from BYPASS at panel 2-9-5. ✓

Date 4-26-04

7.0 PROCEDURE STEPS (cont.) — INITIALS

7.11.12 **VERIFY** that SRM C has ≥ 3 cps, OR **VERIFY** that less than 4 fuel assemblies are adjacent to the SRM and on other assemblies are in the associated core quadrant. — N/A (AC)

7.11.13 **NOTIFY** the Refuel Floor SRO that SRM C has been unbypassed. (**N/A** if core alterations have been suspended.)

7.12 SRM D Response Check and Signal to Noise Ratio

7.12.1 **OBTAIN** permission from the Refuel Floor SRO to bypass SRM D. (**N/A** if core alterations have been suspended.)

7.12.2 **REQUEST** UO place SRM D in BYPASS at panel 2-9-5.

7.12.3 **DISCONNECT** the high voltage cable from J7 at the back of the SRM D drawer at panel 2-9-12 . — IM

7.12.4 **PLACE** a temporary short between the center conductor and the shield of the disconnected high voltage cable to discharge the residual energy stored in the high voltage cable . — IM

NOTE:

If SRM D indicator is downscale, record the lowest scale reading of 0.1 cps. It may take several minutes for the SRM count rate to stabilize.

7.12.5 **RECORD** SRM D count rate from indicator (Panel 2-9-12) _____ cps. — IM

7.12.6 **RECONNECT** the high voltage cable to J7 at the back of the SRM D drawer at panel 2-9-12. — / IM/2nd

7.12.7 **RECORD** SRM D count rate from indicator on Panel 2-9-12 after it is stable _____ cps. — IM

Date 4-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

7.12.8 **COMPUTE** the signal to noise ratio for SRM D as follows and **RECORD** results below:

$$\frac{\text{Reading in Step 7.12.7 - Reading in Step 7.12.5}}{\text{Reading in Step 7.12.5}}$$

$$\frac{(\quad) - (\quad)}{(\quad)}$$

The signal to noise ratio for SRM D is _____.

N/A IM

7.12.9 **VERIFY** signal to noise ratio for SRM D is greater than 3.

IM (AC)

7.12.10 **RESET** alarms on SRM D.

IM

7.12.11 **REQUEST** UO REMOVE SRM D from BYPASS at panel 2-9-5.

7.12.12 **VERIFY** that SRM D has ≥ 3 cps; OR **VERIFY** that less than 4 fuel assemblies are adjacent to the SRM and on other assemblies are in the associated core quadrant.

(AC)

7.12.13 **NOTIFY** the Refuel Floor SRO that SRM D has been unbypassed. (**N/A** if core alterations have been suspended.)

✓

Date 4-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

NOTE: The following section must be performed every 12 hours while core alterations are in progress and within 12 hours prior to the beginning of core alterations. One SRM may be used to satisfy more than one of the following conditions.

7.13 **COMPLETE** the following table by answering yes or no for each question for each core quadrant (Reference the previous procedure steps just completed).

Quad A	Quad B	Quad C	Quad D	
yes	yes	yes	yes	Was count rate >= 3 cps?
yes	no	yes	yes	Was signal-to-noise ratio >= 3:1?
yes	yes	yes	yes	Is the quadrant a fueled region?
yes	yes	yes	yes	Are core alterations being performed or expected within the next 12 hours?

R

NOTE: SRM Operability is established when the count rate >= 3 cps with a signal-to-noise ratio >= 3:1 (not required when <= four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant) Step 7.14 may be N/A'ed for each core quad where no core alterations are being performed and none expected within the next 12 hours.

7.14 **VERIFY** an operable SRM detector is located in each core quadrant in which core alterations are being performed (or planned within 12 hours) **AND** an adjacent core quadrant. Check mark the appropriate operable SRMs for each core Quad.

Quad A, then SRM A (✓) and either SRM B ( ) or SRM D (✓). R (AC)

Quad B, then SRM B (✓) and either SRM A (✓) or SRM C ( ). R (AC)

Quad C, then SRM C (✓) and either SRM B ( ) or SRM D (✓). R (AC)

Quad D, then SRM D (✓) and either SRM A ( ) or SRM C (✓). R (AC)

Date 4-26-04

7.0 PROCEDURE STEPS (cont.)

INITIALS

7.15 **COMPLETE** Attachment 1, Surveillance Procedure Review Form up to Unit Supervisor Review. R

7.16 **NOTIFY** Unit Operator of Surveillance Procedure completion. R

7.17 **NOTIFY** the Unit Supervisor that this Surveillance Procedure is complete. R

8.0 ILLUSTRATIONS/ATTACHMENTS

Attachment 1 - Surveillance Procedure Review Form

END OF TEXT

ATTACHMENT 1
(Page 1 of 1)

SURVEILLANCE PROCEDURE REVIEW FORM

REASON FOR TEST:
__✓__ Scheduled Surveillance
_____ System Inoperable (Explain in Remarks)
_____ Maintenance (WR/WO No._____)
_____ Other (Explain in Remarks)

DATE/TIME STARTED 4/26/04/1000
DATE/TIME COMPLETED 4/26/04/1030
PLANT CONDITIONS Shutdown

PRE-TEST REMARKS:_____

PERFORMED BY:

Initials	Name (Print)	Name (Signature)
R	Ralph Rogers (Test Dir/Lead Perf)	Ralph Rogers (Test Dir/Lead Perf)

Delays or Problems (If yes, explain in POST-TEST REMARKS)? ____Yes ✓No
Acceptance Criteria Satisfied? ✓Yes ____No
If the above answer is no, the Unit Supervisor shall determine if an LCO exists.
LCO ____Yes ____No

UNIT SUPERVISOR_____ Date_____

==========

INDEPENDENT QUALIFIED REVIEWER_____ Date_____

==========

SCHEDULING COORDINATOR_____ Date_____

==========

POST-TEST REMARKS:_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: 539 **Admin Equipment Control**

TITLE: **Determine the appropriate actions when requested to allow maintenance on Scram Inlet Valve for a fully withdrawn control rod in Mode 1. (SRO ONLY)**

TASK NUMBER: N/A

SUBMITTED BY: _____ DATE:

VALIDATED BY: _____ DATE:

APPROVED: _____ DATE:
TRAINING

PLANT CONCURRENCE: _____ DATE:
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	03/29/2004	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR: _____

RO _____ SRO _____ DATE:

JPM NUMBER: 539x 2.2

JPM TITLE: Determine the appropriate actions when requested to allow maintenance on Scram Inlet Valve for a fully withdrawn control rod in Mode 1.
(SRO ONLY)

K/A NUMBER: 2.2.13 K/A RATING: RO 3.6 SRO: 3.8

****
*
TASK STANDARD: SRO determines TS Actions to insert and disarm control rod. Also, determines appropriate boundary isolation valves and order of isolation per OI-85.

LOCATION OF PERFORMANCE: SIMULATOR x PLANT x CONTROL ROOM x

REFERENCES/PROCEDURES NEEDED: Tech Specs Section 3.1.3
Prepared Clearance for HCU
2-47E820-2 drawing
2-OI-85 Rev 89

VALIDATION TIME: CONTROL ROOM: 40:00 LOCAL:

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL

COMMENTS: _____

Additional comment sheets attached? YES _____ NO

RESULTS: SATISFACTORY _____ UNSATISFACTORY

EXAMINER SIGNATURE: _____ DATE: _____
EXAMINER

Provide initial conditions:

Unit 2 is in Mode 1 at 95% power at end of core life. Coastdown is in progress for Refueling Outage, planned in 3 weeks. ALL CONTROL RODs are fully WITHDRAWN. The scram inlet valve for control rod 58-43 is determined to be leaking through, although not enough to cause the control rod to drift in. Maintenance has determined that replacement of the valve seat and tensioning spring is required. The maintenance activity will fully disassemble the valve, which will breach the system. Double isolation is not required, exception approved by Plant Manager.

Examiners Note, DO NOT DISCLOSE THE FOLLOWING STATEMENT TO STUDENT: The Scram Inlet valve is an Air/Spring Operated Valve. Air pressure from the scram air header is provided to the valve diaphragm to hold the valve closed during normal operation. When a scram occurs, air is vented off the diaphragm to allow the spring to open the valve which routes water to the under-piston area of the CRD causing the control rod to insert. Spring tensioning and valve seating is an integral part of scram timing, which will require scram time testing on RTS. The HCU routes water to and from the CRD unit both on the inlet and outlet side of the drive. 2-OI-85 provides guidance on order of isolation of the HCU, this is to prevent damage to the drive and piping should a scram occur during isolation. The maintenance activity will make the control rod inoperable, which will require the control rod to be fully inserted and disarmed by TS 3.1.3. Disarming may be specified on initial positioning of the valve or during clearance placement

Provide required references:
2-47E820-2
2-OI-85
TS 3.6.1.3 LCO and Required Actions, no bases
Clearance component sheet without sequencing

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

STUDENT HANDOUT
(Page 1 of 2)

****
*

I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****
*

INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. Unit 2 is in Mode 1 at 95% Power, EOL, coastdown is in progress for a Refueling Outage schedule to start in 3 weeks. Maintenance has determined that the Scram Inlet valve for Control Rod 58-43 is leaking through, although not enough to cause the rod to drift, does require maintenance to replace the valve seat and tensioning spring. The maintenance foreman has requested a mechanical clearance to breach the system at the scram inlet valve. In addition, the mechanical planner has requested you review the TS SRs for the Control Rod Operability to determine if Scram Time Testing will be required to return the control rod to service once maintenance is complete.

STUDENT HANDOUT
(Page 2 of 2)

INITIATING CUES: As the Unit 2 Unit Supervisor, utilize initial condition on previous page and...

1. Determine and specify any actions necessary to remove the HCU from service.

2. Review the archived clearance for adequacy of safe boundary isolation.

3. Determine and specify the sequencing on the clearance placement.

4. Determine if Scram Time Testing will be required for PMT.

References Provided:
2-47E820-2
2-OI-85
TS 3.6.1.3 LCO, Required Actions, SRs (no bases)
Archived Clearance Tag sheet

****

Performance Step 1: Critical X Not Critical

Review Tech Specs to determine required actions.

Standard:

Candidate reviews Tech Specs and determines section 3.1.3.A.1 requires immediate verification of the stuck control rod separation criteria.

Examiner Note: Completion Times are not important since the control rod is being removed from service. The important aspect of this is for the student to determine that the control rod must be fully inserted prior to hydraulically isolating the drive. Disarming will be accomplished by Removal of the HCU from service by the OI.

3.1.3.C.1 requires that the Control Rod fully inserted within 3 hours.

3.1.3.C.2 requires the Control Rod be disarmed within 4 hours.

SAT___ UNSAT___ N/A___ COMMENTS:_____

_____

_____

****

****

Performance Step 2: Critical X Not Critical __

Utilize 2-OI-85 section 8.6, archived clearance tag sheet, and CRDH Print (2-47E-820 Sheet 2) to determine boundary isolation points, i.e., tagged component.

Standard:

Candidate must complete one of the following two for successful performance of this step:

1. Candidate reviews the clearance sheet and determines the CHARGING WATER ISOLATION SOV 2-SHV-085-0588 is not included in the clearance as a valve that is required to be closed for a safe clearance.

2. Candidate utilizes print to determine isolation boundary and marks up the following isolation points as a minimum. Valves, 85-588, 596, 612. If this option is used, the candidate must be required to mark up the isolation points with the required position of the valves.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

****

Performance Step 3: Critical X Not Critical __

Utilize 2-OI-85 section 8.6, achieve clearance tag sheet, and CRDH Print (2-47E-820 Sheet 2) to determine sequence of closing HCU valves.

Examiner Note: If order of isolation of valves is not apparent -or- the candidate states that the HCU will be removed from service per the OI, the examiner should ask the student to specify the order on the clearance tag sheet under the "Place Seq" column.

Standard:

Candidate specifies the order of valve closure to include the following:

1. **CLOSE** INSERT RISER ISOL, 2-ISV-085-612
2. **CLOSE** WITHDRAW RISER ISOL, 2-ISV-085-0615
3. **CLOSE** CHARGING WATER SOV, 2-SHV-085-588
4. **CLOSE** COOLING WATER SOV, 2-SHV-085-596
5. **CLOSE** DRIVE WATER SOV, 2-SHV-085-593
6. **CLOSE** EXHAUST WATER SOV, 2-SHV-085-600

Note, actual sequence number may be different, but order of isolation is the critical step.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

****

****

Performance Step 4: Critical X Not Critical __

Utilizes System Knowledge and Technical Specification SRs to determine required Post Maintenance Testing.

Standard:

Candidate determines that Scram Time testing **IS** required on return to service of the Control Rod and associated HCU. The Scram inlet valve is in the flow path and planned maintenance could affect the scram time of the control rod, thus scram time testing is required.

SAT___ UNSAT___ N/A___ COMMENTS:_____

_____

_____

****

Overall Grading: The candidate had four steps to perform during the performance of this JPM. Each individual step had it own Grading Standard and was marked SAT or UNSAT.
In order to grade the overall performance of this evolution as Satisfactory, then 3 of the 4 steps had to be graded as satisfactory, otherwise the overall grading for this JPM is UNSAT.

Overall JPM Grading.

SAT_____ UNSAT_____

Examiner: _____ Date:_____

67 M 2-47E820-2

REACTOR

PRIMARY CONTAINMENT

CONTROL ROD DRIVE UNIT (TYPICAL 185 UNITS)

HCU MANIFOLD AND DIRECTIONAL CONTROL VALVE

HYDRAULIC CONTROL UNIT (TYPICAL 185 UNITS) (NOTE 4)

ACCUMULATOR

PORTABLE ACCUMULATOR N_2 CHARGING SYSTEM B

PORTABLE ACCUMULATOR N_2 CHARGING SYSTEM A

CHARGING WATER

DRIVE WATER

COOLING WATER

EXHAUST WATER

NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 2-47E600-1.
2. REMOVABLE SPOOL PIECE MAY BE REPLACED WITH STRAINER FOR TESTING AND FLUSHING.
3. ALL VALVES SHALL BE PROVIDED WITH UNIT 2 AND SYS 03 UNLESS NOTED OTHERWISE.
4. HYDRAULIC CONTROL UNIT (HCU) AND CONTROL ROD DRIVE UNIT COMPONENTS ARE SHOWN FOR A SINGLE UNIT. FOR ONE TYPICAL OF 185 SUCH UNITS. THE DRIVES ARE DESIGNED IN ACCORDANCE WITH TVA M.A.P. DRAWING 1-47W610-26-1. SIMILAR ALL EXCEPTING APPLICATION WITH A PENETRATION DRIVE WILL HAVE SUFFIX 'P' IN THE NUMBER. FOR EXAMPLE THE UNIT FOR HCU VALVE ZONE ASSOCIATED WITH DRIVE 30-43 SHALL BE 2-HCV-85-30P. ORIFICE AND FOR CHECK VALVE 085 SHALL BE 2-CKV-85-085/085A.

SYSTEM PRESS.- TEMP DATA

LINE NO.	DESIGN PRESSURE (PSIG)	DESIGN TEMP(°F)
1	1250	550
2	1750	150
3	1375	545

SYMBOLS:
SOLENOID OPERATED VALVE WITH BUILT-IN FLOW CONTROL

COMPANION DRAWINGS:
2-47E610-1
2-47E650-1

D12	20684	RC PHILLIPS	WCH	RLO 6-27-91
REVISED PER DCA 20565-001-000				
REV	CHANGE REF	PREPARED	CHECKED	APPROVED DATE

SCALE: NONE — EXCEPT AS NOTED

POWERHOUSE UNIT 2 — SYSTEM NO. 85 (68).(69)

FLOW DIAGRAM CONTROL ROD DRIVE HYDRAULIC SYSTEM

BROWNS FERRY NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAWN MMS	CHECKED BEH	1 N/A	2 N/A	J.R. PARTISH
DESIGNED MMS	REVIEWED ROY E. LYON	3 N/A	4 N/A	

KNOXVILLE | DATE 10-7-70 | 67 | M | 2-47E820-2 | R012

THIS DRAWING APPEARS IN THE FSAR

TRACED BY: N/A

CAD MAINTAINED DRAWING

CCD

ALL A/D HISTORY RESEARCHED @ R000

8.6 Removing a Hydraulic Control Unit from Service

****

CAUTIONS

1) HCU valving sequences should NOT deviate from those listed in this instruction, otherwise serious damage to the CRD could result.

2) HCU valves should only be opened or closed hand tight unless there is a need to apply additional torque to ensure leak tightness. The torque values provided in Illustration 2 shall be used when torquing is required.

3) [NER/C] If a maximum value is exceeded, a WO shall be initiated and the System Engineer shall be notified. [GE SIL 419]

4) The following steps totally isolates an HCU from the Control Rod Drive, Control Rod Drive Hydraulic System, Reactor Manual Control System and the Reactor Protection System for the purposes of removing and replacing HCU parts. This step should be performed only when the period of isolation is NOT to exceed several hours or only during periods of reactor shutdown when the reactor is NOT at operating pressure and temperature.

5) The following steps isolates the flow of cooling water from the HCU to the Control Rod Drive. Sustained loss of cooling water when the reactor is at operating pressure and temperature will shorten the life of the Control Rod Drive internal seals.

****

NOTE:

This section is written to allow total isolation of an HCU (Step 8.6.4) or HCU isolation while maintaining cooling water flow (Step 8.6.3). This section also provides a simplified method of disabling control rod withdrawal due to Technical Specification restrictions when no maintenance is involved(Step 8.6.5).

8.6.1 **VERIFY** that at least one of the following initial conditions are satisfied:

- The control rod associated with the Hydraulic Control Unit (HCU) to be isolated is fully inserted, OR
- The control rod associated with the HCU to be isolated is inoperable and Shift Manager/Unit Supervisor notified to verify Technical Specifications and rod pattern restraints, OR
- Fuel in that cell around a withdrawn control rod has been off loaded.

8.6.2 **REVIEW** all Precautions and Limitations in Section 3.1.

8.6 Removing a Hydraulic Control Unit from Service (continued)

****

CAUTION

1) The following step permits isolation of an HCU during reactor operation, when it is desirable to maintain a flow of cooling water to the CRD. This method will prevent CRD movement in response to Reactor Manual Control System or Reactor Protection System signals and is NOT to be used for maintenance on the HCU.

2) HCU valving sequences should NOT deviate from those listed in this instruction, otherwise serious damage to the CRD could result.

3) HCU valves should only be opened or closed hand tight unless there is a need to apply additional torque to ensure leak tightness. The torque values provided in Illustration 2 shall be used when torquing is required.

4) [NER/C] If a maximum value is exceeded, a WO shall be initiated and the System Engineer shall be notified. [GE SIL 419]

****

8.6.3 **IF** it is desired to isolate the HCU but retain cooling water flow, **THEN**

PERFORM the following:

8.6.3.1 **CLOSE** INSERT RISER ISOL, 2-ISV-085-612.

8.6.3.2 **UNLOCK AND CLOSE** WITHDRAW RISER ISOL, 2-ISV-085-615.

8.6.3.3 **CLOSE** CHARGING WATER SOV, 2-SHV-085-588.

8.6.3.4 **INSTALL** pipe fittings and drain hose at the outlet of the ACCUM WATER SIDE DR, 2-DRV-085-590; **ROUTE** hose to a floor drain or a suitable container.

8.6.3.5 **SLOWLY OPEN** ACCUM WATER SIDE DR, 2-DRV-085-590.

NOTE:

The accumulator is fully drained when the gas pressure, as shown on 2-PI-85-34, remains constant. This indicates that the piston in the water accumulator has reached the mechanical stop.

8.6.3.6 **IF** the Control Rod Drive Hydraulic System is shutdown, **THEN**

FULLY CLOSE ACCUM WATER SIDE DR, 2-DRV-085-590, when all water has drained.

8.6 Removing a Hydraulic Control Unit from Service (continued)

8.6.3.7 **IF** the Control Rod Drive Hydraulic System is in operation, **THEN**

MAINTAIN OPEN ACCUM WATER SIDE DR, 2-DRV-085-590, to drain possible leakage through the CHARGING WATER SOV, 2-SHV-085-588.

****

CAUTION

High pressure nitrogen may be trapped between the nitrogen charging connection and RT VLV TO PI-85-34, 2-RTV-085-229A.

****

8.6.3.8 **PERFORM** the following to discharge the nitrogen gas accumulator:

8.6.3.8.1 **CLOSE** RT VLV TO PI-85-34, 2-RTV-085-229A.

8.6.3.8.2 **SLOWLY REMOVE** the cap from the nitrogen charging connection fitting.

8.6.3.8.3 **SLOWLY OPEN** RT VLV TO PI-85-34, 2-RTV-085-229A, to vent the nitrogen gas through the nitrogen charging connection. [GESIL 536]

8.6.3.8.4 **VERIFY** CRD ACCUMULATOR NITROGEN SIDE PRESS, 2-PI-85-34 indicates the nitrogen gas is completely vented.

8.6.3.8.5 **LOOSELY REPLACE** the cap on the nitrogen charging connection fitting.

8.6.3.9 **CLOSE** DRIVE WATER SOV, 2-SHV-085-593.

8.6.3.10 **OPEN** INSERT RISER ISOL, 2-ISV-085-612, to reestablish cooling water flow to the CRD.

NOTE:

Disconnected directional control valve amphenol connectors should be tagged and protected from dirt, moisture and electrical hazard with a suitable material.

8.6.3.11 **DISCONNECT** the amphenol connectors to the following valves:
- CRD DIR CONT VALVE W/SPEED ADJ-INSERT, 2-FCV-085-40A.
- CRD DIR CONT VALVE W/SPEED ADJ-WITHDRAW, 2-FCV-085-40B.
- CRD DIRECTION CONT VALVE-WITHDRAW, 2-FCV-085-40C.
- CRD DIRECTION CONT VALVE-INSERT, 2-FCV-085-40D.

8.6.3.12 **RECORD** the Control Rod coordinates in the narrative log.

8.6 Removing a Hydraulic Control Unit from Service (continued)

8.6.4 **IF** it is desired to totally isolate the HCU, **THEN**

PERFORM the following:

8.6.4.1 **CLOSE** INSERT RISER ISOL, 2-ISV-085-612.

8.6.4.2 **UNLOCK AND CLOSE** WITHDRAW RISER ISOL, 2-ISV-085-615.

8.6.4.3 **CLOSE** CHARGING WATER SOV, 2-SHV-085-588.

8.6.4.4 **CLOSE** COOLING WATER SOV, 2-SHV-085-596.

8.6.4.5 **CLOSE** DRIVE WATER SOV, 2-SHV-085-593.

8.6.4.6 **CLOSE** EXHAUST WATER SOV, 2-SHV-085-600.

8.6.4.7 **INSTALL** pipe fittings and drain hose at the outlet of the ACCUM WATER SIDE DR, 2-DRV-085-590; **ROUTE** hose to a floor drain or a suitable container.

8.6.4.8 **SLOWLY OPEN** ACCUM WATER SIDE DR, 2-DRV-085-590, and **DRAIN** the pressurized water from the accumulator.

NOTE:

The accumulator is fully drained when the gas pressure, as shown on 2-PI-85-34, remains constant. This indicates that the piston in the water accumulator has reached the mechanical stop.

8.6.4.9 **IF** the Control Rod Drive Hydraulic System is shutdown, **THEN**

FULLY CLOSE ACCUM WATER SIDE DR, 2-DRV-085-590, when all water has drained.

8.6.4.10 **IF** the Control Rod Drive Hydraulic System is in operation, **THEN**

MAINTAIN OPEN ACCUM WATER SIDE DR, 2-DRV-085-590, to drain possible leakage through the CHARGING WATER SOV, 2-SHV-085-588.

8.6.4.11 **CLOSE** RT VLV TO FSV-85-39A & B, 2-RTV-085-265, on the Control Air Header supplying air to the Hydraulic Control Unit.

NOTE:

Control Rod Scram Timing Test Cabinet (Panel 9-16) requires a Key from U-2 Control Room Key Cabinet.

8.6.4.12 **NOTIFY** Unit Operator in the control room of individually scramming the control rod for the HCU being removed from service.

8.6 Removing a Hydraulic Control Unit from Service (continued)

8.6.4.13 **PLACE** the appropriate Rod Scram Switch, on Panel 9-16 in the Auxiliary Instrument Room, in the DOWN Position to de-energize the scram pilot air valves.

NOTE:

Disconnected directional control valve amphenol connectors should be tagged and protected from dirt, moisture and electrical hazard with a suitable material.

8.6.4.14 **DIRECT** Unit Operator to **VERIFY** correct rod scrammed by blue light indication.

8.6.4.15 **UNLOCK AND CLOSE** SCRAM OUTLET SOV, 2-SHV-085-617.

8.6.4.16 **DISCONNECT** the amphenol connectors to the following valves:

- CRD DIR CONT VALVE W/SPEED ADJ-INSERT, 2-FCV-085-40A.
- CRD DIR CONT VALVE W/SPEED ADJ-WITHDRAW, 2-FCV-085-40B.
- CRD DIRECTION CONT VALVE-WITHDRAW, 2-FCV-085-40C.
- CRD DIRECTION CONT VALVE-INSERT, 2-FCV-085-40D.

8.6.4.17 **IF** the Unit Supervisor determines the Nitrogen gas accumulator is required to be discharged, **THEN**

PERFORM the following:

****

CAUTION

High pressure nitrogen may be trapped between the nitrogen charging connection and RT VLV TO 2-PI-85-34, 2-RTV-085-229A.

****

8.6.4.17.1 **CLOSE** RT VLV TO PI-85-34, 2-RTV-085-229A.

8.6.4.17.2 **SLOWLY REMOVE** the cap from the nitrogen charging connection fitting.

8.6.4.17.3 **SLOWLY OPEN** RT VLV TO PI-85-34, 2-RTV-085-229A to vent the nitrogen gas through the nitrogen charging connection. [GESIL 536]

8.6.4.17.4 **VERIFY** CRD ACCUMULATOR NITROGEN SIDE PRESS, 2-PI-85-34 indicates the nitrogen gas is completely vented.

8.6.4.17.5 **REPLACE** the cap on the nitrogen charging connection fitting.

8.6.4.18 **RECORD** the Control Rod coordinates in the narrative log.

8.6 Removing a Hydraulic Control Unit from Service (continued)

NOTE:

When maintenance is complete on the HCU, the HCU should be returned to service. **REFER TO** Section 8.7.

****

CAUTION

The following step prevents control rod movement from the Reactor Manual Control System demands only and should NOT be used for maintenance on the HCU or when scram insertion may cause control rod drive damage.

****

8.6.5 **IF** it is desired to prevent CRD movement in response to the Reactor Manual Control System and Shift Manager/Unit Supervisor authorization is received, **THEN**

PERFORM the following:

8.6.5.1 **CLOSE** DRIVE WATER SOV, 2-SHV-085-593.

NOTE:

Disconnected directional control valve amphenol connectors should be tagged and protected from dirt, moisture and electrical hazard with a suitable material

8.6.5.2 **DISCONNECT** the amphenol connectors to the following valves:

- CRD DIR CONT VALVE W/SPEED ADJ-INSERT, 2-FCV-085-40A.
- CRD DIR CONT VALVE W/SPEED ADJ-WITHDRAW, 2-FCV-085-40B.
- CRD DIRECTION CONT VALVE-WITHDRAW, 2-FCV-085-40C.
- CRD DIRECTION CONT VALVE-INSERT, 2-FCV-085-40D.

8.6.5.3 **RECORD** the Control Rod coordinates in the narrative log.

Clearance Tag List

TVAN Clearance Sheet Clearance Number: 2-085-0001

APPARATUS:											
Equipment ID Equipment Description Equipment Location	Tag Serial No	Tag Type	Place Seq	Place Config	Place First Verifer	Place Second Verifier	Rest. Seq	Rest. Config	Rest. First Verifier	Rest. Second Verifier	Tag Notes
2-XS-085-S8/5843 HCU 58-43 Scram Switch Pnl 9-16 U2 Aux Inst Room	1	Danger		Down							
2-ISV-085-0612/5843 HCU 58-43 Insert Riser Isol HCU 58-31 U2 RB El 565	2	Danger		Closed							
2-ISV-085-0615/5843 HCU 58-43 Withdraw Riser Isol HCU 58-31 U2 RB El 565	3	Danger		Closed							
2-SHV-085-0600/5843 HCU 58-43 Exhaust Water SOV HCU 58-31 U2 RB El 565	4	Danger		Closed							
2-SHV-085-0596/5843 HCU 58-43 Cooling Water SOV HCU 58-31 U2 RB El 565	5	Danger		Closed							
2-SHV-085-0593/5843 HCU 58-43 Drive Water SOV HCU 58-31 U2 RB El 565	6	Danger		Closed							

Clearance Tag List

TVAN Clearance Sheet

Clearance Number: 2-085-0001

2-DRV-085-590/5843 HCU 58-43 Accum Water Side Drain HCU 58-31 U2 RB El 565	7	Danger		Throttled							
2-RTV-085-0265/5843 Root valve to FSV-85-39A & B/5843 HCU 58-31 U2 RB El 565	8	Danger		Closed							
2-SHV-085-0617/5843 HCU 58-43 Scram Outlet SOV HCU 58-31 U2 RB El 565	9	Danger		Closed							
2-AML4-085-58-43 HCU 58-43 Directional Control Valve Amphenols (4) HCU 58-31 U2 RB El 565	10	Danger		Disconnected							
2-RTV-085-29A/5843 Root Valve to PI-85-34/5843 HCU 58-31 U2 RB El 565	11	Danger		Closed							

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Control Rod OPERABILITY

LCO 3.1.3 Each control rod shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each control rod.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One withdrawn control rod stuck.	----------NOTE---------- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow continued operation. --- A.1 Verify stuck control rod separation criteria are met. AND A.2 Disarm the associated control rod drive (CRD). AND	Immediately 2 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3	Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod.	24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM
	AND		
	A.4	Perform SR 3.1.1.1.	72 hours
B. Two or more withdrawn control rods stuck.	B.1	Be in MODE 3.	12 hours
C. One or more control rods inoperable for reasons other than Condition A or B.	C.1	----------NOTE---------- RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation. ---------- Fully insert inoperable control rod.	3 hours
	AND		
	C.2	Disarm the associated CRD.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ----------NOTE---------- Not applicable when THERMAL POWER > 10% RTP. ---------- Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.1 Restore compliance with BPWS. OR D.2 Restore control rod to OPERABLE status.	4 hours 4 hours
E. Required Action and associated Completion Time of Condition A, C, or D not met. OR Nine or more control rods inoperable.	E.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	24 hours
SR 3.1.3.2	----------NOTE---------- Not required to be performed until 7 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. ---------- Insert each fully withdrawn control rod at least one notch.	7 days
SR 3.1.3.3	----------NOTE---------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. ---------- Insert each partially withdrawn control rod at least one notch.	31 days
SR 3.1.3.4	Verify each control rod scram time from fully withdrawn to notch position 06 is $\leq$ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.5	Verify each control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **534 Admin Conduct of Operations**

TITLE: **Review 2-SI-4.7.A.2.a Primary Containment Nitrogen Consumption and Leakage. (SRO ONLY)**

TASK NUMBER: S-090-SU-01

SUBMITTED BY: _____ DATE:

VALIDATED BY: _____ DATE:

APPROVED: _____ DATE:
TRAINING

PLANT CONCURRENCE: _____ DATE:
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	02/24/04	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR: _____

RO _____ SRO _____ DATE:

JPM NUMBER: 534

JPM TITLE: REVIEW 0-SI-4.7.A.2.a, Primary Containment Nitrogen Consumption and Leakage for the day.

TASK NUMBER:

TASK TITLE: Review Nitrogen Consumption SI

K/A NUMBER: 2.1.11 K/A RATING: RO 3.0 SRO: 3.8

****
*
TASK STANDARD: Upon reviewing 2-SI-4.7.A.2.a for the day, determine an incorrect calculation and the required TRM/ITS actions.

LOCATION OF PERFORMANCE: SIMULATOR x PLANT x CONTROL ROOM x

REFERENCES/PROCEDURES NEEDED: 2-SI-4.7.A.2.a, Primary Containment Nitrogen Consumption and Leakage (filled out) and TRM section 3.6, ITS section 3.6.

VALIDATION TIME: CONTROL ROOM: 15:00 LOCAL:

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL

COMMENTS: _____
_____
_____

Additional comment sheets attached? YES _____ NO

RESULTS: SATISFACTORY _____ UNSATISFACTORY

EXAMINER SIGNATURE: _____ DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. The UO has given you the Primary Containment Nitrogen consumption SI to review for the day. Primary Containment is inerted. Unit 2 is in Mode 1.

INITIATING CUES: Review this SI and initial where appropriate.

****

Performance Step: Critical X Not Critical

Review the SR.

Standard:

Initials as Unit Supervisor Attachments 3 & 4 (Not Critical). Determines that Attachment 2 Nitrogen Makeup corrections Event 3 calculation is incorrect, (Critical), when this result is used in Attachment 5 the calculated leakage is also incorrect (Critical).

SAT UNSAT N/A COMMENTS:

****
****

Performance Step: Critical Not Critical X

Candidate enters 2-AOI-64-7 and performs all calculations again.

Standard:

Candidate repeats calculations and determines that Primary Containment leakage is greater than the value allowed by TRM.

SAT UNSAT N/A COMMENTS:

****

TR 3.6 CONTAINMENT SYSTEMS

TR 3.6.5 Nitrogen Makeup to Containment

LCO 3.6.5 When the primary containment is inerted the containment shall be continuously monitored for gross leakage by review of the inerting system makeup requirements. Nitrogen makeup to the primary containment, averaged over 24 hours (corrected for drywell temperature, pressure, and venting operations), shall not exceed 542 scfh.

APPLICABILITY: When primary containment is inerted

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Nitrogen makeup to the primary containment, averaged over 24 hours (corrected for drywell temperature pressure, and venting operations), exceeds 542 scfh.	A.1 Declare primary containment inoperable. (TS LCO 3.6.1.1)	Immediately

****

Performance Step: Critical X Not Critical

Determine appropriate actions.

Standard:

Candidate determines from the TR 3.6.5 that Primary Containment is inoperable and must be restored in 1 hour or the Unit placed in Mode 3 within 12 hours and Mode 4 within 36 hours per TS LCO 3.6.1.1 action A.1, B.1 and B.2.

SAT___ UNSAT___ N/A___ COMMENTS:_____

_____

****

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Primary Containment

LCO 3.6.1.1 Primary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment inoperable.	A.1 Restore primary containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

Student Handout

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. The UO has given you the Primary Containment Nitrogen consumption SI to review for the day. Primary Containment is inerted. Unit 2 is in Mode 1.

INITIATING CUES: Review this SI and initial where appropriate.

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

2-SI-4.7.A.2.a

PRIMARY CONTAINMENT NITROGEN CONSUMPTION AND LEAKAGE

REVISION 19

PREPARED BY: Kelvin Green PHONE: 2648

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: PHILLIP CHADWELL DATE: 11/08/2003

EFFECTIVE DATE: 11/08/2003

LEVEL OF USE: CONTINUOUS USE

QUALITY-RELATED

REVISION LOG

Procedure Number: 2-SI-4.7.A.2.a

Revision Number: 19

Pages Affected: 3,19

Description of Change: Deleted previous references to TIP purge leakage. The leak has been corrected. IC-025

1.0 INTRODUCTION

1.1 Purpose

This Surveillance Instruction provides the necessary steps to monitor the primary containment nitrogen consumption rate (i.e., primary containment system leakage) in compliance with the requirements in Technical Specification 3.6.1.1 and TRM 3.6.2, and 3.6.5.

1.2 Scope

Primary containment nitrogen consumption is monitored to determine the average daily nitrogen consumption. Corrections are made for Suppression Chamber level changes and Drywell/Suppression Chamber venting that may occur. The average nitrogen leakage is calculated using data gathered during the day of this test.

For calculation purposes, a day consist of 24-hours. During the days when the time changes to Daylight Savings Time (DST) 23-hours will be used. When returning to Central Standard Time (CST) 25-hours will be used.

1.3 Frequency

This Surveillance Instruction shall be performed each day (24-hour duration except the day conversion to Daylight Saving Time and returning to Central Standard Time) and reviewed shiftily while the reactor is in the RUN mode (Mode 1) and primary containment is inerted.

This procedure should be initiated at Midnight (0000 Hours) and remain in process for a 24 Hour period (until the following Midnight (2400 Hours)).

2.0 REFERENCES

2.1 Technical Specifications

Section 3.6.1.1, Primary Containment.

Technical Requirements Manual - TRM

Section 3.6.2 Oxygen Concentration Monitors.
section 3.6.5, Nitrogen Makeup to Containment.

2.2 Final Safety Analysis Report

Section 5.2.2.8, Primary Containment-Safety Design Basis

Section 5.2.3.8, Containment Inerting System

Section 5.2.4.5, Primary Containment Leakage Analysis

Section 5.2.5.1, Primary Containment Integrity and Leak-Tightness

Table 5.2-1, Principal Design Parameters and Characteristics of Primary Containment

2.3 Plant Instructions

SPP-8.1, Conduct of Testing

0-OI-57C, 208/120V AC Electrical System Operating Instructions

2-OI-64, Primary Containment System Operating Instructions

2-OI-84, Containment Atmosphere Dilution System.

2-AOI-64-7, PRIMARY CONTAINMENT N_2 USAGE HIGH

2.4 Plant Drawings

1-47E610-76-1, Mechanical Control Diagram Containment Inerting System

2-47E610-64-1, 2, 3, Mechanical Control Diagram Primary Containment System

2-47E610-76-1, Mechanical Control Diagram Containment Inerting System

1-47E860-1, Flow Diagram Containment Inerting System

2-47E860-1, Flow Diagram Containment Inerting System

2.5 Plant Generated Calculations

PGC-003-064-0, Change in Torus Free Volume Per 1" of Water Level

2.6 Technical Instructions

0-TI-215, Drywell Control Air Consumption Test.

2.7 Miscellaneous

BFPER970886, Calculating Leakage when CAD is cross-tied to Drywell Control Air.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 If Nitrogen leakage exceeds 542 SCFH. REFER TO 2-AOI-64-7 and TECH SPECS.

3.1.1 **IF** 24-Hour average N_2 makeup to the primary containment is > 542 scfh, **THEN**

DECLARE Primary Containment INOP immediately.
REFER TO Section 3.6.1.1 Primary Containment.

3.2 If the nitrogen consumption demonstrates a trend that will be greater than 542 SCFH for the 24-hour period, notify the Unit Supervisor (US) immediately.

3.3 For an INDEPENDENT REVIEWER signature, the STA or SRO cannot perform any actions or signoffs in the body of the procedure. This will ensure an adequate review of the procedure.

3.4 This procedure should be initiated at Midnight (0000 Hours) and remain in process for a 24 Hour period (until the following Midnight (2400 Hours)).

If it is necessary to begin a new revision to the procedure before the time period is completed, then transfer the appropriate data to the new document and maintain the two procedures together.

Date 4-25-04

INITIALS

4.0 PREREQUISITES

4.1 Cabinet 2, Panel 9-9 is energized in accordance with 0-OI-57C, 208/120V AC Electrical System Operating Instruction. R

4.2 **VERIFY** this instruction to be the most current revision. R

5.0 SPECIAL TOOLS AND EQUIPMENT RECOMMENDED

5.1 Calculator

6.0 **ACCEPTANCE CRITERIA**

6.1 Responses which fail to meet the following acceptance criteria constitute unsatisfactory surveillance instruction results and require the immediate notification of the Unit Supervisor at the time of failure:

6.1.1 Nitrogen makeup to the primary containment, averaged over 24 hours (corrected for Suppression Chamber level changes and Drywell/Suppression Chamber venting) is less than 542 standard cubic feet per hour (SCFH).

6.2 Steps which determine the above criteria are designated by (AC) next to the initials blank.

Date 4-25-04

INITIALS

NOTE:

1) This procedure should be initiated at Midnight which is represented as (0000 Hours) and remain in process for a 24 Hour period (until the following Midnight which is represented as (2400 Hours)) These times are used to represent the difference from the start and the completion of this SR and may not match the proper military times that is used by the electronic narrative logs.

2) If it is necessary to stop and recommence a new procedure before the time period is completed. Then transfer the appropriate data to the new document and maintain the two procedures together.

7.0 PROCEDURE STEPS

7.1 **VERIFY** the following initial conditions are satisfied:

7.1.1 Precautions and Limitations in Section 3.0 have been reviewed. R

7.1.2 Prerequisites in Section 4.0 are satisfied. R

7.2 **RECORD** the date and time started, reason for test, and plant condition on Attachment 1, Surveillance Instruction Review Form. R

7.3 **RECORD** the date on each data sheet Attachments 2 through 5. R

7.3.1 **RECORD** on of Attachment 2 Part B, the initial Suppression Pool Level (0000 Hour), in column (1) for each of the following instruments (if available) from Panel 9-3.

- 2-LI-64-54A
- 2-LI-64-66

R

Date 4-25-04

NOTE:

Section 7.4.1 and Attachment 2 are to be initiated by the midnight shift Unit Supervisor if the requirements of Section 1.3 are satisfied or by the Unit Supervisor of any shift upon meeting these requirements. The Unit Supervisor should be contacted to perform all calculations necessary to correct makeup flow to reflect actual drywell leakage, i.e., Sections 7.4.2 through 7.6. NA each section not required for make-up flow corrections.

7.4 Nitrogen Makeup/Suppression Chamber Level Corrections

NOTES:

1) A Stopwatch may be used to perform this Section.

2) For the first run of the 24-hour period, the previous cumulative total is zero since totals are not carried over from the previous 24-hour test.

7.4.1 Attachment 2 - Nitrogen Makeup - Section A

7.4.1.1 **PERFORM** the following if Makeup is from the Nitrogen Storage Tank.

A) In EVENT Column, **RECORD** "N2 Tank".

B) In column (1), **RECORD** the time each nitrogen addition begins.

NOTE:

Since chart speed is 25mm per hour, the nitrogen makeup duration may be calculated by measuring the length, in mm, of N2 flow on the chart and multiplying by 2.4.

C) In column (2), **RECORD** the nitrogen makeup duration, in minutes, from the chart of DW/Suppr Chbr N2 Makeup Flow/Press, 2-XR-076-0014 on Panel 9-3 or from Stopwatch.

D) In column (3), **RECORD** the nitrogen makeup flow in cubic feet per minute as indicated by the Red Pen on DW/Suppr Chbr N2 Makeup Flow/Press, 2-XR-076-0014 on Panel 9-3.

Date 4-25-04

7.4 Nitrogen Makeup/Suppression Chamber Level Corrections (Continued)

NOTE:

Nitrogen flow should be less than 60 SCFM in accordance with 2-OI-64, Primary Containment.

E) **CALCULATE** the amount of nitrogen, in cubic feet (ft^3), added during the run by multiplying column (2) by column (3) and **RECORD** in column (4).

F) **CALCULATE** the total cumulative nitrogen use in cubic feet for the 24-hour period of this test by adding the latest entry in column (4) to the previous cumulative total in column (5). **RECORD** the new cumulative total in column (5).

7.4.1.2 [QC/C] **PERFORM** the following if CAD is cross-tied to Drywell Control Air. REFER TO 2-OI-84. [BFPER950835]:

A. In EVENT Column, **RECORD** "CAD/DCA".

B. In Column (1), **RECORD** the time CAD was cross-tied to Drywell Control Air on the CAD/DCA line provided.

C. In Column (2), **RECORD** the duration in minutes that CAD was cross-tied to Drywell control air.

D. **OBTAIN** calculated Total Leakage(CFM) from Site Engineering for the most recent performance of 2-TI-215, DRYWELL CONTROL AIR CONSUMPTION TEST.

E. In Column (3), **RECORD** the calculated Total Leakage(CFM) obtained from the most recent performance of 2-TI-215, DRYWELL CONTROLAIR CONSUMPTION TEST.

F. **CALCULATE** the amount of nitrogen added during the period by multiplying columns (2) and (3) and **RECORD** in column (4).

G. **CALCULATE** the total cumulative nitrogen use in cubic feet for the 24-hour period of this test by adding the latest entry in column (4) to the previous cumulative total in column (5). **RECORD** the new cumulative total in column (5).

Date 4-25-04

7.4 Nitrogen Makeup/Suppression Chamber Level Corrections (Continued)

NOTES:

1) Measure the CAD addition using a stop watch.

2) Use a separate Event Column for each CAD TRAIN if both trains are being used at the same time.

7.4.1.3 **PERFORM** the following if CAD is aligned to Containment other than section 7.4.1.2.

A) In EVENT Column, **RECORD** "CAD/CONT"

B) In column (1), **RECORD** the time each CAD addition begins.

C) In column (2), **RECORD** the CAD addition duration, in minutes from the stopwatch.

D) In column (3), **RECORD** the CAD makeup flow in cubic feet per minute for each CAD train being used:

CAD A N2 SYSTEM

0-FI-84-7, CAD LINE A N2 FLOW, on (Unit 1) PNL-9-54

OR

0-FI-84-7/3, CAD A N2 SYSTEM FLOW, on 3-PNL-9-54.

CAD B N2 SYSTEM FLOW

0-FI-84-18, CAD B N2 SYSTEM FLOW, on (Unit 1) PNL-9-55.

OR

0-FI-84-18/3, CAD B N2 SYSTEM FLOW, on 3-PNL-9-55.

E) **CALCULATE** the amount of nitrogen, in cubic feet (ft^3), added during the run by multiplying column (2) by column (3) and **RECORD** in column (4).

F) **CALCULATE** the total cumulative nitrogen use in cubic feet for the 24-hour period of this test by adding the latest entry in column (4) to the previous cumulative total in column (5). **RECORD** the new cumulative total in column (5).

Date 4-25-04

7.4 Nitrogen Makeup/Suppression Chamber Level Corrections (Continued)

NOTE:

The Suppression Chamber level may change for any number of events such as venting the drywell/suppression chamber, pumping down the Suppression Chamber, MSRVs Leakage or testing Core Spray, RHR, HPCI, or RCIC Systems. Since changes in Suppression Chamber level change the Suppression Chamber free volume, the Torus atmospheric pressure will change, although nitrogen may not have been lost or added. The correction for level changes is based on the assumption that the Suppression Chamber level change is relatively small (-1" to -7.25" indicated level) allowing the effect of Suppression Chamber curvature to be neglected. Therefore, the 909.8 cubic feet change in volume per one inch change in Suppression Chamber level is assumed constant.

7.4.2 Attachment 2 - Suppression Chamber Level Corrections - Section B

7.4.2.1 At the beginning of the surveillance (0000 hours), **RECORD** the Suppr Pool Water Level from indicators 2-LI-64-54A and 2-LI-64-66 on Panel 9-3, in column (1) for each available instrument.

7.4.2.2 At the end of the surveillance (2400 hours), **RECORD** the Suppression Chamber level from indicators 2-LI-64-54A and 2-LI-64-66 on Panel 9-3, in column (2), for each available instrument.

7.4.2.3 If both instruments are available, 2-LI-64-54A and 2-LI-64-66, **SUBTRACT** column (2) from column (1) to determine the amount of change in Suppression Chamber level and **RECORD** in column (3) (negative numbers are possible).

7.4.2.4 For each instrument 2-LI-64-54A and 2-LI-64-66, **CALCULATE** the change in Suppression Chamber free volume as standard cubic feet (SCF) by multiplying column (3) by column (4) (909.8 ft^3/in.) and **RECORD** in column (5).

7.4.2.5 **ADD** column (5) for each instrument (64-54A & 64-66) and **DIVIDE** by two (for calculating the average) and **RECORD** results as the Total Suppression Chamber Level Correction. If an instrument is unavailable, then use only the operable instrument and enter the column (5) value for the operable instrument as total suppression chamber level correction.

Date 4-25-04

7.5 Drywell/Suppression Chamber Venting

NOTES:

(1) Drywell/Suppression Chamber venting may be required to maintain Drywell pressure within limits during changes in barometric pressure, maintenance on Drywell Delta P Air Compressors, or other similar events. If the following instrumentation is available; (2-PI-64-135 or 2-PI-64-136) and (2-PDI-64-137 or 2-PDI-64-138) then calculate the venting correction factor for the Drywell/Suppression Chamber using Attachment 3 or 4, Section A. This correction is based on the following assumptions.

(1) The Drywell free volume is 159,000 cubic feet.

(2) The Suppression Chamber free volume is 126,200 cubic feet at -1 inches (2-LI-64-54A or 66, Suppr Pool Water Level) and an additional 909.8 cubic feet of free volume for each inch that water level is lowered.

(3) The actual venting process is a rapid event so barometric pressure changes can be neglected.

(4) The average Drywell temperature change is represented by 2-TI-64-52AB, Drywell Temperature and 2-XR-64-50, Drywell Temperature/Pressure.

(5) Drywell and Suppression Chamber nitrogen pressures are low enough to use the ideal gas law as a model, i.e.:

$$V_c = 1 - \left[\frac{P_B T_A}{P_A T_B}\right] \times V_t$$

where:

V_c = Venting Correction

P_B = Drywell or Suppression Chamber pressure before venting

P_A = Drywell or Suppression Chamber pressure after venting

T_B = Drywell or Suppression Chamber temperature before venting

T_A = Drywell or Suppression Chamber temperature after venting

V_t = Total free volume of Drywell or Suppression Chamber

(6) The Suppression Chamber water and atmospheric temperatures are in equilibrium.

Date 4-25-04

7.5 Drywell/Suppression Chamber Venting (Continued)

NOTES: (Continued)

(2) For Sections 7.5.1 and 7.5.5, if one pressure indicator and/or differential indicator is inoperable, NA the appropriate column on the Attachment, note the inop indicator on Attachment 1, and delete dividing by 2 for that particular term in the equation.

(3) If the instrumentation identified in note (1) is unavailable, then calculate the venting correction factor per Attachment 3 or 4, Section B.

7.5.1 Attachment 3 - Drywell Venting - Section A

7.5.1.1 In column (1), **RECORD** the time the venting begins.

7.5.1.2 In column (2), block P_{B1}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-135 on Panel 9-3, prior to venting.

7.5.1.3 In column (3), block P_{B2}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-136 on Panel 9-3, prior to venting.

7.5.1.4 In column (4), block T_B, **RECORD** the Drywell temperature from Drywell Temperature indicator, 2-TI-64-52AB on Panel 9-3, prior to venting.

7.5.1.5 In column (2), block P_{A1}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-135 on Panel 9-3, after venting.

7.5.1.6 In column (3), block P_{A2}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-136 on Panel 9-3, after venting.

7.5.1.7 In column (4), block T_A, **RECORD** the Drywell temperature from Drywell Temperature indicator, 2-TI-64-52AB on Panel 9-3, after venting.

Date 4-25-04

7.5 Drywell/Suppression Chamber Venting (Continued)

7.5.2 Attachment 3 - Drywell Venting - Section B

7.5.2.1 In column (1), **RECORD** the time the venting begins.

7.5.2.2 In column (4), **RECORD** the vent flow rate indicated on 2-FIC-84-20 on Panel 9-55, Path A Vent Flow Controller.

7.5.2.3 In column (2), **RECORD** the time the venting ends.

7.5.2.4 In column (3), **RECORD** the elapsed venting time in minutes by subtracting column (1) from column (2).

7.5.2.5 In column (5), **RECORD** the Drywell Venting Correction Factor by multiplying column (3) by column (4).

7.5.3 Attachment 3 - Drywell Venting - Section C

7.5.3.1 Using the data in Section A, **PERFORM** the calculation and enter the result in column (5) of Section A.

7.5.4 Attachment 3 - Drywell Venting - Section D

7.5.4.1 At the completion of the 24-hour period add the absolute values of all the entries in column (5) of Section A and Section B and **RECORD** the sum in Section D for Total Drywell Venting Correction as a positive number.

7.5.5 Attachment 4 - Suppression Chamber Venting - Section A

7.5.5.1 In column (1), **RECORD** the time the venting begins and ends.

7.5.5.2 In column (2), block P_{B1}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-135 on Panel 9-3, prior to venting.

7.5.5.3 In column (3), block P_{B2}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-136 on Panel 9-3, prior to venting.

7.5.5.4 In column (4), block P_{B3}, **RECORD** the Drywell differential pressure from DW/Suppr Chbr Diff Press indicator, 2-PDI-64-137 on Panel 9-3, prior to venting.

Date 4-25-04

7.5 Drywell/Suppression Chamber Venting (Continued)

7.5.5.5 In column (5), block P_{B4}, **RECORD** the Drywell differential pressure from DW/Suppr Chbr Diff Press indicator, 2-PDI-64-138 on Panel 9-3, prior to venting.

7.5.5.6 In column (6), block T_B, **RECORD** the Suppression Chamber temperature from Suppression Chamber Temperature/Pressure 2-XR-64-52 (red pen) on Panel 9-3, prior to venting.

7.5.5.7 In column (2), block P_{A1}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-135 on Panel 9-3, after venting.

7.5.5.8 In column (3), block P_{A2}, **RECORD** the Drywell pressure from Drywell Pressure indicator, 2-PI-64-136 on Panel 9-3, after venting.

7.5.5.9 In column (4), block P_{A3}, **RECORD** the Drywell differential pressure from DW/Suppr Chbr Diff Press indicator, 2-PDI-64-137 on Panel 9-3, after venting.

7.5.5.10 In column (5), block P_{A4}, **RECORD** the Drywell differential pressure from DW/Suppr Chbr Diff Press indicator, 2-PDI-64-138 on Panel 9-3, after venting.

7.5.5.11 In column (6), block T_A, **RECORD** the Suppression Chamber temperature from Suppression Chamber Temperature/Pressure, 2-XR-64-52 (red pen) on Panel 9-3, after venting.

7.5.5.12 In column (7), block L_a, **RECORD** the suppression chamber water level from 2-LI-64-54A or 2-LI-64-66, Suppr Pool Water Level after venting and **RECORD** which instrument was used.

Date 4-25-04

7.5 Drywell/Suppression Chamber Venting (Continued)

7.5.6 Attachment 4 - Suppression Chamber Venting - Section B.

7.5.6.1 In column (1), **RECORD** the time the venting begins.

7.5.6.2 In column (4), **RECORD** the vent flow rate indicated on 2-FIC-84-20, Path A Vent Flow Controller.

7.5.6.3 In column (2), **RECORD** the time the venting ends.

7.5.6.4 In column (3), **RECORD** the elapsed venting time in minutes by subtracting column (1) from column (2).

7.5.6.5 In column (5), **RECORD** the Suppression Chamber Venting Correction Factor by multiplying column (3) by column (4).

7.5.7 Attachment 4 - Suppression Chamber Venting - Section C

7.5.7.1 Using the data in Section A, **PERFORM** the calculation and enter the result in column (8), Section A.

7.5.8 Attachment 4 - Suppression Chamber Venting - Section D

7.5.8.1 At the completion of the 24-hour period ADD the absolute values of all of the entries in Section A column (8) and Section B column (5) and **RECORD** the sum in Section D for Total Suppression Chamber Venting Correction as a positive number.

Date 4-25-04

NOTE:

If there is no data from Data Sheets 1, 2, or 3 then the appropriate items on Attachment 5 are NA.

7.6 **Average Nitrogen Consumption and Leakage**

7.6.1 Attachment 5 - Net Nitrogen Leakage - Section A

7.6.1.1 In item 1 - Cumulative Nitrogen Makeup, **RECORD** the total cumulative nitrogen makeup from Attachment 2 Section A.

7.6.1.2 In item 2 - Total Suppression Chamber Level Correction, **RECORD** the total Suppression Chamber level correction from Attachment 2, Section B.

7.6.1.3 In item 3 - Total Drywell Venting Correction, **RECORD** the total Drywell Venting Correction from Attachment 3, Section D.

7.6.1.4 In item 4 - Total Supp Chamber Venting Correction, **RECORD** the Total Suppression Chamber Venting Correction from Attachment 4, Section D.

7.6.1.5 ADD items 2, 3, and 4 and SUBTRACT the sum from item 1.

7.6.1.6 **RECORD** the result from Step 7.6.1.4 in item 5 - Net Nitrogen Leakage.

Date 4-25-04

7.6 Average Nitrogen Consumption and Leakage (Continued)

7.6.2 Attachment 5 - Average Nitrogen Leakage - Section B

NOTE:

Leakage rates, for comparison purposes, should always be converted to standard flow rate conditions (flow at 70°F, one standard atmosphere). Since nitrogen gas is supplied by evaporating liquid nitrogen and heating it to approximately 70°F then reducing the pressure to 2.0 psig the conversion is:

$$\frac{14.7 \text{ psig} + 2.0 \text{ psia}}{14.7 \text{ psia}} \times \frac{460°R + 70°F}{460°R + 70°F} = 1.136$$

Where:

14.7 psia = 1 standard atmosphere

2.0 psig = nitrogen supply pressure

460°R = Fahrenheit to Rankine conversion factor

70°F = degrees Fahrenheit of nitrogen, actual and standard

For calculation purposes, a day consist of 24-hours. During the days when the time changes to Daylight Savings Time (DST) 23-hours will be used. When returning to Central Standard Time (CST) 25-hours will be used.

To average the net nitrogen usage (in ft^3) for a day, a 24 hour period is normally used and the results are expressed in standard cubic feet per hour. The net nitrogen leakage is multiplied by a conversion factor 1.136, then divided by the number of hours in the day. The result gives the average nitrogen leakage in standard cubic feet per hour for that day. When Daylight Savings Time and Central Standard Time changes take place, the appropriate number of hours will be used instead of 24 (hours).

7.6.2.1 **MULTIPLY** the net nitrogen leakage from Attachment 5, Section A, item 5 by (1.136/ Hours during the day) and **RECORD** the result on the Average Nitrogen Leakage line.

Date 4-25-04

INITIALS

7.7 **REVIEW** narrative log and LOG in post test remarks section if SUPPR POOL WATER LEVEL, 2-LI-64-54A or 2-LI-64-66 instruments have been "backfilled" during the performance of this SI. R

7.8 **COMPLETE** Attachment 1, Surveillance Instruction Review Form, to the Unit Supervisor review section. R

7.9 **NOTIFY** the Unit Supervisor that this Surveillance Instruction is complete. R

8.0 **ILLUSTRATIONS/ATTACHMENTS**

8.1 Attachment 1 - Surveillance Instruction Review Form

8.2 Attachment 2 - Nitrogen Makeup/Suppression Chamber Water Level

8.3 Attachment 3 - Drywell Venting Corrections

8.4 Attachment 4 - Suppression Chamber Venting Corrections

8.5 Attachment 5 - Average Nitrogen Consumption and Leakage

END OF TEXT

SURVEILLANCE INSTRUCTION REVIEW FORM

REASON FOR TEST:
✓ Scheduled Surveillance
_____ System Inoperable (Explain in Remarks)
_____ Maintenance (WO#)_____)
_____ Other (Explain in Remarks)

DATE/TIME STARTED 4-25-04/0001
DATE/TIME COMPLETED 4-26-04/0000
PLANT CONDITIONS MODE 1

PRE-TEST REMARKS: _____

PERFORMED BY:

Initials	Name (Print)	Name (Signature)
	(Test Dir/Lead Perf)	
R	Ralph Rogers (Test Dir/Lead Perf)	Ralph Rogers

Delays or Problems (If yes, explain in post-test remarks) _____ Yes ✓ No
Acceptance Criteria Satisfied. ✓ Yes _____ No
If the above answer is no, the Unit Supervisor shall determine if an LCO exists. LCO _____ Yes _____ No

UNIT SUPERVISOR - _____ Date _____

==========

Signature attests that I understand the scope and purpose of this instruction and that, to the best of my knowledge, it was properly performed in accordance with instruction in that: the recording, reduction, and evaluation of data is complete and correct; acceptance criteria is met or justification for exceptions is provided; portions of test performed were appropriate for specified test conditions or reasons for test; deficiencies were evaluated and dispositioned; reportability was evaluated; marginal results were evaluated with respect to potential for future problems based on operating experience and regulatory requirements; and instruction was complete except as noted in post-test remarks.

Independent Reviewer (SRO) - _____ Date _____

==========

SCHEDULING COORDINATOR - _____ Date _____

==========

POST-TEST REMARKS: _____

NITROGEN MAKEUP/SUPPRESSION CHAMBER LEVEL CORRECTIONS

Date: _____

A. Nitrogen Makeup Data (Section 7.4.1)

	EVENT	(1) TIME	(2) MAKEUP DURATION (MINUTES)		(3) N_2MAKEUP FLOW (CFM)		(4) N_2 ADDED (2) X (3) (FT 3)	(5) CUMULATIVE N_2 MAKEUP (4) + PREVIOUS (5) (FT 3)	UNIT OPER INIT
1.	CAD/DCA	0100	1380	x	4.2	=	5796	5796	R
2.	N2 TANK	0700	33	x	60	=	1980	7776	R
3.	N2 TANK	1300	37	x	58	=	214.6	7990.6	RM
4.	N2 TANK	1900	39	x	60	=	2340	10330.6	RM
5.				x		=			
6.				x		=			
7.				x		=			
8				x		=			

Remarks:

0100 - CAD XTIED to DCA when DCA compressors were unable to maintain DWCA pressure above low pressure alarm point, troubleshooting in progress.

Date: _____

B. Suppression Chamber Level Correction Data (Section 7.4.2)

NOTES:

1) If both Instruments are Operable, then calculate the average of BOTH Operable Instruments by Dividing the sum of their SUPPRESSION CHAMBER LEVEL CORRECTION(column 5) by 2 (two) and record as the TOTAL SUPPRESSION CHAMBER LEVEL CORRECTION.

2) If one of the instruments is INOP, then use only the Operable Instrumentation Correction Factor for the TOTAL SUPPRESSION CHAMBER LEVEL CORRECTION.

3) EXAMPLE (AVERAGE SUPPRESSION CHAMBER LEVEL CORRECTION)

$$\frac{\text{Column 5 (FT}^3\text{) for 2-LI-64-54A} + \text{Column 5 (FT}^3\text{) for 2-LI-64-66}}{2} = \text{AVERAGE SUPPRESSION CHAMBER LEVEL CORRECTION}$$

Instrument	(1) INITIAL Suppr CHBR LEVEL (IN.) (0000 Hours)		(2) ENDING SUPPR CHBR LEVEL (IN.) (2400 Hours)	=	(3) CHANGE IN SUPPR CHBR LEVEL (IN.)	(4) CONVERSION FACTOR 909.8 FT3/IN.	(5) SUPPR CHBR LEVEL CORRECTION (FT 3)	US/UO INIT
2-LI-64-54A	_____	-	_____	=	_____	x 909.8 =	_____	_____
2-LI-64-66	_____	-	_____	=	_____	x 909.8 =	_____	_____

TOTAL SUPPRESSION CHAMBER LEVEL CORRECTION (calculation)

$$\frac{\text{_____(FT 3) 2-LI-64-54A} + \text{_____(FT 3) 2-LI-64-66}}{2} = \text{_____ (FT 3) AVERAGE SUPPRESSION CHAMBER LEVEL CORRECTION}$$

TOTAL SUPPRESSION CHAMBER LEVEL CORRECTION _____ (FT 3)

DRYWELL VENTING

Date: _____

A. DRYWELL VENTING DATA (Section 7.5.1)

(1) EVENT TIME		(2) 2-PI-64-135 (psig)	(3) 2-PI-64-136 (psig)	(4) 2-TI-64-52AB (°F)	(5) Drywell VENTING CORRECTION	(6) US/UO INIT
1	_____	(BEFORE)	P_{B1}	P_{B2}	T_B	_____ ft^3	_____
		(AFTER)	P_{A1}	P_{A2}	T_A		
2	_____	(BEFORE)	P_{B1}	P_{B2}	T_B	_____ ft^3	_____
		(AFTER)	P_{A1}	P_{A2}	T_A		
3	_____	(BEFORE)	P_{B1}	P_{B2}	T_B	_____ ft^3	_____
		(AFTER)	P_{A1}	P_{A2}	T_A		
4	_____	(BEFORE)	P_{B1}	P_{B2}	T_B	_____ ft^3	_____
		(AFTER)	P_{A1}	P_{A2}	T_A		

B. DRYWELL VENTING DATA (Section 7.5.2)

NOTE: Enter data when instrumentation from previous table is unavailable.

EVENT	(1) VENT START TIME	(2) VENT END TIME	(3) ELAPSED VENT TIME (MIN)	(4) VENT FLOW RATE PER 2-OI-64 (SCFM)	(5) DRYWELL VENTING CORRECTION (SCF)	US/UO INIT
1						
2						
3						
4						
5						
6						

DRYWELL VENTING

Date _____

C. EQUATION (Section 7.5.3)

$$\left[1 - \left[\frac{\left[14.7 + \left(\frac{P_{B1} + P_{B2}}{2}\right)\right] \times \left(T_A + 460\right)}{\left[14.7 + \left(\frac{P_{A1} + P_{A2}}{2}\right)\right] \times \left(T_B + 460\right)}\right]\right] \times 159{,}000 = \text{DRYWELL VENTING CORRECTION}$$

Where: P_{B1} = Drywell pressure before venting taken from Drywell Pressure indicator 2-PI-64-135

P_{B2} = Drywell pressure before venting taken from Drywell Pressure indicator 2-PI-64-136

P_{A1} = Drywell pressure after venting taken from Drywell Pressure indicator 2-PI-64-135

P_{A2} = Drywell pressure after venting taken from Drywell Pressure indicator 2-PI-64-136

$T_B + 460$ = Drywell temperature before venting taken from Drywell Temperature indicator 2-TI-64-52AB and corrected to absolute temperature (Rankine)

$T_A + 460$ = Drywell temperature after venting taken from Drywell Temperature indicator 2-TI-64-52AB and corrected to absolute temperature (Rankine)

D. Total Drywell Venting Correction (Section 7.5.4) _____ _____/_____
UO / US

SUPPRESSION CHAMBER VENTING

Date_____

A. Suppression Chamber Venting Data (Section 7.5.5)

EVENT TIME		(2) 2-PI-64-135 (psig)	(3) 2-PI-64-136 (psig)	(4) 2-PDI-64-137 (psid)	(5) 2-PDI-64-138 (psid)	(6) 2-XR-64-64-52 (°F)	(7) 2-LI-64-54A or 66 (in.) Inst. Used	UO/US INIT
1	(BEFORE)	P B1	P B2	P B3	P B4	T B	NA	
	(AFTER)	P A1	P A2	P A3	P A4	T A	LA	
2	(BEFORE)	P B1	P B2	P B3	P B4	T B	NA	
	(AFTER)	P A1	P A2	P A3	P A4	T A	LA	
3	(BEFORE)	P B1	P B2	P B3	P B4	T B	NA	
	(AFTER)	P A1	P A2	P A3	P A4	T A	LA	
4	(BEFORE)	P B1	P B2	P B3	P B4	T B	NA	
	(AFTER)	P A1	P A2	P A3	P A4	T A	LA	

(8) SUPRESSION CHMBR VENTING CORRECTION	(9) UO	Unit Supervisor
1._____ ft^3	_____	_____
2._____ ft^3	_____	_____
3._____ ft^3	_____	_____
4._____ ft^3	_____	_____

Date _____

B. SUPPRESSION CHAMBER VENTING DATA (Section 7.5.6)

NOTE: Enter data when instrumentation from previous table is unavailable.

EVENT	(1) VENT START TIME	(2) VENT END TIME	(3) ELAPSED VENT TIME (MIN)	(4) VENT FLOW RATE (SCFM)	(5) SUPPRESSION CHAMBER VENTING CORRECTION (SCF)	US/UO INIT
1						
2						
3						
4						
5						
6						
7						
8						

SUPPRESSION CHAMBER VENTING

Date _____

C. Suppression Chamber Venting Correction Equation (Section 7.5.7)

$$\left[1 - \left[\frac{\left[14.7 + \left(\frac{P_{B1}+P_{B2}}{2}\right) - \left(\frac{P_{B3}+P_{B4}}{2}\right)\right] \times \left(T_A + 460\right)}{\left[14.7 + \left(\frac{P_{A1}+P_{A2}}{2}\right) - \left(\frac{P_{A3}+P_{A4}}{2}\right)\right] \times \left(T_B + 460\right)}\right]\right] \times \left[126{,}200 - \left(L_A + 1\right) \times 909.8\right]$$

= Suppression Chamber Venting Correction

Where: P_{B1} = Drywell pressure before venting taken from Drywell Pressure indicator 2-PI-64-135

P_{B2} = Drywell pressure before venting taken from Drywell Pressure indicator 2-PI-64-136

P_{B3} = Drywell/Suppression Chamber differential pressure before venting taken from DW/Suppr Chbr Diff Press indicator 2-PDI-64-137

P_{B4} = Drywell/Suppression Chamber differential pressure before venting taken from DW/Suppr Chbr Diff Press indicator 2-PDI-64-138

$T_B + 460$ = Suppression Chamber temperature before venting taken from Suppression Chamber Temperature/Pressure, 2-XR-64-52 (red pen) and corrected to absolute temperature (Rankine)

$T_A + 460$ = Suppression Chamber temperature after venting taken from Suppression Chamber Temperature/Pressure, 2-XR-64-52 (red pen) and corrected to absolute temperature (Rankine)

P_{A1} = Drywell pressure after venting taken from Drywell Pressure indicator 2-PI-64-135

P_{A2} = Drywell pressure after venting taken from Drywell Pressure indicator 2-PI-64-136

P_{A3} = Drywell/Suppression Chamber differential pressure after venting taken from DW/Suppr Chbr Diff Press indicator 2-PDI-64-137

P_{A4} = Drywell/Suppression Chamber differential pressure after venting taken from DW/Suppr Chbr Diff Press indicator 2-PDI-64-138

L_A = Suppression Chamber water level indicated on 2-LI-64-54A or 66, Suppr Pool Water Level

D. Total Suppression Chamber Venting Correction (Section 7.5.8) _____ ft^3 _____/_____
UO / US

AVERAGE NITROGEN CONSUMPTION AND LEAKAGE

Date _____

A. Net Nitrogen Leakage (Section 7.6.1)

1. Cumulative Nitrogen Makeup	10330.6 ft^3	Attachment 2, Section A
2. Total Supp Chamber Level Correction	0 ft^3	Attachment 2, Section B
3. Total Drywell Venting Correction	0 ft^3	Attachment 3, Section D
4. Total Supp Chamber Venting Correction	0 ft^3	Attachment 4, Section D
5. Net Nitrogen Leakage	10330.6 ft^3	

NOTE:

For calculation purposes, a day consist of 24-hours. During the days when the time changes to Daylight Savings Time (DST) 23-hours will be used. When returning to Central Standard Time (CST) 25-hours will be used.

Average Nitrogen Leakage (Section 7.6.2)

$$\text{Avg. Nitrogen Leakage} = \frac{\text{Net nitrogen leakage} \times 1.136}{\text{Hours during the day}} =$$

$$\text{Avg. Nitrogen Leakage} = \frac{(10330.6\ ft^3) \times (1.136)}{(24\ \text{Hours})}$$

Average Nitrogen Leakage 488.98 SCFH (AC)

R / _____ UO / US

NOTE:

The average nitrogen leakage (adjusted) must be <542 SCFH (Step 6.1.1). Notify the Unit Supervisor (US) if the nitrogen leakage exceeds 542 SCFH. (REFER TO 2-AOI-64-7 and Tech Specs LCO 3.6.1.1.)

LAST PAGE

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **182 Admin REP**

TITLE: **CLASSIFY THE EVENT PER THE REP (SPENT FUEL POOL LEVEL LOWER)**

TASK NUMBER: S-000-EM-21

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	10/1/96	ALL	INITIAL ISSUE
1	12/10/96	2,3,9-11	PROCEDURE REVISION
2	11/16/99	ALL	PROCEDURE REVISIONS, FORMAT DOCUMENT
3	5/02/04	ALL	PROCEDURE REVISION, UPDATE FOR USE IN CLASSROOM.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____SS#_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 182

TASK NUMBER: S-000-EM-21 (SRO ONLY)

TASK TITLE: CLASSIFY THE EVENT PER THE REP

K/A NUMBER: 294001A1.16 K/A RATING: RO 2.9 SRO: 4.7

****

TASK STANDARD: THE EVENT IS CLASSIFIED AS AN NOUE BASED ON UNCONTROLLED WATER LEVEL DECREASE IN SPENT FUEL POOL WITH IRRADIATED FUEL ASSEMBLIES EXPECTED TO REMAIN COVERED BY WATER.

LOCATION OF PERFORMANCE: SIMULATOR ___ PLANT ___ CLASSROOM X

REFERENCES/PROCEDURES NEEDED: EPIP-1, REV. 31, EPIP-2, REV. 26

VALIDATION TIME: CONTROL ROOM: 16 MIN LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____UNSATISFACTORY _____

SIGNATURE: _____ **DATE:** _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are the SHIFT MANAGER. Unit 2 is at 100% power. The Unit 2 Board Operator acknowledges alarm "Fuel Pool System Abnormal" and refers to ARP 2-XA-55-4C, Window 1. AUO is dispatched to Panels 25-15 and 25-16 and determines that the cause is low level. The AUO reports to the Control Room that the Fuel Pool Liner appears to be leaking and level is slowly trending downward--Condensate makeup valve 2-SHV-078-0532 is tagged. The Operator notifies the US and SM of the impending problem.

INITIATING CUES: TECHNICAL SUPPORT personnel/UNIT SUPERVISOR determine that it will be two (2) hours before the fuel in the spent fuel pool will be in danger of being uncovered and 2-SHV-078-0532, Condensate Makeup valve will be untagged in one (1) hour for an adequate makeup source. Radcon reports that radiation levels around the Fuel Pool are raising slowly. Using the following parameters provided to you by the Control Room operating crew, **CLASSIFY THE EVENT** according to the EPIP's and perform any required actions.

Reactor Level--(+33 inches on Normal Range)
Reactor Pressure--1005 psig
DW Pressure--1.35 psig
DW Temperature--148 degrees F
DW Radiation--RR-90-256 reading normal
Torus Temperature--89 degrees F
Torus Pressure--1.40 psig
Torus Level--(+3 inches on normal band)

Fuel Pool Level two (2) feet below normal (TRENDING DOWN SLOWLY)
Radiation around Fuel Pool--previously 10 mr/hr--presently 20 mr/hr
NOTE: No abnormal radiological release is expected Offsite.

START TIME:_____

****

Performance Step : Critical_X__ Not Critical___

Refers to EPIP 1 to determine level of event.

Standard:

SHIFT MANAGER/SED refers to EPIP 1, Section 1.1, Reactor Water Level and declares an NOUE (1.1-U2) based on "Uncontrolled water level decrease in Spend Fuel Pool with irradiated fuel assemblies expected to remain covered by water.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical_X__ Not Critical___

Implements EPIP-2 NOTIFICATION OF UNUSUAL EVENT.

Standard:

SHIFT MANAGER/SED recognizes/implements an NOUE per EPIP-2.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

NOTIFICATION OF UNUSUAL EVENT | EPIP-2 | BROWNS FERRY NUCLEAR PLANT

3.0 INSTRUCTIONS

3.1 Notification of the Operations Duty Specialist (ODS)

Note: The ODS **should** be notified within 5 minutes after the emergency event is declared.

****

Performance Step : Critical__ Not Critical X

3.1.1 **Complete** Attachment A (Notification Information).

Standard:

ATTACHMENT A is complete with EAL Designator 1.1-U2 NOTIFICATION OF UNUSUAL EVENT status on Unit 2. Unit 2 is at 100% power with a Fuel Pool Liner leak causing fuel pool level to be two (2) feet below normal. Fuel Pool Makeup valve, 2-SHV-078-0532 is tagged [expected to be untagged in one (1) hour.] Irradiated fuel is expected to remain covered at all times. Radiation levels around pool are slowly trending upward. No abnormal radiological OFFSITE releases expected. **(INFORMATION GIVEN IN INITIAL CONDITIONS & INITIATING CUES EXCEPT EAL DESIGNATOR) NOTE: THIS IS GENERIC INFORMATION FOR DESCRIPTION OF EVENT--ALL THIS EXACT INFORMATION IS NOT REQUIRED FOR ACCEPTANCE UNDER BRIEF DESCRIPTION OF EVENT.**

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical X Not Critical ___

3.1.2 **Notify** the ODS and **Provide** the information from Attachment A.

Note: Utilize the direct ring-down ODS phone when making this notification or as applicable dial direct.

ODS Telephone Numbers
5-751-1700
5-751-2495

If the ODS cannot be reached within 10 minutes, **Then** contact the State of Alabama directly by requesting the Rad Health Duty Officer at:

Day Shift 8 a.m.-5 p.m.
9-1-334-206-5391

Holidays-Weekends-Offshifts
9-1-334-242-4378

Standard:

NOTIFIES the ODS and **provides** the information from Attachment A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: CONTACTING THE ODS WILL BE SIMULATED. Repeat back information provided on attachment A.

****

Performance Step : Critical___ Not Critical_X__

3.1.3 **Fax** a copy of Attachment A to the ODS for confirmation of information or State if contacted directly).

ODS Fax	AL Rad Health
5-751-8620	9-1-334-206-5387

CUE: FAXING TO THE ODS WILL BE SIMULATED.

Standard:

SIMULATED faxing a copy of Attachment A to the ODS.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

3.1.4 **Receive** confirmation call from the ODS (to verify notification of the State of Alabama. (NA this step if the State was contacted directly).

CUE: EXAMINER CONFIRMS THAT ODS HAS NOTIFIED THE STATE OF ALABAMA

3.2 **NOTIFICATION OF SITE PERSONNEL**

****

Performance Step : Critical__ Not Critical_X_

3.2.1 **Provide** the Unit 1, Unit Operator with a completed copy of Attachment A.

Standard:

SIMULATED providing the Unit 1 Operator with a completed copy of Attachment A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: UNIT 1 OPERATOR HAS A COPY OF ATTACHMENT A.

****

Performance Step : Critical__ Not Critical_X_

3.2.2 **Direct** the Unit 1, Unit Operator to make notifications from Attachment B (Unit 1, Unit Operator Notification), utilizing information from Attachment A.

Standard:

SIMULATED by requesting Unit 1 Operator and directing to make notifications per Attachment B, utilizing information from Attachment A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: UNIT 1 OPERATOR IS MAKING NOTIFICATIONS PER ATTACHMENT B.

****

Performance Step : Critical___ Not Critical_X__

3.2.3 **Make** the following P.A. announcement:

THIS IS (NAME), SHIFT MANAGER. A NOTIFICATION OF UNUSUAL EVENT HAS BEEN DECLARED ON UNIT _ 2. I HAVE ASSUMED THE DUTIES OF SITE EMERGENCY DIRECTOR.

Standard:

P. A. Announcement was simulated giving name, SHIFT MANAGER'S Position, NOTIFICATION OF UNUSUAL EVENT status on Unit 2.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X__

3.2.4 **Notify** the Plant Manager or alternate.

Standard:

SHIFT MANAGER **SIMULATES** calling the Plant Manager.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: PLANT MANAGER HAS BEEN NOTIFIED.

****

Performance Step : Critical___ Not Critical X__

3.3.1 **Determine** if Assembly and Accountability are required.

Standard:

Shift Manager determines that no Assembly or Accountability are required.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

3.3 ACCOUNTABILITY

3.3.1 **If** the NOUE has been declared due to Security EAL, 6.7-U, and Nuclear Security recommends Accountability to establish the "Two Person (Line of Sight) Rule", **Then** implement EPIP-8, Appendix C, for Assembly and Accountability only.

****

Performance Step : Critical___ Not Critical_X__

3.4 **OFFSITE DOSE ASSESSMENT**

3.4.1 Evaluate the need for offsite dose assessment. **(N/A STEP IF NOT APPLICABLE)**

CUE: DOSE ASSESSMENT STEP IS NOT APPLICABLE.

3.4.1.1 When offsite dose assessment is required obtain the information from the CECC when operational.

3.4.1.2 If the CECC is not operational, contact the TSC, when staffed or the RADCON Shift Supervisor and request the implementation of EPIP 14, for manual dose assessment.

Standard:

SHIFT MANAGER/SED addresses the OFFSITE DOSE ASSESSMENT and N/A's STEP.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical X Not Critical ___

3.5 **NOTIFICATION OF THE NRC**

3.5.1 **Notify** the **NRC** immediately or within within 1 hour and if requested by the **NRC** maintain an open and continuous communications channel.

Note: **Utilize** the Emergency Notification System **(ENS)** when making this notification. Dial the first number listed on the sticker affixed to the **ENS** telephone, using all 10 digits. **IF** the number is busy, **THEN** select in order, the alternate numbers until a connection is achieved.

Note: **IF** the **ENS** phones are out-of-service, **THEN** dial direct utilizing the TVA phone system by dialing 9-1-the number listed on the **ENS** telephones. No access codes are required.

Standard:

PERFORMER simulated notifying NRC. Informing NRC that the SHIFT MANAGER/SED has declared a NOTIFICATION OF UNUSUAL EVENT status on Unit 2 (1.1-U2).

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: EXAMINER REPEATS BACK INFORMATION PROVIDED TO NRC AND REQUESTS UPDATES FOR ANY CHANGE IN STATUS.

****

Performance Step : Critical___ Not Critical_X__

3.6 **PERIODIC EVALUATION OF THE EVENT**

3.6.1 Continue to **Evaluate** the event by using EPIP-1 as conditions warrant.

CUE: ANOTHER SHIFT MANAGER (SRO) IS HERE TO RELIEVE YOU. THAT WILL BE ALL FOR NOW!

END OF TASK

STOP TIME _____

STUDENT HANDOUT

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are the SHIFT MANAGER. Unit 2 is at 100% power. The Unit 2 Board Operator acknowledges alarm "Fuel Pool System Abnormal" and refers to ARP 2-XA-55-4C, Window 1. AUO is dispatched to Panels 25-15 and 25-16 and determines that the cause is low level. The AUO reports to the Control Room that the Fuel Pool Liner appears to be leaking and level is slowly trending downward--Condensate makeup valve 2-SHV-078-0532 is tagged. The Operator notifies the US and SM of the impending problem.

INITIATING CUES: TECHNICAL SUPPORT personnel/UNIT SUPERVISOR determine that it will be two (2) hours before the fuel in the spent fuel pool will be in danger of being uncovered and 2-SHV-078-0532, Condensate Makeup valve will be untagged in one (1) hour for an adequate makeup source. Radcon reports that radiation levels around the Fuel Pool are raising slowly. Using the following parameters provided to you by the Control Room operating crew, **CLASSIFY THE EVENT** according to the EPIP's and perform any required actions.

Reactor Level--(+33 inches on Normal Range)
Reactor Pressure--1005 psig
DW Pressure--1.35 psig
DW Temperature--148 degrees F
DW Radiation--RR-90-256 reading normal
Torus Temperature--89 degrees F

Torus Pressure--1.40 psig
Torus Level--(+3 inches on normal band)
Fuel Pool Level two (2) feet below normal (TRENDING DOWN SLOWLY)
Radiation around Fuel Pool--previously 10 mr/hr--presently 20 mr/hr
NOTE: No abnormal radiological release is expected Offsite.

Final

JPMs

(Browns Ferry 2004-301)

Final Submittal

Facility: BFN Exam Level (circle one): RO / SRO-I / **SRO-U**	Date of Examination:04/26-30/04 Operating Test Number: 1	
Control Room Systems (6 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
116F- Swap SJAE with failure of the alternate SJAE to initiate properly.	M, A, S	9
14F-EOI Appendix 5A Condensate/Feedwater with High Pressure Heaters isolated	D, A, S, L	2
23F-EOI Appendix 6E Injection Subsystem Lineup-CS Loop II	**D, A, S, L**	**4**
340-Restore a 4kv Shutdown Bd to normal alignment per 0-OI-82.	**N, S**	**6**
90-Start a Recirc Pump during power operation	M, S	1
126-Respond to High DW Pressure and Temp	M, A, S	5
133F-EOI Appendix 11B Alternate Pressure Control RCIC in Test Mode	**M, A, S, L**	**3**
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for **SRO-U**)		
79-Start RCIC from outside Control Room	**M, L, R**	**2**
86-Place a 250v Battery Charger in service	D	6
305- Restore RPS bus 3B after loss of the MG set	**D**	**7**
* Type codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow power, (R)CA		

FINAL (ROBERTSON ONLY)

Facility: BFN Date of Examination: 4/29/07
Exam Level (circle one): RO / SRO-I / **SRO-U** Operating Test Number:_____

Control Room Systems (6 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
116F- Swap SJAE with failure of the alternate SJAE to initiate properly.	M, A, S	9
14F-EOI Appendix 5A Condensate/Feedwater with High Pressure Heaters isolated	D, A, S, L	2
23F-EOI Appendix 6E Injection Subsystem Lineup-CS Loop II	**D, A, S, L**	**4**
340-Restore a 4kv Shutdown Bd to normal alignment per 0-OI-82.	**N, S**	**6**
90-Start a Recirc Pump during power operation	M, S	1
126-Respond to High DW Pressure and Temp	M, A, S	5
133F-EOI Appendix 11B Alternate Pressure Control RCIC in Test Mode DELETED DUE TO SIMULATOR MALFUNCTION	**M, A, S, L**	**3**
48F-EOI Appendix 11F RFPT on Minimum flow For Candidate Robertson only.	D A,S,L	**3**
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for **SRO-U**)		
79-Start RCIC from outside Control Room	**M, L, R**	**2**
86-Place a 250v Battery Charger in service	D	6
305- Restore RPS bus 3B after loss of the MG set	**D**	**7**

* Type codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow power, (R)CA

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.

2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).

3. Check the appropriate box if a psychometric flaw is identified:

- The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
- The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
- The answer choices are a collection of unrelated true/false statements.
- One or more distractors is not credible.
- One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).

4. Check the appropriate box if a job content error is identified:

- The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
- The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
- The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
- The question requires reverse logic or application compared to the job requirements.

5. Check questions that are sampled for conformance with the approved K/A and those that are designated SRO-only (K/A and license level mismatches are unacceptable).

6. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?

7.

8. 7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: 48F

TITLE: LINE UP ALTERNATE RPV PRESSURE CONTROL SYSTEMS - RFPT ON MINIMUM FLOW IN ACCORDANCE WITH 2-EOI APPENDIX 11F

TASK NUMBER: U-000-EM-58

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	11/09/99	ALL	NEW JPM
1	10/13/00	4	FORMAT CHANGE
2	8/13/02	All	General Revision
3	9/13/02	11	EDITORIAL

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 48F

TASK NUMBER: U-000-EM-58

TASK TITLE: LINE UP ALTERNATE RPV PRESSURE CONTROL SYSTEMS - RFPT ON MINIMUM FLOW IN ACCORDANCE WITH 2-EOI APPENDIX 11F

K/A NUMBER: 295025G12 K/A RATING: RO 3.9 SRO: 4.5

****

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO PLACE A RFPT IN PRESSURE CONTROL AS DIRECTED BY 2-EOI APPENDIX 11F.

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ____

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 11F, REV 4

VALIDATION TIME: CONTROL ROOM: 10:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____ UNSATISFACTORY _____

SIGNATURE: _____ DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. The Unit 2 reactor has scrammed and the turbine bypass valves are not responding properly for pressure control. EOI-1 has been followed to RC/P-11.

INITIATING CUES: The Unit Supervisor directs you to place 2A RFPT in alternate pressure control as directed by 2-EOI Appendix 11F.

START TIME_____

****

Performance Step: Critical___ Not Critical_X___

WHEN REQUESTED BY EXAMINER identify/obtain copy of required EOI Appendix.

Standard:

IDENTIFIED OR OBTAINED copy of 2-EOI Appendix 11F.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X__

1. IF.....BOTH of the following exist:

   - Emergency RPV Depressurization is required,

   AND

   - Group 1 Isolation Signal exists,

   THEN...**EXIT** this procedure and **ENTER** EOI Appendix 11H.

Standard:

VERIFIED that a Group 1 Isolation Signal DOES NOT exist by observing illuminated RED PCIS Group I lights and/or **VERIFIED** MSIVs are open by observing illuminated RED valve position indicating lights for each valve.

CUE: IF ASKED, EMERGENCY DEPRESSURIZATION IS NOT REQUIRED.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

2. **VERIFY** MSIVs open.

Standard:

VERIFIED MSIVs are open by observing illuminated RED valve position indicating lights above each valve handswitch and/or observing illuminated RED valve position indicating lights for MSIVs on PCIS display.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

3. **VERIFY** Hotwell Pressure at or below -7 in. Hg.

Standard:

VERIFIED main condenser vacuum at or below 23 in. HG absolute using 2-XR-2-2, HOTWELL TEMP AND PRESS, Panel 9-6, or by computer point D383, D384 or D385.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

4. **PLACE** RFPTs in service as follows:

   a. **VERIFY** the following:

      1) At least one condensate pump running.

      2) At least one condensate booster pump running.

      3) Condensate System aligned to supply suction to RFPs.

Standard:

VERIFIED at least one condensate and condensate booster pump running by red lights above handswitches on panel 9-6.
VERIFIED Condensate aligned by Low Pressure heater inlet and outlet valves open and RFP suction valves open.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

   b. **VERIFY** Main Oil Pump running for EACH RFPT to be started.

Standard:

VERIFIED 2A RFPT Main Oil Pump running by red light above MOP handswitch.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical X Not Critical

c. **VERIFY CLOSED** 2-FCV-3-19(12)(5), RFP 2A(2B)(2C) DISCHARGE VALVE.

Standard:

ATTEMPS TO CLOSE 2-FCV-3-19 using handswitch and observing valve did not close. Notifies US that 2-FCV-3-19 will not close.

CUE: US INSTRUCTS OPERATOR TO USE 2B RFP INSTEAD.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical_____Not Critical X

d. **DEPRESS** 2-HS-46-8A(9A)(10A), RFPT 2A(2B)(2C) SPEED CONT RAISE/LOWER, and **VERIFY** amber light is illuminated.

Standard:

DEPRESSED 2-HS-46-9A and **VERIFIED** amber light illuminated.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical X Not Critical_____

e. **DEPRESS** 2-HS-3-124A(150A)(175A), RFPT 2A(2B)(2C) TRIP RESET.

Standard:

DEPRESSED 2-HS-3-150.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical X Not Critical_____

f. **PLACE** 2-HS-46-112A(138A)(163A), RFPT 2A(2B)(2C) START/LOCAL ENABLE, in START.

Standard:

PLACED 2-HS-46-138A, **RFPT 2B** START/LOCAL ENABLE, in START and observed illuminated Red light.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

g. **CHECK** RFPT 2A (2B) (2C) Speed accelerates to approximately 600 rpm.

Standard:

CHECKED RFPT 2B Speed accelerating to approximately 600 rpm on 2-SI-46-9A.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical_X_ Not Critical_____

h. **VERIFY OPEN** 2-FCV-3-20 (13) (6), RFP 2A (2B) (2C) MIN FLOW VALVE.

Standard:

VERIFIED 2-FCV-3-13 RFP 2B MIN FLOW VALVE open by observing illuminated red light.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

CAUTION

RFP discharge pressure is limited to below 1250 psig to avoid system damage.

****

****

Performance Step: Critical X Not Critical_____

i. **PLACE** 2-HS-46-8A(9A)(10A), RFPT 2A(2B)(2C) SPEED CONT RAISE/LOWER in RAISE to raise RFPT speed, maintaining discharge pressure less than 1250 psig.

Standard:

RAISED RFPT speed using Manual Speed Control Handswitch, maintaining discharge pressure ≤ 1250 psig as indicated on 2-PI-3-9A, RFP 2B.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

5. **REPEAT** Steps 4.b through 4.i as necessary.

****

Performance Step: Critical____ Not Critical X___

PERFORMER demonstrated the use of TOUCH STAAR during this JPM.

Standard:

PERFORMER verified applicable components by utilizing TOUCH STAAR (Standard is subjective and instructor must evaluate the need for additional training on TOUCH STAAR to maintain plant standards).

SAT____ UNSAT_____N/A_____ COMMENTS: _____

_____

_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **116F1 System Simulator**

TITLE: **PLACING STANDBY STEAM JET AIR EJECTOR IN OPERATION**

TASK NUMBER: U-066-NO-07

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	10/10/99	ALL	NEW JPM
1	08/15/02	ALL	DELETED SS#, PAGE 4 DELETED PLANT WORK EXPECTATIONS, TOUCH STAAR, AND 3-WAY COMM. GENERAL REVISION OF PROCEDURE.
2	03/25/04	ALL	Procedure Rev; Format; Editorial; new fault; critical steps corrected to reflect system logic changes

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 116F1

TASK NUMBER: U-066-NO-07

TASK TITLE: PLACE THE STANDBY SJAE IN OPERATION

K/A NUMBER: 271000A4.09 K/A RATING: RO 3.3 SRO: 3.2

****
*

TASK STANDARD: PERFORM CONTROL ROOM MANIPULATIONS REQUIRED TO PLACE THE STANDBY STEAM JET AIR EJECTOR IN OPERATION DURING POWER OPERATION

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-OI-66, REV 84

VALIDATION TIME: CONTROL ROOM: 15:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY** _____

SIGNATURE: _____ **DATE:** _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. Unit 2 is at 100% power. 2A steam jet air ejector is in service in accordance with Section 5.9 of 2-OI-66. 2A steam jet air ejector is to be removed from service for maintenance and 2B steam jet air ejector is to be placed into operation. HWC is shutdown per 2-OI-4.

INITIATING CUES: _____(NAME)_____, remove 2A steam jet air ejector from service and place 2B steam jet air ejector into operation.

START TIME_____

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure.

Standard:

IDENTIFIED OR OBTAINED copy of 2-OI-66.

SAT___UNSAT___N/A___ COMMENTS:_____

8.4 Placing Standby SJAE in Operation

NOTES:

1. Auto swapping of SJAE is administratively prohibited per GE-SIL-150. See Precautions and Limitations 3.17.
2. Panel 25-105 located in Unit 2 Turbine Bldg. EL 586' T6-C
3 The HWC system is shutdown prior to intentional swapping of SJAEs to prevent receipt of the automatic trip of the HWC system that will occur when both SJAE DISCHARGE VALVES 2-FCV-66-14 and 18 are closed.

****

Performance Step : Critical___ Not Critical_X___

8.4.1 REVIEW all Precaution and Limitations in Section 3.0.

Standard:

REVIEWED all Precautions and Limitations in Section 3.0.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step : Critical___ Not Critical_X__

8.4.2 VERIFY the following initial conditions have been met:

8.4.2.1 Off-Gas System hydrogen concentration is less than 4% (by volume).

Standard:

VERIFIED hydrogen concentration less than 4% by any of the following methods:

- No high off gas hydrogen alarms on annunciator panel 2-XA-55-53
- Offgas Hydrogen Analyzer recorder 2-H2R-66-96, Panel 2-9-53, indicates less than 4% hydrogen (A & B analyzers)
- H2 Analyzer Conc Hi, 2-IL-66-96A and 2-IL-66-96B, Panel 2-9-53, status indicating amber lamps EXTINGUISHED

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X__

8.4.2.2 IF HWC System is in service, THEN

SHUTDOWN HWC System. REFER TO 2-OI-4. (otherwise N/A)

Standard:

None

SAT____UNSAT____N/A__X__ COMMENTS: Given in initial

conditions.

****

Performance Step : Critical___ Not Critical_X__

8.4.2.3 SJAEs are in operation. REFER TO Section 5.9.

Standard:

None

SAT____UNSAT____N/A__X__ COMMENTS: Given in initial conditions.

****

Performance Step : Critical___ Not Critical_X__

8.4.3 At Panel 2-9-6, VERIFY OPEN the following valves:

8.4.3.1 SJAE 2B(2A) CNDS INLET VALVE, using 2-HS-2-31A(36A).

8.4.3.2 SJAE 2B(2A) CNDS OUTLET VALVE, using 2-HS-2-35A(41A).

Standard:

At Panel 2-9-6, **VERIFIED** illuminated RED valve position indicating lamps above 2-HS-2-31A and 2-HS-2-35A.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step : Critical___ Not Critical_X__

8.4.4 At Panel 25-105, VERIFY CONDENSATE FROM SJAE B(A) pressure, 2-PI-2-34(40), is greater than 60 psig.

Standard:

DISPATCHED/CALLED Turbine Building AUO to determine reading from 2-PI-2-34, CONDENSATE FROM SJAE B, Panel 25-105.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

CUE: [WHEN DISPATCHED/CALLED] 2-PI-2-34, CONDENSATE FROM SJAE B, INDICATES 90 PSIG.

****

Performance Step : Critical___ Not Critical_X___

8.4.5 At Panel 25-105, VERIFY manual/hand loader output pressure and pressure controller setpoints are adjusted as follows:

8.4.5.1 Setpoint for STEAM TO SJAE B(A) STAGE I & II, 2-PC-1-152(150) set for approximately 225 psig (dial located inside controller housing).

8.4.5.2 Manual/Hand loader for STEAM TO SJAE B(A) STAGE I & II, 2-PC-1-152(150) set for approximately 8 psig.

8.4.5.3 Setpoint for STEAM TO SJAE B(A) STAGE III, 2-PC-1-167(166) set for approximately 225 psig (dial located inside controller housing).

8.4.5.4 Manual/hand loader for STEAM TO SJAE B(A) STAGE III, 2-PC-1-167(166), set for approximately 8 psig.

CUE: [WHEN DISPATCHED/CALLED], THE SETPOINT FOR STEAM TO SJAE B STAGES I AND II, 2-PC-1-152 IS SET FOR 225 PSIG. (INSIDE CONTROLLER HOUSING).

MANUAL HAND LOADER FOR SJAE B STAGE I AND II 2-PC-1-152 IS SET FOR 8 PSIG.

SETPOINT FOR STEAM TO SJAE B, STAGE III, 2-PC-1-167 IS SET FOR 225 PSIG. (INSIDE CONTROLLER HOUSING)

MANUAL HAND LOADER FOR STEAM TO SJAE B, STAGE III, 2-PC-1-167 IS SET FOR 8 PSIG.

Standard:

DISPATCH US to perform/verify steps 8.4.5.1 through 8.4.5.4.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

****

Performance Step : Critical_____Not Critical__X__

8.4.6 At Panel 25-105, VERIFY both SJAE dilution steam pressure modifiers are adjusted to approximately mid-position (located at the rear of panel).

8.4.6.1 SJAE B(A) STG I & II PRESSURE, 2-XM-1-152(150).

8.4.6.2 SJAE B(A) STAGE III PRESSURE, 2-XM-1-167(166).

CUE: [WHEN DISPATCHED/CALLED], BOTH SJAE DILUTION STEAM PRESSURE MODIFIERS ARE ADJUSTED TO MID-POSITION.

Standard:

DISPATCHED US to verify both SJAE dilution steam pressure modifiers are in mid-position.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

****

Performance Step : Critical____Not Critical_X___

8.4.7 At Panel 2-9-8, VERIFY OPEN both SJAE Inlet Valves using the following:

8.4.7.1 SJAE 2A INLET VALVE, 2-HS-66-11.

8.4.7.2 SJAE 2B INLET VALVE, 2-HS-66-15.

Standard:

VERIFIED/PLACED 2-HS-66-11 and 15 in the OPEN position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical__X__

8.4.8 At Panel 2-9-7, PLACE the STEAM TO SJAE 2A(2B) handswitch, 2-HS-1-155A(156A), in CLOSE.

Standard:

VERIFIED/PLACED 2-HS-1-155A in CLOSED position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical__X__

8.4.9 At Panel 2-9-7, PLACE the SJAE 2A(2B) PRESS CONTROLLER handswitch, 2-HS-1-150(152), in CLOSE.

Standard:

VERIFIED/PLACED 2-HS-1-150 in CLOSED position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

Performance Step : Critical___ Not Critical__X__

8.4.10 At Panel 2-9-8, PLACE the SJAE 2A(2B) OG OUTLET

VALVE using 2-HS-66-14(18), in CLOSE.

Standard:

VERIFIED/PLACED 2-HS-66-14 in CLOSED position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical_X_ Not Critical_____

8.4.11 At Panel 2-9-8, PLACE in OPEN/AUTO the SJAE 2B(2A) OG OUTLET VALVE using, 2-HS-66-18(14).

Standard:

VERIFIED/PLACED 2-HS-66-18 in the OPEN/AUTO position.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

****

Performance Step : Critical____ Not Critical_X___

8.4.12 At Panel 2-9-7, PLACE the SJAE TO SJAE 2B(2A) handswitch, 2-HS-1-156A(155A) in OPEN.

Standard:

PLACED 2-HS-1-156A in OPEN position. **Observes valve 1-156A does not respond.**

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_

_____

_

CUE: When failure of 2B SJAE recognized, STATE as UNIT SUPERVISOR "Place 2A SJAE back in service.....continue at step 8.4.8".

****

Performance Step : Critical_X__ Not Critical_____

8.4.8 At Panel 2-9-7, PLACE the STEAM TO SJAE 2A(2B) handswitch, 2-HS-1-155A(156A), in CLOSE.

Standard:

VERIFIED/PLACED 2-HS-1-156A in CLOSED position.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

****

Performance Step : Critical__X__Not Critical_____

8.4.9 At Panel 2-9-7, PLACE the SJAE 2A(2B) PRESSURE CONTROLLER handswitch, 2-HS-1-150(152), in CLOSE.

Standard:

PLACED 2-HS-1-152 to CLOSE.

SAT_____UNSAT_____N/A_____ COMMENTS:_____
_

_____
_

****

Performance Step : Critical_____Not Critical__X___

8.4.10 At Panel 2-9-8, PLACE the SJAE 2A(2B) OG OUTLET VALVE using 2-HS-66-14(18), in CLOSE.

Standard:

PLACED 2-HS-66-18 to CLOSE.

SAT_____UNSAT_____N/A_____ COMMENTS:_____
_

_____
_

_____

****

Performance Step : Critical X Not Critical

8.4.11 At Panel 2-9-8, PLACE in OPEN/AUTO the SJAE 2B(2A) OF OUTLET VALVE using, 2-HS-66-18(14).

Standard:

PLACED 2-HS-66-14 to OPEN/AUTO position.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step : Critical X Not Critical

8.4.12 At Panel 2-9-7, PLACE the STEAM TO SJAE 2B(2A) handswitch, 2-HS-1-156A(155A), in OPEN.

Standard:

PLACED 2-HS-1-155A in OPEN.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step : Critical_X_ Not Critical_____

8.4.13 At Panel 2-9-7, PLACE the STEAM TO SJAE 2B(2A) PRESS CONTROLLER handswitch, 2-HS-1-152(150), in OPEN.

Standard:

PLACED 2-HS-1-150 in OPEN.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

_____

_____

NOTE:

It may be necessary to return 2-HS-1-152(150) to CLOSE position, then back to OPEN in order to open the SJAE steam supply valves. This will reset the logic sequence.

****

Performance Step : Critical_____Not Critical_X_____

8.4.14 On Panel 25-105, ADJUST manual/hand loaders until dilution steam pressure is indicating approximately 190 to 220 psig on the following indications:

8.4.14.1 STEAM TO SJAE B(A) STAGE I & II, 2-PI-1-152(150).

8.4.14.2 STEAM TO SJAE B(A) STAGE III, 2-PI-1-167(166).

CUE: [WHEN DISPATCHED/CALLED], INFORM OPERATOR THAT LOCAL STEPS 8.4.14 THROUGH 8.4.19 HAVE BEEN COMPLETE.

Standard:

DISPATCHED Operator to perform steps 8.4.14 through 8.4.19 locally.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step : Critical___ Not Critical_X__

8.4.20 On Panel 2-9-6, MONITOR hotwell pressure as indicated on HOTWELL TEMP AND PRESS recorder, 2-XR-2-2.

Standard:

VERIFIED stable hotwell pressure and temperature indications on 2-XR-2-2.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: FOR STEP 8.4.21: INFORM OPERATOR THAT HWC IS TAGGED OUT AND UNAVAILABLE FOR SERVICE.

END OF TASK

STOP TIME:_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. Unit 2 is at 100% power. 2A steam jet air ejector is in service in accordance with Section 5.9 of 2-OI-66. 2A steam jet air ejector is to be removed from service for maintenance and 2B steam jet air ejector is to be placed into operation. HWC is shutdown per 2-OI-4.

INITIATING CUES: _____(NAME)_____, remove 2A steam jet air ejector from service and place 2B steam jet air ejector into operation.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **126F System Simulator**

TITLE: **RESPOND TO DRYWELL PRESSURE AND/OR TEMPERATURE HIGH OR EXCESSIVE LEAKAGE INTO DRYWELL**

TASK NUMBER: U-064-AB-01

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	9/22/99	ALL	NEW JPM
1	10/03/00	2,4,5	FORMAT REVISION
2	9/16/02	3,8	CHNG PROCED REV, ADD STEP
3	02/28/04	ALL	Format; Editorial

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 126F

TASK NUMBER: U-064-AB-01

TASK TITLE: RESPOND TO DRYWELL PRESSURE AND/OR TEMPERATURE HIGH OR EXCESSIVE LEAKAGE INTO DRYWELL

K/A NUMBER: 223001A4.07 K/A RATING: RO 4.2 SRO: 4.1

****
*

TASK STANDARD: PERFORM SUBSEQUENT OPERATOR ACTION REQUIRED TO REDUCE DRYWELL PRESSURE AS DIRECTED BY 2-AOI-64-1

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-AOI-64-1, REV 20

VALIDATION TIME: CONTROL ROOM: 14:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY**

SIGNATURE: _____ **DATE:** _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. Unit 2 is experiencing rising drywell pressure

INITIATING CUES: Respond to rising drywell pressure in accordance with the appropriate procedure.

START TIME_____

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required Abnormal Operating Instruction.

Standard:

IDENTIFIED OR OBTAINED copy of 2-AOI-64-1.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X__

4.2 Subsequent Actions

4.2.1 **IF** any EOI entry condition is met, **THEN**

ENTER appropriate EOI(s).

4.2.2 High Drywell Pressure:

4.2.2.1 **CHECK** Drywell pressure using multiple indications.

4.2.2.2 **ALIGN** and **START** additional Drywell coolers and fans as necessary. **REFER TO** 2-OI-64.

Standard:

Determine no EOI Entry condition is met and verifies all DW coolers are in service.

****

CAUTION

Stack release rates exceeding 1.4 X 10^{5} µci/sec, or a SI-4.8.B.1.a.1 release fraction above one will result in ODCM release being exceeded.

****

****

Performance Step : Critical_X_ Not Critical_____

4.2.2.3 **VENT** Drywell as follows:

4.2.2.3.1 **CLOSE** SUPPR CHBR INBD ISOLATION VLV 2-FCV-64-34 (Panel 2-9-3)

Standard:

PLACED 2-FCV-64-34 in the CLOSE position and **VERIFIED** illuminated GREEN valve position indicating lamp above associated hand switch.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X___

4.2.2.3.2 **VERIFY OPEN**, DRYWELL INBD ISOLATION VLV, 2-FCV-64-31, (Panel 2-9-3).

Standard:

VERIFIED illuminated RED valve position indicating lamps above associated hand switch.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X___

4.2.2.3.3 **VERIFY** 2-FIC-84-20 is in AUTO and SET at 100 scfm (Panel 2-9-55).

Standard:

VERIFIED 2-FIC-84-20 in AUTO and set for 100 scfm.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical_X_ Not Critical_____

4.2.2.3.4 **VERIFY RUNNING** a Standby Gas Treatment Fan STGTS TRAIN C(A)(B) (Panel 2-9-25.)

Standard:

At Panel 2-9-25, **DISCOVERED** that SGT Fan C would not start. Requests Unit 1 Operator to start A or B SGT.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

4.2.2.3.5 **REQUEST** Unit 1 Operator to START Standby Gas Treatment Fans A or B, if required. (Otherwise N/A)

****

CAUTION

If 2-FCV-84-20 closes after 2-HS-64-35 is opened, the reason for valve closure must be cleared and 2-HS-64-35 must be returned to OPEN in order for 2-FCV-84-20 to re-open.

****

****

Performance Step: Critical___ Not Critical_X_____

4.2.2.3.6 **RECORD** venting data (if required) in 2-SI-4.7.A.2.a (Otherwise N/A)

Standard:

None. Not required.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

****

Performance Step : Critical_X_ Not Critical_____

4.2.2.3.7 **PLACE** 2-FCV-84-20 CONTROL DW/SUPPR CHBR VENT, 2-HS-64-35, in OPEN (Panel 2-9-3).

Standard:

PLACED 2-HS-64-35 in the OPEN position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_____

4.2.2.3.8 **MONITOR** stack release rates to prevent exceeding ODCM limits.

Standard:

CONTACTED Log Person to determine stack release rates.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

****

CUE: [WHEN STEP 4.2.2.3.6 COMPLETED] THE UNIT SUPERVISOR DIRECTS DRYWELL VENTING TO BE CONTINUED UNTIL DIRECTED TO SECURE THE VENTING OPERATION. STACK RELEASE RATES ARE WELL WITHIN LIMITS.

END OF TASK

STOP TIME:_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. Unit 2 is experiencing rising drywell pressure

INITIATING CUES: Respond to rising drywell pressure in accordance with the appropriate procedure.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **14F System Simulator**

TITLE: **2-EOI APPENDIX 5A - INJECTION SYSTEMS LINEUP - CONDENSATE/FEEDWATER. HP HTRs ISOLATED.**

TASK NUMBER: U-000-EM-29

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* **Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence**

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	10/23/98	ALL	New JPM.
1	10/23/01	3, 4	PROCEDURE CHANGE, FORMAT CHANGE, SETPOINT CHANGE
2	02/28/04	All	Format; Editorial; Procedure Rev; KA change add setup Cue

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 14F

TASK NUMBER: U-000-EM-29

TASK TITLE: LINE UP INJECTION SYSTEMS - CONDENSATE/FEEDWATER IN ACCORDANCE WITH 2-EOI APPENDIX 5A. HP HTRs isolated.

K/A NUMBER: 295031EA1.12 K/A RATING: RO 3.9 SRO: 4.1*

****

TASK STANDARD: PERFORM CONTROL ROOM ACTIONS REQUIRED TO ESTABLISH THE CONDENSATE/FEEDWATER SYSTEM AS AN RPV INJECTION SYSTEM AS DIRECTED BY 2-EOI APPENDIX 5A

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 5A, REV 8

VALIDATION TIME: CONTROL ROOM: 11:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____ UNSATISFACTORY _____

SIGNATURE: _____DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are a Unit 2 Operator. The reactor was operating at 100% power and was scrammed and feedwater was secured due to misdiagnosis of a leak. EOI-1 has been followed through RC/L-3. RCIC is out of service and HPCI isolated upon startup.

INITIATING CUES: The problem that caused the loss of RFW has been verified to be erroneous and the Unit Supervisor has directed you to restore and maintain RPV water level + 2" to + 51" as directed by 2-EOI Appendix 5A, INJECTION SYSTEMS LINEUP - CONDENSATE/FEEDWATER.

SIMULATOR INSTRUCTOR: JPM REQUIRES RFPTS TRIPPED WITH ALL HP HEATERS ISOLATED AT START.

START TIME_____

****

Performance Step: Critical___ Not Critical_X___

WHEN REQUESTED BY EXAMINER identify/obtain copy of required EOI Appendix.

Standard:

IDENTIFIED OR OBTAINED copy of 2-EOI Appendix 5A.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

1. **VERIFY** Condensate system in service supplying suction to RFPs.

Standard:

VERIFIED condensate system in service by observation of valve alignment, condensate and condensate booster pump operation and RFP alignment.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

2. **VERIFY OPEN** MSIVs, supplying steam to RFPTs.

Standard:

VERIFIED MSIVs open by illuminated RED valve position indicating lamps on Panel 2-9-3 (vertical panel or benchboard).

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

3. **VERIFY** Hotwell Pressure below -7 in. Hg.

Standard:

VERIFIED Hotwell Pressure below -7 inches Hg. as indicated on 2-XR-2-2, Panel 2-9-6 or ICS computer.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X__

4. **VERIFY CLOSED** 2-FCV-1-121(129)(137), RFPT 2A(B)(C) LP STEAM SUPPLY VALVE.

Standard:

Closes or verifies LP steam supply valves closed. Student is not required to wait at this step until valves fully close.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

5. **VERIFY OPEN** 2-FCV-1-125(133)(141), RFPT 2A(B)(C) HP STEAM SUPPLY VALVE.

Standard:

VERIFIED illuminated RED valve position indicating lamp above 2-HS-1-125(133)(141) for selected RFP.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step : Critical_X_ Not Critical___

6. **DEPRESS** 2-HS-46-8A(9A)(10A), RFPT 2A(2B)(2C) SPEED CONT RAISE/LOWER, and **VERIFY** amber light is illuminated.

Standard:

DEPRESSED 2-HS-46-8A(9A)(10A), for selected RFP and verifies amber light illuminated.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X___

7. **VERIFY** a Main Oil Pump is running for RFPT to be started.

Standard:

VERIFIED Main Oil Pumps running for selected RFP.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

8. **VERIFY** for EACH of the following pushbuttons, the green light is illuminated and the red light is extinguished:

   2-HS-3-208A, RX WTR LVL CH A HI RFPT/MT TRIP RESET.

   2-HS-3-208B, RX WTR LVL CH B HI RFPT/MT TRIP RESET.

Standard:

VERIFIED illuminated GREEN LIGHT and RED LIGHT extinguished on 2-HS-3-208A & 208B.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical_X_ Not Critical____

9. **VERIFY OPEN** the following valves:

   - 2-FCV-3-75, HP HTR 2A1 FW OUTLET ISOL VLV.
   - 2-FCV-3-76, HP HTR 2B1 FW OUTLET ISOL VLV.
   - 2-FCV-3-77, HP HTR 2C1 FW OUTLET ISOL VLV.

Standard:

Recognizes HP heater inlet and outlet valves closed and **OPENs** a minimum of one set of the following valves.

2-FCV-3-38 and 2-FCV-3-75, A HP HTR Inlet and Outlet
2-FCV-3-31 and 2-FCV-3-76, B HP HTR Inlet and Outlet
2-FCV-3-24 and 2-FCV-3-77, C HP HTR Inlet and Outlet

NOTE: Inlet valve not fully open before the outlet valve is fully opened will cause the outlet valve to close.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

CUE: HP Heaters are charged

****

Performance Step: Critical X Not Critical_____

10. **DEPRESS** 2-HS-3-124A(150A)(175A), RFPT 2A(2B)(2C) TRIP RESET, and **CHECK** the following:

    - Blue light extinguished
    - HP Stop Valve open as indicated by red light above the following:
        - 2-HS-3-108, RFPT 2A HP STOP VLV (2-FCV-1-127) TEST
        - 2-HS-3-134, RFPT 2B HP STOP VLV (2-FCV-1-135) TEST
        - 2-HS-3-159, RFPT 2C HP STOP VLV (2-FCV-1-143) TEST
    - LP Stop Valve open as indicated by red light above the following:
        - 2-HS-3-107, RFPT 2A LP STOP VLV (2-FCV-1-123) TEST
        - 2-HS-3-133, RFPT 2B LP STOP VLV (2-FCV-1-131) TEST
        - 2-HS-3-158, RFPT 2C LP STOP VLV (2-FCV-1-139) TEST

Standard:

DEPRESSED RESET PB and verified the LP Stop Valve for the selected pump opens.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

11. **VERIFY OPEN** 2-FCV-3-20(13)(6), RFP 2A(2B)(2C) MIN FLOW VALVE.

Standard:

VERIFIED min flow valve for selected RFP is open.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical_X_ Not Critical___

12. **PLACE** 2-HS-46-112A(138A)(163A), RFPT 2A(2B)(2C) START/LOCAL ENABLE, in START.

Standard:

PLACED START/LOCAL ENABLE switch for the selected RFP in **START**.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical____ Not Critical X___

13. **CHECK** RFPT 2A (2B) (2C) Speed accelerates to approximately 600 rpm.

Standard:

CHECKED RFPT Speed accelerated to approximately 600 rpm.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X_

14. **VERIFY OPEN** 2-FCV-3-19(12)(5), RFP 2A(2B)(2C) DISCHARGE VALVE.

Standard:

VERIFIED RFP Discharge valve open for selected RFP.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical X Not Critical___

15. **RAISE** RFPT 2A (2B) (2C) speed UNTIL RFP discharge pressure is approximately equal to RPV pressure using ANY of the following methods on Panel 2-9-5:

- Using individual 2-HS-46-8A (9A) (10A), RFPT 2A (2B) (2C) SPEED CONT RAISE/LOWER switch in MANUAL GOVERNOR,

OR

- Using individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in MANUAL,

OR

- Using 2-LIC-46-5, REACTOR WATER LEVEL CONTROL PDS, in MANUAL with individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in AUTO.

Standard:

RAISED RFPT speed UNTIL RFP discharge pressure was approximately equal to RPV pressure utilizing one of the methods above on Panel 2-9-5.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical_X_ Not Critical_____

16. **SLOWLY RAISE** speed of RFPT UNTIL RFW flow to the RPV is indicated using ANY of the following methods on Panel 2-9-5:

- Using individual 2-HS-46-8A (9A) (10A), RFPT 2A (2B)(2C) SPEED CONT RAISE/LOWER switch in MANUAL GOVERNOR,

OR

- Using individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in MANUAL,

OR

- Using 2-LIC-46-5, REACTOR WATER LEVEL CONTROL PDS, in MANUAL with individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in AUTO.

Standard:

SLOWLY RAISED speed of RFPT **UNTIL** RFW flow to the RPV is indicated utilizing one of the above methods.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step : Critical____ Not Critical_X__

17. **ADJUST** RFPT speed as necessary using ANY of the following methods on Panel 2-9-5:

- Using individual 2-HS-46-8A (9A) (10A), RFPT 2A (2B) (2C) SPEED CONT RAISE/LOWER switch in MANUAL GOVERNOR,

OR

- Using individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in MANUAL,

OR

- Using 2-LIC-46-5, REACTOR WATER LEVEL CONTROL PDS, in MANUAL with individual 2-SIC-46-8 (9) (10), RFPT 2A (2B) (2C) SPEED CONTROL PDS in AUTO.

Standard:

ADJUSTED speed of RFPT as required utilizing one of the above methods to obtain stable operation.

SAT____UNSAT____N/A____ COMMENTS:_____

WHEN RX WATER LEVEL IS RISING AND EXAMINEE DEMONSTRATES CONTROL OF RX FEED PUMP:

CUE: "ANOTHER OPERATOR WILL RELIEVE YOU OF WATER LEVEL CONTROL, THAT WILL BE ALL FOR NOW."

END OF TASK

STOP TIME_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are a Unit 2 Operator. The reactor was operating at 100% power and was scrammed and feedwater was secured due to misdiagnosis of a leak. EOI-1 has been followed through RC/L-3. RCIC is out of service and HPCI isolated upon startup.

INITIATING CUES: The problem that caused the loss of RFW has been verified to be erroneous and the Unit Supervisor has directed you to restore and maintain RPV water level + 2" to + 51" as directed by 2-EOI Appendix 5A, INJECTION SYSTEMS LINEUP - CONDENSATE/FEEDWATER.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **23F System Simulator**

TITLE: **2-EOI APPENDIX 6E - INJECTION SUBSYSTEM LINEUP - CS SYSTEM II**

TASK NUMBER: U-000-EM-35

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	09/20/99	ALL	NEW JPM
1	09/22/00	ALL	GENERAL REVISION
2	8/30/02	ALL	GENERAL REVISON
3	02/26/04	ALL	Format; Editorial

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 23F

TASK NUMBER: U-000-EM-35

TASK TITLE: LINE UP INJECTION SUBSYSTEMS - CORE SPRAY LOOP II IN ACCORDANCE WITH 2-EOI APPENDIX 6E

K/A NUMBER: 209001A4.05 K/A RATING: RO 3.8 SRO: 3.6

****

TASK STANDARD: PERFORM MANIPULATIONS REQUIRED TO INJECT WATER INTO THE RPV VIA CORE SPRAY SYSTEM II AS DIRECTED BY 2-EOI APPENDIX 6E

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 6E, REV 6

VALIDATION TIME: CONTROL ROOM: 6:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY** _____

SIGNATURE: _____ **DATE:** _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

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****

INITIAL CONDITIONS: You are the Unit Operator. The Unit 2 reactor was in Mode 4 with shutdown cooling on loop 2 when an unisolable leak developed causing RPV level to lower. The plant is operating per EOI-1.

INITIATING CUES: The Unit Supervisor directs you to inject water into the RPV to restore RPV water level to + 2" - + 51" using Core Spray System II as directed by 2-EOI Appendix 6E.

START TIME_____

INSTRUCTOR NOTE: VERIFY 75-51 CLOSED and 75-53 OPEN FOR THIS JPM.

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure.

Standard:

IDENTIFIED OR OBTAINED copy of 2-EOI APPENDIX 6E.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

****

Performance Step: Critical___ Not Critical_X__

1. **VERIFY OPEN** the following valves:

   - 2-FCV-75-30, CORE SPRAY PUMP 2B SUPPR POOL SUCT VLV.

Standard:

VERIFIED illuminated RED valve position indicating lamp located above 2-HS-75-30A.

SAT____UNSAT____N/A____ COMMENTS:_____

****

Performance Step: Critical___ Not Critical_X___

- 2-FCV-75-39, CORE SPRAY PUMP 2D SUPPR POOL SUCT VLV.

Standard:

VERIFIED illuminated RED valve position indicating lamp located above 2-HS-75-39A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step: Critical_X__ Not Critical_____

- 2-FCV-75-51, CORE SPRAY SYS II OUTBD INJECT VALVE.

Standard:

Recognize valve closed (illuminated GREEN valve position indicating lamp located above 2-HS-75-51A) and opened 2-FCV-75-51 with 2-HS-75-51A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

Instuctor Note:
This is the faulted step in the JPM. Valve interlocks will prevent the outboard valve from opening with the inboard valve open. Examinee must first close the inboard valve to allow opening of the outboard valve. If AUO dispatched to open the outboard valve manually, report no personnel available.

****

Performance Step: Critical___ Not Critical_X__

2. **VERIFY CLOSED** 2-FCV-75-50, CORE SPRAY SYS II TEST VALVE.

Standard:

VERIFIED illuminated GREEN valve position indicating lamp located above 2-HS-75-50A.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step: Critical_X_ Not Critical___

3. **VERIFY** CS Pump 2B and/or 2D running.

Standard:

PLACED 2-HS-74-33A and/or 2-HS-74-42A in the START position and **VERIFIED** illuminated RED motor breaker position indicating lamp(s) above associated control switches.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step: Critical X Not Critical____

4. WHEN...RPV pressure is below 450 psig, THEN...**THROTTLE** 2-FCV-75-53, CORE SPRAY SYS II INBD INJECT VALVE, as necessary to control injection at or below 4000 gpm per pump.

Standard:

PLACED 2-HS-75-53A (2-FCV-75-53) in the OPEN position and **VERIFIED** illuminated RED valve position indicating lamp above associated control switch.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

CAUTION

Continuous operation with inadequate NPSH may result in pump damage or pump inoperability.

****
****

Performance Step : Critical___ Not Critical X___

5. **MONITOR** Core Spray Pump NPSH using Attachment 1.

Standard:

COMPARED pump flow rate, suppression pool temperature and suppression chamber pressure and **DETERMINED** adequate NPSH.

SAT____UNSAT____N/A____ COMMENTS:_____

END OF TASK

STOP TIME _____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are the Unit Operator. The Unit 2 reactor was in Mode 4 with shutdown cooling on loop 2 when an unisolable leak developed causing RPV level to lower. The plant is operating per EOI-1.

INITIATING CUES: The Unit Supervisor directs you to inject water into the RPV to restore RPV water level to + 2" - + 51" using Core Spray System II as directed by 2-EOI Appendix 6E.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **340 System Simulator**

TITLE: **Restore a 4kv Shutdown Bd to normal alignment per 0-OI-82.**

TASK NUMBER:

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	04/02/04	ALL	NEW JPM

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 340

TASK NUMBER: U-82-NO-5

TASK TITLE: SHUT DOWN A DIESEL GENERATOR

K/A NUMBER: 264000A4.04 K/A RATING: RO 3.7 SRO: 3.7

****

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO UNLOAD A DIESEL GENERATOR AND RESTORE A 4KV SHUTDOWN BD TO NORMAL ALIGNMENT PER 0-OI-82 AT PANEL 9-23

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 0-OI-82, REV. 82

VALIDATION TIME: CONTROL ROOM: 17:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____
_____
_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____UNSATISFACTORY _____

SIGNATURE: _____ **DATE:** _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are a Unit Operator. Unit 2 is operating at 100% power. Diesel Generator 'A' is running as the only source to A 4KV Shutdown board per 0-OI-82 section 8.2 to allow maintenance on the transfer circuitry for the board.

INITIATING CUES: The UNIT SUPERVISOR directs you to restore offsite power to the A 4kv Shutdown Board and return A DG to standby as directed by 0-OI-82 step 8.3 starting at step 8.3.1.

START TIME_____

****

Performance Step: Critical___ Not Critical__X___

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure.

Standard:

IDENTIFIED OR OBTAINED copy of 0-OI-82.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

8.3 Restoring Offsite Power to 4-kV Shutdown Board at Panel 9-23

****

Performance Step: Critical____ Not Critical___X__

8.3.1 **VERIFY** 4-kV Shutdown Board A(B,C,D) is being supplied power by its respective diesel generator as the only source of power.

Standard:

Verifies only the D/G output breaker is closed on panel 9-23

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical X Not Critical_____

8.3.2 **VERIFY** the associated 4kV shutdown board auto transfer lockout relay is tripped to MANUAL:

Diesel	Instrument Name	Instrument No	Panel
A	4kV SD BD A AUTO/LOCKOUT RESET	0-211-A	0-9-23-7
B	4kV SD BD B AUTO/LOCKOUT RESET	0-211-B	0-9-23-7
C	4kV SD BD C AUTO/LOCKOUT RESET	0-211-C	0-9-23-8
D	4kV SD BD D AUTO/LOCKOUT RESET	0-211-D	0-9-23-8

Standard:

VERIFIES the associated 4kV shutdown board auto transfer lockout relay is tripped to MANUAL:

Diesel	Instrument Name	Instrument No	Panel
A	4kV SD BD A AUTO/LOCKOUT RESET	0-211-A	0-9-23-7

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical__X__ Not Critical_____

8.3.3 **PLACE** the synchroscope switch for the 4-kV shutdown board feeder breaker that is to be paralleled with the diesel generator in ON.

Standard:

PLACED Synchroscope handle into slot for normal feeder breaker (1614) and turns on.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical__X__

8.3.4 **VERIFY** 4-kV Shutdown Bus 1(2) voltage is between 3950 VOLTS and 4400 VOLTS and NOT undergoing abnormal voltage transients.

8.3.5 **VERIFY** associated incoming frequency is between 59 HERTZ and 61 HERTZ and NOT undergoing abnormal frequency transients:

Shutdown Bd	Instrument Name	Instrument No	Panel
A or B	GEN SYNC FREQUENCY	0-SI-82-AB	0-9-23-7
C or D	GEN SYNC FREQUENCY	0-SI-82-CD	0-9-23-8

Standard:

Verifies 4kv Shutdown bus 1 is within the acceptable range on

voltage and frequency and not undergoing abnormal transients.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

8.3.7 **PULL and PLACE** the associated Diesel Generator mode selector switch in PARALLEL WITH SYSTEM:

Diesel	Handswitch Name	Handswitch No	Panel
A	DG A MODE SELECT	0-HS-82-A/5A	0-9-23-7

Standard:

RELEASED switch **OBSERVED** Parallel with System light illuminated.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical_X_ Not Critical_____

8.3.9 **ADJUST** diesel generator frequency using the associated Diesel Generator governor control switch to obtain a synchroscope needle rotation of one revolution every 15 to 20 seconds in the SLOW direction:

Diesel	Handswitch Name	Handswitch No	Panel
A	DG A GOVERNOR CONTROL	0-HS-82-A/3A	0-9-23-7

Standard:

Adjusted Governor switch to obtain synchroscope rotation in the CCW direction with 15-20 seconds for one revolution.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

8.3.10 **USE** the associated Diesel Generator voltage regulator control switch to match Diesel Generator and System voltages:

Diesel	Instrument Name	Instrument No	Panel
A	DG A VOLT REGULATOR CONT	0-HS-82-A/2A	0-9-23-7
	GEN SYNC REF VOLTAGE	0-EI-82-AB	
	SYSTEM SYNC REF VOLTAGE	0-EI-211-AB	

Standard:

Adjusted Voltage Regulator Control Switch to match voltages.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

8.3.11 **WHEN** the synchroscope needle is approximately 2 minutes on the right hand side of the 12 o'clock position, **THEN**

CLOSE the 4-kV shutdown board feeder breaker that is to be paralleled with the diesel generator.

Standard:

Closed Breaker 1614 and observed red indicating light illuminated for breaker.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

****

Performance Step: Critical___ Not Critical_X___

8.3.12 **PLACE** the synchroscope switch for the 4-kV shutdown board feeder breaker that was paralleled with the diesel generator in OFF.

Standard:

Placed synchroscope switch for the 4-kV shutdown board feeder breaker that was paralleled with the diesel generator in **OFF**.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

8.3.13 **IF** the normal feeder breaker from the 4-kV shutdown bus is supplying the 4-kV shutdown board, **THEN**

RESET the associated 4kV shutdown board auto transfer lockout relay:

Diesel	Instrument Name	Instrument No	Panel
A	4kV SD BD A AUTO/LOCKOUT RESET	0-43-211-A	0-9-23-7

Standard:

Reset 4kV shutdown board auto transfer lockout relay 0-43-211-A.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

****

Performance Step: Critical___ Not Critical_X___

8.3.14 **USE** the associated Diesel Generator's governor control switch and voltage regulator control switch to obtain desired kW and kVAR load:

Diesel	Instrument Name	Instrument No.	Panel
A	DG A GOVERNOR CONTROL	0-HS-82-A/3A	0-9-23-7
	DG A VOLT REGULATOR CONT	0-HS-82-A/2A	

CUE: Diesel Generator A is no longer required, Place the D/G in Standby Readiness per 0-OI-82.

****

Performance Step: Critical___ Not Critical_X___

8.3.17 **WHEN** Parallel with System operation is no longer desired, **THEN**

UNLOAD the diesel generator as follows:

****

CAUTION

[II/C] When unloading the diesel generator, failure to slowly approach the 100 kW/100 kVAR limit may result in a reverse power trip of the diesel generator output breaker. [II-92-055]

****

8.3.17.1 [II/C] **USE** the associated Diesel Generator's governor control switch and voltage regulator control switch to reduce generator load to approximately 100 kW and 100 kVAR: [II-92-055]

Diesel	Instrument Name	Instrument No	Panel
A	DG A GOVERNOR CONTROL	0-HS-82-A/3A	0-9-23-7
	DG A VOLT REGULATOR CONT	0-HS-82-A/2A	
	DG A KILOWATTS	0-JI-82-A/A	
	DG A KILOVARS	0-VAR-82-A/A	

Standard:

Verifies generator load is approximately 100 kW and 100 kVAR:

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical X Not Critical___

8.3.17.2 **PLACE** the associated diesel generator breaker control switch in TRIP:

Diesel	Handswitch Name	Handswitch No	Panel
A	DG A BKR 1818	0-HS-211-A/22A	0-9-23-7
B	DG B BKR 1822	0-HS-211-B/4A	0-9-23-7
C	DG C BKR 1812	0-HS-211-C/4A	0-9-23-8
D	DG D BKR 1816	0-HS-211-D/20A	0-9-23-8

Standard:

Places D/G A Output Breaker Handswitch (0-HS-211-A/22A) in Trip

and verifies Green Light illuminated.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical _X__

8.3.17.3 PULL and **PLACE** the associated Diesel Generator mode selector switch in SINGLE UNIT:

Diesel	Handswitch Name	Handswitch No.	Panel
A	DG A MODE SELECT	0-HS-82-A/5A	0-9-23-7

8.3.17.4 **RELEASE** the Diesel Generator mode selector switch and **OBSERVE** the SINGLE UNIT light illuminated.

Standard:

Places Diesel Generator A mode selector switch in SINGLE UNIT, **OBSERVES** the SINGLE UNIT light illuminated.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical _X__

8.3.17.5 **RECORD** the time/date unloaded on Illustration 2.

8.3.17.6 **VERIFY** Diesel Generator breaker closing spring is charged by observing that the amber breaker spring charged light is on and closing spring target indicates closed.

CUE: Another UO is performing these actions.

****

Performance Step: Critical___ Not Critical _X__

8.3.18 **IF** operation of the diesel generator is no longer required, **THEN**

REFER TO Section 7.0 and SHUT DOWN the diesel generator.

****

> **NOTE:** Candidate has already been instructed to return D/G to Standby Readiness.

Performance Step: Critical___ Not Critical _X__

7.1 Shutdown at Panel 9-23

7.1.1 **VERIFY** the following initial conditions:

7.1.1.1 All Precautions and Limitations in Section 3.0 have been reviewed.

7.1.1.2 DG A(B,C,D) Output Bkr 1818(1822,1812,1816) is OPEN.

Standard:

Verifies Diesel Generator A Output Bkr 1818 is OPEN.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

****

Performance Step : Critical X Not Critical

7.1.2 **PULL UP and RELEASE** the associated Diesel Generator control switch in NORMAL to initiate the shutdown sequence:

Diesel	Handswitch Name	Handswitch No.	Panel
A	DG A CONTROL	0-HS-82-A/1A	0-9-23-7
B	DG B CONTROL	0-HS-82-B/1A	0-9-23-7
C	DG C CONTROL	0-HS-82-C/1A	0-9-23-8
D	DG D CONTROL	0-HS-82-D/1A	0-9-23-8

Standard:

PULLED UP and RELEASED 0-HS-82-A/1A, DG A CONTROL switch in NORMAL to initiate the shutdown sequence.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

NOTE:

The diesel engine will idle between 440 RPM and 460 RPM for approximately 11.5 minutes after receiving a stop signal. An additional 3 minutes should be allowed for the logic timer to reset.

CUE: Another operator will complete restoration of the DG to standby. This completes the JPM.

END OF TASK

STOP TIME_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are a Unit Operator. Unit 2 is operating at 100% power. Diesel Generator 'A' is running as the only source to A 4KV Shutdown board per 0-OI-82 section 8.2 to allow maintenance on the transfer circuitry for the board.

INITIATING CUES: The UNIT SUPERVISOR directs you to restore offsite power to the A 4kv Shutdown Board and return A DG to standby as directed by 0-OI-82 step 8.3 starting at step 8.3.1.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **90 System Simulator**

TITLE: **START A RECIRC PUMP DURING POWER OPERATION**

TASK NUMBER: U-000-NO-06

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE:_____DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
3	10/4/94	ALL	GENERAL REVISION
4	10/31/95	ALL	PROCEDURE REVISIONS
5	11/30/95	ALL	PROCEDURE REPAGINATION
6	5/2/96	ALL	PROCEDURE REPAGINATION, ADDED NOTE ON DISCH VLV CLOSURE CKT, AND MINOR VERBAL CHANGES
7	11/09/99	ALL	PROCEDURE REVISION, RE-FORMAT DOCUMENT, ADDED PLANT WORK EXPECT., TOUCH STAAR, 3-WAY COMM., CHANGED ASOS TO US
8	09/23/00	ALL	GENERAL REVISION
9	09/02/01	ALL	General Revision
10	10/10/01	ALL	General Revision
11	02/27/04	ALL	FULL REVISION to incorporate VFDs

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 90

TASK NUMBER: U-068-NO-06

TASK TITLE: START AN IDLE RECIRCULATION PUMP DURING POWER OPERATIONS

K/A NUMBER: 202001A4.01 K/A RATING: RO 3.7 SRO: 3.7

****

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO RESTART AN IDLE RECIRC PUMP DURING POWER OPERATIONS AS DIRECTED BY 2-OI-68

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ____

REFERENCES/PROCEDURES NEEDED: 2-OI-68, REV 106

VALIDATION TIME: SIMULATOR: 17:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____ **UNSATISFACTORY** _____

EXAMINER:_____**DATE:** _____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. 2A Recirc Pump tripped 1 hour ago. All AOI actions have been completed. The problem with 2A Recirc Pump has been corrected. The SRO has directed 2A Recirc Pump be restarted. The Reactor Engineer is in the control room. Steps 5.3.1 through 5.3.8 and 2-SR-3.3.1.1.I are complete 2-SR-3.4.9.3 & 4 has been started per step 5.3.9.

INITIATING CUES: The US directs you to continue the return of 2A Recirc Pump to service and balance jet pump flows in preparation for power ascension as directed by 2-OI-68 starting at Step 5.3.10 when step 5.3.9 is complete.

START TIME:_____

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure.

Standard:

IDENTIFIED OR OBTAINED copy of 2-OI-68.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

Performance Steps : Critical___ Not Critical__X___

REVIEW Precautions and Limitations.

Standard:

REVIEWED Precautions and Limitations

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

5.3 Recirc Pump Startup

NOTES:

(1) All operations are performed at Panel 2-9-4 unless noted otherwise.

(2) Capacitor bank fuses are subject to clearing when the unit boards are being supplied from the 161 source and large pumps are started. Unit Supervisors are to evaluate the need to place the Capacitor Banks in Manual prior to starting a Recirc Pump from the Alternate feeder. The evaluation should consider placing a Caution Order on the Recirc Pump's start switches stating, "evaluate the need to place CAP Banks in Manual prior to starting Pumps from the ALTERNATE FEED."

(3) If the OPRMS are inoperable then surveillance 2-SR-3.3.1.1.I is required to be performed prior to starting a recirc pump while in Mode 1.

5.3.1 **VERIFY** Recirc Drive Cooling System is in service with conductivity <3μs REFER TO Section 5.1 .

5.3.2 **VERIFY** Seal purge aligned to the Recirc Pump Being started REFER TO Section 5.2

5.3.3 **VERIFY** RPTs are reset, **REFER** TO Section 8.6.

NOTE: The following step will apply input voltage to the Recirc Drive but will not start the Recirc Pump.

5.3.4 **VERIFY CLOSED**, RECIRC DRIVE 2A(2B) NORMAL FEEDER, 2-HS-57-17(14) or RECIRC DRIVE 2A(2B) ALTERNATE FEEDER 2-HS-57-15(12). REFER TO Section 5.4

NOTE: Recirc Drive cells which are bypassed may be unbypassed when fault is repaired and 4KV is applied to the drive.

5.3.5 **IF** ICS is available, **REFER** TO ICS Screen VFDPMPA or VFDPMPB and VERIFY VFD cells which are bypassed are addressed.

****
CAUTION

Recirc System operation is restricted by criteria in Illustrations 1 and 2.
****

5.3.6 **IF** one Recirc Pump is in service, **THEN**

VERIFY the following:

- Operating Recirc Pump flow is below 46,600 gpm.
- Operating Recirc Pump speed is less than 860 RPM speed.
- Reactor operating conditions are outside of regions 1, 2 and 3. (REFER TO Illustration 1)
- 10% margin between Reactor Power and APRM rod block setpoint.

5.3.7 [NER/C] **VERIFY** RBCCW PUMP SUCTION HDR, 2-TIS-70-3, greater than 70°F (Panel 2-9-4). [GE SIL-303]

5.3.8 **IF** necessary to bring Recirc Pump temperatures to within limits, **THEN**

THROTTLE RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79), using 2-HS-68-3A(79A), as necessary to limit the heatup rate to less than 90°F/hr.

****

CAUTION

Recirc Pump should be started within 15 minutes after performance of 2-SR-3.4.9.3 & 4 to prevent pump temperature changes due to cooldown.

****

NOTE: Control Room copy of 2-SR-3.4.9.3&4 may be used.

5.3.9 **PERFORM** 2-SR-3.4.9.3&4, Reactor Recirculation Pump Start Limitations, to verify that coolant temperatures are within proper limits. **IF** the Control Room Copy of 2-SR-3.4.9.3&4 is used, **THEN**:

NOTIFY TIC to replace.

CUE: When candidate has had an opportunity to review precautions and limitations and earlier procedure steps, REPORT 2-SR-3.4.9.3&4 is completed satisfactorily and logged.

****

Performance Step : Critical_____ Not Critical__X__

5.3.10 **VERIFY** RECIRC LOOP A(B) DIFF PRESS LOW annunciation, 2-XA-55-4A(4B), Window 31 in ALARM.

Standard:

VERIFIES RECIRC LOOP A(B) DIFF PRESS LOW annunciation, 2-XA-55-4A(4B), Window 31 in ALARM

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

NOTE:

The closure circuit for RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-HS-68-3A(79A) is a seal-in and is **NOT** to be held in the **CLOSE** position unless specifically directed.

****

Performance Step : Critical_X__ Not Critical____

5.3.11 **VERIFY CLOSED**, RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

Standard:

PLACES 2-HS-68-3 to close and releases. **CHECKS** red light extinguishes

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

CAUTION

Recirc System operation is restricted by criteria in Illustrations 1 and 2.

****

NOTES:

(1) The DRIVE READY light will only light after the FAULT RESET push button is depressed, if all the active faults are reset. ICS screen VFDAAL(VFDBAL) can be referred to verify the Number of Active Faults is zero after depressing the fault reset push buttons. Any faults listed after the FAULT RESET push button has been depressed, are keeping the drive from being ready to run.

(2) The actions which occur after the START pushbutton is depressed are listed on the next page.

(3) When depressing the switches which control the Recirc Drives these switches must be firmly depressed to ensure all the contacts are madeup.

****

Performance Steps : Critical___ Not Critical__X____

5.3.12 **IF** the recirc drive startup seq incomplete alarm is received and the Recirc discharge valve is jogging OPEN **THEN**: (N/A if alarm is not received)

5.3.12.1 **CLOSE and HOLD**, RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

5.3.12.2 **OPEN THEN CLOSE** RECIRC PUMP A(B) INSTR BKR 519(520) panel 9-9 cabinet 5.

5.3.12.3 **RELEASE** RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

Standard:

No Action Required

SAT_____UNSAT_____N/A___X___ COMMENTS:_____

****

Performance Step : Critical X Not Critical_____

5.3.13 **IF** starting 2A Recirc Pump, **THEN**:
PERFORM the Following (otherwise N/A)
5.3.13.1 **DEPRESS** FAULT RESET, 2-HS-96-13
5.3.13.2 **VERIFY** DRIVE READY, 2-IL-96-37 is LIT.
5.3.13.3 **FIRMLY DEPRESS** DRIVE START, 2-HS-96-11.

Standard:

DEPRESSED FAULT RESET, 2-HS-96-13
VERIFIED DRIVE READY, 2-IL-96-37 is LIT.(not critical)
FIRMLY DEPRESSED DRIVE START, 2-HS-96-11.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

5.3.14 **IF** starting 2B Recirc Pump, **THEN**:
PERFORM the Following (otherwise N/A)
5.3.14.1 **DEPRESS** FAULT RESET, 2-HS-96-14
5.3.14.2 **VERIFY** DRIVE READY, 2-IL-96-36 is LIT.
5.3.14.3 **FIRMLY DEPRESS** DRIVE START, 2-HS-96-12.

****

Performance Step : Critical_____ Not Critical___X___

5.3.15 For the Recirc Pump being started observe the following.

- DRIVE RUNNING, 2-IL-96-41(40) is LIT
- Pump DP rises to above 5 psid as indicated on PUMP DP, 2-PDI-68-65(82).
- Recirc Pump 2A(2B) speed rises to ≈ 345 RPM, as indicated on RECIRC PUMP 2A(2B) SPEED , 2-SI-68-59(71).
- RECIRC LOOP A(B) DIFF PRESS LOW 2-PDS-68-65(2-PDA-68-82), 2-XA-55-4A(B), Window 31, is reset.
- RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79), begins to open by the automatic jogging circuit.

Standard:

OBSERVED:

- DRIVE RUNNING, 2-IL-96-41(40) is LIT
- Pump DP rises to above 5 psid as indicated on PUMP DP, 2-PDI-68-65(82).
- Recirc Pump 2A(2B) speed rises to ≈ 345 RPM, as indicated on RECIRC PUMP 2A(2B) SPEED , 2-SI-68-59(71).
- RECIRC LOOP A(B) DIFF PRESS LOW 2-PDS-68-65(2-PDA-68-82), 2-XA-55-4A(B), Window 31, is reset.
- RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79), begins to open by the automatic jogging circuit.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

NOTES:

(1) In order to achieve balanced jet pump flows, the Recirc Pumps speed may require a mismatch.
(2) Recirc Pump speed cannot be raised above 480 RPM(28%) until total Feedwater flow is greater than 19 percent. Recirc Pump speed can be controlled between ~345 RPM and ~480 RPM using the Recirc Drive/Recirc Pump Speed Controllers.
(3) Recirc Pump A(B) will trip 85 seconds after initiation of the automatic jogging sequence if RECIRC PUMP A(B) DISCHARGE VALVE, 2-FCV-68-3(79), is less than 90 percent open.
(4) Performance of 2-SR-3.4.2.1 is required 24 hours after reaching > 25% RTP and/or 4 hours after returning a Recirc Pump to service.
(5) After Recirc loop(s) are in service, Technical Specifications Surveillance Requirements SR 3.4.1.1 and SR 3.4.2.1 have performance requirements which shall be referred to while performing Step 5.3.18.

****

Performance Step : Critical___ Not Critical_X_

5.3.16 **VERIFY** fully open, RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

Standard:

VERIFIED fully open, RECIRC PUMP 2A DISCHARGE VALVE, 2-FCV-68-3.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

****

CAUTION

Per Technical Specifications, the reactor **CAN BE** operated indefinitely with one Recirc loop out of service, provided the requirements of T.S. 3.4.1 are implemented within 24 hours of entering single loop operations.

****

****

Performance Step : Critical_____ Not Critical__X___

5.3.17 **NOTIFY** Reactor Engineer to **VERIFY** that the following has been **PERFORMED**, as applicable, depending on the number of operating recirc loops, and **RECORD** the applicable requirements and their completion status in the narrative log.

5.3.17.1 2-SR-3.4.1(DLO), Reactor Recirculation System Dual Loop Operation.

OR

5.3.17.2 2-SR-3.4.1(SLO), Reactor Recirculation System Single Loop Operation.

Standard:

NOTIFIES reactor Engineer to verify 2-SR-3.4.1(DLO) has been performed.

CUE: Another unit operator has logged the SR.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

Performance Step : Critical___ Not Critical_X_

5.3.18 **PERFORM** 2-SR-3.4.2.1 within the next 4 hours following placing a recirc loop in service. (REFER TO Tech Specs 3.4.1 and 3.4.2.)

Standard:

NONE.

CUE: Another operator will complete the SR after we finish.

SAT_____UNSAT_____N/A___X___ COMMENTS:_____

_____

_____

****

Performance Step : Critical___X__ Not Critical_____

5.3.19 **DEPRESS** push-button RECIRC PUMP 2A(2B) RUNBACK RESET 2-HS-68-32(41).

Standard:

DEPRESSED push-button RECIRC PUMP 2A RUNBACK RESET 2-HS-68-32

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

Performance Step : Critical___ Not Critical_X_

5.3.20 **MONITOR** Recirc Pump seal pressures during pressurization for proper operation. (Number 2 seal pressure should be approximately one half that of Number 1 seal pressure).

Standard:

None - seals are pressurized.

SAT_____UNSAT_____N/A___X___ COMMENTS:_____

_____

_____

****

CAUTION

The Recirc System should be operated with balanced jet pump flows to reduce hydraulic forces and vibration stresses on jet pumps and retainers.

****

****

Performance Step : Critical__X__ Not Critical____

5.3.21 **RAISE** Recirc Pump speed 2A using RAISE SLOW (MEDIUM), 2-HS-96-15A(15B)/LOWER SLOW(MEDIUM) 2-HS-96-17A(17B), push buttons, to 480 rpm.

AND/OR

RAISE Recirc Pump speed 2B using RAISE SLOW (MEDIUM), 2-HS-96-16A(16B)/LOWER SLOW(MEDIUM) 2-HS-96-18A(18B), push buttons, to 480 rpm.

Standard:

RAISED Recirc Pump speed 2A using RAISE SLOW (MEDIUM), 2-HS-96-15A(15B)/LOWER SLOW(MEDIUM) 2-HS-96-17A(17B), push buttons, to 480 rpm.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

****

Performance Step : Critical_____ Not Critical__X__

5.3.22 **WHEN** total Feedwater flow is greater than 19%, **THEN**

VERIFY reset, RECIRC LOOP A(B) FLOW LIMITER ENFORCING 2-FA-96-46(47), 2-XA-55-4A(B), Window 35.

Standard:

NONE.

SAT_____UNSAT_____N/A__X__ COMMENTS:_____

_____

_____

****

Performance Step : Critical__X__ Not Critical_____

5.3.23 **WHEN** desired to control Recirc Pumps 2A and/or 2B speed with the RECIRC MASTER CONTROL, **THEN**

ADJUST Recirc Pump speed 2A & 2B using the following push buttons as required.

RAISE SLOW,	2-HS-96-31
RAISE MEDIUM,	2-HS-96-32
LOWER SLOW,	2-HS-96-33
LOWER MEDIUM,	2-HS-96-34
LOWER FAST,	2-HS-96-35

Standard:

BALANCES Jet pump flows.

SAT_____UNSAT_____N/A_____ COMMENTS:_____

_____

_____

NOTE:

This SR requirement may be previously satisfied by performance of step 5.3.18.

5.3.24 **IF** this is the second Recirc Pump started, **THEN**

PERFORM 2-SR-3.4.2.1 for the Jet Pump Mismatch requirements, within the next 24 hours (refer to Tech Specs 3.4.1.1).

5.3.25 **RAISE** Recirc Pumps 2A and/or 2B speed as directed by 2-GOI-100-1A or 2-GOI-100-12, or 2-GOI-100-12A **REFER TO** Section 6.2.

END OF TASK

STOP TIME_____

Student Handout

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an Operator. 2A Recirc Pump tripped 1 hour ago. All AOI actions have been completed. The problem with 2A Recirc Pump has been corrected. The SRO has directed 2A Recirc Pump be restarted. The Reactor Engineer is in the control room. Steps 5.3.1 through 5.3.8 and 2-SR-3.3.1.1.I are complete 2-SR-3.4.9.3 & 4 has been started per step 5.3.9.

INITIATING CUES: The US directs you to continue the return of 2A Recirc Pump to service and balance jet pump flows in preparation for power ascension as directed by 2-OI-68 starting at Step 5.3.10 when step 5.3.9 is complete.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **305 System In Plant**

TITLE: **RESTORE POWER TO RPS BUS 3B USING ALTERNATE POWER SUPPLY**

TASK NUMBER: S-099-NO-05

SUBMITTED BY: _____ DATE: _____

VALIDATED BY: _____ DATE: _____

APPROVED: _____ DATE: _____
TRAINING

PLANT CONCURRENCE: _____ DATE: _____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	5/8/95	ALL	NEW JPM
1	10/24/95	ALL	PROCEDURE REVISION, FORMATTING
2	6/4/96	2,3	PROCEDURE REVISION
3	11/11/96	ALL	PROCEDURE UPGRADE, ADDED NON-CRITICAL STEPS ON TOUCH STAAR AND SAFETY, CHANGED SOS TO SHIFT MANAGER.
4	10/28/98	2,3,7,9	PROCEDURE REVISION LEVEL, TYPOS.
5	11/10/99	ALL	PROCEDURE REVISION, MINOR FORMAT, CHANGED MGT. EXPECT. TO PLANT WORK EXPECT., ADDED 3-WAY COMM.
6	03/25/04	2,3,8,11	Procedure Revision

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 305

TASK NUMBER: S-099-NO-05

TASK TITLE: TRANSFER RPS A/B POWER FROM MG SET TO ALTERNATE

K/A NUMBER: 212000A2.01 K/A RATING: RO 3.7 SRO: 3.9

****
*

TASK STANDARD: SIMULATE PERFORMING OPERATIONS REQUIRED TO TRANSFER RPS BUS 3B FROM NORMAL TO ALTERNATE POWER SUPPLY

LOCATION OF PERFORMANCE: SIMULATOR ___ PLANT X CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 3-OI-99, REV 36

VALIDATION TIME: CONTROL ROOM: 12:00 LOCAL: 10:00

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____
COMMENTS: _____
_____
_____
_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY** _____

SIGNATURE: _____ **DATE:** _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-PLANT: I will explain the initial conditions and state the task to be performed. ALL STEPS WILL BE SIMULATED. Do NOT operate any plant equipment. Touch STAAR may be carried out to the point of touching a label. If it becomes necessary to physically touch a control switch, use a non-conductive pointing device. I will provide initiating cues and indicate any steps to be discussed. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's correct" (or That's incorrect", if applicable). When you have completed your assigned task, you will say, "My task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an operator. Unit 3 is operating at 100% power. RPS M-G set 3B has tripped due to a seized drive motor.

INITIATING CUES: The SHIFT MANAGER has directed you to restore RPS Bus 3B on its alternate power supply as directed by 3-OI-99, Section 8.4.

CAUTION: DO NOT OPERATE ANY PLANT EQUIPMENT!

START TIME_____

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure.

Standard:

IDENTIFIED OR OBTAINED copy of 3-OI-99.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

8.4 Restoring Power to RPS Bus A(B) Using Alternate Power Supply

****

CAUTION

[NRC/C] Make every effort to minimize the time RPS distribution buses are left on the RPS Regulating Transformer (Alternate source). Whenever the 4kV power supply to the 480V Shutdown Bd. 3B is transferred and a RPS bus is being fed from the RPS Regulating Transformer the possibility exists of tripping the RPS circuit protectors due to voltage fluctuations. [LER 259/87003, 260/88006]

****

8.4.1 IF immediate restoration of power to RPS A(B) using alternate power is desired, THEN

GO TO Section 8.5.

CUE: IMMEDIATE RESTORATION OF POWER TO RPS BUS 3B IS NOT DESIRED

****

Performance Step : Critical___ Not Critical_X_

8.4.2 PERFORM the following at Battery Board Room No. 3:

8.4.2.1 VERIFY RPS BUS TRANSFORMER DISCONNECT SW, 3-FUDS-099-03C1B, is ON.

8.4.2.2 VERIFY RPS REG XFMR DISC SW FROM 480V RMOV BD 3B, 3-FUDS-099-03C1A is ON.

8.4.2.3 VERIFY the RPS ALTERNATE POWER TRANSFORMER TRP-3 AC Power switch is ON.

Standard:

In Battery Board Room 3, **VERIFIED** UNIT 3 RPS BUS A&B ALT SOURCE fused disconnect switch in the UP position, the RPS BUS TRANSFORMER DISCONNECT SWITCH is ON, AND THAT the RPS ALTERNATE POWER TRANSFORMER TRP-3 AC Power switch is ON.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X_

8.4.3 VERIFY breaker 5C1, RPS ALTERNATE POWER TRANSFORMER TRP-3, ON 480V RMOV Board 3B is in ON position.

Standard:

VERIFIED breaker 5C1, RPS Alternate Power Transformer TRP-3, on 3B 480V Reactor MOV Board in the ON position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X_

8.4.4 VERIFY RESET memory lights inside RPS Circuit Protector cabinets 3C1 and 3C2.

Standard:

VERIFIED/RESET RPS circuit protector cabinets 3C1 and 3C2 illuminated memory lights.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: ALL MEMORY LIGHTS INSIDE RPS CIRCUIT PROTECTOR CABINETS 3C1 AND 3C2 ARE EXTINGUISHED.

****

Performance Step : Critical___ Not Critical_X_

8.4.5 VERIFY RESET CIRCUIT PROTECTORS 3C1 AND 3C2.

Standard:

VERIFIED RPS CKT PROTECTOR ON INDR CABs 3C1 and 3C2 RED indicating lamps are ILLUMINATED.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: [WHEN SIMULATED] RPS CIRCUIT PROTECTOR 3C1 AND 3C2 red lights are illuminated

****

Performance Step : Critical___ Not Critical_X_

8.4.6 At RPS A(B) MG Control Panel, VERIFY ALTERNATE SOURCE AVAILABLE, 3-IL-099-0003AD(0003BD) illuminated.

Standard:

VERIFIED ALTERNATE SOURCE CONNECTED-AVAILABLE (right side) 3-IL-099-0003AD(0003BD) ILLUMINATED at RPS 3B MG Control Panel.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

****

Performance Step : Critical___ Not Critical_X_

8.4.7 NOTIFY Unit Operator RPS A(B) is being placed on alternate power supply.

Standard:

SIMULATED NOTIFYING UNIT 3 OPERATOR that RPS BUS 3B is being placed on alternate power supply.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: [WHEN SIMULATED] UNIT 3 OPERATOR REPEATS "YOU ARE PLACING 3B RPS ON THE ALTERNATE POWER SUPPLY."

****

Performance Step : Critical_X_ Not Critical___

8.4.8 PLACE RPS BUS A(B) NORMAL/ALTERNATE TRANSFER SWITCH, 3-XS-099-0003A(0003B) to ALT.

Standard:

SIMULATED PLACING RPS B NORMAL/ALTERNATE SOURCE transfer switch in the ALT position.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: [WHEN SIMULATED] THE RPS BUS 3B NORMAL/ALTERNATE SOURCE TRANSFER SWITCH IS IN THE ALT POSITION.

THE ALTERNATE SOURCE CONNECTED LAMP IS ILLUMINATED.

****

Performance Step : Critical___ Not Critical_X__

8.4.9 NOTIFY Unit Operator RPS A(B) is on alternate power supply.

Standard:

SIMULATED NOTIFYING Unit 3 Operator that RPS BUS 3B is on alternate power supply.

SAT____UNSAT____N/A____ COMMENTS:_____

_____

CUE: UNIT 3 OPERATOR REPEATS "RPS 3B IS ON THE ALTERNATE POWER SUPPLY AND I HAVE RECEIVED ALL MY EXPECTED ALARMS AND ACTIONS.

****

END OF TASK

STOP TIME:_____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **79 System In Plant RCA**

TITLE: **START RCIC FROM OUTSIDE CONTROL ROOM**

TASK NUMBER: U-000-AB-05

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
3	12/1/94	1,2,3,4	REVISE TO NEW FORMAT
4	10/24/95	ALL	GENERAL REVISION
5	08/25/98	ALL	PROCEDURE REVISION, FORMAT DOCUMENT
6	11/16/99	2,3,5,6	PROCEDURE REVISION, MOVED START TIME.
7	10/03/01	ALL	PROCEDURE REVISION
8	8/21/03	ALL	FORMAT; EDITORIAL; PROCEDURE REV; chg steps required to make RCIC function to crit and those that will not prevent function to non-crit
9	5/02/04		Procedure revision

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 79

TASK NUMBER: U-000-AB-05

TASK TITLE: RESPOND TO CONTROL ROOM ABANDONMENT

K/A NUMBER: 295016AA1.07 K/A RATING: RO 4.2 SRO: 4.3

****

TASK STANDARD: SIMULATE PERFORMING OPERATIONS NECESSARY TO ALIGN RCIC FROM OUTSIDE CONTROL ROOM AS DIRECTED BY 2-AOI-100-2.

LOCATION OF PERFORMANCE: SIMULATOR ___ PLANT _X_ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-AOI-100-2, REV 48

VALIDATION TIME: CONTROL ROOM: _____ LOCAL: 20:00

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: SATISFACTORY _____ UNSATISFACTORY _____

SIGNATURE: _____ DATE: _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-PLANT: I will explain the initial conditions and state the task to be performed. ALL STEPS WILL BE SIMULATED. Do NOT operate any plant equipment. SELF CHECKING may be carried out to the point of touching a label. If it becomes necessary to physically touch a control switch, use a non-conductive pointing device. Observe ALL plant radiological and safety precautions. I will provide initiating cues and indicate any steps to be discussed. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's correct" (or That's incorrect", if applicable). When you have completed your assigned task, you will say, "My task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: Unit 2 Control Room has been abandoned. Pressure control has been established at the backup control panel 2-25-32. The RCIC system is being aligned for injection to the RPV. You are the AUO assigned to the reactor building and you are in radio contact with the operators at the backup control panel.

INITIATING CUES: The Unit Operator directs you to perform Attachment 3, Part A of 2-AOI-100-2, then stand by to perform step 4.2.9.3.

CAUTION: DO NOT OPERATE ANY PLANT EQUIPMENT!

START TIME_____

****

Performance Step: Critical___ Not Critical_X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required AOI.

Standard:

IDENTIFIED OR OBTAINED copy of 2-AOI-100-2

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

Reactor Bldg. - RCIC Relay Aux Panel 2-LPNL-025-0031 El 621'

NOTE:

PAX phone Ext. 2233 is located at Column R-12, P-line near stairs to SLC.

PART A

****

Performance Step: Critical_X_ Not Critical___

2-XS-071-0036B	RCIC PUMP DISCH FLOW EMER TRANS SWITCH	EMERG_____
2-XS-071-0047	RCIC TURB GOV & CPLG END BRG HIGH TEMP EMER TRANS SWITCH	EMERG_____
2-XS-071-0024	RCIC OIL CLR OIL OUTLET TEMP EMER TRANS SWITCH	EMERG_____

Standard:

At Panel 2-25-31, **SIMULATED PLACING** 2-XS-071-0036B, 2-XS-071-0047 and 2-XS-071-0024 in EMERG.

CUE: [AS EACH SWITCH IS SIMULATED], THE SWITCH IS IN EMERG.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

Reactor Bldg. - 250VDC Reactor Mov Bd 2C - EL 565

****

CAUTION

Failure to place control switch for each component in the desired position prior to transferring to emergency may result in inadvertent actuation of the component.

****

NOTE:

PAX phone Ext. 2225 is located at Column R-9, R-line between West side HCUs.

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical____ Not Critical__X___

1E 2-BKR-071-0029
RCIC TURB BAROMETRIC CNDR CNDS PUMP BREAKER

2-XS-071-0029, RCIC BAROMETRIC CNDR CNDS
PUMP EMER TRANS SWITCH EMERG_____

2-HS-071-0029C, RCIC VAC TANK CNDS PUMP
EMER HAND SWITCH START_____

Standard:

At compartment 1E, **SIMULATED PLACING** 2-XS-071-0029 in the EMERG position and 2-HS-071-0029C in the START position.

CUE: [AS 2-XS-071-0029 IS SIMULATED] THE SWITCH IS IN EMERG.

[AS 2-HS-071-0029C IS SIMULATED], THE SWITCH IS IN START. [

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

3B 2-BKR-071-0037
RCIC PUMP DISCHARGE VALVE BREAKER (GE-13-20):

2-XS-071-0037, RCIC PUMP DISCH VLV EMER TRANS SWITCH EMERG_____

2-HS-071-0037C, RCIC PUMP DISCH VLV EMER HAND SWITCH OPEN_____

Standard:

At compartment 3B, **SIMULATED PLACING** 2-XS-071-0037 in the EMERG position and 2-HS-071-0037C in the OPEN position.

CUE:[AS 2-HS-071-0037IS SIMULATED], THE SWITCH IS IN EMERG.
[AS 2-HS-071-0037C IS SIMULATED] THE SWITCH IS IN OPEN.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical X Not Critical____

3D 2-BKR-071-0039
RCIC PUMP INJECTION VALVE BREAKER: (GE-13-21)

2-XS-071-0039, RCIC PUMP INJECTION VALVE
EMER TRANS SWITCH EMERG_____

2-HS-071-0039C, RCIC PUMP INJECTION VALVE
EMER HAND SWITCH OPEN_____

Standard:

At compartment 3D, **SIMULATED PLACING** 2-XS-071-0039 in the EMERG position and 2-HS-071-0039C in the OPEN position.

**CUE: [AS 2-XS-071-0039 IS SIMULATED], THE SWITCH IS IN EMERG.
[AS 2-HS-071-0039C IS SIMULATED] THE SWITCH IS IN OPEN.**

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical X Not Critical____

4B 2-BKR-071-0008, RCIC TURBINE STM SUPPLY VALVE BREAKER (GE-13-131)

2-XS-071-0008, RCIC TURB STM SUPPLY EMER TRANS SWITCH EMERG_____

2-HS-071-0008C, RCIC TURB STM SUPPLY VALVE EMER HAND SWITCH NOR_____

Standard:

At compartment 4B, **SIMULATED PLACING** 2-XS-071-0008 in the EMERG position and 2-HS-071-0008C in the NOR position.

CUE: [AS 2-XS-071-0008 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0008C IS SIMULATED] THE SWITCH IS IN NORM.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

6D 2-BKR-071-0019, RCIC CST 2 SUCT VALVE BREAKER (GE-13-18)

2-XS-071-0019, RCIC CST 2 SUCT VALVE EMER TRANS SWITCH EMERG_____

2-HS-071-0019C, RCIC CST 2 SUCT VALVE EMER HAND SWITCH OPEN_____

Standard:

At compartment 6D, **SIMULATED PLACING** 2-XS-071-0019 in the EMERG position and 2-HS-071-0019C in the OPEN position.

CUE: [AS 2-XS-071-0019 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0019C IS SIMULATED] THE SWITCH IS IN OPEN.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

7B 2-BKR-071-0038, RCIC PUMP TEST VALVE BREAKER (GE-13-30)

2-XS-071-0038, RCIC PUMP TEST VALVE EMER TRANS SWITCH EMERG_____

2-HS-071-0038C, RCIC PUMP TEST VALVE EMER HAND SWITCH CLOSE_____

Standard:

At compartment 7B, **SIMULATED PLACING** 2-XS-071-0038 in the EMERG position and 2-HS-071-0038C in the CLOSE position.

CUE: [AS 2-XS-071-0038 IS SIMULATED], THE SWITCH IS IN EMER. [AS 2-HS-071-0038C IS SIMULATED] THE SWITCH IS IN CLOSE.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

7D 2-BKR-071-0018, RCIC SUPPR POOL OUTBD SUCT VALVE BREAKER

2-XS-071-0018, RCIC SUPP POOL OUTBD SUCT EMER TRANS SWITCH EMERG_____

2-HS-071-0018C, RCIC SUPP POOL OUTBD SUCT VALVE EMER HAND SWITCH CLOSE_____

Standard:

At compartment 7D, **SIMULATED PLACING** 2-XS-071-0018 in the EMERG position and 2-HS-071-0018C in the CLOSE position.

CUE: [AS 2-XS-071-0018 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0018C IS SIMULATED] THE SWITCH IS IN CLOSE.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

8B 2-BKR-071-0017, RCIC SUPPR POOL INBD SUCT VALVE BREAKER (GE-13-41)

2-XS-071-0017, RCIC SUPP POOL INBD SUCT EMER TRANS SWITCH EMERG_____

2-HS-071-0017C, RCIC SUPP POOL INBD SUCT VALVE EMER HAND SWITCH CLOSE_____

Standard:

At compartment 8B, **SIMULATED PLACING** 2-XS-071-0017 in the EMERG position and 2-HS-071-0017C in the CLOSE position.

CUE: [AS 2-XS-071-0017 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0017C IS SIMULATED] THE SWITCH IS IN CLOSE.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical X Not Critical____

8D 2-BKR-071-0025, RCIC LUBE OIL COOLING WATER VALVE BREAKER (GE-13-132)

2-XS-071-0025, RCIC LUBE OIL CLR COOLING WATER EMERG TRANS SWITCH EMERG_____

2-HS-071-0025C, RCIC LUBE OIL CLR COOLING WATER VALVE EMER HAND SWITCH OPEN_____

Standard:

At compartment 8D, **SIMULATED PLACING** 2-XS-071-0025 in the EMERG position and 2-HS-071-0025C in the OPEN position.

CUE: [AS 2-XS-071-0025 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0025C IS SIMULATED] THE SWITCH IS IN OPEN.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

Switch/ Breaker Number	Component Description	Required Position	Initials

****

Performance Step: Critical___ Not Critical_X__

10E 2-BKR-071-0031, RCIC TURB BAROMETRIC CNDR VAC PUMP BREAKER

2-XS-071-0031, RCIC BAROMETRIC CNDR VAC PUMP EMER TRANS SWITCH EMERG_____

2-HS-071-0031C, RCIC BAROMETRIC CNDR VAC PUMP EMER HAND SWITCH START_____

Standard:

At compartment 10E, **SIMULATED PLACING** 2-XS-071-0031 in the EMERG position and 2-HS-071-0031C in the START position.

CUE: [AS 2-XS-071-0031 IS SIMULATED], THE SWITCH IS IN EMERG. [AS 2-HS-071-0031C IS SIMULATED] THE SWITCH IS IN START.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X__

NOTIFY UO at Panel 2-25-32 upon completion of Part A. STOP here until directed to perform Part B.

Standard:

Using radio, **SIMULATED NOTIFYING** UO of completion of Attachment 3, Part A.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

CUE: PERFORM STEP 4.2.9.3 OF 2-AOI-100-2 AND NOTIFY OPERATOR AT 2-25-32 WHEN COMPLETE.

****

CAUTION

RCIC TURBINE STEAM SUPPLY VALVE, 2-FCV-71-8, transfer switch has been placed in EMERGENCY and will NOT trip on Reactor Water Level High (+51 inches). Failure to maintain level below this value may result in equipment damage.

****

4.2.8 Upon completion of attachments, RE-ESTABLLISH communication using the best available means and continue procedure.

4.2.9 INITIATE RCIC as follows:

4.2.9.1 At Panel 2-25-32, CHECK OPEN 2-FCV-71-9 (Red Light above switch) RCIC TURB TRIP/THROT VALVE RESET, 2-HS-71-9D.

4.2.9.2 At 250V DC RMOV Bd 2B, compt. 5D, PLACE RCIC PUMP MIN FLOW VALVE EMER HAND SWITCH, 2-HS-071-0034C, IN OPEN. (Unit 2 Turbine Building AUO)

****

Performance Step: Critical_X__ Not Critical____

4.2.9.3 At 250V DC RMOV Bd 2C, compt. 4B, PLACE RCIC TURB STM SUPPLY VALVE EMER HAND SWITCH, 2-HS-071-0008C, in OPEN. (Unit 2 Reactor Building AUO)

Standard:

At compartment 4B, PLACED 2-HS-071-0008C, in OPEN and **VERIFIED** illuminated RED valve position indicating lamp above 2-HS-071-0008C.

CUE: [WHEN INDICATED] THE RED LIGHT IS ON.

SAT_____ UNSAT_____ N/A _____ COMMENTS:_____

_____

_____

CUE: [WHEN INDICATED] [WHEN STEP 4.2.9.3 REPORTED COMPLETE] THAT WILL BE ALL OF 2-AOI-100-2 REQUIRED OF YOU.

END OF TASK

STOP TIME:_____

Student Handout

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-PLANT: I will explain the initial conditions and state the task to be performed. ALL STEPS WILL BE SIMULATED. Do NOT operate any plant equipment. SELF CHECKING may be carried out to the point of touching a label. If it becomes necessary to physically touch a control switch, use a non-conductive pointing device. Observe ALL plant radiological and safety precautions. I will provide initiating cues and indicate any steps to be discussed. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's correct" (or That's incorrect", if applicable). When you have completed your assigned task, you will say, "My task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: Unit 2 Control Room has been abandoned. Pressure control has been established at the backup control panel 2-25-32. The RCIC system is being aligned for injection to the RPV. You are the AUO assigned to the reactor building and you are in radio contact with the operators at the backup control panel.

INITIATING CUES: The Unit Operator directs you to perform Attachment 3, Part A of 2-AOI-100-2, then stand by to perform step 4.2.9.3.

CAUTION: DO NOT OPERATE ANY PLANT EQUIPMENT!

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **86 System In Plant**

TITLE: **PLACE A 250V BATTERY CHARGER IN SERVICE**

TASK NUMBER: S-57D-NO-02

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
2	10/4/94	1,2,3,4	REVISE TO NEW FORMAT
3	12/1/94	1,2,3,4	REVISE TO NEW FORMAT
4	4/25/95	ALL	GENERAL
5	10/26/95	1,2,3,6,11,15	PROCEDURE REVISION
6	10/31/95	11	ADDED INSTRUCTOR'S NOTE
7	11/9/95	15	ADDED CUES
8	11/30/95	11	STEP 5.2.7.5 CHANGED TO NOT CRITICAL
9	10/9/97	ALL	FORMAT, PROCEDURE REVISION,
10	10/28/98	3,4	PROCEDURE REVISION
11	10/11/00	all	GENERAL REVISION
12	11/13/03	all	FORMAT; EDITORIAL; PROCEDURE REV; CHG VERIFY TO NON-CRITICALS
13	5/02/04	all	Procedure Rev

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 86

TASK NUMBER: S-57D-NO-02

TASK TITLE: PLACE A 250V UNIT BATTERY CHARGER IN SERVICE TO A BATTERY BOARD

K/A NUMBER: 263000A4.1 K/A RATING: RO 3.3 SRO: 3.5

****

TASK STANDARD: SIMULATE PLACING 250V UNIT BATTERY CHARGER 2A IN SERVICE TO BATTERY BOARD 2

LOCATION OF PERFORMANCE: SIMULATOR ___ PLANT X CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 0-OI-57D, REV 73

VALIDATION TIME: CONTROL ROOM: _____ LOCAL: 15:00

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____
_____
_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY** _____

SIGNATURE: _____ **DATE:** _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-PLANT: I will explain the initial conditions and state the task to be performed. ALL STEPS WILL BE SIMULATED. Do NOT operate any plant equipment. SELF CHECKING may be carried out to the point of touching a label. If it becomes necessary to physically touch a control switch, use a non-conductive pointing device. Observe ALL plant radiological and safety precautions. I will provide initiating cues and indicate any steps to be discussed. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's correct" (or That's incorrect", if applicable). When you have completed your assigned task, you will say, "My task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an operator. 250V Battery Board 2 is being fed by 250V (Spare) Battery Charger 2B for testing purposes. Testing has been completed. 250V Unit Battery 2 is in service in accordance with Section 5.1 of 0-OI-57D.

INITIATING CUES: The US has directed you to return 250V Battery Board 2 to its normal charging supply, i.e. place 250V Battery Charger 2A in service to Battery Board 2 using the NORMAL power source as directed by 0-OI-57D.

CAUTION: DO NOT OPERATE ANY PLANT EQUIPMENT!

START TIME_____

****

Performance Step: Critical___ Not Critical_X___

WHEN REQUESTED BY EXAMINER identify/obtain copy of required procedure, 0-OI-57D.

Standard:

IDENTIFIED OR OBTAINED copy of 0-OI-57D.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

5.2 Placing the 250V Unit Battery Charger 1(2A,3,4,5,6) in Service to Battery Board 1(2,3,4,5,6)

5.2.1 VERIFY the 250V Unit Battery 1(2,3,4,5,6) is in service in accordance with Section 5.1.

****

Performance Step: Critical___ Not Critical_X___

5.2.2 REVIEW all Precautions and Limitations in Section 3.0.

Standard:

REVIEWED precautions and limitations in Section 3.0.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

5.2.3 VERIFY the supply breaker on the 480V AC board for the selected AC source is closed per the table below.

250V Battery Charger	Normal Source	Alternate Source (Charger Service Bus)
1	480V SD Bd 1A, Comp 6D 1-BKR-248-0001A/6D	480V Common Bd 1, Comp 3A
2A	480V SD Bd 2A, Comp 6D 2-BKR-248-0002A/6D	480V Common Bd 1, Comp 3A
3	480V SD Bd 3A, Comp 6D 3-BKR-248-0003A/6D	480V Common Bd 1, Comp 3A
4	480V SD Bd 3B, Comp 6D	480V Common Bd 1, Comp 3A
5	480V Common Bd 1 Comp 5C	None
6	480V Common Bd 3 Comp 3D	None

Standard:

LOCATED Compartment 6D on 480V SD Bd 2A and **VERIFIED** breaker position indicator indicated CLOSED.

CUE: THE BREAKER INDICATES CLOSED.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

NOTE:

Steps 5.2.4 through 5.2.11 are performed in the 1(2,3,4) Battery Board Room unless specifically noted. (Or locally at Battery Board 5(6) in Unit 1(3) Turb. Bldg El 617.)

****

Performance Step: Critical___ Not Critical_X_

5.2.4 VERIFY that DC BUS FILTER CAPACITORS, BKR 713 (711,713,211,211,211) is ON.

Standard:

LOCATED breaker 711 and **VERIFIED** in the ON position IN BB RM 2.

CUE: THE BREAKER INDICATES ON.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

NOTES:

(1) Mechanical interlock prevents closing both input transfer switches simultaneously on Battery Chargers 1, 2A, 3 and 4 or 5 or 6.

(2) Battery Chargers 5 and 6 do not have an Alternate AC source.

****

Performance Step: Critical___ Not Critical__X__

5.2.5 VERIFY the BATTERY CHARGER INPUT TRANSFER SWITCH on Battery Charger 1(2A,3,4) is aligned to the desired AC power source, NORMAL or ALTERNATE; and, that the mechanical interlock is in place to prevent paralleling AC services at the battery charger. For Battery Chargers 5 and 6, VERIFY AC power Switch ON.

Standard:

LOCATED battery charger input transfer switch on battery charger 2A and **VERIFIED** aligned to NORMAL power source. **VERIFIED** by observation that mechanical interlock in place to prevent paralleling power supplies.

CUE: THE NORMAL SUPPLY BREAKER IS IN THE ON POSITION. THE MECHANICAL INTERLOCK IS IN PLACE.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X__

5.2.6 VERIFY the 250V BAT CHGR 1(2A,3,4,5,6) DISCT FROM BAT BD 1(2,3,4,5,6), NORM FDR, BKR 607(608, 608, 201,201,201) on Battery Board 1(2,3,4,5,6) is ON.

Standard:

LOCATED breaker 608 and **VERIFIED** indicated CLOSED IN BB RM2

CUE: THE BREAKER INDICATES ON.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical_X_ Not Critical_____

5.2.7 IF the 250V Battery Charger 2B is supplying power to Battery Board 1(2,3,4,5,6) AND a transfer to the unit battery charger is desired; THEN

5.2.7.1 PLACE the 2B Battery Charger EMER/OFF/ON switch to OFF.

Standard:

LOCATED 2B Battery Charger EMER/OFF/ON switch and **SIMULATED PLACING** in the OFF position.

CUE: THE SWITCH IS IN THE OFF POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical_X_ Not Critical_____

5.2.7.2 OPEN the 250V BATTERY CHARGER 2B DC BREAKER, on front of charger, by placing breaker to OFF.

Standard:

LOCATED 250V Battery Charger 2B DC breaker and **SIMULATED PLACING** in the OFF position.

CUE: YOU HEAR A LOUD CLICK, THE BREAKER IS IN THE OFF POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical_X_ Not Critical_____

5.2.7.3 OPEN both the NORMAL and ALTERNATE AC INPUT SUPPLY BREAKERS on the BATTERY CHARGER INPUT TRANSFER SWITCH by placing the breakers to OFF.

Standard:

LOCATED the NORMAL and ALTERNATE AC INPUT SUPPLY BREAKERS and **SIMULATED PLACING** both switches in the OFF position.

FOR EACH BREAKER CUE: YOU HEAR A LOUD CLICK, THE BREAKER IS IN THE OFF POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X___

5.2.7.4 PLACE all the 2B BATTERY CHARGER OUTPUT TRANSFER SWITCH 2B 0-XSW-248-0002B breakers to OFF.

Standard:

At 250V Battery Charger 2B Output Transfer Switch Panel, **SIMULATED PLACING** all 2B Battery Charger output transfer switches to the OFF position.

FOR EACH BREAKER, CUE: YOU HEAR A LOUD CLICK, THE BREAKER IS IN THE OFF POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step : Critical___ Not Critical_X__

5.2.7.5 PLACE all the breakers on Battery Charger 2B Output Transfer Switch 2BA, 0-XSW-248-0002BA to Off (located in battery board room 4).

Standard:

SIMULATED going to BB RM4 & **LOCATING** Battery Charger 2B Output Transfer Switch 2BA, 0-XSW-248-002BA and **SIMULATED PLACING** 2BA, 0-XSW-248-0002BA to OFF.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

CUE: WHEN PERFORMER INDICATES THAT STEP, 5.2.7.5, IS IN BATTERY BOARD ROOM 4, THEN STATE "ALL DISCONNECT SWITCHES ON 0-XSW-248-0002BA ARE IN THE OFF POSITION.

NOTE:

Step 5.2.8 does not apply to Battery Charger 4, 5 or 6.

****

Performance Step: Critical___ Not Critical__X__

5.2.8 VERIFY the BATTERY CHARGER 1(2A,3) OUTPUT TRANSFER SWITCH, on 250V Battery Charger 1(2A,3) Output Transfer Switches Panel, is ON.

Standard:

LOCATED Battery Charger 2A output transfer switch and **VERIFIED** in the ON position.

CUE: THE BREAKER IS IN THE ON POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

NOTE:

Step 5.2.10 does NOT apply to Battery Charger 5 or 6.

****

Performance Step: Critical X Not Critical_____

5.2.9 PLACE the BATTERY CHARGER 1(2A,3,4) EMER/OFF/ON Select Switch to ON and allow voltage to stabilize for approximately 2 minutes.

Standard:

LOCATED BATTERY CHARGER 2A ON/OFF/EMERG ON Select Switch and **SIMULATED PLACING** in the ON position.

CUE: THE SWITCH IS IN THE ON POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical__X___

5.2.10 CHECK DC Voltage stabilized greater than 250 Volts on 250VUnit Battery Charger 1(2A,3,4,5,6):

Standard:

CHECKS voltage > 250 VDC.

CUE: VOLTAGE IS STABLE AS INDICATED (> 250 vdc).

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

****

Performance Step: Critical X Not Critical_____

5.2.11 CLOSE the 250V BATTERY CHARGER 1(2A,3,4,5,6) DC BREAKER on front of charger, by placing it to ON.

Standard:

LOCATED 250V BATTERY CHARGER 2A DC BREAKER and **SIMULATED PLACING** in the ON position.

CUE: YOU HEAR A LOUD CLICK, THE BREAKER IS IN THE ON POSITION.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

CAUTION

If a charger malfunction occurs, the Normal and Alternate AC input Supply (Chargers No. 5 and 6 have no Alternate AC Supply) and DC Breakers should be placed to the OFF position and the Shift Manager informed immediately.

****

NOTE:

During Safe Shutdown Instruction (SSI) implementation, load shed logic to Battery Chargers 1 and 2A may be initiated by an LOP/LOCA signal or for Fire Area 16 (Control Building El 593 through 617), by fire damage to load shed logic cables. When operation of either of these chargers is required by an SSI procedure, the control switch must be placed in EMERG to bypass load shed of the charger.

5.2.12 IF SSI procedure has been implemented AND operation of Battery Charger 1(2A) is required, THEN

PERFORM the following:

CUE: SSI PROCEDURE HAS NOT BEEN IMPLEMENTED. SECTION 5.2.12 NOT INCLUDED.

****

Performance Step: Critical___ Not Critical_X__

5.2.13 CHECK the following indications of normal operation on 250V Unit Battery Charger 1(2A,3,4,5,6):

5.2.13.1 DC Voltage greater than 250 Volts.

5.2.13.2 DC Amperes less than 300 Amps.

5.2.13.3 POWER ON light illuminated.

NOTE:

Step 5.2.13.4 through 5.2.13.7 do NOT apply to Battery Chargers 5 and 6.

5.2.13.4 TRANSFORMER OVERTEMP light extinguished.

5.2.13.5 OVERVOLTAGE DC light extinguished.

5.2.13.6 UNDERVOLTAGE DC light extinguished.

5.2.13.7 UNDERVOLTAGE AC light extinguished.

CUES: [IF NO INDICATIONS AVAILABLE AND AS EACH IS CHECKED]

1) DC VOLTAGE IS INDICATED AS 265 VOLTS

2) DC AMPERES ARE INDICATED AS 125

3) THE POWER ON LIGHT IS ILLUMINATED.

Standard:

LOCATED AND CHECKED the following as indications of normal operation:

1) DC Voltage greater than 250 Volts.

2) DC Amperes less than 300 amps.

3) POWER ON light illuminated.

4) TRANSFORMER OVERTEMP light extinguished.

5) OVERVOLTAGE DC light extinguished.

6) UNDERVOLTAGE DC light extinguished.

7) UNDERVOLTAGE AC light extinguished.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X__

5.2.14 VERIFY that EQUALIZE HOURS timer is set to zero.

Standard:

LOCATED equalize hours timer and **VERIFIED** set to zero.

IF TIMER NOT SET TO ZERO, CUE: THE TIMER INDICATES ZERO.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

****

Performance Step: Critical___ Not Critical X___

5.2.15 CHECK 250V DC Battery Charger 1(2A,3,4,5,6) is supplying power to the bus by OBSERVING DC Ammeter indication greater than zero Amps.

Standard:

LOCATED 250V DC Battery Charger 2A DC Ammeter and **VERIFIED** indicating greater than zero amps.

IF AMMETER NOT INDICATING GREATER THAN ZERO AMPS, CUE: THE AMMETER INDICATION IS GREATER THAN ZERO.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

END OF TASK

STOP TIME_____

Student Handout

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-PLANT: I will explain the initial conditions and state the task to be performed. ALL STEPS WILL BE SIMULATED. Do NOT operate any plant equipment. SELF CHECKING may be carried out to the point of touching a label. If it becomes necessary to physically touch a control switch, use a non-conductive pointing device. Observe ALL plant radiological and safety precautions. I will provide initiating cues and indicate any steps to be discussed. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's correct" (or That's incorrect", if applicable). When you have completed your assigned task, you will say, "My task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an operator. 250V Battery Board 2 is being fed by 250V (Spare) Battery Charger 2B for testing purposes. Testing has been completed. 250V Unit Battery 2 is in service in accordance with Section 5.1 of 0-OI-57D.

INITIATING CUES: The US has directed you to return 250V Battery Board 2 to its normal charging supply, i.e. place 250V Battery Charger 2A in service to Battery Board 2 using the NORMAL power source as directed by 0-OI-57D.

CAUTION: DO NOT OPERATE ANY PLANT EQUIPMENT!

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: **133F System Simulator**

TITLE: **2-EOI APPENDIX 11B - ALTERNATE PRESSURE CONTROL - RCIC TEST MODE (FLOW CONTROLLER AUTO FEATURE FAILED)**

TASK NUMBER: U-000-EM-54

SUBMITTED BY:_____ DATE:_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
2	12/8/94	1,2,3,4	REVISE TO NEW FORMAT
3	10/22/95	ALL	FORMATTING, TYPOS, UNIT 2 SPECIFIC ITEMS
4	9/5/96	ALL	DELETED PLANT INST., ADDED CRIT. STEP ON TOUCH STAAR, CHANGED ASOS TO US.
5	10/29/96	4, 13	CHANGED CRIT. STEP ON TOUCH STAAR TO NON-CRITICAL.
6	10/28/98	ALL	GENERAL REVISION
7	9/16/02	ALL	GENERAL REVISION
8	02/28/04	ALL	Format; Editorial; change failure to flow controller auto failure

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: 133F

TASK NUMBER: U-000-EM-54

TASK TITLE: 2-EOI APPENDIX 11B - ALTERNATE PRESSURE CONTROL - RCIC TEST MODE (FLOW CONTROLLER AUTO FEATURE FAILED)

K/A NUMBER: 295025EA1.05 K/A RATING: RO 3.7 SRO: 3.7

****

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO PLACE RCIC IN TEST MODE FROM STANDBY FOR ALTERNATE RPV PRESSURE CONTROL AS DIRECTED BY 2-EOI APPENDIX 11B.

LOCATION OF PERFORMANCE: SIMULATOR X PLANT ___ CONTROL ROOM ___

REFERENCES/PROCEDURES NEEDED: 2-EOI-APPENDIX 11B, REV 4

VALIDATION TIME: CONTROL ROOM: 10:00 LOCAL: _____

MAX. TIME ALLOWED: _____ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL _____

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES _____ NO _____

RESULTS: **SATISFACTORY** _____ **UNSATISFACTORY** _____

SIGNATURE: _____ **DATE:** _____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an operator. The Unit 2 reactor has scrammed and three turbine bypass valves stuck open requiring MSIV closure. EOI-1 has been entered and followed to RC/P-11.

INITIATING CUES: The UNIT SUPERVISOR directs you to place RCIC in Alternate RPV Pressure Control as directed by 2-EOI Appendix 11B. Your Pressure band is 600-700 psig.

START TIME:_____

****

Performance Step: Critical___ Not Critical_X_

WHEN REQUESTED BY EXAMINER identify/obtain copy of required EOI Appendix.

Standard:

IDENTIFIED OR OBTAINED copy of 2-EOI Appendix 11B.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

CAUTION

Operating RCIC turbine below 2100 rpm may result in unstable system operation and damage.

Elevated Suppression Chamber pressure may trip the RCIC turbine on high exhaust pressure.

Operating RCIC Turbine with suction temperatures above 140°F may result in equipment damage.

****
*

Performance Step: Critical___ Not Critical_X_

1. IF.....Emergency RPV Depressurization is required
OR
Steam Cooling is required,

THEN...**EXECUTE** EOI Appendix 16A and 16B as necessary to bypass RCIC Low RPV Pressure and Test Mode Isolation Interlocks.

Standard:

DID NOT request Appendix 16A and 16B.

CUE: EMERGENCY DEPRESSURIZATION NOT REQUIRED.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

2. **IF**.....Suppression Pool level CANNOT be maintained below 7 in.,

   THEN....EXECUTE EOI Appendix 16E concurrently with this procedure to bypass HPCI High Suppression Pool Level Suction Transfer Interlock

Standard:

Did not **REQUEST** EOI Appendix 16E.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

3. IF.....RCIC Turbine is operating and NOT required for RPV level control,
THEN...**ALIGN** RCIC in test mode as follows:

   a. **OPEN** 2-FCV-71-38, RCIC PUMP CST TEST VLV.

   b. **VERIFY OPEN** 2-FCV-73-36, HPCI/RCIC TEST RETURN VLV.

   c. **CLOSE** 2-FCV-71-39, RCIC PUMP INJECTION VALVE.

   d. **CONTINUE** in this procedure at Step 5.

Standard:

VERIFIES RCIC Turbine not operating by any of the following:

Speed 0 on 2-SI-71-42A
Flow 0 on 2-FIC-71-36A
2-FCV-71-8 Closed
2-FCV-71-39 Closed
Discharge pressure 0 on 2-PI-71-35A

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

4. IF.....RCIC is in standby readiness,
THEN...**START** RCIC as follows:

a. **VERIFY CLOSED** 2-FCV-71-39, RCIC PUMP INJECTION VALVE.

Standard:

VERIFIED illuminated GREEN valve position indicating lamp above 2-HS-71-39A.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X__

b. **VERIFY RESET** and **OPEN** 2-FCV-71-9, RCIC TURB TRIP & THROTTLE VALVE RESET.

Standard:

VERIFIED illuminated RED condition indicating lamp 2-ZI-71-9.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical_X_ Not Critical___

c. **VERIFY OPEN** the following valves:

- 2-FCV-71-38, RCIC PUMP TEST RETURN VLV.
- 2-FCV-71-25, RCIC LUBE OIL CLR COOLING WTR VLV.
- 2-FCV-71-34, RCIC PUMP MINIMUM FLOW VLV.
- 2-FCV-73-36, HPCI/RCIC TEST RETURN VLV.

Standard:

HELD 2-HS-71-38A in the OPEN position until **VERIFIED** illuminated RED valve position indicating lamps above associated control switch.

PLACED 2-HS-71-25A,34A and 73-36A in the OPEN position and **VERIFIED** illuminated RED valve position indicating lamps above associated control switches.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

d. **PLACE** 2-HS-71-31A, RCIC VACUUM PUMP, handswitch in START.

Standard:

PLACED 2-HS-71-31A in the START position and **VERIFIED** illuminated RED motor breaker position indicating lamp.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

****

Performance Step: Critical_X_ Not Critical___

e. **OPEN** 2-FCV-71-8, RCIC TURBINE STEAM SUPPLY VLV, to start RCIC Turbine.

Standard:

PLACED 2-HS-71-8 in the OPEN position and **VERIFIED** illuminated RED valve position indicating lamp above associated control switch.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

f. **VERIFY** RCIC Turbine speed accelerates to above 2100 rpm.

Standard:

VERIFIED speed greater than 2100 rpm on 2-SI-71-42A.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

Note: 2-FIC-71-36 will fail to 0 output 1 minute after 2-FCV-71-8 is given an open signal.

****

Performance Step: Critical___ Not Critical_X_

5. **VERIFY** proper RCIC minimum flow valve operation as follows:

   a. IF.....RCIC flow is above 120 gpm,
      THEN...**VERIFY CLOSED** 2-FCV-71-34, RCIC PUMP MINIMUM FLOW VALVE.

   b. IF.....BOTH of the following exist:

      - RCIC Initiation signal is not present,
      AND
      - RCIC flow is below 60 gpm,

      THEN...**VERIFY OPEN** 2-FCV-71-34, RCIC PUMP MINIMUM FLOW VALVE.

Standard:

VERIFIED illuminated RED valve position indicating lamp above 2-HS-71-34. **RECOGNIZES** flow controller failure and places controller in manual and raises flow to 120 to 600 gpm.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

6. **THROTTLE** 2-FCV-71-38, RCIC PUMP CST TEST VLV, to control RCIC pump discharge pressure at or below 1100 psig.

Standard:

MANIPULATED 2-HS-71-38 to maintain pressure on 2-PI-71-35A at or below 1100 psig.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical__X__ Not Critical___

7a. **Recognize** failure of 2-FIC-71-36 in Automatic and **select** Manual on the controller.

Standard:

Recognizes failure of the Flow Controller and **places** 2-FIC-71-36 in manual.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical__X__ Not Critical___

7b. **ADJUST** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller to control RPV pressure.

Standard:

ADJUSTED 2-FIC-71-36A as required to maintain RPV pressure and:

- Maintain RCIC flow 120-600 gpm on 2-FIC-71-36A.
- Maintain RCIC discharge pressure ≤ 1100 psig on 2-PI-71-35A.
- Maintain RCIC Speed > 2100 rpm on 2-SI-71-42A.

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

****

Performance Step: Critical___ Not Critical_X_

8. **IF**....RCIC injection to the RPV becomes necessary, **THEN**... **ALIGN** RCIC to RPV as follows:

   a. **OPEN** 2-FCV-71-39, RCIC Pump Injection valve.

   b. **CLOSE** 2-FCV-71-38, RCIC Pump Test return valve.

   c. **GO TO** EOI Appendix 5C.

CUE: SRO DOES NOT DIRECT RCIC INJECTION.

Standard:

Does not **INJECT** with RCIC

SAT_____ UNSAT_____ N/A _____COMMENTS:_____

_____

_____

END OF TASK

STOP TIME:_____

Student Handout

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are an operator. The Unit 2 reactor has scrammed and three turbine bypass valves stuck open requiring MSIV closure. EOI-1 has been entered and followed to RC/P-11.

INITIATING CUES: The UNIT SUPERVISOR directs you to place RCIC in Alternate RPV Pressure Control IAW 2-EOI Appendix 11B. Your Pressure band is 600-700 psig.