

# **FINAL SUBMITTAL**

**BROWNS FERRY EXAM  
50-259, 260, 296/2001-301**

**SEPTEMBER 17-21, 2001**

**FINAL AS-GIVEN JPMs FOR EACH**

**WALK-THROUGH TEST**

**FINAL SUBMITTAL**

**FINAL AS-GIVEN JPMs FOR EACH**

**WALK-THROUGH TEST**

Facility: Browns FerryDate of Examination: 9/17-9/19-2001Examination Level (circle one): RO / SROOperating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct Of Operations	RO-JPM NRC  A.1.a DETERMINE REACTOR VESSEL WATER LEVEL.  (K/A 2.1.28)
	Shift Staffing Requirements	RO - NRC-JPM-02 (NEW),  EVALUATE OVERTIME ELIGIBILITY (K/A 2.1.3, 3.0/3.4)
A.2	Equipment Operability Requirements	RO - JPM A.2  DETERMINE COMPONENT POSITIONS FOR VALVE LINE-UPS AND TAG ORDER PERFORMANCE. (K/A 2.2.1, 3.6/3.8)
A.3	Control of Radiation Releases	DETERMINE BUILDING VENTILATION NOBLE GAS RELEASE RATE. <u>JPM #131</u> , KA 271000A4.05, 3.2/3.9
A.4	Emergency Plan	1. RO QUESTION: KNOWLEDGE OF ABNORMAL CONDITION PROCEDURES.( K/A: G2.4.11)
		2. RO QUESTION: KNOWLEDGE OF THE RO'S RESPONSIBILITIES IN EMERGENCY PLAN IMPLEMENTATION. (K/A G2.4.39)

Facility: <u>Browns Ferry</u>		Date of Examination: <u>9/17-9/19 2001</u>
Examination Level (circle one): RO / <u>SRO</u>		Operating Test Number: <u>1</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	QUESTION ON FITNESS FOR DUTY. (K/A 2.1.6, 4.3)
		DETERMINE THE CONDITION CLASSIFICATION FOR RCIC INOPERABLE. (K/A 2.1.33, 3.4/4.0)
	Shift Staffing Requirements	SRO - NRC-JPM-02 (NEW), EVALUATE OVERTIME ELIGIBILITY (K/A 2.1.3, 3.0/3.4)
A.2	Equipment Operability Requirements	SRO - JPM A.2 DETERMINE COMPONENT POSITIONS FOR VALVE LINE-UPS AND TAG ORDER PERFORMANCE. (K/A 2.2.1, 3.6/3.8)
A.3	Control of Radiation Releases	DETERMINE BUILDING VENTILATION NOBLE GAS RELEASE RATE. <u>JPM #131</u> , (KA 271000A4.05, 3.2/3.9)
A.4	Emergency Plan	JPM -181 CLASSIFY THE EVENT PER THE REP (GASEOUS RELEASE RATE-OSI-4.8.B.1.A.1) (K/A 2.4.38, 4.0)

### Handout to Applicant

A handout of SR-2 readings and an attachment is given. The following is an explanation of the conditions, followed by two questions.

During the past 24 hours the Unit 2 has cooled down from 212 degrees F to 100 degrees F bulk moderator temperature.

2-SR -2 recorded the indicated water level on FRIDAY while at 212 deg F. Readings were again recorded on SATURDAY with moderator temperature at 100 degrees F. The readings for Narrow Range Compensated and Uncompensated columns are provided (provide marked up copy of page 24 and 46 of the SR, and Attachment 4).

1. The Unit Supervisor has requested that you utilize the reading and Attachment 4 of 2-SR-2 to determine corrected water level, and determine the actual net change in reactor water level over the 24 hour period starting when the reactor was at 212 degrees F and ending when the reactor was at 100 degrees F.
2. Assume the rate of change is the same over the next 24 hour period, determine the actual water level expected on SUNDAY.

Examiner Note: Give applicant the conditions handout and the marked up copy of SR-2 (Instrument Checks and Observations) and Attachment 4

A handout of SR-2 readings and an attachment is given. The following is an explanation of the conditions, followed by two questions.

During the past 24 hours the Unit 2 has cooled down from 212 degrees F to 100 degrees F bulk moderator temperature.

2-SR -2 recorded the indicated water level on FRIDAY while at 212 deg F. Readings were again recorded on SATURDAY with moderator temperature at 100 degrees F. The readings for Narrow Range Compensated and Uncompensated columns and are provided (provide marked up copy of page 24 and 46 of the SR, and Attachment 4).

1. The Unit Supervisor has requested that you utilize the reading and Attachment 4 of 2-SR-2 to determine corrected water level, and determine the actual net change in reactor water level over the 24 hour period starting when the reactor was at 212 degrees F and ending when the reactor was at 100 degrees F.
2. Assume the rate of change is the same over the next 24 hour period, determine the actual water level expected on SUNDAY.

**Solution - Corrected Water Level for both sets of readings is 35 inches on both Friday and Saturday, should be the same for Sunday, so Net Change is Zero.**

KA 2.1.28 (3.2/3.3) Knowledge of major system components and controls.

#### INFORMATION FOR THE SR-2 READINGS

At beginning of cooldown:

Narrow Range Compensated

2-LIS-3-53, 60, 206, and 253 indicated 41 inches  
(listed as Friday Readings)

Narrow Range Uncompensated

2-LIS-3-184, 185, 203(A-D), and 208 (A-D) indicated 48 inches  
(listed as Friday Readings)

Following the cooldown

Narrow Range Compensated

2-LIS-3-53, 60, 206, and 253 indicated 44 inches  
(listed as Saturday Readings)

Narrow Range Uncompensated

2-LIS-3-184, 185, 203(A-D), and 208 (A-D) indicated 51 inches  
(Listed as Saturday Readings)

Attachment 4 on following page.

**ATTACHMENT 4**  
(Page 1 of 1)

**Reactor Water Level Indication Correction**

The Reactor Water Level Instrumentation tables in Attachment 2 are arranged such that only instruments in the same compensation group are compared. However, determination of corrected level indication may be required during operation at off-normal conditions or if desired to compare instruments from different compensation groups.

Corrected level indication may be used for satisfying MAX DEV criteria provided the following are observed:

- The parameter correction is appropriately applied to all instruments being compared.
- Both the indicated and corrected level indications are recorded and annotated in Attachment 2 along with the bases for the corrected level indication.

Corrected level indication can be determined from the following table which provides commonly needed corrections or from Technical Instruction 2-TI-149. The following table presents Reactor Water Level

as: indicated, corrected for Reactor Vessel Temperature 100°F, and corrected for Reactor Vessel Temperature 212°F for various water level instruments. Enter the indicated Rx water level and find the correct instrument column and use the closest Rx vessel temperature. (Matching corrected levels between instruments and subtracting the associated indicated levels will yield an approximate deviation value in inches between those instruments. i.e. If the Narrow Range Compensated Instrument is reading 38", the corrected level would be 34.5". Also, using a corrected value of 35.5" in the Narrow Range Uncompensated column shows the instrument should be reading 46". Therefore, a deviation of approximately 8" would be expected between the Narrow Range Compensated instrument and the Narrow Range Uncompensated instrument.)

INDICATED LEVEL		CORRECTED LEVEL									
Indicated Reactor Water Level	Narrow Range Compensated 2-LIS-3-53(60)(206) (253) Level		Narrow Range Uncompensated 2-LIS-3-184, 185,203(A-D), 208(A-D) Level		Wide Range 2-LI-3-58A (B), 2-LIS-3-56A (D) Level		Post Accident 2-LR-3-62 2-LI/LIS-3-52 2-LI/LIS-3-62A Level		Floodup 2-LI-3-55 Level		Wide Range 2-LI-3-46 (B) Level
	100°	212°	100°	212°	100°	212°	100°	212°	100°	212°	
50	39	42	34.5	37	Note 1	Note 2	No Calculated Correction Value	49	50.5	No Calculated Correction Value	
48	38	40	33	35				47	48.5		
46	36.5	39	31.5	34				45	46.5		
44	35	37	30	32.5				43	44		
42	33.5	36	29	31				41	42		
40	32	34	27.5	29.5				39	40		
38	31	33	26	28				37	38		
36	29.5	31.5	24.5	26.5				35	36		
34	28	30	23	25				33	34		
32	26.5	28.5	22	23.5				31	32		
30	25	27	20.5	22				29	30		
28	24	25.5	19	20.5				27	28		

**Notes:**

- (1) Indicates >60" if actual Water Level is >14".
- (2) Indicates >60" if actual Water Level is >8".

BFN	INSTRUMENT CHECKS AND OBSERVATIONS	2-SR-2
UNIT 2	SURVEILLANCE PROCEDURE DATA PACKAGE MODES 1, 2, & 3 - DAY SHIFT	Rev 0026
		Page 24 of 129

WEEK: 9/1/01 to 9/7/01 ATTACHMENT 2 (Page 10 of 77)

TABLE 1.9 REACTOR WATER LEVEL INSTRUMENTATION NARROW RANGE (COMPENSATED)								
APPLICABILITY: <b>Readings are required at all times.</b> (REFER TO P&L step 3.2) (Note 2)								
Criteria Source: FSAR 7.10.4								
LOCATION: Panel 2-9-5								
Reference Leg	A	B	C	D	MAX DEV Note 1	All Data is SAT/UNSAT	Review Initials	
	2-LI-3-53 (in.)	2-LI-3-60 (in.)	2-LI-3-206 (in.)	2-LI-3-253 (in.)			UO	Unit Supvr
Friday	41	41	41	41	3.0 inches			
Saturday	44	44	44	44				
Sunday								
Monday								
Tuesday								
Wednesday								
Thursday								

Note:

- 1) REFER TO Attachment 4 during off-normal operating conditions.
- 2) Reactor vessel water level indications from the four water level channels can be compared during operation (and are compared automatically by the RFWCS) to detect instrument malfunctions.

BFN UNIT 2	INSTRUMENT CHECKS AND OBSERVATIONS SURVEILLANCE PROCEDURE DATA PACKAGE MODES 1, 2, & 3 - DAY SHIFT	2-SR-2 Rev 0026 Page 46 of 129
---------------	---	--------------------------------------

WEEK: 9/1/01 to 9/7/01 ATTACHMENT 2 (Page 32 of 77)

TABLE 1.32 REACTOR WATER LEVEL INSTRUMENTATION NARROW RANGE (UNCOMPENSATED)									
Part 1 - APPLICABILITY: Modes 1, 2 & 3(REFER TO P&L step 3.2) Readings are required at all times.					Mode 3 (REFER TO P&L step 3.2) Readings are required at all times.			Review Initials	
Surveillance Requirements: 3.3.1.1.1(f4), 3.3.6.1.1(f2a,5h), 3.3.6.2.1(f1), 3.3.7.1.1(f1)					3.3.6.1.1(f6b)				
Reference Leg	Leg C/D Instruments		Leg A/B Instruments		MAX DEV (AC) Note 3	All Data SAT/UNSAT	UO	Unit Supvr	
	D	C	B	A					
LOCATION	2-9-86	2-9-85	2-9-84	2-9-83					
	2-LIS-3-203D (in.)	2-LIS-3-203C (in.)	2-LIS-3-203B (in.)	2-LIS-3-203A (in.)					
Friday	48	48	48	48	5.0 inch Deviation Between All Instruments  AND  3.5 inch Deviation Between All Instruments on the A/B Leg				
Saturday	51	51	51	51					
Sunday									
Monday									
Tuesday									
Wednesday									
Thursday									
Part 2 - APPLICABILITY: Mode 1 and Modes 2 & 3 when Reactor steam dome pressure >150 psig (REFER TO P&L step 3.2) Readings are required at all times.									
Surveillance Requirements: 2-LIS-3-208A-D = 3.3.2.2.1, 3.3.5.1.1(f3c), 3.3.5.2.1(f2) 2-LIS-3-184 & 185 = 3.3.5.1.1(f4d,5d)									
Reference Leg	Leg C/D Instruments		Leg A/B Instruments		MAX DEV (AC) Note 3	All Data SAT/UNSAT	UO	Unit Supvr	
	C	D	C	B					B
LOCATION	2-9-82	2-9-81	2-9-82	2-9-81					
	2-LIS-3-185 (in.)	2-LIS-3-208D (in.)	2-LIS-3-208C (in.)	2-LIS-3-208B (in.)	2-LIS-3-184 (in.)	2-LIS-3-208A (in.)			
Friday	48	48	48	48	48	48			
Saturday	51	51	51	51	51	51			
Sunday									
Monday									
Tuesday									
Wednesday									
Thursday									

Notes:

- 1) REFER TO Attachment 4 during offnormal operating conditions.
- 2) IM's may obtain voltage readings, corrected for level indication, to assist in operability determination.
- 3) All instruments on the A/B(C/D) Leg should read within 3.5 inches of each other AND within 5.0 inches of C/D(A/B) Leg instruments.

BFN UNIT 2	INSTRUMENT CHECKS AND OBSERVATIONS	2-SR-2 Rev 0026 Page 125 of 129
---------------	------------------------------------	---------------------------------------

**ATTACHMENT 4**  
(Page 1 of 1)

**Reactor Water Level Indication Correction**

The Reactor Water Level Instrumentation tables in Attachment 2 are arranged such that only instruments in the same compensation group are compared. However, determination of corrected level indication may be required during operation at off-normal conditions or if desired to compare instruments from different compensation groups.

Corrected level indication may be used for satisfying MAX DEV criteria provided the following are observed:

- The parameter correction is appropriately applied to all instruments being compared.
- Both the indicated and corrected level indications are recorded and annotated in Attachment 2 along with the bases for the corrected level indication.

Corrected level indication can be determined from the following table which provides commonly needed corrections or from Technical Instruction 2-TI-149. The following table presents Reactor Water Level as: indicated, corrected for Reactor Vessel Temperature 100°F, and corrected for Reactor Vessel Temperature 212°F for various water level instruments. Enter the indicated Rx water level and find the correct instrument column and use the closest Rx vessel temperature. (Matching corrected levels between instruments and subtracting the associated indicated levels will yield an approximate deviation value in inches between those instruments. i.e. If the Narrow Range Compensated Instrument is reading 38", the corrected level would be 34.5". Also, using a corrected value of 35.5" in the Narrow Range Uncompensated column shows the instrument should be reading 46". Therefore, a deviation of approximately 8" would be expected between the Narrow Range Compensated instrument and the Narrow Range Uncompensated instrument.)

INDICATED LEVEL		CORRECTED LEVEL									
Indicated Reactor Water Level	Narrow Range Compensated 2-LIS-3-53(60) (206) (253) Level		Narrow Range Uncompensated 2-LIS-3-184, 185,203(A-D), 208(A-D) Level		Wide Range 2-LI-3-58A (B), 2-LIS-3-56A (D) Level		Post Accident 2-LR-3-62 2-LI/LIS-3-52 2-LI/LIS-3-62A Level		Floodup 2-LI-3-55 Level		Wide Range 2-LI-3-46A (B) Level
	100°	212°	100°	212°	100°	212°	100°	212°	100°	212°	
50	39	42	34.5	37	Note 1	Note 2	No Calculated Correction Value		49	50.5	No Calculated Correction Value
48	38	40	33	35					47	48.5	
46	36.5	39	31.5	34					45	46.5	
44	35	37	30	32.5					43	44	
42	33.5	36	29	31					41	42	
40	32	34	27.5	29.5					39	40	
38	31	33	26	28					37	38	
36	29.5	31.5	24.5	26.5					35	36	
34	28	30	23	25					33	34	
32	26.5	28.5	22	23.5					31	32	
30	25	27	20.5	22					29	30	
28	24	25.5	19	20.5					27	28	

Notes:

- (1) Indicates >60" if actual Water Level is >14".  
(2) Indicates >60" if actual Water Level is >8".

### Handout to Applicant

A startup is planned for the following shift. One Reactor Operator must be held over two hours for startup. The following is the work history (excluding shift turnover time) of the available reactor operators on shift (hours reflect those worked PRIOR to the 2 hour holdover). A break of at least 8 hours occurred between all work periods.

DAY	1	2	3	4	5	6	7	8 (Today)
Operator #1	0	0	13	11	14	10	14	10
Operator #2	0	3	10	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

Evaluate the work history for all 5 operators. Determine which operator(s), if any, can be held over for two hours without prior overtime approval, and determine which operators CANNOT be held over for two hours without prior overtime approval.

## A1.2

### TASK CONDITIONS:

A startup is planned for the following shift. One Reactor Operator must be held over two hours for startup. The following is the work history (excluding shift turnover time) of the available reactor operators on shift (hours reflect those worked PRIOR to the 2 hour holdover). A break of at least 8 hours occurred between all work periods.

DAY	1	2	3	4	5	6	7	8 (Today)
Operator #1	0	0	13	11	14	10	14	10
Operator #2	0	3	10	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

Evaluate the work history for all 5 operators. Determine which operator(s), if any, can be held over for two hours without prior overtime approval, and determine which operators CANNOT be held over for two hours without prior overtime approval.

**Task Standard:**

GEN 2.1.3 (3.0/3.4) Knowledge of shift turnover practices CFR 41.10 RO and SRO

**SOLUTION:**

Step	Description	Standard	SAT/UNSAT
1	Reference SPP-1.5	Current Revision SPP-1.5	
2	Evaluate Operator 1	Determine Operator #1 would exceed 24 hours in a 48 hour period and would exceed 72 hours in a 7 day period and would require overtime authorization	Critical
<b>PROMPT:</b> If asked, inform applicant that operator 1 received authorization for exceeding 24 hours in a 48 hour period between days 4 and 5.			
3	Evaluate Operator 1	Determine Operator exceeded 24 hours in a 48 hour period between days 5 and 6	
4	Evaluate Operator 2	Determine Operator #2 would exceed 72 hours in a 7 day period and would require overtime authorization	Critical
5	Evaluate Operator 3	Determine Operator #3 would exceed 16 hours in a 24 hour period and 24 hours in a 48 hour period and would require overtime authorization	Critical
6	Evaluate Operator 4	Determine that Operator #4 would not exceed any overtime guidelines	
7	Evaluate Operator 5	Determine Operator #2 would exceed 72 hours in a 7 day period and would require overtime authorization	Critical

<b>Tennessee Valley Authority</b>  <b>TVAN STANDARD PROGRAMS AND PROCESSES</b>	<b>TITLE</b>  <b>OVERTIME RESTRICTIONS (REGULATORY)</b>	<b>SPP-1.5 Rev. 2 Page 1 of 10</b> <hr/> Quality Related <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No PORC Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 10CFR50.59 Review <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Effective Date <u>11/15/99</u>
<p>RESPONSIBLE PEER TEAM: <u>Plant Managers</u>  <div style="text-align: right; margin-left: 300px;"><i>Organization</i></div> </p>		
<b>APPROVALS</b>		
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; width: 60%;"> <u>Dennis L. Koehl</u>  <i>* Primary Sponsor</i> </div> <div style="text-align: center; width: 35%;"> <u>10/29/99</u>  <i>Date</i> </div> </div>		
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; width: 60%;"> <u>N/A</u>  <i>General Manager, NA</i> </div> <div style="text-align: center; width: 35%;"> <u>N/A</u>  <i>Date</i> </div> </div> <p style="margin-top: 5px;">For Nuclear Assurance Sponsored SPPs</p>		
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; width: 60%;"> <u>Karl W. Singer</u>  <i>* Senior Vice President, Nuclear Operations</i> </div> <div style="text-align: center; width: 35%;"> <u>11/9/99</u>  <i>Date</i> </div> </div> <p style="margin-top: 5px;">* Site-specific changes are approved by Site Sponsor and Site Vice President (see PCF)</p>		

**REVISION LOG**

<b>Revision Number</b>	<b>Effective Date</b>	<b>Pages Affected</b>	<b>Description of Revision</b>
0	10/8/97	All	Replaces STD-1.7, SSP-1.7 at SQN and BFN; and SSP-1.07 at WBN.
1	5/20/99	2, 4-10	Revised to allow Plant Manager or Site Vice President to delegate approval of exception to overtime during outages, and modified requirements for review of the monthly overtime exception report.
2	11/15/99	2, 5, 8, 9	Added exception to paragraph 3.B.3 and adjusted Forms SPP-1.5-1 and SPP-1.5-2 accordingly (minor/editorial change).

## TABLE OF CONTENTS

Section	Title	Page
	Revision Log.....	2
	Table of Contents .....	3
<b>1.0</b>	<b>PURPOSE</b> .....	4
<b>2.0</b>	<b>SCOPE</b> .....	4
<b>3.0</b>	<b>INSTRUCTIONS</b> .....	4
<b>4.0</b>	<b>RECORDS</b> .....	6
4.1	QA Records .....	6
4.2	Non-QA Records .....	6
<b>5.0</b>	<b>DEFINITIONS</b> .....	6
	<b>APPENDIXES</b>	
	Appendix A Overtime Limitation Exception Report Processing Flowchart.....	7
	<b>FORMS</b>	
SPP 1.5-1	Overtime Limitation Exception Report .....	8
SPP 1.5-2	Overtime Limitation Exception Report for Extended Shutdown Periods .....	9

## 1.0 PURPOSE

This SPP establishes TVAN's regulatory overtime program to meet regulatory requirements and as specified in individual plant Technical Specifications.

The intent of these controls are to prevent situations where fatigue could reduce the ability of operating personnel to keep the reactor in a safe condition, and to assure that critical plant operating personnel are not assigned to shift duties while in a fatigued condition which could significantly reduce their mental alertness or decision making ability.

## 2.0 SCOPE

- A. The following personnel are required to meet the limitations specified in this SPP: Senior Reactor Operators (SRO), Reactor Operators (RO), Nuclear Assistant Unit Operators (NAUO), Onshift RADCON Personnel, Operations Shift Managers, Shift Technical Advisors, Onshift Fire Operations Personnel, Unit Operators, Unit Supervisors, and key maintenance personnel (see 5.0 Definitions), including craft and contractors performing safety-related activities in the capacity of the TVA positions listed.
- B. Although not specifically restricted by Technical Specifications, the limitations specified in this SPP should be used as a guide for all personnel performing work.

## 3.0 INSTRUCTIONS

- A. Expectations are that critical personnel work a nominal 40-hour week with minimal overtime. When overtime is required, it shall be assessed and monitored to ensure the below-listed restrictions are met. Assignment of overtime is made after consideration of such factors as on going activities, expected duration, and personnel involved, with the intent to minimize potential impact on safety-related activities.
- B. For plant conditions which require substantial amounts of overtime to be used, or during temporary periods of work such as refueling outages, major maintenance projects or plant modifications, the following restrictions apply:
  - 1. An employee may work no more than 16 hours straight, excluding shift turnover time (for exceptions, see 3.0-C below).

As an example an employee has worked on shift 16 continuous hours. At the end of the shift it takes one hour for shift turnover which means the employee has worked 17 continuous hours. Since the one hour over 16 was for shift turnover, an authorization for deviation from the overtime limitation is not required.
  - 2. An employee may work no more than 16 hours in any 24-hour period, 24 hours in a 48-hour period, or 72 hours in any 7-day period, excluding shift turnover time (for exceptions, see 3.0-C below).

For example a 7-day period is any combination of 7 consecutive days or rolling days (such as Monday through Sunday or Tuesday through Monday). Hours worked over 72 require authorization for exception to the limitation, excluding shift turnover (for exceptions, see 3.0-C below).

3. Employees are to receive at least an 8-hour break between work periods, including shift turnover time (for exceptions, see 3.0-C below).
  4. During normal plant operations, the use of overtime is not for an entire staff working on a shift. It is considered on an individual basis. In the case of an extended shutdown for refueling, major maintenance, or major plant modification, approval may be made on a group basis.
  5. When a control board operator must work in excess of the overtime guidelines, every effort must be made to remove the operator from the responsibility of operating the control room board.
- C. The Plant Manager or Site Vice President may authorize deviations from the overtime restrictions on the Overtime Limitation Exception Report (Form 1.5-1). Their designees may approve deviations other than exceeding 16 hours straight. During outages, the Site Vice President or the Plant Manager may delegate the authority to exceed 16 hours to the Outage Manager or the Assistant Plant Manager. Form 1.5-2 will be used during periods of extended shutdown for refueling major maintenance, or major plant modification as determined by Plant Manager. The deviation will be based on the following criteria:
1. Unusual circumstances exist.
  2. Significant reduction in personnel effectiveness would be highly unlikely.
- D. The exact work to be performed is specified in the Overtime Limitation Exception Report in sufficient detail for the authorizing manager to review and conclude that significant reduction in personnel effectiveness would be highly unlikely.
- E. The form must be filled out and approved before the individual(s) exceeds the overtime limit. If approval is received by telecon, the preparer shall document that approval was via telecon, initial, date, and given by whom.
- F. Each month the Plant Manager or designee compiles the Overtime Limitation Exception Report forms approved for that month. Plant Manager or designee reviews the approved Overtime Limitation Exception Report forms for:
1. Excessive number of approvals/exemptions
  2. Excessive exemptions for the same individuals and
  3. Excessive group approvals (i.e., blanket approvals for whole groups or organization entities)
- G. The Plant Manager documents that the review has taken place. The Overtime Limitation Exception Report forms and review documentation are sent to RIMS/EDM as non-QA records.
- H. Business and Work Performance (B&WP) periodically checks the ATR report against the forms generated to ensure that no key personnel covered by the overtime procedure have worked hours exceeding limits without prior approval.

**4.0     RECORDS**

**4.1     QA Records**

None.

**4.2     Non-QA Records**

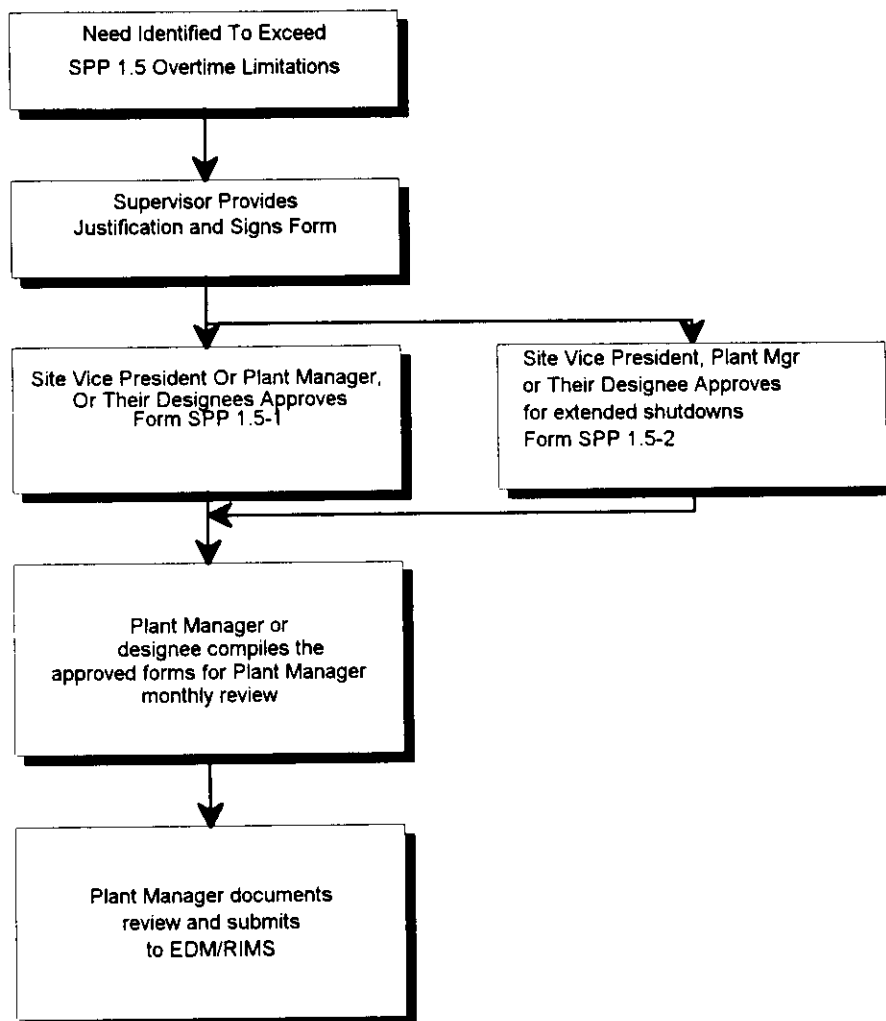
Overtime Limitation Exception Report  
Overtime Limitation Exception Report for Extended Shutdown Periods

**5.0     DEFINITIONS**

**Key Maintenance Personnel** - The term applies to all TVAN and contractor personnel who are subject to performing maintenance, repair, calibration or testing of safety-related structures, systems or components or personnel who are directly supervising such activities.

APPENDIX A  
Page 1 of 1

OVERTIME LIMITATION EXCEPTION REPORT PROCESSING FLOWCHART



OVERTIME LIMITATION EXCEPTION REPORT

Page 1 of 1

The following employees (three or less) are authorized to work overtime in excess of the overtime limits specified in paragraphs 3.B.1 and 3.B.2 of SPP-1.5. This report must be maintained and available for NRC review.

Name	SSN	Organization	Hours Exceeding Requirements		
			Date	# Hours	Time Limit Will Be Exceeded
a.					Time:
b.					Time:
c.					Time:

1. Specify specific reason for cause of overtime (i.e., another employee on S/L, unexpected job, etc.).

2. Specify requirement to be exceeded: ☐ 16 hours continuous (\*NOTE 1) ☐ 8-hour work break  
☐ 16 hrs. in 24 ☐ 24 hrs. in 48 ☐ 72 hrs. in 7-day period

3. Specify exact work to be performed and brief description (include procedure number, workplan number, work request number, or support of other specific activity):

4. State justification for exceeding the overtime limits. Justification should address considerations and actions taken to minimize potential impacts on safety-related activities (i.e., rescheduling of task, assignment of alternate employee to task, etc.) and reasoning for the determination that a significant reduction in effectiveness of the personnel involved will not result. This analysis should include considerations such as the total amount of time worked/anticipated, break periods taken/planned, type of activity to be performed, etc. for personnel to ensure that fatigue is not/will not be a factor.

Prepared by \_\_\_\_\_  
Print Name

Prepared by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Ext. \_\_\_\_\_  
Signature

THE ABOVE ACTIVITY IS CONSIDERED AN UNUSUAL CIRCUMSTANCE AND WARRANTS EXCEEDING THE OVERTIME RESTRICTIONS.

Approved by \_\_\_\_\_  
Print Name/Position

Approved by \_\_\_\_\_ Date \_\_\_\_\_  
Site Vice President/Plant Manager/Authorized Designee Signature

FOR ADDITIONAL SPACE, USE REVERSE SIDE OF THIS FORM.

Distributed to: Plant Manager's Office  
Originator (Employees Section Manager)

\*NOTE 1 Requires Site Vice President/Plant Manager approval, cannot be delegated.

**OVERTIME LIMITATION EXCEPTION REPORT FOR EXTENDED SHUTDOWN PERIODS**  
**Page 1 of 2**

The following attached list of employees are authorized to work overtime in excess of the overtime limits specified in paragraphs 3.B.1 and 3.B.2 of SPP-1.5. This report must be maintained and available for NRC review.

1. Specify specific reason for cause of overtime (i.e., another employee on S/L, unexpected job, etc.).

2. Specify requirement to be exceeded: ☐ 16 hours continuous (\*NOTE 1) ☐ 8-hour work break  
☐ 16 hrs. in 24 ☐ 24 hrs. in 48 ☐ 72 hrs. in 7-day period

3. Specify exact work to be performed and brief description (include procedure number, workplan number, work request number, or support of other specific activity):

4. State justification for exceeding the overtime limits. Justification should address considerations and actions taken to minimize potential impacts on safety-related activities (i.e., rescheduling of task, assignment of alternate employee to task, etc.) and reasoning for the determination that a significant reduction in effectiveness of the personnel involved will not result. This analysis should include considerations such as the total amount of time worked/anticipated, break periods taken/planned, type of activity to be performed, etc. for personnel to ensure that fatigue is not/will not be a factor.

Prepared by \_\_\_\_\_  
Print Name

Prepared by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Ext. \_\_\_\_\_  
Signature

**THE ABOVE ACTIVITY IS CONSIDERED AN UNUSUAL CIRCUMSTANCE AND WARRANTS EXCEEDING THE OVERTIME RESTRICTIONS.**

Approved by \_\_\_\_\_  
Print Name/Position

Approved by \_\_\_\_\_ Date \_\_\_\_\_  
Site Vice President/Plant Manager/Authorized Designee Signature

**FOR ADDITIONAL SPACE, USE REVERSE SIDE OF THIS FORM.**

Distributed to: Plant Manager's Office  
Originator (Employees Section Manager)

**\*NOTE 1** Requires Site Vice President/Plant Manager approval (can be delegated to Outage Manager or Assistant Plant Manager during outages).

OVERTIME LIMITATION EXCEPTION REPORT FOR EXTENDED SHUTDOWN PERIODS  
Page 2 of 2

Name	SSN	Organization	Hours Exceeding Requirements		
			Date	# Hours	Time Limit Will Be Exceeded
a.					Time:
b.					Time:
c.					Time:
d.					Time:
e.					Time:
f.					Time:
g.					Time:
h.					Time:
i.					Time:
j.					Time:
k.					Time:
l.					Time:
m.					Time:
n.					Time:
o.					Time:
p.					Time:
q.					Time:
r.					Time:
s.					Time:
t.					Time:
u.					Time:
v.					Time:
w.					Time:
x.					Time:

## **Handout to Applicant**

It is 3:00am on January 1. Following a declaration of an unusual event, several people are responding to the event. You are the shift manager, security has informed you that they have a reasonable belief that an NRC resident inspector, may have recently used alcohol and may be unfit for duty. In addition a deputy sheriff, TVA pipe fitter and a contract pipe fitter that are responding onsite to the NOUE have stated that they consumed alcohol at midnight although the three of them appeared to be unimpaired. All the above individual have unescorted access (badged) with the exception of the deputy sheriff.

In reference to allowing these individual onsite, what action are required?

**NRC Resident Inspector**

**Deputy Sherriif**

**TVA Pipe Fitter**

**Contract Pipe Fitter**

## A1.1a SRO ONLY

It is 3:00am on January 1. Following a declaration of an unusual event, several people are responding to the event. You are the shift manager, security has informed you that they have a reasonable belief that an NRC resident inspector, may have recently used alcohol and may be unfit for duty. In addition a deputy sheriff, TVA pipe fitter and a contract pipe fitter that are responding onsite to the NOUE have stated that they consumed alcohol at midnight although the three of them appeared to be unimpaired. All the above individual have unescorted access (badged) with the exception of the deputy sheriff.

In reference to allowing these individual onsite, what action are required?

Solution:

K/A 2.1.6 CFR43.5 (2.1/4.3) Ability to supervise and assume a management role during plant transients and upset conditions. SRO ONLY Reference allowed.

**NRC employee** must be granted escorted access, the regional administrator must be called and the NRC Operations Center must be notified. (2.0 B. TVA may not deny access but shall escort the individual. In any instance of this occurrence, the NRC Region II Administrator must be notified immediately by telephone. During other than normal working hours, the NRC Operations Center must be notified)

**Deputy Sheriff** (This SPP does not apply to NRC employees, law enforcement personnel, or non-TVA offsite emergency response personnel while responding onsite.) Law enforcement while not covered by this SPP, should not be allowed to enter the protected area. There are no statutory requirements to allow local law enforcement onsite. It would be permissible to escort these individuals if their presence were actually necessary.

**TVA employee** - must have saliva test administered. (\*SPP-1.2, Fitness for Duty, section 3.14, Call-in for Unscheduled Work, 3.14.1.A.4, if the answer to the alcohol consumption question -is "yes" then Nuclear Security on site should be notified and be requested to administer a saliva test to the -employee. This test must be administered as soon as the person arrives on site.)

**Contract Employee** - must have saliva test administered or access denied. Typically, these contractors, if badged, will participate in the TVA FFD program, and the requirements are the same as for a TVA employee.

<b>Tennessee Valley Authority</b>  <b>TVAN STANDARD PROGRAMS AND PROCESSES</b>	<b>TITLE</b>  <div style="text-align: center; padding-top: 20px;"><b>FITNESS FOR DUTY</b></div>	<b>SPP-1.2 Rev. 4 Page 1 of 30</b> <hr/> <div style="display: flex; justify-content: space-between;"> <div>Quality Related</div> <div><input type="checkbox"/> Yes</div> <div><input checked="" type="checkbox"/> No</div> </div> <div style="display: flex; justify-content: space-between;"> <div>PORC Required</div> <div><input type="checkbox"/> Yes</div> <div><input checked="" type="checkbox"/> No</div> </div> <div style="display: flex; justify-content: space-between;"> <div>10CFR50.59 Review</div> <div><input type="checkbox"/> Yes</div> <div><input checked="" type="checkbox"/> No</div> </div> <div style="margin-top: 5px;">             Effective Date     <u>11/30/99</u> </div>
<div style="margin-top: 20px;"> <b>RESPONSIBLE PEER TEAM:</b>    <u>B&amp;WP</u>  <div style="text-align: center; margin-left: 150px;"><i>Organization</i></div> </div>		
<b>APPROVALS</b>		
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; flex-grow: 1;"> <u>Chris Kelly</u>  <i>* Primary Sponsor</i> </div> <div style="text-align: center; flex-grow: 1;"> <u>11/19/99</u>  <i>Date</i> </div> </div>		
<div style="margin-bottom: 5px;">For Nuclear Assurance Sponsored SPPs</div> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; flex-grow: 1;"> <u>N/A</u>  <i>General Manager, NA</i> </div> <div style="text-align: center; flex-grow: 1;"> <u>                    </u>  <i>Date</i> </div> </div>		
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center; flex-grow: 1;"> <u>Karl W. Singer</u>  <i>* Senior Vice President, Nuclear Operations</i> </div> <div style="text-align: center; flex-grow: 1;"> <u>11/24/99</u>  <i>Date</i> </div> </div> <div style="margin-top: 10px; font-size: small;">             * Site-specific changes are approved by Site Sponsor and Site Vice President (see PCF)         </div>		

**REVISION LOG**

<b>Revision Number</b>	<b>Effective Date</b>	<b>Pages Affected</b>	<b>Description of Revision</b>
0	2-18-97	All	Replacing STD-1.6.
1	10-24-97	All	General revision to update and clarify FFD policy and requirements. Changed the definition of Emergency Response Center to incorporate wording found in 10CFR26.2.
2	8-5-98	2, 3, 5, 6, 10-13, 15-18, 19, 20, 21, 23, 24-27	Deleted references to Health Services due to organization changes. Shifted and clarified FFD Program responsibilities due to organization changes. Minor editorial changes and FFD Program clarifications. Added 10CFR26.27(d) information regarding NRC employees. Added information regarding TVA's contract Employee Assistance Program. Shifted and clarified responsibilities for non-QA FFD Program records due to organization changes.
3	02-12-99	All	General revision.
4	11/30/99	2, 3, 11, 12, 14, 16, 17, 19, 21-24, 26, 27, 30	Added Form SPP-1.2-1, "Call-InForm for Unscheduled Work" that may be utilized to document unscheduled call-ins as corrective action for SQN PER 99-007109-000. Deleted reference to hand held breathalyzers. Clarified requirements for alcohol and drug testing. For emphasis, added information contained in Section 3.7 "Penalties for Violation(s) of the FFD Program" table, regarding refusal to fully cooperate in the testing process, to Section 3.8 "Resulting Actions for Other Violations of this Procedure (or SPP)". Clarified appeals. Minor/editorial changes.

## TABLE OF CONTENTS

Section	Title	Page
	Revision Log.....	2
	Table of Contents .....	3
<b>1.0</b>	<b>PURPOSE</b> .....	4
<b>2.0</b>	<b>SCOPE</b> .....	4
<b>3.0</b>	<b>INSTRUCTIONS</b> .....	5
3.1	Responsibilities.....	5
3.2	Standards of Conduct .....	6
3.3	Alcohol and Drug Testing.....	11
3.4	Appeals .....	17
3.5	Training .....	18
3.6	Employee Assistance Program.....	19
3.7	Penalties for Violation(s) of the FFD Program.....	20
3.8	Resulting Actions for other Violations of this Procedure (or SPP).....	21
3.9	Fitness for Duty Requirements for Unescorted Access.....	21
3.10	Transfer of Fitness for Duty Certification.....	21
3.11	Emergency Response Center.....	21
3.12	Fitness for Duty Program Integrity.....	22
3.13	Contractor/Vendor Programs.....	23
3.14	Call-in for Unscheduled Work.....	23
3.15	Contracts and Purchasing.....	24
3.16	Audits .....	24
3.17	Reporting .....	24
<b>4.0</b>	<b>RECORDS</b> .....	25
4.1	QA Records .....	25
4.2	Non-QA Records .....	25
<b>5.0</b>	<b>DEFINITIONS</b> .....	27
	<b>APPENDIXES</b>	
	Appendix A: Contracts/Purchasing FFD Requirements.....	29
	<b>FORMS</b>	
	SPP-1.2-1 Call-In Form for Unscheduled Work.....	30

## 1.0 PURPOSE

The Fitness For Duty (FFD) Program was established to ensure that each employee has a safe, drug-free workplace and to provide reasonable assurance that personnel supporting the TVA Nuclear (TVAN) program will perform their tasks in a reliable and trustworthy manner. In addition, the FFD Program provides assurance that employees are not under the influence of any legal or illegal substance or mentally or physically impaired from any cause which in any way could adversely affect their ability to safely and competently perform their duties. The program is administered in accordance with Regulation 10 CFR Part 26 issued by the Nuclear Regulatory Commission (NRC).

## 2.0 SCOPE

The requirements of this SPP apply to:

- A. All TVAN employees
- B. TVA employees located at TVAN sites or projects
- C. Contractor and vendor employees located at TVAN work locations
- D. All persons who have unescorted access at TVA nuclear plants
- E. Persons required to report to the emergency response centers
- F. Those who by the nature of their jobs, as determined by the Chief Nuclear Officer and Executive Vice President, TVAN, could affect the safe operation of TVA's nuclear plants
- G. NRC contractor employees

Exemptions:

- A. This SPP does not apply to NRC employees, law enforcement personnel, or non-TVA offsite emergency response personnel while responding onsite.
- B. If TVA has a reasonable belief that a NRC employee may be under the influence of any substance, or otherwise unfit for duty, TVA may not deny access but shall escort the individual. In any instance of this occurrence, the NRC Region II Administrator must be notified immediately by telephone. During other than normal working hours, the NRC Operations Center must be notified.
- C. Short-term contractors who do not require entry to the protected area are exempt from Subsections 3.3.1(A), 3.3.1(C), and 3.5.
- D. Bellefonte Nuclear Plant (BLN) is exempt from Subsections 3.3.1(C.2.b.) and 3.5. Only those BLN employees who are required to report to the Emergency Response Center, BLN employees maintaining unescorted access at another TVAN site, or BLN supervisors/managers responsible for performing continual behavioral observation are required to meet the requirements of Section 3.5.
- E. Additional exemptions which do not affect regulatory requirements and commitments may be granted on a case-by-case basis by the Manager, Nuclear Security.

### **3.0 INSTRUCTIONS**

#### **3.1 Responsibilities**

**3.1.1** The Corporate Nuclear Security organization is responsible for:

- A. Regulatory interpretations and decisions
- B. Policy Development
- C. Overall direction of the program administration
- D. Organizational interfaces
- E. Management of the random testing program
- F. Procedures coordination
- G. Reporting requirements
- H. Monitoring of FFD training
- I. Disposition of positive test results
- J. Consistent implementation
- K. Consulting with experts concerning drugs of abuse in the Tennessee Valley
- L. Maintaining contracts with primary and backup Substance Abuse and Mental Health Services Administration (SAMHSA) certified laboratories.

**3.1.2** The Site Medical Office/Corporate Nuclear Security FFD Staff is responsible for:

- A. Notifying supervisors/designees regarding employees selected for random testing
- B. Specimen collection/chain of custody
- C. Training of collectors
- D. Records from breath analysis equipment (maintenance/calibration/repair)
- E. Review of test results

**3.1.3** The Health & Safety Organization is responsible for maintaining Employee Assistance Program (EAP) contract(s)

### **3.2 Standards of Conduct**

#### **3.2.1 General**

All persons under the scope of this SPP shall ensure that they are fit to perform their duties in a reliable and trustworthy manner. It is their duty to keep alcohol and illegal drugs off TVAN property and immediately report persons on TVAN property who may not be fit for duty to the appropriate management/supervisor or Nuclear Security.

- A. All persons under the scope of this SPP are responsible for reporting to the Site Medical Office/Corporate Nuclear Security FFD Staff and to their immediate supervisor any health problems which may impair their ability to safely and competently perform work or impair fitness for duty. Examples include:
1. Medications (prescriptions and over-the-counter)
  2. Mental or emotional problems
  3. Personal problems
  4. Fatigue or stress
  5. Physical illness or condition
- B. If there are indications of drug or alcohol abuse or indications that an individual is unable to safely and competently perform his/her duties, the individual's management supervisor is responsible for:
1. Informing the employee of the assistance available through the EAP, and
  2. Referring the person to the Site Medical Office/Corporate Nuclear Security FFD Staff for a fitness for duty evaluation in accordance with Subsection 3.3.1.E.
  3. When applicable, requesting a for-cause alcohol and drug test which must be approved by the Vice President, General Manager or his/her designee in accordance with Subsection 3.3.1.D.

#### **3.2.2 Illegal Drugs and Alcohol**

All employees and workers under the scope of this procedure shall not possess, use, or sell illegal drugs on or off of TVA property.

All employees and workers under the scope of this procedure shall not possess, use, or sell alcohol on any TVA property.

All employees and workers are prohibited from reporting to a TVAN work location under the influence of illegal drugs or alcohol at or above the cutoff levels established in 10 CFR 26, Appendix A, or more stringent TVAN cutoff levels as described in Subsection 3.3.2.C.

**3.2.3 Offsite Alcohol Consumption**

- A. Off-site consumption of alcohol is prohibited under the following conditions;
1. If a person leaves the work location with the intent of returning that day or shift.
  2. If the person is attending an off-site business meeting.
  3. If a person is scheduled to report for work within five hours.
- NOTE** Excessive consumption of alcohol before the five hour abstinence period can cause a positive breath test.
4. If a TVA vehicle will be driven following consumption of the alcohol.
- B. The consumption of alcohol is not prohibited after completing official business, if done in accordance with applicable local laws and the guidelines above.

**3.2.4 Handling of Drugs and Illegal Substances Found at Nuclear Plants**

All employees, employee vehicles, personal belongings, offices, lockers and company property are subject to search. Refusal to submit to a search will subject the employee to immediate disciplinary action. To provide a means to detect or deter drug activity on-site, each TVAN station may use canines to facilitate searches.

- A. **Discovery of Suspected Controlled Substance or Illegal Drugs - OUTSIDE THE PROTECTED AREA (PA)**
1. Security Supervisor will:
    - Immediately take positive possession and control of the substance using caution not to spill or contaminate the substance.
    - Take appropriate actions to secure the general area.
    - Notify the Site Security Manager (SSM)/Shift Coordinator
    - Evaluate the overall situation and take whatever action is required to contain the situation and minimize its impact.
    - Initiate a Chain of Custody (COC) form. (Ask the Site Medical Office/Collection Facility for assistance with COC)
  2. Site Medical Office/Collection Facility will:
    - Package the substance for shipment to laboratory.

- Lock the packaged substance in the Medical Office/Collection Facility refrigerator until forwarding to laboratory for analysis.
- Separately package excess or remaining amounts of the substance with another COC form.

**NOTE** Excess amounts of the substance may be maintained in the Medical Office/Collection Facility refrigerator or by Security in an evidence safe until laboratory analysis is complete. If results are positive, the remaining substance may be turned over to OIG, LLEA, other authorities, as appropriate. If results are negative, the remaining substance may be returned to owner, if known, or discarded.

3. SSM or Designee will:

- Upon receiving information that a suspected substance has been found and confirming it was outside the PA, make the following contacts, explaining that this is not a reportable event.
  - Site Management (Site VP, Plant Manager, Site Human Resource Manager)
  - Manager, Nuclear Security
  - OIG (determine if OIG will initiate investigation)
  - Informally brief Resident Inspectors and Region II Inspectors of investigation, explaining that this is not a reportable event--awaiting lab results.
- Inform contacts that the substance will immediately be sent to the contract laboratory for analysis or to the lab of OIG's choice, as appropriate.
- Inform contacts of laboratory analysis results immediately upon receipt.

4. Manager, Nuclear Security, or Designee will:

- Make corresponding contacts to Nuclear Corporate Management.
- Notify the SSM of contract laboratory analysis results immediately upon receipt.

If the results are negative, notify management and the NRC of the results and refer to OIG for determining if a follow-up investigation is necessary.

If the results are positive, notify management and the NRC of the results, this is not a reportable event, and refer to OIG for a follow-up investigation. Keep management and the NRC informed of the status of the investigation.

B. **Discovery of Suspected Controlled Substance or Illegal Drugs - INSIDE THE PROTECTED AREA (PA)**

1. Security Supervisor will:
  - Immediately take positive possession and control of the substance using caution not to spill or contaminate the substance.
  - Take appropriate actions to secure the general area.
  - Notify the SSM/Shift Coordinator.
  - Evaluate the overall situation and take whatever action is required to contain the situation and minimize its impact.
  - Initiate a Chain of Custody (COC) form. (Ask the Site Medical Office/Collection Facility for assistance with COC)
2. Site Medical Office/Collection Facility will:
  - Package the substance for shipment to laboratory.
  - Lock the packaged substance in the Medical Office/Collection Facility refrigerator until forwarding to laboratory for analysis.
  - Separately package excess or remaining amounts of the substance with another COC form.

**NOTE** Excess amounts of the substance may be maintained in the Medical Office/Collection Facility refrigerator or by Security in an evidence safe until laboratory analysis is complete. If results are positive, the remaining substance may be turned over to OIG, LLEA, other authorities, as appropriate. If results are negative, the remaining substance may be returned to owner, if known, or discarded.

3. SSM or Designee will:
  - Upon receiving information that a suspected substance has been found and confirming that it was inside the PA, make the following contacts:
    - Site Management (Site VP, Plant Manager, Site Human Resource Manager)
    - Manager, Nuclear Security
    - OIG (determine if OIG will initiate investigation)
    - Resident Inspectors and Region II Inspectors - "courtesy call"
  - Inform all contacts that the substance will immediately be sent to the contract laboratory for analysis or to the laboratory of OIG's choice, as appropriate.

**NOTE** The substance cannot be confirmed as an illegal drug without laboratory analysis.

- Inform all contacts that if the laboratory confirms the substance, this will be classified as a significant FFD event under requirements of 10CFR26.73(a) and will be reported to the NRC Operations Center by telephone within 24 hours of the confirmation.
  - Inform all contacts of laboratory analysis results immediately upon receipt.
4. Manager, Nuclear Security, or Designee will:
- Make corresponding contacts to Nuclear Corporate Management. Advising that the event is under investigation and will be reportable to the NRC if the laboratory confirms that the suspected substance is an illegal drug.
  - Assist in investigation of incident as appropriate.

Upon receipt of the laboratory test results, the Manager, Nuclear Security will make the following contacts if negative:

- Inform the SSM of contract laboratory analysis results immediately upon receipt. The SSM or designee will brief Site Management and the NRC that the laboratory test was negative and that the event is not reportable. The SSM will notify the OIG if necessary and request investigative assistance if appropriate.
- Inform Nuclear Corporate Management that the event is not reportable.
- Assist in investigation of incident if requested.

Upon receipt of the laboratory test results, the Manager, Nuclear Security will make the following contacts if positive:

- Inform the SSM of contract laboratory analysis results immediately upon receipt. The SSM or designee will brief Site Management and the NRC that the laboratory test was positive and that the event is reportable. The SSM will notify the OIG and request investigative assistance.
- Inform Nuclear Corporate Management that the event is reportable.
- Contact Corporate Licensing and arrange to complete 24-hour notification to the NRC operations center within 24 hours of receipt of the laboratory results.
- Assist in investigation of incident if requested.

### 3.3 Alcohol and Drug Testing

#### 3.3.1 General

Alcohol and Drug testing shall be conducted in accordance with 10CFR26 and the TVAN FFD Procedure Manual.

##### A. Employment/Transfer Alcohol and Drug Testing

This type of initial testing applies to:

1. Outside applicants for a TVAN position.
2. TVA employees transferring to a TVAN position.
3. Contractors and vendors applying for TVAN work.

Employment/transfer testing is not required under the following conditions:

1. When a person has been tested within the previous 60 days by TVAN, another nuclear licensee, or a TVAN-approved FFD testing program.
2. When a person has been subject to random alcohol and drug testing in TVAN's, another nuclear licensee's, or TVAN-approved FFD testing program within the last 30 days. The person must have completed an initial alcohol and drug test.

Individuals who have had a confirmed positive alcohol or drug test or have refused to be tested under a federal or state regulated FFD/alcohol and drug testing program within the past three (3) years will not be considered for employment.

##### B. Pre-access Alcohol and Drug Testing (Testing Prior to Granting of Unescorted Access)

Testing must be completed by TVAN prior to granting of unescorted access except in the following situations:

1. When a person has been tested within the previous 60 days by TVAN, another nuclear licensee, or a TVAN-approved FFD testing program.
2. When a person has been subject to random testing in TVAN's, another nuclear licensee's, or a TVAN-approved FFD testing program within the past 30 days. The person must have completed an initial alcohol and drug test.

##### C. Random Alcohol and Drug Testing

1. Random alcohol and drug testing is applicable to:
  - a. Those with unescorted access.

- b. Employees who report for emergency response centers.
  - c. Those with an official station of a nuclear plant or project.
  - d. TVAN employees and contractors (TVAN employees or contractors with clerical-related salary administration plans may be excluded unless other criteria in this section apply).
  - e. Those who remain in the random program in order to maintain eligibility for an unescorted access badge.
  - f. Those responsible for administering the FFD program (Program Integrity).
  - g. NRC contractor employees.
2. Random testing is conducted at an annual rate equal to at least 50 percent of the population. Each person has an equal chance of being selected for testing every day that testing is conducted, from all shifts. Random testing is conducted:
- a. Various times of the day
  - b. Several days of the week
  - c. On weekends and holidays
3. Notification will be made by the Site Medical Office/Corporate Nuclear Security FFD Staff through the individual's supervisor or designee. The person selected is responsible for reporting **promptly (without delay)** to the medical/collection facility.

Supervisors/designees are responsible for:

- a. Notifying individuals of their selection. Some flexibility exists regarding notifying the individual of his/her selection if the selected individual is involved in critical activities (e.g., inside containment or involved in Technical Specification testing/action, etc.). Delayed notification must be coordinated with and approved by the appropriate Site Medical Office/Corporate Nuclear Security FFD Staff;

**NOTE** No advance notification/warning will be given. Notification to report shall not be left on answering machines, voice mail, notes on desks, etc.

- b. Ensuring that the selected individual reports **promptly (without delay)** to the medical/collection facility;

- c. Ensuring that knowledge of the individual's selection is kept private and restricted to the absolute minimum number of appropriate persons necessary to facilitate prompt testing.

D. For-Cause Alcohol and Drug Testing

All for-cause testing must be approved by the Vice President, General Manager or his/her designee. Rationale for for-cause testing must be verified to be in compliance with this procedure's requirements and must be thoroughly documented by the appropriate supervisor/manager. In addition, all for-cause testing should be reported to the FFD Manager within 48 hours (Monday - Friday) of test completion.

1. For-cause testing shall be conducted when there is reasonable suspicion that the worker's behavior involved a failure of performance that contributed to:
  - a. Radiation releases or exposure of radioactivity in excess of regulatory limits.
  - b. Actual or potential substantial degradations of the level of safety of the plant.
  - c. An accident involving serious injury or death or significant damage to property or equipment.
  - d. A "near miss" which could have resulted in serious injury, death, or significant damage to property or equipment.
2. For-cause testing may also be conducted under the following conditions:
  - a. When aberrant behavior is exhibited.
  - b. When a person is reasonably suspected of:
    - (1) Recent use of controlled substance(s) or alcohol.
    - (2) Engaged in illegal drug activities.
    - (3) Possession of illegal drugs or alcohol.
  - c. After receiving credible information or credible allegations of drug/alcohol abuse against:
    - (1) An individual
    - (2) A work unit determined to be a critical nuclear employment area when:
      - The number or proportion of positive results is found to be significant, and

- When activities are confirmed by testing or otherwise (for example, Inspector General's investigations) for a number of employees.
- d. As part of an investigation involving an accident (vehicle or personal) in which safety precautions were violated or unusually careless acts were performed.
- e. When an employee's work record indicates a history of accidents or "near misses" or accidents which are the fault of the employee.
- f. When an excessively high accident rate is observed in a particular location.

E. Follow-up Alcohol and Drug Testing

Follow-up testing is required for TVA employees for whom unescorted access has been reinstated and who have been returned to work following a confirmed positive test result.

Employees in the follow-up testing are subject to the following:

1. Follow-up testing on a random basis of at least once every month for the first four months; and at least once every 3 months for the next 2 years and eight months.
2. Random testing program.

F. Witnessed Collections

Witnesses must be of the same gender as the individual providing the specimen and must be trained as a urine drug screen collector or witness. Program Integrity Clearance is required for witnesses.

Specimen collections may be witnessed if:

1. The individual has presented a urine specimen that falls outside the normal temperature range, or
2. The collector observes an attempt to substitute or adulterate the urine sample, or
3. The individual has previously been determined to have used a substance inappropriately or without medical approval and the particular test is being conducted as a part of a rehabilitation program or on return to service after evaluation and/or treatment for a confirmed positive test result.

G. FFD Evaluations

FFD Evaluations will be conducted in accordance with the specific working principles and procedures as contained in the TVAN Corporate Nuclear Security Psychological Screening Manual and the Medical Examiner's Guide.

FFD evaluations are performed when changes in behavior (on or off the job - based upon circumstances) or performance are indicated. These evaluations are also performed on return to work following a positive alcohol or drug test. A FFD Evaluation is requested by the employee's management supervisor or Corporate Nuclear Security. The evaluation consists of medical and psychological evaluations for purposes of establishing eligibility for special nuclear security clearances. Evaluations for return to work following a positive alcohol or drug test will include an alcohol and drug test. When applicable and when approved by the Vice President, General Manager, or his/her designee, a drug and alcohol test may also be conducted in accordance with Subsection 3.3.1.D.

3.3.2 Processes and Cut-Off Levels

Chemical and alcohol testing will be conducted in accordance with 10CFR26 and the TVAN FFD Procedure Manual.

A. Chemical Testing Process

1. The chemical testing process shall screen for the following drugs of concern:
  - marijuana
  - cocaine
  - opiates
  - phencyclidine
  - amphetamines
2. TVAN will utilize a "split" specimen/sample process.
3. TVAN will utilize strict chain-of-custody procedures to ensure the integrity of specimens.
4. TVAN will utilize a Department of Health and Human Services (DHHS) certified laboratory to confirm all positive drug test analyses.
5. TVAN will submit blind performance test specimens which contain known negative and positive quantities of drugs to ensure continued quality control is maintained by the laboratory.
6. An initial screening test will be performed on ALL urine samples for testing, utilizing an immunoassay procedure. The immunoassay screen tests for drugs or drug metabolites, indicating a "preliminary positive" or negative result.

7. Negative specimens will be eliminated from further testing.
8. A "confirmatory test" using gas chromatography/mass spectrometry (GC/MS) will be performed when an initial screening test indicates drugs in a person's urine. GC/MS is a sophisticated analytical technique that accurately identifies substances and amounts.
9. In for-cause, follow-up, witnessed, or return to work tests, the following drugs will also be screened for:
  - methaqualone
  - methadone
  - benzodiazepines
  - barbiturates
  - propoxyphene
10. A physician designated as the Medical Review Officer (MRO) will interpret and evaluate "analytical" confirmed positive test results from the laboratory together with the individual's medical history and other relevant biomedical information. **It is important to note the following:**
  - Hemp food products, such as "Seedy Sweeties" or "Hemp Liquid Gold," may cause a positive test for marijuana; however, consumption of these products is not a legitimate medical explanation for a positive drug test result.
  - Coca leaf teas, such as "Health Inca Tea," can cause a positive cocaine drug test result. This type of tea is now illegal and will not be considered a valid explanation for a positive drug test result.
  - Although some states allow for the medicinal use of marijuana based on a physician recommendation, a physician recommendation is not considered a legitimate explanation for a positive marijuana test result under federal drug testing programs.
11. If there is no information to suggest a legitimate reason for the presence of the drug in the individual's urine, the MRO shall declare the result confirmed positive.
12. For MRO-confirmed positives, at the tested individual's request, the original testing laboratory will forward the split specimen to another TVAN approved DHHS certified laboratory for analysis. A MRO will review the results of split specimen analyses to facilitate appropriate disposition.

**B. Alcohol Analysis Process**

1. Breath samples will be provided for alcohol analysis.
2. Individuals being tested will provide a minimum of two samples. Breath-alcohol test results will not be considered accurate unless each breath measurement is within plus or minus 10% of the average of all the measurements.
3. In accordance with 10CFR26, a breath alcohol content indicating a blood alcohol concentration of 0.04% or greater shall be considered a positive test result.
4. If the individual being tested disputes the results of the breath-alcohol analysis, he/she may request the test to be confirmed by using gas chromatography analysis of his/her blood.

**NOTE** Failure of the individual to request the blood test within 15 minutes of the confirmed positive breath alcohol test will constitute acceptance of the breath alcohol results. The individual will remain in the medical/collection facility between breath alcohol and blood testing.

**C. Cut-off Levels**

TVAN will use preliminary initial cut-off levels and confirmatory test cut-off levels for the above substances as described in 10CFR26, Appendix A, Section 2.7, with the following exceptions, which are more stringent:

1. The initial test cut-off level for marijuana metabolites is 50 ng/ml and the confirmatory test cut-off level is 15 ng/ml. In addition, if the creatinine level for a specimen is below 20 mg/dl and the marijuana is negative at a cut-off level of 50 ng/ml, the contract laboratory will test the specimen for marijuana using a 20 ng/ml cut-off. If the specimen is positive on the initial screen at or above 20 ng/ml and up to 50 ng/ml, the confirmation test will be at the limit of quantitation - which the GC/MS technology supports.
2. **Alcohol test results between 0.02 and 0.039 BAC will be reviewed for appropriate action - see Subsection 3.7 (Table) - Penalties for Violation(s) of the FFD Program.**

**3.4 Appeals**

An opportunity to appeal the confirmed positive test result, subversion or refusal to fully cooperate in the testing process is provided to any current TVA employee or contractor/vendor.

### 3.5 Training

#### 3.5.1 General

FFD Program information as required by 10CFR26 and Behavioral Observation Program information and techniques as required by 10CFR26 and 10CFR73.56 "Personnel Access Authorization Requirements for Nuclear Power Plants," will be included in FFD Training.

All persons under the scope of this procedure shall be subject to the training requirements of this section. This is regardless of whether or not the person is subject to the random alcohol and drug testing portions of the program.

Training shall be administered under the policy and procedures established by TVAN Training.

Medical Review Officers and psychologists are normally not required to take Fitness for Duty Training because of the nature of their training, education, and experience.

##### A. Completion of Training

FFD training **MUST** be completed prior to the granting of unescorted access, prior to assignment to an Emergency Response Center or within 90 days of assignment to supervisory duties.

For all other employees, it must be taken within four months of assignment to TVAN.

##### B. Expiration of Training

Training expires annually at the end of the quarter in which it comes due.

If training expires one or more of the following actions will normally occur:

1. Unescorted access is promptly suspended;
2. The person will be restricted from Emergency Response Center participation.
3. Denial of access to a site or TVAN work location and placement in a TVAN non-work status until the training has been completed.

**NOTE** Actions 1 and 2 above occur automatically within applicable computer programs.

Employees who do not have unescorted access and are not tasked with emergency center response who have valid reasons for failing to complete required FFD training within the specified quarter may preclude Action 3. – placement in a TVAN non-work status, if:

- The responsible supervisor documents the valid reason(s) for the employee's failure to complete the required training. This documentation should be placed in the employee's personnel file with copies forwarded

to the applicable Human Resources Office and to the Nuclear Security FFD Program Manager.

- The responsible supervisor ensures the employee completes the required training **immediately** upon return to work.

Valid reasons for failure to complete required training within the specified quarter include extended medical/sick leave; extended A/L due to hardship; temporary assignment to Institute of Nuclear Power (INPO) or to another utility. Supervisors should encourage employees not to schedule required training near quarter ending. Taking scheduled annual leave the last week of the quarter is not a valid reason for failing to complete required training.

Upon successful completion of the course as determined by TVAN training policy, the person may be returned to work, and activities in actions (1) and (2) above may be reinstated.

### **3.6     Employee Assistance Program**

#### **3.6.1   General**

TVA has a contract Employee Assistance Program (EAP) which provides assistance to TVA employees experiencing substance abuse, financial, marital, or other similar problems. Confidential assistance to employees is provided consistent with applicable laws and requirements.

- A.     The EAP offers the following for TVA employees and their families with problems that could adversely affect performance of job duties:
  - 1.     Assessment
  - 2.     Short-term counseling
  - 3.     Referral services
  - 4.     Treatment monitoring
- B.     The EAP provides TVA employees with confidential access to trained counselors. Confidentiality is assured except in cases where a person's condition constitutes a hazard to himself/herself or others, or could adversely affect the safe operation of TVAN's facilities. In these cases, the EAP shall contact TVA's Manager, Clinical Services, Health & Safety, who in turn will inform TVAN Personnel Security, without identifying the person as an alcohol or drug treatment patient.

### 3.7 Penalties for Violation(s) of the FFD Program

TABLE OF PENALTIES			
ISSUE	TVAN EMPLOYEE	OTHER TVA EMPLOYEE	CONTRACTOR WORKER
Positive			
<u>Alcohol &amp; Drug Test</u>			
Applicant/Badging Pre-Access A&D Test	Employment Denied (Restricted for 3 years minimum)	Badging-Return to TVA organization (Restricted for 3 years minimum)	Restricted from TVAN work (Restricted 3 years minimum)
Random A&D Test	1st Positive-Minimum 14-day suspension & EAP (Return subject to conditions)*	Return to TVA organization for action (3-year minimum restriction from TVAN)	Restricted from TVAN work (3-year minimum restriction from TVAN)
Follow-up; For-Cause; 2nd Random A&D Test; Subversion	Termination** (Permanent TVAN restriction)	Restricted from TVAN work (Permanent TVAN restriction)	Permanent restriction from TVAN work activities
<u>Use, Sell, Possession of Illegal Drugs &amp; Alcohol</u>	(TVAN will support criminal prosecution by law enforcement agencies for all USP violations)		
Onsite	Termination (Permanent TVAN Restriction; 5 year restriction nuclear industry)	Return to TVA organization (Permanent TVAN restriction; 5 year restriction nuclear industry)	Immediate removal from TVAN (Permanent TVAN restriction; 5 year restriction - nuclear industry)
Offsite (Alcohol Excluded)	Disciplinary action up to and including termination	Return to TVA organization (Minimum 5 year restriction)	Restriction from TVAN work (Minimum 5 year restriction)
Repeat violations will result in a permanent work restriction in the nuclear industry.			
<u>0.02-0.039% BAC</u> Random Alcohol Test	Referral to EAP (Subject to disciplinary actions & FFD Evaluation) Removed from work for remainder of shift.	Referral to EAP (Subject to be returned to TVA organization) Removed from work for remainder of shift.	Referral to Contractor for action (Subject to restriction to TVAN) Removed from work for remainder of shift.
<u>0.02-0.039% BAC</u> Pre-employment/ Badging Alcohol Test	Employment Denied (Restricted for 3 years minimum) minimum)	Badging-Return to TVA organization (Restricted for 3 years minimum)	Restricted from TVAN work (Restricted 3 years minimum.)

\*Refusal to fully cooperate in the testing process including refusal to provide a specimen or deliberately attempting to evade the detection of substance abuse (subversion) will result in for-cause termination and permanent restriction from TVAN work.  
Any positive alcohol and drug test will result in immediate denial of Unescorted Nuclear Plant access or other security clearances and participation in the Emergency Response Program. Employees testing random positive for the first time must complete EAP assessment and initiate any rehabilitation program deemed appropriate prior to being considered for reinstatement. Restoration of Unescorted Nuclear Plant Access or other security clearances and Emergency Response will be determined by Personnel Security following reapproval of medical and psychological eligibility for special security clearances.  
Excludes temporary employees – temporary employees will be terminated.

\*\*In instances where entire work units/groups are tested for-cause due to circumstances outlined in Subsection 3.3.1.D, those testing positive will, as a minimum, receive a 14-day suspension and EAP with return subject to conditions.

**3.8 Resulting Actions for other Violations of this Procedure (or SPP)**

Management actions for any violation of this procedure other than confirmed positive tests shall be based on all the circumstances of the particular violation and shall be consistent with the purpose of this procedure. Resignations prior to removal for violation of TVAN FFD policy concerning drugs must be recorded as removal for-cause. Refusal to fully cooperate in the testing process, including refusal to provide a specimen or deliberately attempting to evade the detection of substance abuse (e.g., subversion by substituting or adulterating a urine specimen) will result in for-cause termination and permanent restriction from TVAN work.

**3.9 Fitness for Duty Requirements for Unescorted Access**

For an individual to obtain and maintain authorization for unescorted access:

- A. Complete a suitable inquiry into fitness for duty history prior to or within 180 days following the granting of unescorted access.
- B. Successfully meet alcohol and drug test requirements.
- C. Psychological approval for unescorted access to nuclear plants must be obtained.
- D. Fitness-for-Duty training must be completed.

**3.10 Transfer of Fitness for Duty Certification**

An employee of any contractor, vendor, or industry group whose FFD Program has been approved by TVAN to Subsection 3.13 of this SPP, or any employee of any nuclear utility licensee currently subject to the 10 CFR Part 26 FFD of that licensee, may be approved for unescorted access or emergency response duties without additional drug testing, training, or suitable inquiry being performed.

This Subsection shall not apply in cases of transfer of employment to TVA or to a person in a follow-up testing program.

These persons shall be subject to the TVAN FFD program, including random testing.

**3.11 Emergency Response Center**

All persons designated by name or position to respond to an Emergency Response Center are subject to a suitable inquiry and alcohol and drug test prior to being assigned. Should adverse information be developed prior to or during the assignment, the person's approval to participate in emergency center operations may be denied.

- A. The Manager of Radiological Emergency Preparedness shall identify to Personnel Security those persons required to respond to emergency centers.
- B. Personnel Security shall conduct the appropriate reviews for those individuals requested and approve or deny an individual's participation based on FFD criteria.

**3.12 Fitness for Duty Program Integrity**

**3.12.1 Obtaining Program Integrity Clearance**

All persons responsible for administration of drug and alcohol testing program must obtain Program Integrity (PI) Clearance prior to assignment. Initial PI will entail successful completion of:

A background investigation; fingerprinting and criminal history check through the Federal Bureau of Investigation; psychological testing and interview (as appropriate); alcohol and drug test with subsequent enrollment in the random drug test population; FFD Training (annually). PI updates will be performed every subsequent three years. Individuals in PI will also be subject to a behavioral observation program designed to assure that they continue to meet the highest standards for honesty and integrity.

Health & Safety, Information Services, Human Resources, and other applicable organizations shall identify to Corporate Nuclear Security those persons within their organizations responsible for administering the testing program. At a minimum, these persons will include:

- A. Personnel selecting and notifying individuals to be tested.
- B. Personnel collecting specimens and/or conducting the alcohol and drug testing.
- C. Personnel with access to the automated drug screening program.
- D. Personnel with authorization to modify the automated drug screening program.
- E. Personnel trained to witness urine drug screens.

**NOTE** Normally, couriers contracted for specimen transport will not be required to obtain PI Clearance. Examples include couriers who work for the Postal Service, Federal Express, Airborne Express, United Parcel Service, and pilots and crews of aircraft.

**3.12.2 The Manager, Personnel Security, is responsible for the following:**

- A. Conducting background investigations of personnel responsible for administering the testing program, including those listed above, upon initial assignment and updated every three years thereafter.
- B. Requesting a psychological evaluation to be completed upon initial assignment and updated every three years thereafter.
- C. Issuing or withdrawing clearance approval to participate in program activities based on investigative, psychological and FFD information.

### **3.13 Contractor/Vendor Programs**

All contractors, vendors, or industry groups having personnel who will require unescorted access to protected areas, will be designated by name or position to staff an emergency center, or will be located at TVAN work locations must be subject to a FFD program which meets the requirements of 10 CFR Part 26.

TVAN may, at its discretion, accept, either whole or in part, FFD programs administered by contractor, vendors, or industry groups. All such programs must meet the minimum requirements of 10 CFR 26.

Corporate Nuclear Security shall be responsible for review and approval of any such programs.

### **3.14 Call-in for Unscheduled Work**

#### **3.14.1 General**

An employee is expected to not consume alcohol 5 hours prior to reporting for SCHEDULED work and to report fit and within FFD guidelines. If called for unscheduled work the employee's suitability for work must be determined.

A. The following must be done whenever a worker is being called in for unscheduled work.

1. The caller will ask and will document (on Form SPP-1.2-1 or similar type form) the worker's response to the following two questions.
  - a. Are you fit to report to work?
  - b. Have you consumed alcohol within the past 5 hours?

If the answer to the last question is yes, and the individual is called in, document how much alcohol was consumed and when.

**NOTE** Contractor employees will not report if alcohol has been consumed within the past five hours except in **rare emergency** situations.

2. The worker must advise the caller and the supervisor if he or she believes that he/she is unfit to report for work.
3. The caller will then decide whether or not to have the person report to work.
4. If the answer to the alcohol consumption question is "yes" then Nuclear Security on site should be notified and be requested to administer a saliva test to the employee. This test must be administered as soon as the person arrives on site. The test shall be administered outside the Protected Area.

5. If the test results are 0.039 or below, the employee's responsible supervisor shall determine if the employee can be permitted to work. The employee will not be subject to disciplinary action.
6. If the results are 0.040 or above the employee will not be permitted to work. The employee can be paid callout pay. This will NOT be considered a positive test for FFD purposes.

**B. Emergency Response Center Personnel**

Emergency Response Center Personnel who are called by an automated electronic system are responsible for:

1. Advising the center if he/she believes that they are unfit to report for duty.
2. Advising the center on reporting if alcohol has been consumed within the past five hours.

**3.15 Contracts and Purchasing**

The requirements of Appendix A apply to companies which provide services to TVA under Personal Services Contracts, Code III; Consultant Agreements, Code III; Loan Agreements, Code III; and Cooperative Agreements, Code II and to contracts for purchase of personal property and services other than personal. This Subsection does not apply to state and local contract emergency response personnel responding to an emergency at a TVA nuclear plant site.

**3.16 Audits**

The General Manager of Nuclear Assurance (NA) conducts an annual audit of the TVAN FFD Program as required by 10 CFR Part 26, and in accordance with the TVAN Quality Assurance Plan and NADP-2, "Audits." At the request of Nuclear Security, NA will audit the FFD programs of contractors and vendors.

The audit will use professional support as necessary to ensure the technical aspects of the program are thoroughly reviewed.

TVAN may accept audits of contractors and vendors conducted by other licensees or industry groups. TVAN shall maintain a copy of the audit report to include findings, recommendations and corrective actions.

**3.17 Reporting**

**3.17.1 Semiannual Report**

Corporate Nuclear Security shall prepare a semiannual report for submittal to the NRC. The report shall include the following:

- A. A statistical summary of the testing during the period submitted on the standard form.
- B. A summary of the significant FFD events.

### **3.17.2 Twenty-Four Hour Report**

A telephonic report will be made by Corporate Nuclear Security to the NRC Operations Center within 24 hours of discovery of any of the following events:

- A. Sale, use, or possession of illegal drugs within the protected area.
- B. Any of the following acts by persons licensed under 10 CFR Part 55 to operate a power reactor, or by any supervisory personnel with unescorted access to a TVAN nuclear power plant, or supervisory personnel required to report to a TVAN Emergency Response Center in accordance with TVAN emergency plans and procedure.
  - 1. The use, sale or possession of illegal drugs within the protected area.
  - 2. Confirmed positive test results.
  - 3. Use of alcohol within the protected area.
  - 4. A determination of unfitness for scheduled work due to the consumption of alcohol.
  - 5. Any other significant FFD event as determined by Corporate Nuclear Security.

Twenty-four hour reporting is done in accordance with 10 CFR 26.73 rather than 10 CFR 73.71, one hour reporting.

## **4.0 RECORDS**

TVA personnel and medical records, including associated FFD Program information, are maintained and protected in accordance with the Privacy Act of 1974, as amended, and 10 CFR Part 26.

### **4.1 QA Records**

None.

### **4.2 Non-QA Records**

All records pertaining to this program shall be maintained in a secure and confidential area.

- A. The Site Nuclear Training Manager is responsible for official records of training attendance and examination results, retained for five years and maintained by Document Control and Records Management.
- B. The Manager, Nuclear Security, is responsible for the following records:
  - 1. Reports of Medical Review Officer confirmed positive drug and alcohol tests and management actions retained for at least five years.
  - 2. Disciplinary records in connection with violations of the FFD Program retained for at least five years.

3. FFD Program performance data and analyses retained for four years.
4. Background investigation reports including evidence of suitable inquiry retained for five years following termination of the person's access authorization.
5. Employee Release of Information forms
6. Records of persons ineligible for three years or longer for unescorted access or reporting to any TVA emergency response center, retained until termination of the Nuclear Regulatory Commission license for which access or reporting was denied.
7. Audit reports of TVAN-approved contractor, vendor, and industry group FFD Programs when industry group audits are endorsed, or when TVAN performs the audit - retained for three years after the audit.
8. The results of psychological assessments generated after February 28, 1998. These records are retained for at least five years following termination of an individual.
9. Drug and alcohol test results and MRO documentation related to those results generated after March 31, 1998. These records are retained for at least five years.

C. The Manager of Health & Safety is responsible for the following records:

1. Medical examination and evaluation results.
2. The results of psychological assessments generated before March 1, 1998.
3. Drug and alcohol test results and MRO documentation related to those results generated before April 1, 1998. These records are retained for at least five years.
4. Alcohol and drug test information in accordance with 10 CFR Part 26 generated before April 1, 1998.
5. Employee Assistance Program records in accordance with USC Title 42, Section 290dd.

D. The Contract Administration Manager is responsible for the following records:

Written agreements between TVAN and contractors or industry groups which require the contractor or industry group to adhere to TVAN's FFD Program or require contractors or industry groups to implement their own FFD Programs which have been reviewed and approved by TVAN-retained for the life of the contracts.

E. The Site Vice President is responsible for records of unscheduled call-in forms, retained for one year, maintained at the department level.

- F. The Site Security Manager is responsible for saliva testing results for persons called in for unscheduled work. These records are maintained for one year.

## 5.0 **DEFINITIONS**

**Aberrant Behavior** - Behavior deviating from the established norm for an individual.

**Blood Alcohol Concentration** - (BAC), which can be measured directly from blood or derived from a measure of the concentration of alcohol in a breath specimen, is a measure of the mass of alcohol in a volume of blood such that an individual with 100 mg of alcohol per 100 ml of blood has a BAC of 0.10 percent.

**Chain-of-Custody** - Procedures to account for the integrity of each specimen by tracking its handling and storage from the point of specimen collection to final disposition of the specimen.

**Collection Site** - A place designated by TVAN where individuals present themselves for the purpose of providing a specimen of their urine, breath, and/or blood to be analyzed for the presence of drugs or alcohol.

**Collection Site Person** - A person who instructs and assists individuals at a collection site and who receives and makes an initial examination of the specimen(s) provided by those individuals. A collection site person shall have successfully completed training to carry out this function or shall be a licensed medical professional or technician who is provided instructions for collection under 10CFR26 and certifies completion as required. In any case where: (a) a collection is observed or (b) collection is monitored by non-medical personnel, the collection site person must be a person of the same gender as the donor.

**Confirmatory Test** - A second analytical procedure to identify the presence of a specific drug or drug metabolite which is independent of the initial screening test and which uses a different technique and chemical principle from that of the initial screening test in order to ensure reliability and accuracy. For determining blood alcohol levels, a "confirmatory test" means a second test using another breath alcohol analysis device. Further confirmation upon demand will be by gas chromatography analysis of blood.

**Confirmed Positive Test Result** - The result of a confirmatory test that has established the presence of drugs, drug metabolites, or alcohol in a specimen at or above the cut-off level, and that has been deemed positive by the Medical Review Officer after evaluation. A "confirmed positive test" for alcohol may also be obtained as a result of a confirmation of blood alcohol levels with a second breath-analysis without Medical Review Officer evaluation.

**Contractor** - For the purpose of this procedure (or SPP), any company or individual with which TVA has contracted for work or service to be performed on TVAN property.

**Cut-Off Level** - The value set for designating a test result as positive.

**Emergency Response Center** - The Technical Support Center (TSC), Operations Support Center (OSC), or Central Emergency Control Center (CECC) at which TVA employees, contractors, or vendors are required to physically report in accordance with the Radiological Emergency Plan and procedures.

**Follow-Up Testing** - Chemical testing at unannounced intervals to ensure that an employee is maintaining abstinence from the abuse of drugs or alcohol.

**HHS - Certified Laboratory** - A urine and blood testing laboratory that maintains certification to perform drug testing under the Department of Health and Human Services (HHS) "Mandatory Guidelines for Federal Workplace Drug Testing Program" (53 FR 11970).

**Illegal Drugs** - Those drugs included in Schedules I through V of the Controlled Substances Act (CSA), but not when used pursuant to a valid prescription or when used as otherwise authorized by law.

**Initial or Screening Test** - An immunoassay screen for drugs or drug metabolites to eliminate "negative" urine specimens from further consideration or the first breathalyzer test for alcohol.

**Medical Review Officer** - A licensed physician responsible for determining fitness for duty and receiving laboratory results generated by TVA's drug testing program. The Medical Review Officer has knowledge of substance abuse disorders and has appropriate medical training to interpret and evaluate a person's positive test result together with his or her medical history and any other relevant biomedical information.

**Random Test** - A system of unannounced drug testing administered in a statistically random manner to a group so that all persons within that group have an equal probability of selection.

**Reasonable Suspicion** - A suspicion based on specific facts and reasonable inferences from those facts in light of experience or training which indicates that an individual may be using or has recently used alcohol or drugs, or may be in the possession of alcohol or drugs, or may have engaged in illegal drug activities. Reasonable suspicion may be based on reliable statements made by other employees or tips from informants. Actual observation of impaired behavior on the job is not necessary.

**Split Sample** - A portion of a urine specimen that may be stored by the licensee to be tested in the event of the appeal.

**Suitable Inquiry** - Best-effort verification of employment history for the past five years, but in no case less than three years, obtained from contacts with previous employers to determine if a person was, in the past, tested positive for illegal drugs, subject to a plan for treating substance abuse, removed from or made ineligible for activities within the scope of 10 CFR Part 26, or denied unescorted access at any other nuclear power plant or other employment in accordance with a fitness for duty policy.

**TVAN Work Location** - Any TVA nuclear plant site/project and any TVAN work location or facility.

**Vendor** - For the purpose of this procedure (or SPP), any company or individual not under contract to TVA providing services in the protected area of TVA nuclear plant sites.

**APPENDIX A  
Page 1 of 1  
CONTRACTS/PURCHASING FFD REQUIREMENTS**

- 1.0 The Contracts Administration Manager shall ensure that all contracts that supply personnel to work at TVAN work locations require the contractor to:
  - A. Comply with this FFD SPP.
  - B. Notify Personnel Security of any contractor employee working on TVA assignments who has violated a fitness for duty policy.
  - C. Allow authorized representatives of the NRC to inspect, copy, or take away copies of any contractor's records, documents, or reports related to the implementation of TVAN's or the contractor's TVAN approved FFD Program.
- 2.0 The contract officer shall notify the site plant access whenever a contractor employee becomes a supervisor. He shall also notify Corporate Nuclear Security of any contractor employee working on a TVA assignment who has violated a FFD policy.
- 3.0 The Contracts Administration Manager shall obtain written approval from Corporate Nuclear Security before allowing any contractor employee who has previously been denied access to or removed from work at any nuclear plant as a result of violations of any FFD program to perform work at TVAN work locations or report to an Emergency Response Center.



## Handout to Applicant

Unit 2 is in Mode 1

During a board walkdown, it is discovered that the RCIC flow controller indicates downscale. Subsequent investigation reveals that the automatic function of the flow controller is failed, manual function is still working. Using SPP 3.1, Determine the PER Level that should be assigned.

#### A1.1b SRO ONLY

In accordance with SPP 3.1 Determine the Condition Classification (PER Level) for the following condition. Procedure reference is allowed.

Unit 2 is in Mode 1

During a board walkdown, it is discovered that the RCIC flow controller indicates downscale. Subsequent investigation reveals that the automatic function of the flow controller is failed, manual function is still working. Determine the PER Level that should be assigned.

**Solution**

Classification is C since LCO is involved.

KA Generic 2.1.33 SRO-4.0

APPENDIX D  
Page 1 of 8  
CONDITION CLASSIFICATION CRITERIA

**NOTE** Appendix D provides guidelines for management consideration when assigning PER condition levels to aid in achieving consistency and ensuring appropriate actions and levels of review are assigned. Typical examples are provided for each classification level, but this list is not intended to be all inclusive. PERs may be classified at the discretion of management upon MRC review; PERs may be assigned classification as Level C or D based upon management judgment in allocating resources.

**1.0 LEVEL A - SIGNIFICANT (USUALLY SAFETY RELATED) CONDITIONS - RCA Required**

- A. A major safety-related or QA program condition that has occurred with a frequency as to indicate that past recurrence control has been lacking or ineffective.
- B. Confirmed adverse trends in quality activities identified by trend analysis. These adverse trends would normally be associated with the administrative control programs and would represent a major breakdown.
- C. A programmatic breakdown which negates quality controls or places doubt on the integrity of the affected program.
- D. Repetitive or deliberate occurrences of procedural violations that have a direct and detrimental effect on safety or quality.
- E. Conditions which impact the plant's ability to mitigate design basis accidents.
- F. An adverse condition which merits increased upper management attention:
- G. Falsification or unauthorized changes to quality assurance records (completed or in process).
- H. Unplanned reactor/turbine trips as required by management.
- I. A fatality or serious accident/incident.
- J. NRC Performance Indicators (PI) associated with the revised "Reactor Oversight Process" that falls within the white, yellow or red band.

**NOTE** RCA is required.

APPENDIX D  
Page 2 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL A PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>Emergency Plan declaration of alert or higher .</p> <p>Fuel damage due to misoperation or mishandling.</p> <p>Reactor trip</p> <p>Turbine trip</p> <p>Event requiring use of safety systems.</p> <p>Unusual plant transients</p> <ul style="list-style-type: none"> <li>- operator actions inhibited</li> <li>- extraordinary actions required</li> <li>- inappropriate actions</li> </ul> <p>Significant operating/design violations of Tech/Specs/FSAR, e.g.</p> <ul style="list-style-type: none"> <li>- reactivity mismanagement</li> <li>- inaccurate accident analyses</li> </ul> <p>Loss of entire safety function excluding momentary entry per L.C.O.3.0.3 of low safety significance</p> <p>Unplanned radioactive release or exposure to radioactive material greater than regulatory limits.</p> <p>Common cause failures that could affect multiple safety systems/components.</p> <p>No barriers remaining (only luck averted an accident).</p> <p>Notices of Level I, II, and III violations</p> <p>NRC PI and findings in the yellow or red band</p>	<p>Death</p> <p>Major disability injury</p> <p>Serious near miss incident with potential for death</p>	<p>Immediately reportable spills with potential to harm environment.</p> <p>NPDES releases resulting in significant threat to human health or environment, PCB fire or explosion.</p> <p>PCB release - 1 lb. or more to environment.</p> <p>Atmospheric asbestos contamination.</p> <p>ACM removal without notification 260 linear ft. 160 sq ft. 35 cubic ft.</p> <p>Leaking underground diesel fuel tank or ancillary piping.</p> <p>Operate system with prohibited refrigerant [&gt;30 days &amp; &gt;35% leak rate (process equip) or &gt;15% (pers comfort)].</p> <p>Intentional dumping of hazwaste.</p>	<p>Extensive equipment damage (e.g., required replacement or significant repairs to major equipment such as the turbine generator, reactor coolant pump, MFW pump).</p> <p>Conditions resulting in significant power reductions, outage delays or extensions.</p> <p>Lengthy unplanned outage or operation at significantly reduced power.</p> <p>Repeat failures of surveillance or post modification tests to detect non-conforming equipment or systems.</p> <p>Repeat NRC notices of violations.</p> <p>Repeat INPO findings.</p> <p>Repeat Nuclear Assurance findings.</p> <p>Repeat occurrences of organizational or programmatic breakdowns.</p> <p>Repeat missed Tech Spec Surveillance requirements (unless missed surveillance requirement is a result of a conditional Tech Spec action).</p> <p>Numerous repetitive failures to implement or maintain commitments to regulatory agencies.</p> <p>Major safety-related or QA program condition that has occurred with a frequency that indicates past recurrence control has been lacking or ineffective.</p>

APPENDIX D  
Page 3 of 8  
CONDITION CLASSIFICATION CRITERIA

2.0 **LEVEL B - ISSUES (SIGNIFICANT, IF RCA IS REQUIRED)**

- A. Identified conditions which do not meet the criteria of Level A but which require further evaluation.
- B. Quality-related deficiencies which require identification of apparent cause and action to correct the condition in accordance with the Nuclear Quality Assurance Plan.
- C. Human errors (inappropriate actions) which could have, under different circumstances, caused a significant plant event or serious personnel injury.
- D. Responses to regulatory identified issues which did not result from a Level A event.
- E. Recurring events not classified as significant which retain the potential for causing a plant event or personnel injury. That is, a negative trend which does not meet the above criteria of Level A, Section 1.0 (A), (B), and (D).
- F. Events or conditions which require recurrence control or for NRC reportable issues requiring a formal written response. These include Licensee Event Reports, NRC cited violations, and audit findings. Other examples include adverse trends from plant process equipment history and failure trending on recurring plant process equipment problems.

**NOTE** Apparent cause is required and may require Root Cause Analysis as determined by Senior Management.

APPENDIX D  
Page 4 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL B PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>Emergency Plan declaration of unusual event.</p> <p>Fuel handling incidents with no fuel damage.</p> <p>Reactivity mismanagement that does not violate Tech Spec.</p> <p>Inadvertent actuation of safeguards equipment.</p> <p>Plant transients resulting in <math>\geq 10\%</math> power change due to BOP failures.</p> <p>Events that exceed administrative guidelines concerning plant operations, reactivity management, and radioactivity releases.</p> <p>Excessive quantities of radioactive material found outside the Radiation Controlled Area.</p> <p>Loss or theft of Source or Special Nuclear Material.</p> <p>Events or conditions requiring a formal response to the NRC with the exception of special reports required by Tech Spec, FSAR, etc.</p> <p>Placement of systems/components in paragraph (a)(1) of the Maintenance Rule due to functional failures.</p> <p>Placement of systems/components in paragraph (a)(1) of the Maintenance Rule due to exceeding Performance Criteria.</p> <p>NRC PI and findings in the white band.</p>	<p>Lost time accident.</p> <p>Serious near miss incident (RCA required)</p> <p>Individual exceeds regulatory dose limits.</p> <p>High radiation areas not properly controlled.</p> <p>Violation of a stop work order.</p> <p>Multiple or other significant personnel contamination instances.</p> <p>Significant violations of radiological control procedures.</p>	<p>Repeated major failures such as spills of chems or oil, improper storage, failed secondary containments, etc..</p> <p>NPDES permit noncompliance.</p> <p>Stormwater permit exceeded.</p> <p>PCB spill/leak less than reportable.</p> <p>Exceed annual ACM permitted limit.</p> <p>Improper storage or disposal of chems, solid waste or hazwaaste.</p> <p>Other events resulting in state NOVs.</p> <p>Venting Refrigerant Intentional is prohibited.</p> <p>Work by uncertified personnel on equipment containing prohibited refrigerant.</p> <p>Uncontrolled or unidentified hazwaste satellite storage area.</p>	<p>Major equipment damage to pumps, valves, or piping.</p> <p>Conditions resulting in power reductions, forced outages or outage delays/extensions or <math>\geq</math> one day.</p> <p>Unusual conditions such as damage by lightning, physical impact from other equipment, corrosion, flood, or other environmental conditions.</p> <p>Repeat events indicative of an organizational or programmatic breakdown (e.g., design change control, warehousing, adherence to procedures, etc.).</p> <p>Adverse safety trends (i.e., near misses, minor injuries, etc.).</p> <p>Notices of violation requiring formal response.</p> <p>Significant INPO findings.</p> <p>Conditions detected by independent assessors that represent a significant organization or programmatic barrier breakdown.</p> <p>Failure of multiple administrative and/or equipment protection barriers such that few or as little as one barrier remains.</p> <p>Failed detection by surveillance or post maintenance testing or failed administrative barriers with 2nd verification.</p> <p>A missed Tech Spec Surveillance requirement.</p>

APPENDIX D  
Page 5 of 8  
CONDITION CLASSIFICATION CRITERIA

**3.0 LEVEL C - ISSUES (Routine problems warranting additional corrective evaluation and action.)**

- A. Conditions which do not meet the criteria in Levels A or B but do identify a problem which warrants tracking to closure.
- B. Conditions where structures, systems and components are degraded or nonconforming.
- C. Conditions which identify a problem that requires issuance of a special report.
- D. Human performance problem trends with little consequence and little potential to cause a plant event but require improvement.
- E. An incident resulting in a recordable injury or which under different circumstances could have resulted in an injury.
- F. Minor violations , non-cited violations, or NRC findings in the green band or has no color

APPENDIX D  
Page 6 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL C PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>A Balance of Plant (BOP) transient that did not result in a &gt;10% perturbation to plant power or did not challenge any engineered safety features.</p> <p>Equipment failures/malfunctions resulting in Tech Spec LCO entry (with no loss of system/train safety function).</p> <p>Component failure which does not result in the loss of a train of a maintenance rule system.</p> <p>Other conditions:</p> <ul style="list-style-type: none"> <li>- design qualification issues</li> <li>- procedure deficiencies</li> <li>- personnel errors</li> <li>- violation of requirements</li> <li>- failure to follow procedure</li> <li>- valves, switches, breakers found in wrong positions</li> <li>- radioactive material found outside the RCA</li> </ul> <p>Minor violations, non-cited violations, or NRC or PI findings in the green band or has no color</p>	<p>Radiation areas not properly posted.</p> <p>Individual exceeds administrative dose limits.</p> <p>Minor spills or spread of radioactive material.</p> <p>Valve/system leaks resulting in release of radioactivity/spread of contamination.</p> <p>Uncontrolled water or condensation inside the RCA.</p> <p>Radiation exposure in excess of that projected by the RWP.</p> <p>Personnel contamination events occurring from procedural violations or poor radworker practice.</p> <p>Recordable injury/near miss incident</p>	<p>Failure of tank containing oil or chemical to secondary containment but not the environment.</p> <p>NPDES permit criteria threatened by a discharge.</p> <p>Stormwater best management practices not in use or maintained in good repair.</p> <p>Failure to maintain secondary containment for chemical/oil.</p> <p>Repeat cases of missing labels on drums issued or chemical containers.</p> <p>Release of radioactive or hazardous materials in excess of administrative limits.</p>	<p>Minor equipment damage &lt; \$10K.</p> <p>Small fires.</p> <p>Unavailable fire protection equipment.</p> <p>Maintenance rework items.</p> <p>Condition identified by management.</p> <p>Conditions detected by independent assessors that do not represent a significant organizational or programmatic barrier breakdown.</p> <p>Failed administrative barrier or significant equipment protection (additional administrative or other protective barriers remain).</p> <p>Violation of Administrative Requirements, e.g. Incorrect procedures, drawings, etc. Adverse trends in equipment, programmatic or human performance that do not directly challenge safety, regulatory compliance or reliability.</p>

APPENDIX D  
Page 7 of 8  
CONDITION CLASSIFICATION CRITERIA

4.0 **LEVEL D - ISSUES (RESOLVED/CLOSED AND TRENDED, Routine Problems which are adequately addressed by immediate actions or the work control process. Used for documentation and trending)**

- A. Conditions which do not meet the criteria in Levels A, B, or C and immediate actions taken were sufficient to resolve the condition.
- B. Conditions which do not affect operability, are not reportable, and are not potentially generic.
- C. Conditions which do not involve ASME Section III hardware or processes (construction plants only).
- D. Human performance problems of low importance but require documenting and trending.

APPENDIX D  
Page 8 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL D PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>Minor conditions that can be resolved by immediate action Examples include:</p> <ul style="list-style-type: none"> <li>- personnel errors that do not impact plant equipment</li> <li>- failure to follow minor administrative procedural requirements</li> <li>- fuse found blown during test performance, fuse replaced and checked</li> <li>- WOs processed without properly annotating the "M&amp;TE Used" field in the computer</li> </ul> <p>Drawing Deviations</p>	<p>Problems that are corrected immediately:</p> <p>Minor personnel hazards</p> <p>Minor personnel contamination incidents resulting from procedural violations or poor radworker practices.</p>	<p>Isolated spills of less than reportable quantities</p> <p>Missing labels from drums or chem containers</p> <p>Stormwater best management practices failed but were promptly repaired.</p> <p>Missing/Inadequate Secondary containments for temp storage are promptly put into place</p> <p>Other minor violations of Env. Program.</p>	<p>Immediately correctable minor equipment damage</p> <p>Small easily extinguished fires</p> <p>Immediately correctable inoperable equipment</p> <p>Minor condition identified by any employee</p>



REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	04/06/98	All	Initial issue. Replaces STD-3.4, "Corrective Action Program". General restructure in order to enable the plants to have similar program.
1	7/15/99	2-27, 30, 32-35, 37-39	Further standardized the Corrective Action Program between TVAN sites and clarified statements.
2	8/14/00	2-45, 47-49	Re-ordered Appendices; created new Appendices F and J; re-located pertinent sections from procedure body to Appendices; re-worded for clarity and usability. Incorporated guidance from SPP-3.6 into new Appendix J. Added template information to improve direction to user on which template to use in the electronic system for selective sections of the process. Added information on how generic reviews will be handled. Provided examples for each classification of a PER and added trend analysis guidelines.

TABLE OF CONTENTS  
Page 1 of 2

Section	Title	Page
	Revision Log.....	2
	Table of Contents .....	3
<b>1.0</b>	<b>PURPOSE</b> .....	5
<b>2.0</b>	<b>SCOPE</b> .....	5
<b>3.0</b>	<b>INSTRUCTIONS</b> .....	5
3.1	PER Initiation .....	6
3.2	Supervisory Review .....	7
3.3	Reportability and Operability Review.....	8
3.4	Management Review Committee (MRC) .....	8
3.5	Corrective Action Plan Development and Approval .....	9
3.6	Extension Requests .....	12
3.7	Corrective Action Implementation .....	12
3.8	PER Closure .....	12
3.9	Revising PERs.....	13
3.10	Generic Review.....	13
3.11	Escalation .....	14
3.12	Trend Analysis .....	14
3.13	Program Monitoring.....	14
<b>4.0</b>	<b>RECORDS</b> .....	15
4.1	QA Records .....	15
4.2	Non-QA Records.....	15
<b>5.0</b>	<b>DEFINITIONS</b> .....	15
	<b>APPENDIXES</b>	
Appendix A	Recognized Administrative Control Programs (ACP) .....	18
Appendix B	Inactive Unit PERs (BFN-1 and WBN-2).....	19
Appendix C	Guidelines for Potential Operability Determinations.....	21
Appendix D	Condition Classification Criteria.....	23
Appendix E	Recommended Screening Criteria for Posting Operating Experience (OE) Messages on Nuclear Network .....	31
Appendix F	Controlling Nonconforming Materials, Parts, or Components.....	32
Appendix G	Cause Determination and Corrective Action Development Guidelines.....	33
Appendix H	Resolution of Degraded and Nonconforming Conditions.....	36
Appendix I	PER Closure .....	40
Appendix J	Trend Analysis Guidelines.....	41
Appendix K	PER Initiation .....	43

**TABLE OF CONTENTS**  
**Page 2 of 2**

<b>Section</b>	<b>Title</b>	<b>Page</b>
<b>FORMS</b>		
SPP-3.1-1	Problem Evaluation Report (PER).....	44
SPP-3.1-2	Extension Request .....	49

## 1.0 **PURPOSE**

This SPP describes the TVA Nuclear Corrective Action Program, and establishes the processes, requirements, and responsibilities for documenting and resolving problems, including adverse conditions.

The overall objectives of the Corrective Action Process are to:

- Improve plant performance
- Provide all employees with an effective method for raising issues with equipment, programs or processes that may affect safety, regulatory compliance, reliability, or human performance,
- Assure that priorities and resources are properly aligned based on significance of the issue
- Clarify and reinforce standards
- Provide a means to collect data for trend analysis.

## 2.0 **SCOPE**

The TVA Nuclear Corrective Action Program identifies and corrects problems. The program is designed to address problems in a manner consistent with the nature of the condition and its importance to plant safety, personnel safety or plant reliability. This SPP contains the detailed requirements for Problem Evaluation Reports (PERs) and applies to all TVA Nuclear and to non-TVA Nuclear organizations involved in nuclear power activities.

Other Administrative Control Programs (ACPs) that report and disposition problems are recognized by the overall TVAN Corrective Action Program. A list of ACPs and pertinent requirements is included in Appendix A.

**NOTE 1** PERs identifying problems with inactive units will be handled in accordance with Appendix B.

**NOTE 2** Whenever "PER coordinator" is specified, the responsible organization's PER coordinator or designee is implied.

## 3.0 **INSTRUCTIONS**

It is the responsibility of ALL PERSONNEL TO PROMPTLY DOCUMENT AND REPORT problems and adverse conditions for evaluation and corrective action.

PERs shall not be invalidated, destroyed, canceled, or otherwise prevented from receiving supervisory/management review once they are documented and assigned a number. All PERs shall be entered and tracked to closure in TROI/EMPAC.

3.1 **PER Initiation**

**NOTE 1** PERs should be generated, processed, and tracked using the electronic EMPAC system (Appendix K). This does not prohibit the manual initiation of PER forms, however, information will eventually be entered into the electronic system (when available at site) for processing. In addition, help text is available and can be utilized to aid in the electronic processing of the PER.

**NOTE 2** Site PER conditions identified by offsite personnel should be initiated and processed by personnel assigned by the affected site (including Corporate).

A. Personnel shall promptly document problems including adverse conditions using the appropriate corrective action document. PERs shall be initiated for problems in any area of the site, for programs, processes, recurring or unexpected equipment issues, or human performance issues. If unsure of which document to use, document the condition on a PER form.

B. Any employee identifying a problem or adverse condition shall promptly notify the Shift Manager (SM) when the condition may affect:

1. The reliable operation of the plant which includes technical specification operability and the balance of plant features required for power generation.
2. The health or safety of employees or the public when it involves a significant safety incident/condition or a serious personal injury.
3. A significant radiological or security problem.

**NOTE** Appendix K may be used as necessary by the initiator to aid in PER initiation.

C. The initiator shall:

1. Describe the problem or adverse condition in clear, concise language. Identify NAME of your immediate supervisor under the drop down field called "Planner/Supervisor." The final step performed before saving PER information is to select the department that you work for under the drop down field called "Department." Finally, save the information on the initiator's template.
2. Identify any notifications made or immediate actions taken on the PER.
3. Use paper forms if electronic system is unavailable.

4. Promptly notify the supervisor for review of the PER.

**3.2 Supervisory Review** (Promptly, shall not exceed 3 working days from the initiation of PER).

**NOTE** When it is apparent that a condition is generically applicable to other TVAN sites or corporate, the affected site or corporate organization will be notified via EMPAC reports.

**A. The supervisor shall:**

1. Review the PER to determine if a problem/adverse condition exists.
2. Review the PER for clarity and completeness and to ensure that adequate information is available for subsequent management review.
3. Take immediate action if the condition described may affect the safety of personnel or plant equipment. Evaluate condition for potential operability using Appendix C and potential reportability using SPP-3.5, "Regulatory Reporting Requirements", then:
  - a. Provide prompt verbal notification of the condition to the Shift Manager (SM) of the affected unit.
  - b. Initiate and/or support the completion of any required immediate action(s).
4. Determine if PER condition potentially affects plant process equipment and notify Operations Shift Manager (SM) provided a WR/WO has not already been generated. If WR/WO has been generated, document in immediate actions section of the PER.
5. If immediate actions are required, initiate actions, and document the action(s) taken.
6. If the condition described is determined to not be a problem and no action is required, then disposition and/or document justification. Recommend the PER be closed. PERs determined to be a non-PER condition should be discussed with the initiator. PERs determined to be more appropriately processed by an ACP may be processed by that ACP.
7. Recommend a classification for the PER condition level in accordance with Appendix D.
  - a. If the PER is recommended as Level A, B, or C, coordinate with responsible organizations, then continue to process.

- b. If the PER is classified as Level D then complete associated templates and any appropriate human performance template fields.
- 8. Mark if ASME hardware, processes, or programmatic problems are involved. This includes a violation of the Code. Identify the affected systems, and which unit is involved (ANI involvement is restricted to ASME Code driven requirements only).
- 9. For potential drawing deviations not utilizing SPP-9.8:
  - a. Perform a verification by confirming the potential drawing deviation condition is valid and that there is no ongoing work that would explain the differences.
  - b. Confirm affected documents are included and marked up to reflect the actual plant configuration.
  - c. Evaluate the condition against criteria for Level A and B PERs, take necessary actions.
  - d. If the condition is valid, sign the PER form. The supervisor signature documents second party verification that the condition is valid and that the enclosed marked up documents accurately reflect the plant configuration.
- 10. Ensure supervisor's template is completed.

### **3.3 Reportability and Operability Review**

- A. Operations shall review (immediately, as required by plant Technical Specification) all PERs potentially affecting operability and shall document the operability determination and actions necessary to change plant operating mode on the Operation's template. Appendix C provides guidelines for potential operability determinations.
- B. For PERs determined to affect operability, Operations shall document on the Operation's template. If operability potentially affects an offsite licensed site(s), notification will be made electronically through EMPAC reporting system. Offsite Operation's staff will document their evaluation on the "PER L Reviews template" designated as operability review.
- C. Operations and/or Licensing Manager shall take actions in accordance with SPP-3.5, "Regulatory Reporting Requirements" when PERs are determined reportable and document the reportability determination on the Operation's template.

### **3.4 Management Review Committee (MRC) (should not exceed three working days from the initiation of the PER)**

- A. The MRC shall:
  - 1. Review and determine the classification level of the PER.

2. Determine if a root cause analysis (RCA) is required.
  3. Indicate if Nuclear Assurance (NA) approval is required.
  4. Assign the responsible organization.
- B. MRC should:
1. Review the potential operability and reportability determinations.
  2. Determine any additional interim actions necessary.
  3. Determine whether the events or conditions described by the PER should be reported to the Nuclear Industry by issuance of an INPO Nuclear Network OE Newsgroup entry. (Reference Appendix E).
  4. Confirm if the PER should be reviewed by other TVA plants for operability and/or generic applicability.

### 3.5 Corrective Action Plan Development and Approval

**NOTE** If during the course of the RCA, extent of condition, or development of corrective action plan, the condition is found to be more significant than initially reported, consideration should be given to returning the PER to Management Review Committee (MRC) for upgrading and re-evaluation of the operability and reportability determinations.

- A. If applicable, immediately initiate control of nonconforming materials, parts, or components per Appendix F.
- B. Twenty working days from MRC review of the PER is allowed for responsible organizations to develop and obtain approvals of corrective action plans. The time period allotted may be reduced to support licensing submittals. Up to five additional working days is allowed for NA to evaluate the Corrective Action Plan for PERs requiring NA approval. NA will review corrective actions for all audit findings.
1. Apparent cause determination is required for all PER Levels, unless Root Cause Analysis (RCA) is required.
  2. Corrective action plans may consist of corrective actions and/or enhancements.

**NOTE** The PER completion date is the long lead corrective action date.

- C. The responsible organization shall perform the following for Level A and B:
1. Implement interim actions, if required, to control the situation prior to the development, approval, and implementation of the corrective action. Consider evidence preservation of hardware and other data that may be needed for the RCA. Document interim actions in the PER.

2. Perform RCA utilizing qualified individuals and a structured process for all Level A PERs, and for Level B PERs when requested by MRC. Conclusions and basis of the RCA shall be part of the PER along with the RCA work sheets. (Reference BP-236, "Event Critique and Root Cause Analysis".) An individual is considered qualified if he has received training/re-training, or has performed a root cause analysis within the last 36 months.

**NOTE** Refer to Appendix G for guidance in assignment of cause and corrective action.

3. Perform a review of previous similar events for the detection of corrective actions which should have prevented this problem. This review may consist of TROI/EMPAC/NER/EPIX/Maintenance History database searches and should include industry operating experience if applicable. The term "previous similar events" are conditions that involved the same root cause, failure, or sequence of events.
4. Identify an apparent cause for Level B PERs which do not require RCA. Provide a description of why the event occurred.
5. Determine if the PER is potentially generic and document the determination and affected locations. The extent-of-condition analysis, generic review, and corrective action developed for a Corporate PER shall address all sites unless site-specific PERs have been initiated.
6. Perform an extent of condition review to bound the identified problem. Investigate, as applicable, whether the identified condition affects other units, systems, components, documents, organizations, etc. The level of detail of this investigation should be consistent with the significance of the condition. If during extent of condition a wide spread problem is discovered, a root cause analysis (and consequently actions to prevent recurrence) shall be performed and returned to MRC for review.
7. Determine specific actions necessary to correct the condition and causes (Refer to Appendix G). For PERs which receive RCA, actions to prevent recurrence are required. When action is required by organizations other than the responsible organization, obtain concurrence with schedule dates.
8. Obtain MRC concurrence.
9. Complete Responsible Organization, Cause, CA/RC, and CAP Concurrence templates. As applicable, complete Human Performance (HP) template.

D. For Level C PERs, the responsible organization shall:

**NOTE** Refer to Appendix G for guidance in assignment of cause and corrective action.

1. Determine and document the apparent cause and specific actions to be taken to correct the PER condition and an apparent cause(s), as applicable. Evaluations of lower-significant problems focus on correcting the immediate (or apparent) cause and may not address the root cause. For very simple problems, the cause may be obvious and does not need more rigorous analysis to determine corrective actions. For other lower-significant problems, corrective actions may correct the immediate situation but not prevent recurrence. If similar problems occur, potential adverse performance and/or common causes will be identified through trend analysis.
  2. Document any interim actions needed to control the condition until corrective action implementation. Provide schedule completion dates which have been coordinated with implementing organizations.
  3. Determine if the PER is potentially generic.
- E. For degraded or nonconforming conditions as defined in Section 5.0, annotate the PER as appropriate, and follow the requirements of Appendix H.
- F. Coordinate PERs which potentially affect reactivity management with Reactor Engineering personnel. Refer to SPP-10.4, "Reactivity Management Program," for determining applicability.
- G. If condition is a human performance condition, fill out the necessary fields on the HP template as applicable.
- H. For approval of corrective action:
1. Managers of the action organizations approve the due dates for actions assigned to them.
  2. Site VP or direct reports (e.g., Plant Manager, Engineering and Support Services Manager) approves Level A PERs.
  3. Responsible Organization's Department Manager (e.g., Maintenance and Modifications Manager, Operations Manager) approves Level B PERs.
  4. Responsible Organization's Supervisor approves Level C PERs.
  5. NA approves audit findings PERs and PERs designated by NA or MRC.
  6. Authorized Nuclear Inspector (ANI) reviews PERs involving American Society of Mechanical Engineering (ASME) section XI code-related equipment or activity as documented on the PER A Supervisor's template. The PER is provided by the responsible supervisor as a copy of original or by an automatic printout from the data base. Approval by ANI for corrective action plans is not required.
  7. MRC as directed by management.
  8. PER completion date is the long lead corrective action date.

### 3.6 Extension Requests

- A. If the corrective action plan development, approval, or PER completion date cannot be completed by the due date, the responsible organization shall request an extension. Extension requests shall be approved consistent with levels of approval outlined in Section 3.5.H, and PERs updated accordingly.
- B. The action organization shall coordinate extension to any CA/RC item date change with the responsible organization. Individual CA/RC item dates do not require extension requests. Only the CAP concurrence and PER completion dates required extension requests.

**NOTE** Extension of corrective action development may not be approved prior to the determination if interim actions are required. Justification should include an evaluation of why the proposed extension does not affect nuclear safety.

### 3.7 Corrective Action Implementation

- A. Responsible organization implements and/or monitors the implementation of the approved corrective action plan.

**NOTE** If new information is obtained indicating causes different than originally identified, consider the need for revision of corrective action and re-review operability and reportability determinations.

- B. If a revision to the approved corrective action becomes necessary, the responsible organization shall initiate the revision and obtain the required approvals in accordance with Section 3.9.

### 3.8 PER Closure

- A. The action organization(s) ensures that any supporting documentation that provides evidence of completion of the corrective action is either attached or referenced on the original PER. If the documentation is not attached it must be readily retrievable. (Recommend electronically including all documents to support PER closure)
- B. Responsible organization verifies completion of the PER corrective actions by the action organization using the guidelines of Appendix I and closes the PER by completing the verification template.
- C. The responsible organization ensures that the Authorized Nuclear Inspection Agency (ANI, ANII, or ANIIS) review or acceptance is obtained, if the PER involves an American Society of Mechanical Engineer (ASME) Code-related program activity.

For ASME Section XI program activities, the completion of the ANI fields on the verification templates signifies review and (when applicable) verification that the activity has been performed in accordance with the owner's repair program (SPP-9.1, "ASME Section XI").

- D. Audit finding PERs and PERs identified as needing NA verification should be verified by NA within 10 working days.
- E. The responsible organization shall ensure that all Level A PERs and those Level B PERs determined by MRC receive an effectiveness review after completion of corrective actions (do not wait to close PER if the only action left is the effectiveness review). The schedule for completion of this review shall be commensurate with the nature of the corrective actions and should not exceed one year following corrective action plan closure. The responsible organization shall enter their effectiveness review action item and completion date into a tracking data base. If corrective actions are determined to have been ineffective by the review, a new PER should be initiated and reference to the old PER and the old PER should be supplemented with a reference to the new PER.
- F. The responsible organization completes verification and closure, then submits PER closure package to EDMS.

### 3.9 Revising PERs

**NOTE 1** Extensions approved in accordance with this SPP do not constitute a revision. The responsible organization should coordinate date changes with those other organizations affected.

**NOTE 2** The electronic process will provide history of changes as required by SPP-2.4.

- A. When revising PERs, the action/responsible organization indicates the revised portions on the Revision, CA/RC and Supervisor's templates.
  - 1. Obtain approvals required on the Revision and CA/RC templates for the sections of the PER affected by the revision. For revisions to the PER Description of Condition, the revised PER shall be processed the same as a new PER.

**NOTE** Personnel approving the revision must consider the need for reevaluating generic applicability, reportability, and effect on operability. If the need for reevaluation is identified, actions shall be assigned to ensure they are accomplished.

- 2. Obtains concurrence signatures from action organizations affected by the change.
- 3. Forwards the revised PER to the PER Coordinator.

### 3.10 Generic Review

**NOTE** Generic applicability determination should be made as soon as the responsible organization receives the PER for corrective action development.

- A. PERs determined to be potentially generically applicable are designated on the Responsible Organization template. The offsite PER L Reviews template shall be used to document offsite responses (both generic and operability reviews).

**NOTE** Corporate organizations may be specified to perform the generic reviews for issues associated with design criteria, design methods, selected major component groups, and multi site programs or programmatic issues.

- B. The PER Coordinator of affected sites/organizations obtains the PER for evaluation. Level C PERs are provided for information only, with response limited to acknowledgment. (Note that all fields on the generic template for the offsite organizations need to be addressed for all potential generic PERs).
- C. Managers of the affected sites/organizations should evaluate the Level A or B PER within 20 working days of review of the EMPAC report, showing potential generic conditions, by their PER Coordinator.
  - 1. If a generic condition is determined to exist, the identification number of the PER used to correct the condition is recorded on the affected organization's evaluation.
  - 2. If a generic condition is determined not to exist, a justification is documented on the affected organization's evaluation.

**NOTE** Generic review issues may exist at BLN, but, because of the incomplete state of the project and programs, the issue will be tracked in TROI/EMPAC for future consideration as a generic applicability review item.

- D. The originating PER Coordinator, verifies the affected organization's evaluations and checks the evaluations for consistency and apparent problems. If the check identifies any problems, initiate actions to ensure they are resolved.

### **3.11 Escalation**

The responsible organizations or NA may escalate PERs as needed.

### **3.12 Trend Analysis**

Appendix J provides guidelines for performing trend analysis to identify if potential adverse trends exist and to identify areas where improved performance can be achieved.

### **3.13 Program Monitoring**

- A. Periodic self-assessments are scheduled and performed in accordance with SPP-1.6, "TVAN Self-Evaluation Program", to monitor program health and effectiveness.
- B. Indicators are assigned to key program activities and are routinely reported to management.
- C. Information concerning outstanding program key actions and age (backlog) is routinely reported to management.

- D. Effectiveness reviews are performed as required, and document what was reviewed, and provide evidence of corrective action effectiveness as documented in individual PERs. Evidence of ineffective corrective actions or inadequate recurrence control shall be reported to site management.

#### 4.0 **RECORDS**

##### 4.1 **QA Records**

Problem Evaluation Reports - Template Information (with the exception of trend data), Audit Trail Information, and Supporting Attachments.

Complete generic review packages

##### 4.2 **Non-QA Records**

None

#### 5.0 **DEFINITIONS**

**Accept-As-Is** - A hardware disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse condition and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit and safety. Meeting all engineering functional requirements may not mean meeting all FSAR or configuration requirements. A design change may be required as a result of the accept-as-is disposition.

**Adverse Conditions** - Deficiencies including nonconforming material, parts, or components; failures; malfunctions; deviations; hardware problems involving noncompliance with licensing commitments, specifications, or drawing requirements; abnormal occurrences; and non-hardware problems such as failure to comply with the operating license, technical specifications, licensing commitments, procedures, instructions, or regulations.

**Adverse Trend** - An undesirable change in a quality indicator statistic of such magnitude as to require analysis of the information to ascertain if it requires management attention.

**Apparent Cause** - A problem or condition cause determination based on the evaluator's judgment and experience, and where reasonable effort is made to determine WHY the problem occurred. This might include fact finding, analysis, interviewing, benchmarking, reviewing data or maintenance history, or other methods as appropriate.

**Degraded Condition (Generic Letter 91-18)** - A condition of a system, structure or component (SSC) in which there has been any loss of quality or functional capability, within the scope defined in section 2.0 of Appendix H.

Examples of degraded conditions are:

- Heat exchanger fouling has reduced heat removal capability below the FSAR or design value.
- Pump flow rate is below the value used in the FSAR analysis.
- Valve stroke time is greater than listed in the FSAR.

**NOTE** All the above examples reference the FSAR, however, the intent and scope is further clarified in section 2.0 of Appendix H.

**Drawing Deviation (DD)** - is the method used to resolve differences between design output and the actual plant configuration. The plant is correct. The condition does not potentially affect reportability, operability, and is not potentially generic.

**Enhancements** - Within the scope of this procedure an action that is not required to be performed to satisfactorily correct or prevent recurrence of conditions adversely affecting regulatory compliance, plant reliability or personnel/nuclear safety.

**Management Review Committee** - A group of key managers designated to review PERs for legibility, clarity, completeness, whether it is an example of a previously identified adverse condition, and determination of responsible organization.

**Near Miss** - An incident which given different circumstances, could have resulted in an injury/illness or property damaged.

**Nonconformances** - A deficiency in characteristics, documentation, or procedures which renders the quality of a hardware item unacceptable or indeterminate. Examples of nonconformances include: physical defects, test failures, incorrect or inadequate documentation or deviation from prescribed manufacturing processing, inspection, or test procedures.

**Nonconforming Condition (91-18)** - A condition of an SSC in which there is failure to meet requirements or licensee commitments within the scope of Section 2.0 of Appendix H, such as:

1. There is failure to conform to one or more applicable codes or standards specified in the FSAR.
2. As-built equipment, or as-modified equipment, does not meet FSAR descriptions.
3. Operating experience or engineering reviews demonstrate a design inadequacy.
4. Documentation required by NRC requirements such as 10CFR50.49 is not available or deficient.

**Operable - Operability** - A system, subsystem, train, component, or device shall be operable or have operability when it is capable of performing its specified safety function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal or emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

**PER Coordinator** - Individual within the various line organizations including NA that will be the primary contact within that organization, department, or group for coordination of actions for PERs and submitting necessary documentation for closure of PERs to EDMS.

**Repair** - A hardware disposition which restores a nonconforming characteristic of an item to a condition such that the capability of an item to function reliably and safely is unimpaired even though the item still does not conform to design requirements.

**Responsible Organization** - The organization with lead responsibility for resolving a PER including developing the corrective action, determining potential generic applicability, implementing corrective action, and closing.

**Rework** - The process by which a nonconforming item is made to conform to a prior specified requirement by completion, re-machining, reassembling, or other corrective means.

**Root Cause** - The fundamental cause(s) and associated corrective action(s) that, if corrected, will prevent recurrence of an event or an adverse condition.

**Scrap** - A hardware disposition to discard the item in a controlled manner.

**Serious Near Miss** - A near miss incident with significant probability that a serious injury/illness or extensive property damage could have occurred.

**Significant Problem** - A condition or trend which meets the significance criteria as described in Appendix D.

**Trend Analysis** - A formal evaluation of data to determine the direction of movement in the course of time of a statistically detectable change. Also, trend analysis is the evaluation of data that has been compiled or grouped onto charts, diagrams, reports, or other formats such that the prevailing tendency of selected parameters can identify areas that need improving and areas of past successes. (Refer to Appendix J.)

**APPENDIX A**  
**Page 1 of 1**  
**RECOGNIZED ADMINISTRATIVE CONTROL PROGRAMS (ACP)**

In order to be recognized as an ACP by this procedure, the ACP must address the following issues:

- A procedure must be established describing the ACP.
- Procedural guidance must be established for what conditions constitute a PER versus processing in accordance with the ACP procedure.
- The tracking method (e.g. database) must be specified.
- Trending of the problems (refer to Appendix J for additional guidance).
- Supervisor review must be established to ensure PER thresholds are consistent.

ACP	Program
Maintenance Work Orders (Equipment Failure Trending)	SPP-6.1, MMDP-1
Drawing Deviations	SPP-9.8
Safeguard Event Reports	SPP-1.3
Receiving Unsatisfactory Reports	SPP-4.2

APPENDIX B  
Page 1 of 2  
INACTIVE UNIT PERS (BFN-1 and WBN-2)

**1.0 PURPOSE**

This appendix establishes the minimum requirements and responsibilities for inactive PERs.

**2.0 SCOPE**

The requirements of this appendix apply to PERs identified by this procedure and to conditions documented on currently open reporting documents tracked in the TROI/EMPAC system previously placed in a "hold status" (e.g., PERs) identified in previous revisions of the corrective action program.

**3.0 DEFINITIONS**

Inactive unit PERs - PERs placed on inactive status when the activity has been deferred for an extended period of time.

**4.0 RESPONSIBILITIES**

A. The Responsible Organization is responsible for:

1. Reviewing the open PER in accordance with Section 5.0 of this appendix to determine if the PER is to be processed through to closure or placed in inactive status.
2. Completing a continuation form providing justification and approvals for placing the PER in inactive status and forwarding a copy to the Tracking Organization.
3. Ensuring that the documentation package for the inactive unit PER is stored in accordance with this appendix.

B. The Tracking Organization is responsible for:

1. Updating TROI/EMPAC to reflect the status of the inactive unit PER.

**5.0 REQUIREMENTS**

A. PERs, as a minimum, shall be processed through the following actions in accordance with this procedure prior to being placed in inactive status:

1. Management Review or applicable approval.
2. Determination of potential reportability.
3. Potential generic implications.
4. Assignment of trend codes and specification of apparent cause.
5. Determination of any interim actions necessary to control the issue during inactive status.

**APPENDIX B**  
**Page 2 of 2**  
**INACTIVE UNIT PERS (BFN-1 and WBN-2)**

B. PERs which impact the following activities should remain in active status:

1. Preservation
2. Layup
3. Security
4. Regulatory Requirements and Commitments
5. Nuclear Safety
6. Personnel Safety
7. Startup or operation of an active unit

**6.0 RECORDS**

A. The original PER (for inactive status) shall be stored by the tracking organization and a copy submitted to EDMS.

APPENDIX C  
Page 1 of 2

GUIDELINES FOR POTENTIAL OPERABILITY DETERMINATIONS

1.0 OPERABLE-OPERABILITY

- A. Without information to the contrary, once a component or system is established as operable, it is reasonable to assume that the component or system should continue to remain operable. However, whenever the ability of a Safety-Related/Technical Specification SSC to perform its specific function is called into question, operability must be determined from a detailed examination of the deficiency.
- B. The determination of operability is to be made promptly, with a timeliness that is commensurate with the potential safety significance of the issue. In most cases, the operability determination can be made immediately (e.g., loss of motive power, etc.). In other cases when the determination takes engineering input/analysis, a preliminary determination should be made within approximately 24 hours of discovery even though complete information may not be available. Some cases may take longer. The Shift Manager shall set the due date for the final operability evaluation.
- C. A system, subsystem, train, component, or device shall be operable or have operability when it is capable of performing its specified safety function. Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal or emergency electrical power sources, cooling seal water, lubrication, or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function are also capable of performing their related support function D. Generally, to determine potential effect on operability is to ascertain if the condition described in the PER affects the operability of a system or component required by the technical specifications such that it cannot perform its function (Technical Requirements Manual, Offsite Dose Calculation Manual, Safe Shutdown Requirements of Fire Protection Plan, Technical Specifications, etc.). A clear conclusion is needed regarding whether the system or component will perform its safety function, or whether it will perform its safety function with limitations (state limits), or whether it will perform its safety function by taking credit for alternative functional capability, or whether it will not perform its safety function.
- D. Design-related deficiencies are to be investigated through calculations, evaluation, communication with vendors, or other means to determine whether the deficiency renders the affected equipment inoperable.
- E. Confirmed degradation, damage, failure, malfunction, or loss of plant equipment performed functions important to safety are conditions which may potentially affect unit operability.
- F. Failure to follow or create standards to comply with Code of Federal Regulation 10 CFR 50, Appendix B or TVA criteria is not in itself a condition potentially affecting unit operability.
- G. ASME Section XI pumps and valves must be declared as potentially affecting operability when performance data fails in the required action range.
- H. Safety-related and quality-related piping and pipe supports found to be degraded or nonconforming required classification as potentially affecting operability.

APPENDIX C

Page 2 of 2

GUIDELINES FOR POTENTIAL OPERABILITY DETERMINATIONS

- I. If the degraded condition of the SSC causes any loss of quality of functional capability, then evaluate whether system operability can be justified by taking credit for alternative functional capability (such as manual operation or diverse automatic operation). Describe why the alternative, or limitations, do not create new or different concerns.

**NOTE** Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting is chosen so that the automatic protective action will correct the abnormal situation before a safety limit is exceeded. It is therefore, not appropriate to take credit for manual action in place of automatic action for protection of safety limits in considering equipment operable. The use of operator action to put the plant in a safe condition is always appropriate, but operator action cannot be used as a substitute for automatic safety limit protection unless the action has prior concurrence from the NRC.

- J. The fact that an SSC is not fully qualified does not necessarily render the SSC unable to perform its intended function. Treat qualification and operability of SSCs separately to ensure that the primary focus is on nuclear safety. Returning the component to fully qualified status should be considered to be a corrective action for a nonconforming/degraded condition.
- K. The use of probabilities (i.e., PSA) of the occurrence of accidents or external events shall not be used as the primary source for making operability assumptions. It may be used as supplemental data to support conclusions.

**APPENDIX D**  
**Page 1 of 8**  
**CONDITION CLASSIFICATION CRITERIA**

**NOTE** Appendix D provides guidelines for management consideration when assigning PER condition levels to aid in achieving consistency and ensuring appropriate actions and levels of review are assigned. Typical examples are provided for each classification level, but this list is not intended to be all inclusive. PERs may be classified at the discretion of management upon MRC review; PERs may be assigned classification as Level C or D based upon management judgment in allocating resources.

**1.0 LEVEL A - SIGNIFICANT (USUALLY SAFETY RELATED) CONDITIONS - RCA Required**

- A. A major safety-related or QA program condition that has occurred with a frequency as to indicate that past recurrence control has been lacking or ineffective.
- B. Confirmed adverse trends in quality activities identified by trend analysis. These adverse trends would normally be associated with the administrative control programs and would represent a major breakdown.
- C. A programmatic breakdown which negates quality controls or places doubt on the integrity of the affected program.
- D. Repetitive or deliberate occurrences of procedural violations that have a direct and detrimental effect on safety or quality.
- E. Conditions which impact the plant's ability to mitigate design basis accidents.
- F. An adverse condition which merits increased upper management attention:
- G. Falsification or unauthorized changes to quality assurance records (completed or in process).
- H. Unplanned reactor/turbine trips as required by management.
- I. A fatality or serious accident/incident.
- J. NRC Performance Indicators (PI) associated with the revised "Reactor Oversight Process" that falls within the white, yellow or red band.

**NOTE** RCA is required.

APPENDIX D  
Page 2 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL A PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>Emergency Plan declaration of alert or higher .</p> <p>Fuel damage due to misoperation or mishandling.</p> <p>Reactor trip</p> <p>Turbine trip</p> <p>Event requiring use of safety systems.</p> <p>Unusual plant transients</p> <ul style="list-style-type: none"> <li>- operator actions inhibited</li> <li>- extraordinary actions required</li> <li>- inappropriate actions</li> </ul> <p>Significant operating/design violations of Tech/Specs/FSAR, e.g.</p> <ul style="list-style-type: none"> <li>- reactivity mismanagement</li> <li>- inaccurate accident analyses</li> </ul> <p>Loss of entire safety function excluding momentary entry per L.C.O.3.0.3 of low safety significance</p> <p>Unplanned radioactive release or exposure to radioactive material greater than regulatory limits.</p> <p>Common cause failures that could affect multiple safety systems/components.</p> <p>No barriers remaining (only luck averted an accident).</p> <p>Notices of Level I, II, and III violations</p> <p>NRC PI and findings in the yellow or red band</p>	<p>Death</p> <p>Major disability injury</p> <p>Serious near miss incident with potential for death</p>	<p>Immediately reportable spills with potential to harm environment.</p> <p>NPDES releases resulting in significant threat to human health or environment, PCB fire or explosion.</p> <p>PCB release - 1 lb. or more to environment.</p> <p>Atmospheric asbestos contamination.</p> <p>ACM removal without notification 260 linear ft. 160 sq ft. 35 cubic ft.</p> <p>Leaking underground diesel fuel tank or ancillary piping.</p> <p>Operate system with prohibited refrigerant [&gt;30 days &amp; &gt;35% leak rate (process equip) or &gt;15% (pers comfort)].</p> <p>Intentional dumping of hazwaste.</p>	<p>Extensive equipment damage (e.g., required replacement or significant repairs to major equipment such as the turbine generator, reactor coolant pump, MFW pump).</p> <p>Conditions resulting in significant power reductions, outage delays or extensions.</p> <p>Lengthy unplanned outage or operation at significantly reduced power.</p> <p>Repeat failures of surveillance or post modification tests to detect non-conforming equipment or systems.</p> <p>Repeat NRC notices of violations.</p> <p>Repeat INPO findings.</p> <p>Repeat Nuclear Assurance findings.</p> <p>Repeat occurrences of organizational or programmatic breakdowns.</p> <p>Repeat missed Tech Spec Surveillance requirements (unless missed surveillance requirement is a result of a conditional Tech Spec action).</p> <p>Numerous repetitive failures to implement or maintain commitments to regulatory agencies.</p> <p>Major safety-related or QA program condition that has occurred with a frequency that indicates past recurrence control has been lacking or ineffective.</p>

APPENDIX D  
Page 3 of 8  
CONDITION CLASSIFICATION CRITERIA

2.0 **LEVEL B - ISSUES (SIGNIFICANT, IF RCA IS REQUIRED)**

- A. Identified conditions which do not meet the criteria of Level A but which require further evaluation.
- B. Quality-related deficiencies which require identification of apparent cause and action to correct the condition in accordance with the Nuclear Quality Assurance Plan.
- C. Human errors (inappropriate actions) which could have, under different circumstances, caused a significant plant event or serious personnel injury.
- D. Responses to regulatory identified issues which did not result from a Level A event.
- E. Recurring events not classified as significant which retain the potential for causing a plant event or personnel injury. That is, a negative trend which does not meet the above criteria of Level A, Section 1.0 (A), (B), and (D).
- F. Events or conditions which require recurrence control or for NRC reportable issues requiring a formal written response. These include Licensee Event Reports, NRC cited violations, and audit findings. Other examples include adverse trends from plant process equipment history and failure trending on recurring plant process equipment problems.

**NOTE** Apparent cause is required and may require Root Cause Analysis as determined by Senior Management.

APPENDIX D  
Page 4 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL B PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>Emergency Plan declaration of unusual event.</p> <p>Fuel handling incidents with no fuel damage.</p> <p>Reactivity mismanagement that does not violate Tech Spec.</p> <p>Inadvertent actuation of safeguards equipment.</p> <p>Plant transients resulting in <math>\geq 10\%</math> power change due to BOP failures.</p> <p>Events that exceed administrative guidelines concerning plant operations, reactivity management, and radioactivity releases.</p> <p>Excessive quantities of radioactive material found outside the Radiation Controlled Area.</p> <p>Loss or theft of Source or Special Nuclear Material.</p> <p>Events or conditions requiring a formal response to the NRC with the exception of special reports required by Tech Spec, FSAR, etc.</p> <p>Placement of systems/components in paragraph (a)(1) of the Maintenance Rule due to functional failures.</p> <p>Placement of systems/components in paragraph (a)(1) of the Maintenance Rule due to exceeding Performance Criteria.</p> <p>NRC PI and findings in the white band.</p>	<p>Lost time accident.</p> <p>Serious near miss incident (RCA required)</p> <p>Individual exceeds regulatory dose limits.</p> <p>High radiation areas not properly controlled.</p> <p>Violation of a stop work order.</p> <p>Multiple or other significant personnel contamination instances.</p> <p>Significant violations of radiological control procedures.</p>	<p>Repeated major failures such as spills of chems or oil, improper storage, failed secondary containments, etc..</p> <p>NPDES permit noncompliance.</p> <p>Stormwater permit exceeded.</p> <p>PCB spill/leak less than reportable.</p> <p>Exceed annual ACM permitted limit.</p> <p>Improper storage or disposal of chems, solid waste or hazwaaste.</p> <p>Other events resulting in state NOVs.</p> <p>Venting Refrigerant Intentional is prohibited.</p> <p>Work by uncertified personnel on equipment containing prohibited refrigerant.</p> <p>Uncontrolled or unidentified hazwaste satellite storage area.</p>	<p>Major equipment damage to pumps, valves, or piping.</p> <p>Conditions resulting in power reductions, forced outages or outage delays/extensions or <math>\geq</math> one day.</p> <p>Unusual conditions such as damage by lightning, physical impact from other equipment, corrosion, flood, or other environmental conditions.</p> <p>Repeat events indicative of an organizational or programmatic breakdown (e.g., design change control, warehousing, adherence to procedures, etc.).</p> <p>Adverse safety trends (i.e., near misses, minor injuries, etc.).</p> <p>Notices of violation requiring formal response.</p> <p>Significant INPO findings.</p> <p>Conditions detected by independent assessors that represent a significant organization or programmatic barrier breakdown.</p> <p>Failure of multiple administrative and/or equipment protection barriers such that few or as little as one barrier remains.</p> <p>Failed detection by surveillance or post maintenance testing or failed administrative barriers with 2nd verification.</p> <p>A missed Tech Spec Surveillance requirement.</p>

APPENDIX D  
Page 5 of 8  
CONDITION CLASSIFICATION CRITERIA

**3.0 LEVEL C - ISSUES (Routine problems warranting additional corrective evaluation and action.)**

- A. Conditions which do not meet the criteria in Levels A or B but do identify a problem which warrants tracking to closure.
- B. Conditions where structures, systems and components are degraded or nonconforming.
- C. Conditions which identify a problem that requires issuance of a special report.
- D. Human performance problem trends with little consequence and little potential to cause a plant event but require improvement.
- E. An incident resulting in a recordable injury or which under different circumstances could have resulted in an injury.
- F. Minor violations , non-cited violations, or NRC findings in the green band or has no color

APPENDIX D  
Page 6 of 8  
CONDITION CLASSIFICATION CRITERIA

LEVEL C PER CONDITION EXAMPLES			
Nuclear Safety	Personnel Safety	Environmental Impact	Economic/Operational Impact
<p>A Balance of Plant (BOP) transient that did not result in a &gt;10% perturbation to plant power or did not challenge any engineered safety features.</p> <p>Equipment failures/malfunctions resulting in Tech Spec LCO entry (with no loss of system/train safety function).</p> <p>Component failure which does not result in the loss of a train of a maintenance rule system.</p> <p>Other conditions:</p> <ul style="list-style-type: none"> <li>- design qualification issues</li> <li>- procedure deficiencies</li> <li>- personnel errors</li> <li>- violation of requirements</li> <li>- failure to follow procedure</li> <li>- valves, switches, breakers found in wrong positions</li> <li>- radioactive material found outside the RCA</li> </ul> <p>Minor violations, non-cited violations, or NRC or PI findings in the green band or has no color</p>	<p>Radiation areas not properly posted.</p> <p>Individual exceeds administrative dose limits.</p> <p>Minor spills or spread of radioactive material.</p> <p>Valve/system leaks resulting in release of radioactivity/spread of contamination.</p> <p>Uncontrolled water or condensation inside the RCA.</p> <p>Radiation exposure in excess of that projected by the RWP.</p> <p>Personnel contamination events occurring from procedural violations or poor radworker practice.</p> <p>Recordable injury/near miss incident</p>	<p>Failure of tank containing oil or chemical to secondary containment but not the environment.</p> <p>NPDES permit criteria threatened by a discharge.</p> <p>Stormwater best management practices not in use or maintained in good repair.</p> <p>Failure to maintain secondary containment for chemical/oil.</p> <p>Repeat cases of missing labels on drums issued or chemical containers.</p> <p>Release of radioactive or hazardous materials in excess of administrative limits.</p>	<p>Minor equipment damage &lt; \$10K.</p> <p>Small fires.</p> <p>Unavailable fire protection equipment.</p> <p>Maintenance rework items.</p> <p>Condition identified by management.</p> <p>Conditions detected by independent assessors that do not represent a significant organizational or programmatic barrier breakdown.</p> <p>Failed administrative barrier or significant equipment protection (additional administrative or other protective barriers remain).</p> <p>Violation of Administrative Requirements, e.g. Incorrect procedures, drawings, etc. Adverse trends in equipment, programmatic or human performance that do not directly challenge safety, regulatory compliance or reliability.</p>

APPENDIX D  
Page 7 of 8  
CONDITION CLASSIFICATION CRITERIA

- 4.0 **LEVEL D - ISSUES (RESOLVED/CLOSED AND TRENDED, Routine Problems which are adequately addressed by immediate actions or the work control process. Used for documentation and trending)**
- A. Conditions which do not meet the criteria in Levels A, B, or C and immediate actions taken were sufficient to resolve the condition.
  - B. Conditions which do not affect operability, are not reportable, and are not potentially generic.
  - C. Conditions which do not involve ASME Section III hardware or processes (construction plants only).
  - D. Human performance problems of low importance but require documenting and trending.

**APPENDIX D  
Page 8 of 8  
CONDITION CLASSIFICATION CRITERIA**

<b>LEVEL D PER CONDITION EXAMPLES</b>			
<b>Nuclear Safety</b>	<b>Personnel Safety</b>	<b>Environmental Impact</b>	<b>Economic/Operational Impact</b>
<p>Minor conditions that can be resolved by immediate action Examples include:</p> <ul style="list-style-type: none"> <li>- personnel errors that do not impact plant equipment</li> <li>- failure to follow minor administrative procedural requirements</li> <li>- fuse found blown during test performance, fuse replaced and checked</li> <li>- WOs processed without properly annotating the "M&amp;TE Used" field in the computer</li> </ul> <p>Drawing Deviations</p>	<p>Problems that are corrected immediately:</p> <p>Minor personnel hazards</p> <p>Minor personnel contamination incidents resulting from procedural violations or poor radworker practices.</p>	<p>Isolated spills of less than reportable quantities</p> <p>Missing labels from drums or chem containers</p> <p>Stormwater best management practices failed but were promptly repaired.</p> <p>Missing/Inadequate Secondary containments for temp storage are promptly put into place</p> <p>Other minor violations of Env. Program.</p>	<p>Immediately correctable minor equipment damage</p> <p>Small easily extinguished fires</p> <p>Immediately correctable inoperable equipment</p> <p>Minor condition identified by any employee</p>

**APPENDIX E**

**Page 1 of 1**

**RECOMMENDED SCREENING CRITERIA FOR POSTING OPERATING EXPERIENCE MESSAGES ON  
NUCLEAR NETWORK**

Consideration should be given to preparation of OE messages for events with the following elements:

1. Important to Nuclear, Public, and Personnel Safety
  - a) events that could lead to serious degradation of operating safety margin
  - b) events that affect core reactivity, core cooling, or decay heat removal
  - c) significant personnel injuries or life-threatening situations
  - d) events that exceed, or have a strong potential to exceed, administrative limits because of :
    - fission product barrier breaches
    - uncontrolled release of radioactive material
    - exposures significantly greater than planned
2. Importance to Generation Capability
  - a) transients, including reactor scrams, main turbine trips, feedwater control problems, and other conditions
  - b) equipment malfunctions or human errors
  - c) major equipment damage
  - d) frequent or extended outages
3. Events with Important Generic Implications
  - a) deficiencies in areas such as design, analysis, testing, or procedures with potentially generic implications
  - b) component failures with generic implications
  - c) events involving discovery of information significantly different from what was assumed to be an industry norm
  - d) unique solutions to known industry problems that could benefit other utilities
  - e) transients that required extraordinary actions to terminate event though actual consequences were minor
4. Events for Which a Comprehensive Root Cause Investigation Was Performed and Lessons Learned Would be Beneficial for You to Know About if the Event had Occurred at Another Station

APPENDIX F

Page 1 of 1

CONTROLLING NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

- A. The responsible organization shall determine the scope of the non-installed, non-conforming item(s). This determination shall include location, type, and quantity and shall initiate immediate control for the nonconforming items using one of the following:
1. Physical segregation, when possible, and marking of the item. Designated hold areas are the preferred method of control.
  2. Tag, mark, or use a tracking program, such as: computerized status programs, applicable equipment printouts, outstanding work items list, and inspection or test cards to control the nonconforming item when impractical to segregate.
  3. Document on the PER the method of control utilized.

**NOTE** Control of installed nonconforming items which do not affect Technical Specifications operability is by identification on the corrective action document. Items which affect Technical Specification operability are controlled by use of such mechanisms as limiting condition for operation (LCO) logs and clearances.

- B. The responsible organization is responsible for release of items from nonconforming status and removal of tags upon satisfactory completion of corrective action.
- C. Disposition actions for nonconforming items (i.e., final disposition) may be accept-as-is, rework, scrap, or repair. Technical justification of accept-as-is or repair shall be obtained from Site Engineering or, for nuclear fuel-related items, Nuclear Fuels. Reworked, repaired, and replaced items shall satisfy the original inspection and test requirements or acceptable alternatives. Guidance associated with the scope of hardware can be found in SPP-9.3, "Plant Modifications & Engineering Change Control."

**APPENDIX G**  
**Page 1 of 3**  
**CAUSE DETERMINATION AND**  
**CORRECTIVE ACTION DEVELOPMENT GUIDELINES**

- A. Testing Causes and Contributing Causes - Supervisors/Managers/other site personnel should test causes, and contributing causing codes for validity. The following criteria are conditions recognized as useful in validating cause.
1. The problem can be duplicated based on the suggested causes.
  2. The problem would not have occurred had the causes not been present.
  3. The problem will not recur due to the same causes if those causes are corrected or eliminated.
  4. Correction or elimination of the causes will prevent occurrence of similar conditions.
  5. Correction or elimination of the causes will restore failed barriers and reduce the likelihood of future barrier failures.
  6. Correction or elimination of the causes will break the sequence of events illustrated by an Event and Causal Factor analysis if one was performed
- B. Developing Corrective Actions - Solutions to problems identified by cause, including root cause if required, should prevent recurrence or minimize the effects of recurrence and be within the control of management. The corrective actions should be identified for each corrective opportunity.
1. The following questions may be considered:
    - a. Do the corrective actions address all of the corrective opportunities?
    - b. What are the consequences (positive and negative) of implementing the corrective actions? (e.g. is a new hazard created?)
    - c. What are the consequences of not implementing the corrective actions?
    - d. Will training be required as part of the implementation?
    - e. In what time frame can the corrective actions reasonably be implemented? (Consider impact on the plant of a repeat event.)
    - f. Are the parties responsible for corrective action properly identified and have they agreed to the recommended actions?
    - g. What impact will the development and implementation of the corrective actions have on other activities/work groups? Have these work groups been informed of the potential impacts?
    - h. Can the implementation of the corrective action be measured? (i.e. "Revise step 6.2 of the procedure to reflect the correct equipment location," is measurable; "Ensure the actions of procedure step 6.2 are performed correctly in the future," is not measurable.)
    - i. Do the corrective actions address identified generic implications?
    - j. Where a variety of possible corrective actions exist, the corrective actions should strike a balance among the resources required for implementation, the effectiveness of the corrective action, and the level of significance (risk) of the event or adverse trend?

APPENDIX G  
Page 2 of 3  
CAUSE DETERMINATION AND  
CORRECTIVE ACTION DEVELOPMENT GUIDELINES

More Effective

- Design or design change to reduce the hazard
- Install automatic safety devices
- Install automatic safety warnings or alarms
- Procedures or procedure changes
- Personnel (training, knowledge, etc.)

Less Effective

- Identify and accept assumed risk

- k. Causes identified during the evaluation which are acknowledged as assumed risks must be clearly identified and concurred with by the Responsible Manager?
- l. When a root cause or contributing factor is determined to be due to faulty or missing vendor information, the corrective action should include contact with the vendor to obtain valid information?
- m. When corrective actions resulting from a cause determination specify replacement of a safety related failed component with one of the same type, the cause determination should consider the potential for age related degradation such that the replacement component can be expected to perform its function reliability?

**APPENDIX G**  
**Page 3 of 3**  
**CAUSE DETERMINATION AND**  
**CORRECTIVE ACTION DEVELOPMENT GUIDELINES**

2. Potential corrective actions are provided in the Table below for Human Performance errors or issues (based on performance mode).

<b>Performance Mode</b>	<b>Suggested Corrective Actions</b>
<b>Skill-based</b>	<input type="checkbox"/> 1. Install blocking devices between similar controls. <input type="checkbox"/> 2. Identify critical steps of a task to increase attention. <input type="checkbox"/> 3. Increase supervision or include additional personnel to peer check critical steps of task. <input type="checkbox"/> 4. Avoid multi-mode switches or controls. <input type="checkbox"/> 5. Reread previous two/three steps of a procedure before proceeding with task, if distracted or interrupted. <input type="checkbox"/> 6. Improve planning to reduce distractions and interruptions. <input type="checkbox"/> 7. Improve personal experience with the task. <input type="checkbox"/> 8. Eliminate unnecessary time pressure through scheduling. <input type="checkbox"/> 9. Rotate individuals through various jobs. <input type="checkbox"/> 10. Practice using skills to maintain proficiency. <input type="checkbox"/> 11. Simplify and standardize manual skills (skill of the craft). <input type="checkbox"/> 12. Promote the value of peer checking and challenging. <input type="checkbox"/> 13. Improve human factors identification and layout of controls. <input type="checkbox"/> 14. Automate some tasks less suited for human beings. <input type="checkbox"/> 15. Modify plant equipment to be insensitive to error; reversible.
<b>Rule-based</b>	<input type="checkbox"/> 16. Eliminate procedure inconsistencies. <input type="checkbox"/> 17. Simplify procedures to clarify criteria and purpose. <input type="checkbox"/> 18. Eliminate drawing and technical manual errors. <input type="checkbox"/> 19. Improve knowledge of procedure basis. <input type="checkbox"/> 20. Practice using multiple, alternative indications. <input type="checkbox"/> 21. Promote practice of verbalizing intentions. <input type="checkbox"/> 22. Practice on transitions between procedures. <input type="checkbox"/> 23. Eliminate unwise use of "rules of thumb". <input type="checkbox"/> 24. Specialize on specific, safety-critical tasks. <input type="checkbox"/> 25. Improve human factors identification and layout of displays.
<b>Knowledge-based</b>	<input type="checkbox"/> 26. Practice using methodical problem-solving techniques with novel, unfamiliar situations. <input type="checkbox"/> 27. Design displays to enhance use without keyboarding. <input type="checkbox"/> 28. Practice using team and communication skills. <input type="checkbox"/> 29. Assign role of devil's advocate. <input type="checkbox"/> 30. Identify popular shortcuts prevalent in decision making. <input type="checkbox"/> 31. Use system/component knowledge and fundamental principles of physical sciences associated with plant systems and components in unfamiliar problem situations. <input type="checkbox"/> 32. Train on and verify accuracy of system & social mental models.

APPENDIX H

Page 1 of 4

RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS

1.0 **PURPOSE**

This appendix establishes requirements for the resolution of degraded and nonconforming conditions as defined by Generic Letter 91-18, Revision 1.

2.0 **SCOPE**

The requirements of this appendix apply to PERs identified by this SPP as degraded or nonconforming conditions affecting the following systems, structures, or components (SSC):

- Safety-related SSCs, which are those relied upon to remain functional during and following design basis events (A) to ensure the integrity of the reactor coolant pressure boundary, (B) to ensure the capability to shut down the reactor and maintain it in a safe shutdown condition, or (C) to ensure the capability to prevent or mitigate the consequences of accidents that could result in potential offsite consequences comparable to the 10 CFR Part 100 guidelines. Design basis events are defined the same as in 10 CFR 50.49(b)(1).
- All SSCs whose failure could prevent satisfactory accomplishment of any of the required functions identified in A, B, and C above.
- All SSCs relied on in the safety analyses or plant evaluations that are a part of the plant's current licensing basis. Such analyses and evaluations include those submitted to support license amendment requests, exemption requests, or relief requests, and those submitted to demonstrate compliance with the Commission's regulations such as fire protection (10CFR50.48), environmental qualification (10CFR50.49), pressurized thermal shock (10CFR50.61), anticipated transients without scram (10CFR50.62), and station blackout (10CFR50.63).
- Any SSCs subjects to 10CFR50, Appendix B.
- Any SSCs subject to 10CFR50, Appendix A, Criterion 1.
- Any SSCs explicitly subject to facility Technical Specifications (TS).
- Any SSCs subject to facility TS through the definition of operability (i.e., support SSCs outside TS).
- Any SSCs described in the final safety analysis report (FSAR), that affect the functionality of a safety-related SSC that is relied upon to remain functional during and following design basis events and non safety-related SSCs whose failure challenges these safety related SSCs.

3.0 **REQUIREMENTS**

- A. Corrective action must be timely and commensurate with safety significance (effects on operability, significance of degradation) and by what is necessary to implement the corrective action. In addition, a high priority should be given to resolving those degraded or nonconforming conditions which require compensatory measures to support plant operations.
- B. If a PER involving a degraded or nonconforming condition is not scheduled to be corrected within one cycle of operation, then an appropriate justification must be prepared to support the proposed schedule. The justification should consider the following items:

APPENDIX H

Page 2 of 4

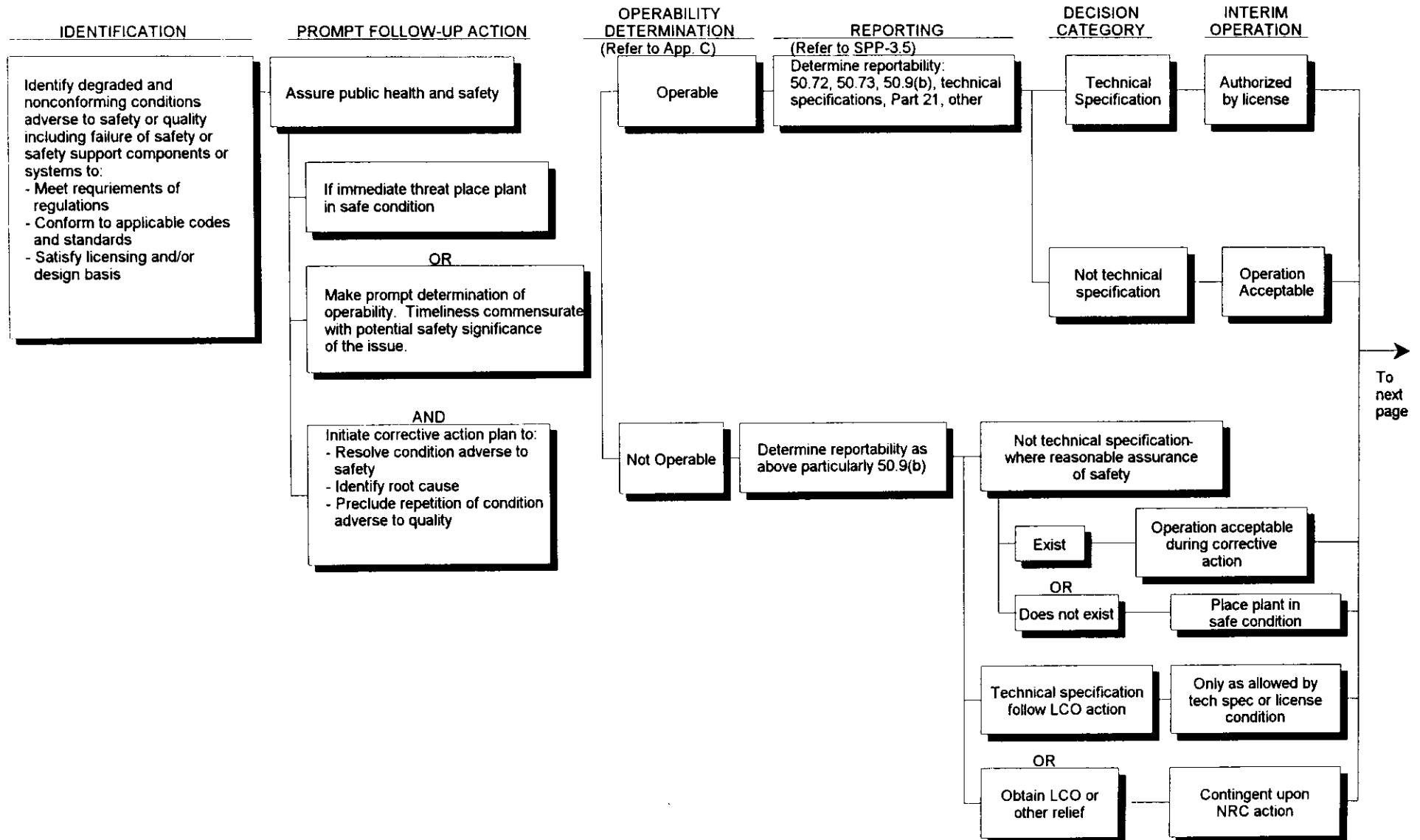
RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS

1. The safety significance of the degraded or nonconforming condition affecting safety or quality-related equipment,
2. The impact of any required compensatory measures on plant operations,
3. The amount of time required for design, review, approval, or procurement for planned repairs or modifications,
4. Availability of specialized equipment needed to make the planned repairs or modifications, or
5. Outage planning and scheduling needs.

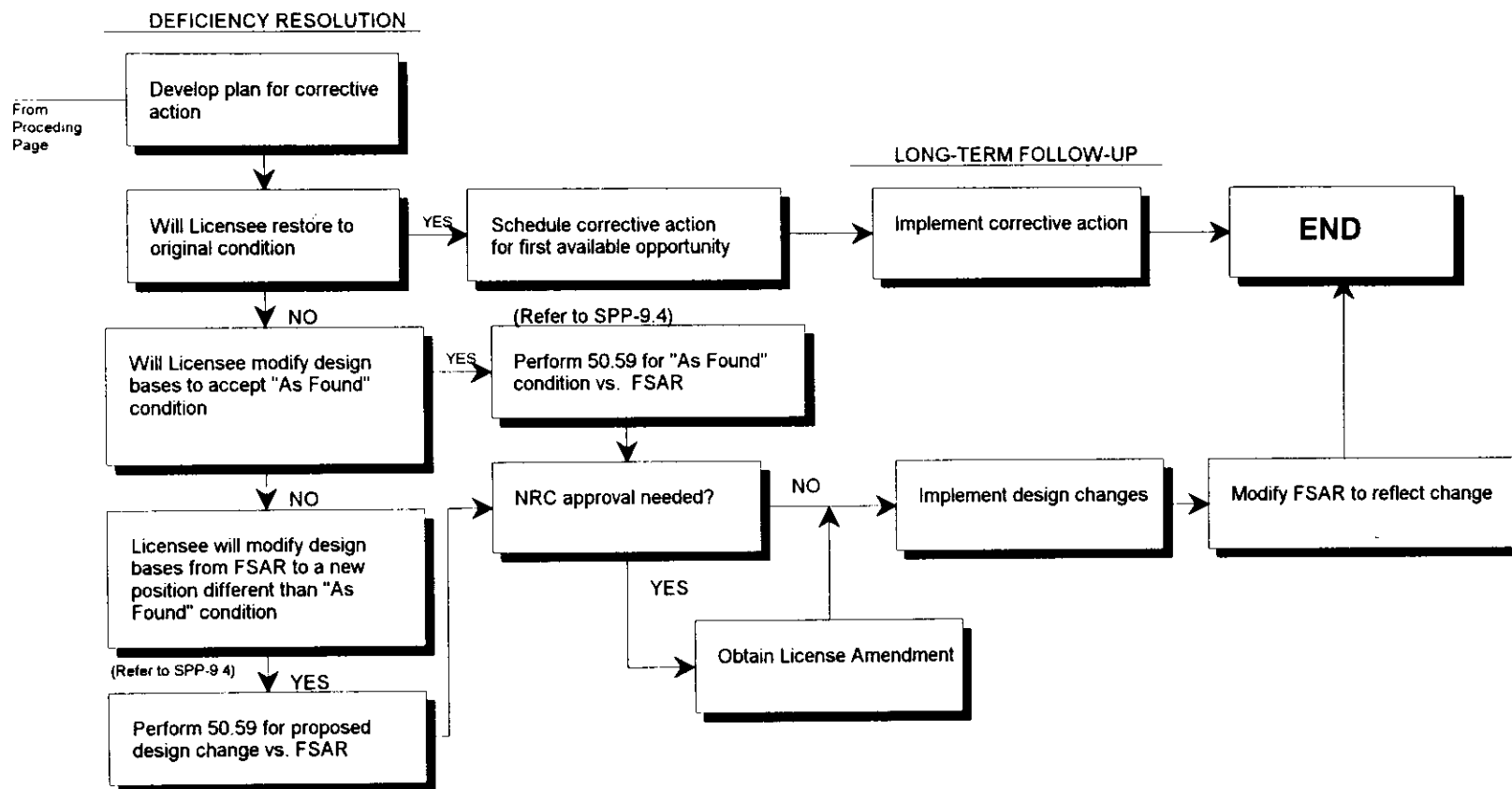
If the justification supports a resolution in the future (i.e., more than 1 cycle), it should be reverified once per cycle.

- C. If the corrective action for a PER involving a degraded or nonconforming condition is extended past one cycle of operation, then the requirements of 3.0.B above must be met and must be approved by the Site Vice President or designee.
- D. If an interim compensatory action is taken to address the condition and the condition involves a degraded or nonconforming condition, follow the guidance of SPP-9.4 regarding 10CFR50.59 as required. The intent is to determine whether the compensatory action itself (not the degraded condition) impacts other aspects of the facility described in the SAR.

APPENDIX H  
Page 3 of 4  
RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS



APPENDIX H  
Page 4 of 4  
RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS



APPENDIX I  
Page 1 of 1  
PER CLOSURE

**NOTE** Recommendation for closure with justification may be made at any point in the process with the appropriate approvals.

1. PERs involving hardware corrective action may be closed when field work is complete. The PER may be closed to a scheduled WO provided:
  - A. The PER and WR/WO are cross-referenced on each document, AND
  - B. Documented justification for any subsequent cancellation of the WR/WO is approved by the organization responsible for the WR/WO and the department manager who approved the original PER corrective action plan.

**NOTE** Closure of PERs to open WO/WRs is at the discretion of senior site management.

**NOTE** Degraded/nonconforming conditions being addressed by a PER cannot be closed to a WR/WO.

2. PERs not involving hardware which are to be resolved through issuance of new or revised procedures or design output documents may be closed when the affected procedures or design output documents have been approved, AND an acceptable date has been established and approved when full implementation shall be complete.
3. The PER may be closed if the only action remaining is an effectiveness review or enhancement that is to be performed at a future date, provided the action is tracked (TROI, etc.).
4. PERs to be dispositioned by scrapping the item may be closed when controls have been imposed to prevent the inadvertent use or installation of the item which is to be scrapped.
5. For corrective actions to be implemented by a WO, but for which there is a required due date, the PER corrective action will specify the due date and remain open until the corresponding WO is completed. For corrective actions to be implemented by a WO, but for which there is not a required due date, the PER corrective action and/or the PER may be closed to the WO provided the requirements of SPP-3.1 are met.

APPENDIX J  
Page 1 of 2  
TREND ANALYSIS GUIDELINES

1.0 **PROBLEM EVALUATION REPORT (PER) AND ADMINISTRATIVE CONTROL PROGRAM (ACP) TRENDING**

1.1 **Tracking Adverse Conditions**

The responsible line organization manager shall ensure PERs are loaded in the TROI/EMPAC database and appropriate Human Performance trending information is entered on the PER B template for Level D PERs and PER F template for all other PERs dealing with Human Performance issues. Loading of problems in TROI/EMPAC from ACPs is at the option of the ACP organization manager. This procedure identifies those formal programs (ACPs) approved by TVAN to identify, analyze, and trend problems outside of the PER process.

1.2 **ACP Trending**

- A. The organization responsible for the ACP shall ensure the following are identified:
  - 1. Data processing methodology (collection, coding, analysis, etc.),
  - 2. Adverse trends, including what constitutes an adverse trend, and
  - 3. Reporting methodology (type of report, distribution, frequency, as applicable).
- B. If an adverse trend is confirmed (from either the ACPs or PERs), the ACP organization shall initiate a PER in accordance with this procedure.

1.3 **PER Trending**

**NOTE** While it is the responsibility of the line organizations to perform their own appropriate PER trending in conjunction with information and analysis input from Performance Analysis, this section delineates the responsibilities associated with the Performance Analysis PER trending process.

**Performance Analysis Manager/Designee**

- A. Assign PER trend and cause codes on the trends template as applicable in the EMPAC database on an ongoing basis.
- B. Assemble PER trend data on a quarterly basis (or as requested) utilizing an appropriate rolling interval to compare the data.
- C. Organize the data in a manner for comparing the current period trend data with previous periods.
- D. Analyze the data and identify potential adverse trends or trend-related issues requiring action.
- E. Identify precursors to more significant issues before they become self-revealing.

**APPENDIX J  
Page 2 of 2  
TREND ANALYSIS GUIDELINES**

- F. Trend key programs, process/barrier activities, and others as appropriate.**
- G. Utilize causal codes for detailed analysis of apparent/root causes.**
- H. Notify the affected organization manager when potential adverse trends or trend-related issues are identified. The affected organization manager is responsible for the development and implementation of appropriate corrective action to resolve validated trend related issues.**
- I. Issue a quarterly report (or as requested) to key site organizations which includes providing analysis, describing any detected trends, and substantiating data.**

APPENDIX K  
Page 1 of 1  
PER INITIATION

PER Initiation

- by preparer

**Work Order - New**

Work Order:  WO Status: **NEW**

Work Request:  Department:  (6)

Planner/SUPVR:  (5)

Work Desc: **TBD**

Problem Desc:  (1)

UNID:

Asset No:  (2)

Category:

Revision:

Asset Desc:

Location:

Asset Status:  (3)

Clearance Required: ☐

Action:  (3)

Requested By:  (7)

Shutdown:  (4)

Phone No:  (8)

Position:

Repair Tag No:

Comp Trace:

WO Priority: **3 Routine work Items**

Comp TMC:

Date Required: **10/05/1999**

Parts Due:

Steps For PER Initiation:

After opening EMPAC, use the tab key to locate the following fields:

1. Problem Desc. - **DO NOT ENTER IN WORK DESCRIPTION**. This is the problem description. Clearly describe the condition being reported.
2. Asset No. - Type in 356127 at Browns Ferry and Corporate, 350669 at Watts Bar, or 357160 at Sequoyah.
3. Action - This field defaults to Routine Maint.
4. Shutdown - This field defaults to undetermined.
5. Planner/Supvr - This is the initiator's supervisor.
6. Department - This is the Initiator's department.
7. Requested By - This is the initiator (Field is auto-populated).
8. Phone No - This is the initiator's telephone number (Field is auto-populated).

After completing the above fields, save the PER. A number will be automatically entered into the Work Order field. This is the PER number.

## PROBLEM EVALUATION REPORT (PER)

- ☐ NRC IDENTIFIED  
☐ NA IDENTIFIED  
☐ NA APPROVAL/VERIFICATION REQUIRED  
☐ SELF-ASSESSMENT IDENTIFIED

PER No.: \_\_\_\_\_ REV. \_\_\_\_\_

## PART A: INITIATOR

- A.1 Description of Condition (What is wrong). If known, what requirements were not complied with, or what could be improved.  
Include other pertinent information known. Also, include suggestions, if desired.

A.2 Initiator \_\_\_\_\_ Organization \_\_\_\_\_ Ext. \_\_\_\_\_ Date \_\_\_\_\_

## PART B: SUPERVISOR

- B.1 Plant process equipment problems? ☐ No ☐ Yes; if not addressed by a WR/WO, notify SM, & document in Immediate Actions Taken (B.4)  
Potentially Affects Operability? ☐ No ☐ Yes notify SM SM: Operability affected? ☐ No ☐ Yes  
Potentially Reportable? ☐ No ☐ Yes notify SM SM: Reportable? ☐ No ☐ Yes  
Insufficient Information? ☐ No ☐ Yes  
If yes, see attached  
SM: Offsite Operability Review at licensed plants? ☐ No ☐ Yes  
If Yes, specify \_\_\_\_\_

SM Signature/Date \_\_\_\_\_

B.2 ASME No ☐ Yes ☐ System numbers affected \_\_\_\_\_ Units Affected \_\_\_\_\_

B.3 Recommendation/Classification:

☐ No Action Required - Close PER, Provide basis: \_\_\_\_\_☐ Process PER As Level \_\_\_\_\_ (A,B,C, or D) \_\_\_\_\_

B.4 Immediate Actions Taken: \_\_\_\_\_

- B.5 For D Level PERs: Cause Code \_\_\_\_\_ INPO Area \_\_\_\_\_  
What organization caused the problem? \_\_\_\_\_ What process/procedure was involved? \_\_\_\_\_  
Hardware disposition ☐ N/A ☐ Repair\*\* ☐ Accept As-Is\*\* ☐ Other  
☐ Rework ☐ Scrap

B.6 Responsible organization if PER classified as Level C: \_\_\_\_\_ coordinated with \_\_\_\_\_

B.7 INITIATING SUPERVISOR \_\_\_\_\_ Ext. \_\_\_\_\_ Date \_\_\_\_\_

B.8 Additional Reviews As Required \_\_\_\_\_

NOTE: For Level D PERs, - Forward to PER Coordinator for closure.

## PART C: RESPONSIBLE ORGANIZATION (For Level C PER)

- C.1 Control of nonconforming item? ☐ No ☐ Yes If yes, document the scope and send a copy to the organization controlling the item
- C.2 Hardware disposition ☐ N/A ☐ Repair\*\* ☐ Accept As-Is\*\* ☐ Rework ☐ Scrap ☐ Other
- C.3 Offsite generic review? ☐ No ☐ Yes If yes, copies sent to PER Coordinator at: ☐ BFN ☐ BLN ☐ SQN ☐ WBN ☐ CORP ☐ All
- C.4 Causal Factor Code(s) \_\_\_\_\_ Causing Organization \_\_\_\_\_ INPO Area \_\_\_\_\_
- C.5 Affected Processes/Procedure(s) \_\_\_\_\_
- C.6 Corrective Actions (See Continuation Page) \_\_\_\_\_
- C.7 Potential Reactivity Management issue? ☐ No ☐ Yes; If Yes, obtain Reactor Engineering approval
- C.8 Degraded/Nonconforming condition? No ☐ Yes ☐

## APPROVAL

## CONCURRENCE

C.9	Name (Print/Type)	Initial	Date		Name (Print/Type)	Initial	Date
Preparer (Ext )							
Supervisor (Ext )							
NA*				ANI/ANII*			

## PART D: CLOSURE (For Level C PERs)

Verification	Name (Print/Type)	Initial	Date	Verification	Name (Print/Type)	Initial	Date
Supervisor				Tags Removed*			
ANI/ANII*				NA			

\*When applicable \*\*Needs NE justification

## PROBLEM EVALUATION REPORT (PER)

PER No.: \_\_\_\_\_

REVISION: \_\_\_\_\_

**PART E: MANAGEMENT REVIEW (For Level A & B PERs)**E.1 Disposition: Process PER as Level \_\_\_\_\_ (NOTE - RCA is required for Level A's)  
RCA required? ☐ NO ☐ YesE.2 Interim Action Required? ☐ No ☐ Yes If yes, specify \_\_\_\_\_E.3 NA Approval of Corrective Action Required? ☐ No ☐ Yes

E.4 Assign Responsible Organization to: \_\_\_\_\_

E.5 MANAGEMENT REVIEW \_\_\_\_\_ Date \_\_\_\_\_

**PART F: RESPONSIBLE ORGANIZATION (For Level A or B PERs)**F.1 Control of nonconforming item? ☐ No ☐ Yes If yes, document the scope and send copy to the organization controlling the item. \_\_\_\_\_F.2 Potential Reactivity management issue? ☐ No ☐ Yes If Yes, obtain Reactor Engineering approval \_\_\_\_\_F.3 Offsite generic review? ☐ No ☐ Yes If yes, specify: ☐ BFN ☐ BLN ☐ SQN ☐ WBN ☐ CORP ☐ AllF.4 Hardware disposition ☐ N/A ☐ Repair\*\* ☐ Accept-As-Is\*\* ☐ Rework ☐ Scrap ☐ Other \_\_\_\_\_  
\*\*(Requires Engineering Justification, Reference EDMS No.) \_\_\_\_\_F.5 ☐ LER \_\_\_\_\_F.6 Cause analysis ☐ Apparent ☐ Root Method \_\_\_\_\_

F.7 Causing Factor Code(s) \_\_\_\_\_ Causing Organization \_\_\_\_\_ INPO Area \_\_\_\_\_

F.8 Affected Procedure(s) \_\_\_\_\_

F.9 Corrective Actions (include extent of condition, previous similar events, and recurrence control). Document on PER continuation form.

F.10 Degraded/Nonconforming condition? ☐ No ☐ Yes

## Approval/Concurrence

## APPROVAL

## CONCURRENCE

F.11	Name (Print/Type)	Initial	Date	Name (Print/Type)	Initial	Date
Preparer (Ext )						
Supervisor (Ext )						
Department Manager*(A&B)						
Site Senior Manager (A)						
Plant Manager *(A)						
MRC(A & B)*						
NA* (A&B)						
Reactor Engineering*				ANI/ANII*		

**PART G: CLOSURE (For Level A&B PERs)**

Verification	Name (Print/Type)	Initial	Date	Verification	Name (Print/Type)	Initial	Date
Supervisor				Tags Removed*			
				NA			
ANI/ANII*							

\*When Applicable



**INSTRUCTIONS FOR COMPLETING PER FORM**

*For details/further requirements see body of procedure*

**PART A: INITIATOR**

- Identify and document problem or condition
- Identify and document any notifications made, or immediate action taken
- Sign as initiator
- Forward to supervisor

**PART B: SUPERVISOR**

- Review problem/condition description for accuracy/completeness
- Determine if PER condition potentially affects plant equipment operability/reportable, if yes, then notify Operations SM provided WR/WO has not been generated. If WR/WO has been generated, document in immediate actions section (B4 of PER form).
- Identify unit and system affected and ASME applicability
- Identify if offsite operability review at licensed plants is required
- Determine appropriate PER classification (Level A, B, C, or D)
- Document any notifications made or immediate actions taken
  - If "A" or "B" - Sign Block B.7
  - Forward to MR
- If "C" - Assign responsible organization and coordinate with organization responsible for corrective action
- Sign Block B.7 (Note RO is same as initiating organization then completion of this block is not required)
- Forward to PER Coordinator if other organization is responsible for corrective action development
- If "D" - Identify causal factor and causing organization (if known), and affected procedure(s) (procedure associated with activity resulting in problem/condition)
- Sign Block B.7 if immediate actions taken were sufficient to resolve the condition and no other corrective action is required,

**PART C: RESPONSIBLE ORGANIZATION (If PER classified Level C)**

- Address hardware issues (if any), C.1 & C.2
  - Address off-site generic review, C.3
  - Identify causal factor code and INPO area code, and causing organization (if known)
  - Identify affected procedure(s) (procedure associated with activity resulting in problem/condition)
  - Identify the interim corrective actions if required
  - Identify corrective action(s) and specify completion date for each action
  - Coordinate PERs which potentially affect reactivity management with Reactor Engineering
  - Determine if the PER involves a Degraded or Nonconforming Condition
  - Complete C.9 as preparer.
  - Obtain supervisor review
  - Obtain required review/approvals when applicable (NA, Site Engineering, ANI)
- Submit to Business and Work Performance (B&WP) only a copy of the closure form with required signatures and transmittal showing EDMS number to close TROI item.

**PART D: CLOSURE (Level C)**

Responsible/Action Organization Supervisor

- Responsible organization supervisor verifies completion of PER corrective actions and signs PER form as applicable (not applicable for level D)
- Ensure ANI/ANII review and NA and/or acceptance is obtained, when applicable
- Ensure that all documentation is included for all actions as applicable from action organization(s)
- PERs generated prior to electronic process, the RO forwards package to EDMS and form to B&WP with EDMS sheet with number indicating closure
- For electronic PERs, the RO will transmit closure packages

**INSTRUCTIONS FOR COMPLETING PER FORM**

*For details/further requirements see body of procedure*

**PART E: MANAGEMENT REVIEW (Level A & Level B PERs)**

To be completed by Management Reviewer or from Management Review Committee (MRC) decisions

- Validate classification (Level A, B, or C)
- Identify if RCA is required for Level B
- Identify any interim actions required
- Identify if NA approval required
- Assign responsible organization
- MRC representative or the Management Reviewer signs E.5

**PART F : RESPONSIBLE ORGANIZATION (If PER classified Level A or Level B)**

- Address items F.1-F.5
- Identify root cause or apparent cause (RCA required for Level A and as identified for Level B, if RCA required, identify method used)
- Identify causal factor code, INPO area code, and causing organization
- Identify affected procedure(s) (procedure associated with activity resulting in a problem/condition)
- Corrective Action Plan

The Corrective action plan for all A&B PERs shall include the following information:

- I. An Extent of Condition Evaluation including the following information:
  - II. Apparent Cause(s) or Root Cause(s) (required for Level A and when applicable for Level B)
  - III. Previous similar events review
  - IV. Interim corrective action, if required
  - V. Corrective actions (annotate if actions are for enhancement)
- Specify organization responsible for each corrective action
  - Identify corrective action(s) and specify completion date for each action
  - Determine if the PER involves a Degraded or Nonconforming Condition
  - Obtain required review/approvals (F.11)
  - Forward a copy of signed closure form to B&WP to close TROI actions for non-electronic PERs and responsible organization send PER closure package to EMDS.

For electronic PERs, the RO will transmit closure packages or NA if they require final review

**PART G: CLOSURE (Level A and B PERs)**

**Responsible/Action Organization Supervisor**

- Ensure ANI/ANII a review and NA or acceptance is obtained, when applicable.
- Verifies completion of PER corrective actions and signs PER form as applicable.
- Ensure that all documentation is included for all actions as applicable from action organization(s)
- Forward a copy of signed closure form to B&WP to close TROI actions with EDMS transmittal sheet for non-electronic PERs and RO organization send PER closure package to EMDS.
- For electronic PERs, the RO will transmit closure packages.

EXTENSION REQUEST FORM

PER No. \_\_\_\_\_ Level \_\_\_\_\_ Rev. \_\_\_\_\_ TROI/EMPAC Sequence # \_\_\_\_\_ No. of Extension(s) to Date: \_\_\_\_\_  
Original Completion Date: \_\_\_\_\_ Current Completion Date: \_\_\_\_\_ Requested Completion Date: \_\_\_\_\_  
Description of Actions: \_\_\_\_\_

Justification for Extension: (should include the reason why the extension will not adversely impact nuclear safety)

Ensure extension does not impact other actions in PER nor impact overall completion date. If yes, coordinate and get concurrence with all responsibility managers. Provide completion date \_\_\_\_\_

REQUIRED MANAGEMENT APPROVALS

For Level A or Level B PERs:

1. The Resp. Organization's Depart. Mgr. (that is direct report to: Plant Manager, Engineering and Support Manager (Note at SQN - Engineering and Support Services Manager)
2. The Resp. Organization's Site Senior Manager (that is direct report to Site V.P.).
3. NA approval for audit finding and NA designated PERs

For Level C PERs:

1. The Resp. Organization's supervisor (e.g., Maintenance supervisor, Operations Shift Manager, etc.)
2. NA approval for NA designated PERs

For Degraded or Nonconforming Conditions

If the corrective action for a PER involving a degraded or nonconforming condition is extended past one cycle of operation, then the requirements for completing a justification must be met and must be approved by the Site Vice President or designee.

	NAME (Print/type)	INITIAL	DATE
Submitted by: _____ (Ext. _____)			
Department Manager			
Site Senior Manager (Level A)			
NA Manager			
Organization Supervisor			

Routine: (1) Return original to responsible organization for inclusion in PER Package.  
Responsible Organization - update TROI / EMPAC.

## Valve Position Verification BFN

The objective of the JPM is to demonstrate the verification requirements/techniques for manually operated valves. The mockup of the refrigeration unit at the BFN Training Center will be used. The valves (4 total) will be positioned prior the start of the JPM at specified below. The applicant will be given a task to Independently Verify all the valves on the checklist sheet. Two of the valves can be independently verified, however, two cannot be independently verified. The valves that cannot be Independently Verified, when identified, will require second party verification.

### Equipment Needed

Mockup in mechanical maintenance area of BFTVC shop.  
Locking Tabs, minimum of two.  
Valve Locking Chain.

### SETUP

POSITION THE FOLLOWING VALVES AS SPECIFIED.

4T-SHV-066-0019A	CONDENSER A OUTLET	OPEN
4T-SHV-066-0016A	CONDENSER A INLET	CLOSED
4T-SHV-066-001	SUCTION ISOLATION	LOCKED OPEN
4T-SHV-066-003A	CIRC A PUMP OUTLET	THROTTLED 3 TURNS OPEN

Initial Conditions and Initiating Cue

Provide initial condition and initiating cue from following page along with Attachment 1.

Note: Student may recognize that two of the four valves cannot be Independently Verified, if so, ***then ask how these valves must be verified.*** Once he/she recognizes that 2<sup>nd</sup> party verification is the technique, then state, ***I will act as your 2<sup>nd</sup> party verifier but you must explain, in detail, my roll in 2<sup>nd</sup> party verification.***

**INITIAL CONDITIONS AND INITIATING CUE:**

You are an Operator, the refrigeration unit in the maintenance shop is being lined up for service. The Unit Supervisor has directed you to perform **Independent Verification** of manual valves per Attachment 1 and notify him when complete.

Evaluation Steps  
Evaluator Copy

Provide Student Attachment 1 and request Independent Verification on listed valves

\*\*\*\*\*  
Step 1

Independent Verification of valve, 4T-SHV-066-0019A, Condenser A Outlet, OPEN.

Standard:

Locate valve and turn hand-wheel in close (clockwise) direction, notes freedom of movement, then returns valve to fully open position by turning hand-wheel in the counterclockwise direction to end of travel.

\_\_\_\_\_ SAT          \_\_\_\_\_ UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Step 2

Independent Verification of valve, 4T-SHV-066-0016A, Condenser A Inlet, **CLOSED**.

Standard:

Locate valve and turn hand-wheel in close (clockwise) direction, notes lack of hand-wheel movement and concludes valve in **CLOSED** position

\_\_\_\_\_ SAT                  \_\_\_\_\_ UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Step 3 (this step has two parts)

Independent Verification of valve, 4T-SHV-066-001, Suction Isolation, **LOCKED OPEN**.

Standard:

Determines valve cannot be Independently Verified **LOCKED OPEN**

\_\_\_\_\_ SAT                  \_\_\_\_\_ UNSAT

**When student determines that Independent Verification cannot be done on a locked open valve, then STATE. *I will act as your second party verifier, demonstrate how second party verification will be accomplished on this valve. Please explain in detail and I will provide assistance as asked.***

Standard:

Explains the method of second party verification, i.e., both parties must agree on the valve and required position, break locking tab, position checked as in step 1, then locking tab is reapplied.

\_\_\_\_\_ SAT                  \_\_\_\_\_ UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Step 4 (this step has two parts)

Independent Verification of valve, 4T-SHV-066-003A, Circ A Pump Outlet,  
THROTTLED 3 TURNS OPEN.

Standard:

Determines valve cannot be Independently Verified as THROTTLED, 3 TURNS  
OPEN.

\_\_\_\_\_ SAT                  \_\_\_\_\_ UNSAT

**When student determines that Independent Verification cannot be done on a throttled valve, then STATE. *I will act as your second party verifier, demonstrate how second party verification will be accomplished on this valve. Please explain in detail and I will provide assistance when asked.***

Standard:

Demonstrates second party verification, i.e., both parties must agree on the valve and required position, close valve fully by rotating in the clockwise direction until fully closed, then counts turns as opening to achieve 3 turns open.

\_\_\_\_\_ SAT                  \_\_\_\_\_ UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ATTACHMENT 1**  
**REFRIGERATION UNIT MANUAL VALVE VERIFICATION CHECKLIST**

Valve ID Number	Noun Name	Required Position	1 <sup>st</sup>	2nd	IV
4T-SHV-066-0019A	CONDENSER A OUTLET	OPEN	<i>REX</i>		
4T-SHV-066-0016A	CONDENSER A INLET	CLOSED	<i>REX</i>		
4T-SHV-066-001	SUCTION ISOLATION	LOCKED OPEN	<i>REX</i>		
4T-SHV-066-003A	CIRC A PUMP OUTLET	THROTTLED 3 TURNS OPEN	<i>REX</i>		



REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	6/30/99 (COC & WBN)	All	Initial issue. This procedure replaces STD-12.6 (Corp.), SSP-12.6 (BFN & SQN), and SSP-12.06 (WBN).
YSO 8/3/99	7/2/99 BFN <del>LATER</del> SQN 8/6/99		

TABLE OF CONTENTS

Section	Title	Page
	Revision Log.....	2
	Table of Contents .....	3
<b>1.0</b>	<b>PURPOSE</b> .....	<b>4</b>
<b>2.0</b>	<b>SCOPE</b> .....	<b>4</b>
<b>3.0</b>	<b>INSTRUCTIONS</b> .....	<b>4</b>
3.1	Responsibilities .....	4
3.2	Qualifications .....	6
3.3	Verification Techniques .....	6
3.4	Verification Requirements .....	7
<b>4.0</b>	<b>RECORDS</b> .....	<b>9</b>
4.1	QA Records .....	9
4.2	Non-QA Records .....	9
<b>5.0</b>	<b>DEFINITIONS</b> .....	<b>10</b>
	<b>APPENDIXES</b>	
	Appendix A - Systems and Components Requiring Independent or Second-Party Verification.....	11

## 1.0 **PURPOSE**

This procedure establishes the requirements for and the criteria used to determine the applicable verification method. The methods of verification are independent (IV) and second-party verification. For the purposes of this procedure and associated procedures/instructions, the term second-party verification is considered synonymous with concurrent verification (CV).

## 2.0 **SCOPE**

This procedure applies to all TVA Nuclear (TVAN) personnel and contractors performing activities affecting nuclear power plant systems. Self-checking techniques should be utilized to ensure the worker positively identifies the correct unit, train, and/or component, and reviews the intended action and expected response before performing the task.

This procedure does not apply to activities performed by the Quality organization or design verification activities.

## 3.0 **INSTRUCTIONS**

### 3.1 **Responsibilities**

#### Operations Manager

#### A. The Operations Manager is responsible for the following:

1. Determining the verification method required and designating those systems and/or components requiring IV or second-party verification.

Appendix A provides the list of systems and components requiring IV or second-party verification.

2. Resolving disagreements between plant sections and making the final decision regarding the method of verification required.

#### Responsible Manager

#### B. The responsible manager is responsible for the following:

1. Designating IV or second-party verification requirements in appropriate plant procedures/instructions and work documents.
2. Ensuring that plant procedures/instructions and work documents specify IV or second-party verification when required.
3. Ensuring that personnel assigned to perform IV and second-party verifications are qualified.

#### Procedure Preparers

#### C. The preparers of site procedures/instructions and work documents are responsible for the following:

1. Ensuring that IV or second-party verification requirements are specified as appropriate.
2. Ensuring the type of verification is clearly identified.

Independent Verifier

**NOTE** To ensure the integrity of the IV process, do not rely on the observed actions of the individual performing the initial alignment, installation, position, or condition.

D. The independent verifier shall ensure:

1. The actual component identification matches the identification of the component required to be verified.
2. The component's actual position/condition matches the component's required position/condition.
3. Completion of documentation that an IV occurred.
4. The respective foreman or supervisor is immediately notified if a discrepancy is discovered during the performance of verification.

Second-Party Verifier

E. The second-party verifier shall ensure:

1. The actual component identification matches the identification of the component required to be verified.
2. Agreement is reached with the performer that the activity/manipulation to be performed is correct before initiation.
3. The component's actual position/condition matches the component's required position/condition after the activity/manipulation has been performed.
4. Completion of documentation that a second-party verification occurred.

F. Shift Manager

The shift manager (SM) shall be responsible for the following:

1. Determining the corrective actions to be taken when discrepancies are discovered.
2. Ensuring that personnel assigned to perform IV and second-party verification are qualified.
3. Authorizing deviations from normal verification practices if needed.

G. Training Manager

Develop, conduct, and document training of personnel engaged in verification activities.

H. All Personnel

Inform their respective foreman or supervisor if they have been assigned a verification which they do not feel qualified to perform. In the event their respective supervisor is not available, they will contact the SM for resolution before continuing the verification.

**3.2 Qualifications**

Individuals assigned IV or second-party verification responsibilities shall meet the following qualification requirements:

- A. Technically qualified to perform the assigned task (experience, position description, familiarity with the task, etc., should be considered) as determined by the responsible manager.
- B. Completed training on verification program requirements.

**3.3 Verification Techniques**

**3.3.1 Valves**

- A. Valves that are to be verified open will be manipulated in the closed direction only as necessary to remove any slack from the operating mechanism and verify valve stem movement. The valve will then be fully opened, subject to normal precautions on backseating valves.
- B. Valves that are to be verified closed will be manipulated in the closed direction only as necessary to verify the valve is fully closed, and not binding or difficult to operate. Care must be exercised, however, to avoid overtorquing the valve operator and damaging the valve seat. If any doubt exists, SM should be contacted for resolution.
- C. To determine the position of a throttled valve, the total number of turns until the handwheel stops moving in the open/closed direction shall be counted. To set the position of a throttled valve, open/close the valve the required number of turns from the full closed/open position (handwheel will no longer move in the closed/open direction).
- D. Reach rod valve position indicators will not be used as the sole method of position verification.
- E. Locked valve and throttled valve position cannot be independently verified since these operations require the verifier to observe actions while they are being performed. Second-party verification shall be used to verify the position of locked and throttled valves in those cases where IV would normally be required.

**SQN ONLY**

Locked Valve verification may be accomplished using Independent Verification in accordance with approved site procedures until the necessary revisions can be made to applicable site procedures.

### **3.3.2 Alternate Verification Techniques**

Alternate verification techniques may be used by the verifier where specified by approved procedures, valve and breaker line-up checklists, or at the discretion of shift supervisory personnel. Examples include the following:

- A. Use of remote position indicators. (Indicating lights in the control room, at the switchgear, or at local controls are the normal method of determining motor-operated and air-operated valve position.)
- B. Use of process parameters (e.g., pressure, flow, vibration, current, voltage, potential lamps, etc.).
- C. Observation of the valve stem to aid in determination of valve position if the valve stem is marked by paint (when fully closed) or other positive verification methods.
- D. Authorized scribe marks on valve stems, properly labeled with the throttled position.
- E. Functional mechanical position indicators.
- F. A post maintenance/modification functional test provided the testing verifies each component under consideration.

### **3.3.3 Circuit Breakers**

Circuit breaker verification will include a local inspection of the breaker, control power switches or fuses, and other equipment as outlined below:

- A. To verify a breaker is removed from service, the independent or second-party verifier will ensure control power is isolated (if required) by inspecting appropriate switches, fuses or fuse blocks, and ensure the breaker is racked out to the disconnected position, as applicable.
- B. To verify a breaker is restored to service, the independent or second-party verifier will ensure control power is energized by inspecting appropriate switches, indicating lights, fuses or fuse blocks, and will ensure the breaker is fully racked in with closing springs charged as applicable. Where practical, the end device should be operated following the reinstallation of a breaker. The verifier will also ensure the cubicle door is in good condition with all fasteners tight.

## **3.4 Verification Requirements**

When determination of these requirements is not clear, the responsible manager will designate the requirements. If there is disagreement, the operations manager will designate the requirements.

### **3.4.1 IV or second-party verification is required for those systems listed in Appendix A and shall include the following as a minimum:**

- A. All valves, breakers, and other components in safety-related systems where an inappropriate positioning could adversely affect system/plant operation or containment integrity.

- B. All valves, breakers, and other components in fire protection system major flow paths, including fire fighting water supply and storage, carbon dioxide storage systems, fire protection systems, and all components necessary for the system to function and supply extinguishing media to the fire.
- C. All valves, breakers, and other components in gaseous and liquid radioactive waste handling and processing systems where an inappropriate positioning could result in radioactive material release to the environment.

**3.4.2 Activities Exempt From Independent and Second-Party Verification Requirements**

- A. Calculations performed by qualified computer software.
- B. Activities for which verifications would be required and one or more of the following conditions exist:
  - Out-of-service systems/channels/components for which configuration control will not be maintained and will be verified to be in the proper configuration during the return to operable status.
  - Activities involving significant radiation exposure. As a guideline, an exposure greater than 10 mrem TEDE to perform the verification would be considered excessive.
  - Activities occurring during emergency conditions (imminent danger to plant or personnel) requiring rapid personnel action.
  - Activities that could jeopardize personnel safety.
  - Components located within locked/covered/controlled access areas provided access to the area has not occurred since the last documented verification.

For these instances, the decision not to perform a verification is to be documented on the procedure/instruction or work document.

**3.4.3 Independent Verification Requirements**

IV is used to confirm that an activity or condition has been implemented in conformance with specified requirements. The individual performing the IV must physically check the condition without relying on observation or verbal confirmation by the initial performer. However, the independent verifier may be involved in unrelated portions of the same activity and may be physically present when the initial action is performed. IV is required for the following:

- A. Any activity that, if done improperly, could remain undetected until that structure, system, or component was called upon to mitigate an accident or transient as described in the FSAR, Fire Protection Plan, Security Plan, or ODCM.

- B. Initial system lineups, or restoring components to their required position/condition following an outage where the system status was not maintained.
- C. Normal system line-up periodic checks conducted during operating conditions. In this case, the individual performing the periodic check of the original lineup is considered to be the independent verifier and an additional second check is not required. IV of locked components consists of checking that required locking devices are present and intact.
- D. Removal from service and return to service of a system or component as required by the plant clearance process.
- E. Installation and removal of temporary alterations covered by the TACF Program.

#### **3.4.4 Second-Party Verification Requirements**

Second-party verification is used in lieu of IV for the activities listed below. When performing a second-party verification, an agreement must be reached between the performer and the verifier that the activity/manipulation to be performed is correct before performance.

- A. Activities where performing an IV would by itself invalidate the actions or conditions the performer is attempting to establish.

##### **EXAMPLE**

Verification of throttled valve position, locked valve position, installation and removal of high voltage line or bus PT fuses, installation and removal of fuses in fuse blocks/clips which are normally hidden from view, etc.

- B. Activities which, if improperly accomplished or incorrectly identified, may cause any of the following:
  - Immediate plant trip or transient
  - Safety system actuation
  - Start of equipment
  - Equipment failure/damage
  - Release of radioactive material
  - Personnel injury

##### **EXAMPLE**

Removal or installation of wires, jumpers, or other connections; valve, switch, or breaker manipulations; removal or installation of fuses or circuit cards; etc.

## **4.0 RECORDS**

### **4.1 QA Records**

None

### **4.2 Non-QA Records**

None

## 5.0 DEFINITIONS

**Second-Party/Concurrent Verification (CV)** - The act of verifying a condition, such as lifting a lead or installing a jumper, concurrent with the activities related to establishing the condition. The individual performing the second-party verification and the performer must reach agreement that the activity/manipulation to be performed is correct before performance. The terms second-party/concurrent verification are synonymous and may be used interchangeably.

**Independent Verification (IV)** - The act of checking a condition, such as a component position, separately from the act of establishing the condition. The individual performing the IV must physically check the condition without relying on observation or verbal confirmation by the initial performer. However, the independent verifier may be involved in unrelated portions of the same activity and may be physically present when the initial action is performed.

APPENDIX A  
Page 1 of 2

SYSTEMS AND COMPONENTS REQUIRING INDEPENDENT OR SECOND-PARTY VERIFICATION

SYS	WBN	SQN	BFN
01	Main Steam (safety-related portion)	Main Steam System (safety-related portion)	Main Steam (safety-related portion)
03	Main Feedwater System (safety-related portion)	Main Feedwater System (safety-related portion)	Reactor Feedwater System (safety-related portion)
03	Auxiliary Feedwater System	Auxiliary Feedwater System	N/A
13	Fire Detection System	Fire Detection System	Fire Detection System
23	N/A	N/A	RHR Service Water System
26	High Pressure Fire Protection	High Pressure Fire Protection	High Pressure Fire Protection
30	Auxiliary Building Gas Treatment System, Lower Compartment Cooler Fans, Containment Air Return Fans	Auxiliary Building Gas Treatment System, MCR Ventilation System, Lower Compartment Cooler Fans, Containment Air Return Fans	HVAC (Refueling Zone, Reactor Zone, Turbine Bldg., Radwaste Bldg.)
31	MCR Ventilation	Covered by System 30.	Control Bay and Off-Gas Building HVAC (CREV)
32	Essential Air System	Essential Air System	Control Air System (Reactor Bldg. And Drywell)
39	CO <sub>2</sub> Storage and Fire Protection	CO <sub>2</sub> Storage and Fire Protection	CO <sub>2</sub> Storage and Fire Protection
41	N/A	N/A	Halon Fire Protection System
43	Post Accident Sampling System - Those parts of the system that isolate RCS, RHR, Containment and flush water	Post Accident Sampling System - Those parts of the system that isolate RCS, RHR, Containment and flush water	Sampling and Water Quality System - Those parts that isolate releases to the environment and establish primary and secondary containment
62	Chemical Volume & Control System	Chemical Volume & Control System	N/A
63	Emergency Core Cooling System	Emergency Core Cooling System	Standby Liquid Control System
64	N/A	N/A	Reactor Building Heating and Ventilation System, Primary Containment and Isolation System
65	Emergency Gas Treatment System	Emergency Gas Treatment System	Standby Gas Treatment System
66	N/A	N/A	Offgas System
67	Essential Raw Cooling Water System	Essential Raw Cooling Water System	Emergency Equipment Cooling Water System
68	Reactor Coolant System	Reactor Coolant System	Reactor Recirculation System
69	N/A	N/A	Reactor Water Cleanup System (RWCU)

APPENDIX A  
Page 2 of 2

SYSTEMS AND COMPONENTS REQUIRING INDEPENDENT OR SECOND-PARTY VERIFICATION

SYS	WBN	SQN	BFN
70	Component Cooling Water System	Component Cooling Water System	Rx Bldg Closed Cooling Water System (RBCCW)
71	N/A	N/A	Reactor Core Isolation Cooling System (RCIC)
72	Containment Spray System	Containment Spray System	Auxiliary Decay Heat Removal
73	N/A	N/A	High Pressure Coolant Injection System (HPCI)
74	Residual Heat Removal (RHR) System	Residual Heat Removal (RHR) System	Residual Heat Removal System (RHR)
75	N/A	N/A	Core Spray System
76	N/A	N/A	Containment Inerting System
77	Radwaste Systems - Those parts that isolate releases to the environment	Radwaste Systems - Those parts that isolate releases to the environment	Liquid Radwaste System (Floor and Equipment Drains) - Those parts that isolate releases to the environment and establish primary and secondary containment
78	Spent Fuel Pit Cooling System	Spent Fuel Pit Cooling System	Fuel Pool Cooling and Cleanup System
82	Emergency Diesel Generators	Emergency Diesel Generators	Standby Diesel Generators
83	Hydrogen Recombination	Hydrogen Recombination	N/A
84	N/A	N/A	Containment Atmosphere Dilution System
85	Rod Control	Rod Control	Control Rod Drive Hydraulics
86	Refer to System 82	Refer to System 82	Diesel Air Start System
88	Containment Isolation System - including valves/components that provide a containment isolation function	Containment Isolation System - including valves/components that provide a containment isolation function	N/A
90	Radiation monitoring systems - Those parts of the systems that provide isolation functions to effluent pathways	Radiation monitoring systems - Those parts of the systems that provide isolation functions to effluent pathways	Radiation monitoring system - Those parts that isolate releases to the environment and establish primary and secondary containment
99	ESFAS & RPS	ESFAS & RPS	Reactor Protection System
268	Permanent Hydrogen Mitigation	Permanent Hydrogen Mitigation	N/A
--	Reactor core (Fuel and component locations)	Reactor core (Fuel and component locations)	Reactor core (Fuel and component locations)
--	Class 1E Electrical Distribution System.	Class 1E Electrical Distribution System.	Class 1E Electrical Distribution System.

**NOTE** N/A indicates that the associated system number is not utilized at the referenced plant.

**JPM 131**  
**0-SI-4.8.B.1.A.1.a Building Release fraction**

**Note:** Any values can be used for this JPM and it may be changed to fit any situation, should however, may a key up to indicate the correct result of the given values.

**SOLUTION:**

**Total building Release Rate is 308.14 microcuries/sec**

**Building Release Fraction 0.002**

**Fan Status  
Handout to Student**

\*\*\*\*\*

**Unit 1**

Rx Zone	B Fast
RF Zone	B Fast
TB	B Fast

**U1 Turbine Room Exhaust**

A	I/S	F	I/S
B	I/S	G	I/S
C	I/S	H	I/S
D	I/S	J	I/S
E	I/S		

\*\*\*\*\*

**Unit 2**

Rx Zone	B Fast
RF Zone	B Fast
TB	B Fast

**U2 Turbine Room Exhaust**

A	I/S	F	OOS
B	I/S	G	I/S
C	I/S	H	OOS
D	I/S	J	I/S
E	I/S		

\*\*\*\*\*

**Unit 3**

Rx Zone	A Fast
RF Zone	A Fast
TB	B Fast

**U3 Turbine Room Exhaust**

A	I/S	F	I/S
B	I/S	G	OOS
C	I/S	H	I/S
D	I/S	J	I/S
E	I/S		

**CAM DATA**  
**Handout to Student**

<b>CAM #</b>	<b>microcuries/sec</b>
--------------	------------------------

<b>1-RM-90-250</b>	<b>16.56</b>
<b>1-RM-90-249</b>	<b>11.01</b>
<b>1-RM-90-251</b>	<b>20.00</b>

<b>2-RM-90-250</b>	<b>29.00</b>
<b>2-RM-90-249</b>	<b>12.96</b>
<b>2-RM-90-251</b>	<b>17.53</b>

<b>3-RM-90-250</b>	<b>182.00</b>
<b>3-RM-90-249</b>	<b>15.71</b>
<b>3-RM-90-251</b>	<b>15.25</b>

<b>0-RM-90-252</b>	<b>12.48</b>
--------------------	--------------

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 131 A.3

TITLE: DETERMINE BUILDING VENTILATION NOBLE GAS RELEASE  
RATE

TASK NUMBER: U-090-SU-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	ALL	GENERAL REVISION
3	09/02/01	ALL	General Revision

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_  
RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_  
JPM NUMBER: 131  
TASK NUMBER: U-090-SU-02  
TASK TITLE: PERFORM AIRBORNE EFFLUENT RELEASE RATE SI  
K/A NUMBER: 272000A4.05 K/A RATING: RO 2.3 SRO: 3.7

\*\*\*\*\*

TASK STANDARD: CALCULATE TOTAL BUILDING RADIOACTIVE RELEASE RATE  
AS DIRECTED BY 0-SI-4.8.B.1.a.1

LOCATION OF PERFORMANCE: SIMULATOR \_\_\_\_ PLANT \_\_\_\_ CONTROL ROOM X

REFERENCES/PROCEDURES NEEDED: 0-SI-4.8.B.1.a.1, REV 44

VALIDATION TIME: CONTROL ROOM: 40:00 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-PLANT: I will explain the initial conditions and state the task to be performed. All steps shall be simulated. I will provide initiating cues and indicate any steps to be discussed. Ensure that you observe electrical safety precautions when working near energized equipment. When you complete the task successfully, the objective for this job performance measure will be satisfied. Ensure you indicate to me when you understand your assigned task and when you have completed the assigned task.

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. Ensure you indicate to me when you understand your assigned task and when you have completed the assigned task.

\*\*\*\*\*

INITIAL CONDITIONS: You are the Control Bay AUO. Unit 2 is operating at power. Units 1 and 3 are defueled. The surveillance instruction to calculate the building ventilation noble gas release rate (once per shift) is due. The fan status has been determined.

INITIATING CUES: Calculate the building ventilation noble gas release rate per 0-SI-4.8.B.1.a.1. Begin at Step 7.7 and continue through Step 7.8.7.

START TIME \_\_\_\_\_

NOTE:

Due to variations in required performance frequency and to minimize impact on personnel, Steps 7.7 and 7.8, 7.9 through 7.13 can be completed independently. If the stack flow instrumentation (0-FI-90-271) is inoperable or out of service, Attachment 7 must be completed before Step 7.9 can be completed.

7.7 Fan Status Determination

\*\*\*\*\*

Performance Step:

Critical\_\_\_ Not Critical X

7.7.1RM-90-249

7.7.1.1 Once per shift: RECORD on Attachment 3 the operating status of each ventilation fan monitored by this CAM. The status shall be indicated with "X" in the appropriate ON/OFF column.

7.7.1.2 Once per day (second shift): If all fans serviced by this CAM are off and the monitor is out of service, VERIFY the exhausts' fan control switches are tagged out of service and VERIFY the fan dampers are closed.

Standard:

Fan status supplied with JPM.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step:

Critical\_\_\_ Not Critical\_X

7.7.2 RM-90-250

Once per shift: CHECK the status of each fan contributing flow to the ventilation path monitored by the RM-90-250 CAM. USE an "A" or "B" to denote which fan is operating. INDICATE the fan status by using the "O" column for all fans off (if applicable), the "S" column for fans on slow or the "F" column for fans on fast.

Standard:

Fan status supplied with JPM.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

7.7.3 RM-90-251

7.7.3.1 Once per shift: RECORD on Attachment 3 the operating status of each ventilation fan monitored by this CAM. The status shall be indicated with "X" in the appropriate ON/OFF column.

7.7.3.2 Once per day (second shift): If all fans serviced by this CAM are off and the monitor is out of service, ENSURE the exhaust fan control switches are tagged out of service and VERIFY the fan dampers are closed.

Standard:

Fan status supplied with JPM.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

7.7.4 0-RM-90-252 (Unit 1 Only)

Once each shift: RECORD the operating status of fans monitored by this CAM with an "X" in the appropriate column of Attachment 3. USE column "0" for all fans off, column "1" for one fan on or column "2" for two fans on.

Standard:

Fan status supplied with JPM.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

JPM NO. 131  
REV. NO. 3  
PAGE 8 OF 13

---

- 7.7.5 If any of the indicated fans (stack dilution or CAM) are operating and the corresponding monitor is declared inoperable, CONTACT the Chemical Laboratory and ENSURE that compensatory sampling in accordance with 0-SI-4.8.B.1.a.2 is being conducted.
- 7.7.6 Prior to 0659 Friday morning, TOTAL the number of shifts each column of Attachment 3 was marked. RECORD the totals at the bottom of Attachment 3.

\*\*\*\*\*

Performance Step: Critical X Not Critical   

7.8 DETERMINE the building ventilation noble gas release rate once per shift by completing the following steps:

7.8.1 For each monitor listed on Attachment 4, COMPLETE one of the following four steps:

7.8.1.1 From the CONTINUOUS AIR MONITORING SYSTEM OPERATOR CONSOLE, O-CONS-90-361A OR O-CONS-90-362A, Panel 1-9-44, OBTAIN the noble gas release rate by entering the keystrokes shown below. RECORD the noble gas release rate( $\mu$ Ci/sec) in the appropriate columns of Attachment 4 for each operable building ventilation radiation monitor. If the release is negative, record 0.00.

Keystrokes:

[DATA], 3-Digit CAM Code, [-], [1], [ENTER], [PRINT], [FILE], [ENTER]

CAM Code		CAM Code	
0-RM-90-252	001	2-RM-90-251	006
1-RM-90-249	002	3-RM-90-251	007
2-RM-90-249	003	3-RM-90-250	008
3-RM-90-249	004	1-RM-90-250	009
1-RM-90-251	005	2-RM-90-250	010



columns on Attachment 4.

Standard:

**DETERMINED** correct release factor based on fan status and  
**RECORDED** on Attachment 4.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_\_

7.8.3 MULTIPLY the release rate by the release factor and  
RECORD the answer under the column labeled "Actual  
Rate" on Attachment 4.

Standard:

**MULTIPLIED** release rate by the release factor and **RECORDED** on  
Attachment 4.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

7.8.4 For each unit, SUM the actual rates for the RM-90-  
249, RM-90-250 and RM-90-251 monitors. RECORD the  
unit total release rates in the appropriate columns  
on Page 4 of Attachment 4.

Standard:

**SUMMED** the actual rates and **RECORDED** the unit total release  
rate on Page 4 of Attachment 4.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical X Not Critical   

7.8.5 SUM the three unit total release rates and the 0-RM-90-252 actual rate. RECORD the building ventilation release rate on Page 4 of Attachment 4.

Standard:

**SUMMED** the three unit total release rates and the 90-252 actual rate and **RECORDED** on Attachment 4.

SAT    UNSAT    N/A    COMMENTS:   

NOTE:

For reporting purposes, the release fraction should only be recorded to three decimal places. For examples:

1. A release fraction of 0.12345 should be recorded as 0.123.
2. A release fraction of 0.000012 should be recorded as 0.000.

\*\*\*\*\*

Performance Step : Critical X Not Critical   

7.8.6 DETERMINE the building ventilation release fraction by dividing the total building ventilation release rate by 1.50 E+05 (or 150,000)  $\mu$ Ci/sec. RECORD the fraction on both Attachment 2 and Attachment 4.

Standard:

**DIVIDED** total building ventilation release rate (from Step 7.8.5) by 1.50 E+05 and **RECORDED** result in Attachments 2 and 4.

SAT    UNSAT    N/A    COMMENTS:

\*\*\*\*\*

Performance Step :                      Critical\_\_ Not Critical\_X

7.8.7        VERIFY the acceptance criteria as given in Step  
              6.2.1 has been met. The building ventilation  
              release fraction must be less than or equal to  
              0.90. If the acceptance criteria has failed,  
              immediately CONTACT the Shift Operation Supervisor.  
              (AC)

Standard:

**VERIFIED** acceptance criteria of building ventilation release  
fraction  $\leq$  0.90.

SAT\_\_ UNSAT\_\_ N/A\_\_    COMMENTS:\_\_\_\_\_

\*\*\*\*\*

END OF TASK

STOP TIME\_\_\_\_\_

TITLE: AIRBORNE EFFLUENT RELEASE RATE

Key

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 3  
 (Page 1 of 3)

Fan Status Report

Unit 1 Fan Status

Week From \_\_\_\_\_ To \_\_\_\_\_

DAY	SHIFT	REACTOR BUILDING									TURBINE BUILDING																RADWASTE BUILDING			AUO INIT.	
		1-RM-90-250									1-RM-90-251								1-RM-90-249								0-RM-90-252				
		Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H		J				
		O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	0		1
FRI	D			B			B			R	X		X		X		X		X		X		X		X					X	
	N																														
SAT	D																														
	N																														
SUN	D																														
	N																														
MON	D																														
	N																														
TUE	D																														
	N																														
WED	D																														
	N																														
THU	D																														
	N																														
TOTAL																															

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 3  
(Page 2 of 3)

Fan Status Report

124

Unit 2 Fan Status

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	REACTOR BUILDING									TURBINE BUILDING																AUO INIT.		
		2-RM-90-250									2-RM-90-251								2- RM-90-249										
		Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H			J	
		O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF		ON	OFF
FRI	D			A			A			A	X		X		X		X		X			X	X			X	X		
	N																					X	X						
SAT	D																												
	N																												
SUN	D																												
	N																												
MON	D																												
	N																												
TUE	D																												
	N																												
WED	D																												
	N																												
THU	D																												
	N																												
TOTAL																													

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 3  
 (Page 3 of 3)

Fan Status Report

Key

Unit 3 Fan Status

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	REACTOR BUILDING									TURBINE BUILDING																AUO INIT.		
		3-RM-90-250									3- RM-90-251								3-RM-90-249										
		Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H			J	
		O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF		ON	OFF
FRI	D			A			A			B	X		X		X		X		X		X			X	X		X		
	N																												
SAT	D																												
	N																												
SUN	D																												
	N																												
MON	D																												
	N																												
TUE	D																												
	N																												
WED	D																												
	N																												
THU	D																												
	N																												
TOTAL																													

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 4  
(Page 1 of 4)

Key

Building Effluent Release Rate Log - Unit 1

Week From \_\_\_\_\_ To \_\_\_\_\_

## Unit 1

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		1-RM-90-250 [009]			1-RM-90-249 [002]			1-RM-90-251 [005]				
		Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D	14.56	1.00	16.56	11.01	1.0	11.01	20.00	1.00	20.00		
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 4  
(Page 2 of 4)Building Effluent Release Rate Log - Unit 2

Week From \_\_\_\_\_ To \_\_\_\_\_

## Unit 2

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		2-RM-90-250 [010]			2-RM-90-249 [003]			2-RM-90-251 [006]				
		Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D	29.00	1.00	29.00	12.96	0.50	6.48	17.53	1.00	17.53		
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 4  
(Page 3 of 4)

Week From \_\_\_\_\_ To \_\_\_\_\_

*Key*  
Building Effluent Release Rate Log - Unit 3

## Unit 3

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		3-RM-90-250 [008]			3-RM-90-249 [004]			3-RM-90-251 [007]				
		Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D	142.00	1.00	182.00	15.71	0.80	12.57	15.25	1.00	5.25		
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 4  
 (Page 4 of 4)

Week From \_\_\_\_\_ To \_\_\_\_\_ Building Effluent Release Rate Log - Unit 0

D A Y	S H I F T	Radwaste Building			Unit Total Release Rates			Building Ventilation Release Rate ( $\mu$ Ci/sec) (7.8.5)	Building Ventilation release Fraction (7.8.6)	Acceptance Criteria	Initials	
		0-RM-90-252 [001]			( $\mu$ Ci/sec)						A U O	Unit Super- visor
		Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Unit 1 (7.8.4)	Unit 2 (7.8.4)	Unit 3 (7.8.4)					
FRI	D	12.73	0.62	7.74	47.57	52.01	11.2	1.12	1.12	$\leq 0.90$		
	N									$\leq 0.90$		
SAT	D									$\leq 0.90$		
	N									$\leq 0.90$		
SUN	D									$\leq 0.90$		
	N									$\leq 0.90$		
MON	D									$\leq 0.90$		
	N									$\leq 0.90$		
TUE	D									$\leq 0.90$		
	N									$\leq 0.90$		
WED	D									$\leq 0.90$		
	N									$\leq 0.90$		
THU	D									$\leq 0.90$		
	N									$\leq 0.90$		

## TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 5  
 (Page 1 of 1)

## Building Ventilation System Release Factors

1-, 2-, and 3- RM-90-250					
Fan Status (Note 1)			Release Factor		
Refuel	Reactor	Turbine	Unit 1	Unit 2	Unit 3
Off	Off	Off	0.00	0.00	0.00
Slow	Slow	Slow	0.49	0.53	0.49
Fast	Slow	Slow	0.63	0.60	0.59
Slow	Fast	Slow	0.64	0.73	0.69
Slow	Slow	Fast	0.72	0.73	0.71
Fast	Fast	Slow	0.77	0.80	0.78
Fast	Slow	Fast	0.86	0.80	0.81
Slow	Fast	Fast	0.87	0.94	0.91
Fast	Fast	Fast	1.00	1.00	1.00

0-RM-90-252			
Number Fans On	0	1	2 Fans
Release Factor	0.00	0.62	1.00

1-RM-90-249, 2-RM-90-249, and 3-RM-90-251					
Number Fans On	0	1	2	3	4
Release Factor	0.00	0.25	0.50	0.75	1.00

1-RM-90-251, 2-RM-90-251, and 3-RM-90-249						
Number Fans On	0	1	2	3	4	5
Release Factor	0.00	0.20	0.40	0.60	0.80	1.00

**NOTE 1:**

If one or more of the fans are off and one or more of the fans are on, assume off fans are on "slow". (This will cover the case where the fans are off, off, slow; off, slow, off; etc.)

**TENNESSEE VALLEY AUTHORITY**

**BROWNS FERRY NUCLEAR PLANT**

**SURVEILLANCE INSTRUCTION**

**0-SI-4.8.B.1.a.1**

**AIRBORNE EFFLUENT RELEASE RATE**

**REVISION 44**

PREPARED BY: ROGER SHIREMAN

PHONE: 2638

RESPONSIBLE ORGANIZATION: RADCHEM, CHEMISTRY

APPROVED BY :ROBERT PITCOCK

DATE: 02/21/2001

EFFECTIVE DATE: 02/22/2001

**LEVEL OF USE: REFERENCE USE**

**QUALITY-RELATED**

REVISION LOG

Procedure Number: 0-SI-4.8.B.1.a.1

Revision Number:0044

Pages Affected: 6.

Pagination Pages: None.

Description of Change:

IC-53 - Clarified criteria for off gas hydrogen analyzer. Requires only one monitor to be in service.

## 1.0 INTRODUCTION

### 1.1 Purpose

This Surveillance Instruction (SI) is used by Browns Ferry Operations and Radiochemical Laboratory personnel to satisfy the following Technical Requirements Manual (TRM) requirements, ODCM requirements, and data recording functions:

- 1.1.1 Airborne effluent release rates in accordance with ODCM Surveillance Requirement 2.2.2.1.1.a.
- 1.1.2 The instrumentation checks required by ODCM Table 2.1-2.
- 1.1.3 The Wide Range Gaseous Effluent Radiation Monitor (WRGERMS), 0-RM-90-306, inoperability requirements in accordance with TABLE 3.3.5-1 of the TRM.
- 1.1.4 The WRGERMS instrumentation check required by TABLE 3.3.5-1 of the TRM.
- 1.1.5 Attachment 11 is used to record data during EOI's and REP conditions.

### 1.2 Scope

- 1.2.1 ODCM Control 1.2.2.1 requires that the general public dose rate from noble gas effluents to be limited to less than 500 mRem per year to the total body and less than 3000 mRem per year to the skin. The Off site Dose Calculation Manual (ODCM) describes the methodology by which the dose rate limits are converted to plant process variables such as the stack noble gas radioactive release rate limit. The limiting release rates for the authorized effluent release points have been calculated as 0.15 curies (Ci) per second for the building level release points and 14.4 Ci per second for the stack.
- 1.2.2 To ensure compliance with ODCM Control 1.2.2.1, each airborne effluent release point is required to be continuously monitored while actively releasing an airborne stream. This is usually accomplished by in-line process instrumentation which has Control Room alarm capabilities. If a monitor is inoperable, releases via that gas stream may continue provided compensatory sampling measures are initiated. Compensatory sampling is accomplished by having the Radiochemical Laboratory personnel obtain and analyze grab samples at a prescribed frequency.

## 1.2 Scope (Continued)

- 1.2.3 Technical Instruction (TI) 15 provides the engineering basis for establishing instrumentation alarm set points, monitor sampling rates, and release point allocation factors for the various plant radiation monitors. The conservative parameters prescribed by TI-15 ensures that the ODCM Control 1.2.2.1 limits are satisfied.
- 1.2.4 Instrumentation checks will be used to provide a reasonable assurance that an unmonitored release does not go undetected. The instrument checks will be performed on the required monitoring instrumentation at a frequency such that a failed monitor is readily detected. The instrument checks will usually consist of data acquisition/instrument readings of such a detail that they will permit the calculation of the total site release rate.

**NOTE:**

The source check formerly in this SI (Rev. 40 and previous Revs) are now in 0-SI-2.1-2.

- 1.2.5 Additionally, this SI provides the pre-planned alternate monitoring instructions for the WRGERMS instrumentation, 0-RM-90-306 and 0-RR-90-360, in the event that the minimum number of operable instrument channels is less than the required number as given in TABLE 3.3.5-1 in the TRM.

## 1.3 Frequency

- 1.3.1 The normal performance band for this SI is one week. The procedure will typically start at 0700 Friday and end 0659 the following Friday.
- 1.3.2 Once per shift, the following checks will be made:
- 1.3.2.1 Release rate information will be obtained for each effluent stream having continuous monitoring capabilities.
  - 1.3.2.2 The overall site release rate will be calculated from the release rate information.
  - 1.3.2.3 Offgas pretreatment and post-treatment monitors, offgas flow rate, and offgas hydrogen concentration will be recorded during main condenser and offgas treatment systems operations.

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1

---

1.3 Frequency (Continued)

1.3.2.4 The WRGERMS instrumentation operability will be demonstrated by an instrumentation check.

1.3.3 Once per day, each effluent radiation monitor shall demonstrate the operability of its sampling rate instrumentation and associated sample flow alarms.

2.0 REFERENCES

2.1 Browns Ferry Nuclear Plant Technical Requirements Manual (TRM).

2.2 Updated Final Safety Analysis Report (UFSAR)

Section 7.12, Process Radiation Monitoring.

Section 9.5, Gaseous Radwaste System (Modified).

2.3 Operating Instructions (OI)

1-, 2-, and 3-OI-90, Radiation Monitoring System

2.4 Surveillance Instructions (SI)

0-SI-2.1-2, Airborne Effluent Radiation Monitor Source Checks.

0-SI-4.8.B.1.a.2, Airborne Effluent Release Rate by Manual Sampling when a Gaseous Effluent Monitor is Inoperable.

1-, 2-, and 3-SI-4.8.B.1.a.3, Off Gas Post-Treatment Release Rate by Manual Sampling.

1-, 2-, and 3-SI-4.8.B.5.a, Off Gas Hydrogen Concentration by Manual Sampling.

2.5 Technical Instructions (TI)

TI-15, Radioactive Gaseous Effluent Engineering Calculations and Measurements.

0-TI-336, Continuous Air Monitor Flow Regulator Adjustment.

2.6 Offsite Dose Calculation Manual (ODCM).

2.7 Part 302 to Title 40 of the Code of Federal Regulations (40 CFR 302), Designation, Reportable Quantities, and Notification.

2.8 Memorandum from John W. Sabados to Masoud Bajestani, Subject: Sampling Set points for the Eberline Continuous Air Monitor (R46 901116 823).

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1

---

2.0 REFERENCES (Continued)2.9 Controlled Vendor Manuals (CVM)Technical Manual for the 250 CAM Monitoring System, BFN-CVM-2083.Technical Manual for the 252 CAM Monitoring System, BFN-CVM-2084.Technical Manual for the 249-251 CAM Monitoring System, BFN-CVM-2085.Technical and Operating Manual for the CT-2B(s) Control Terminal,  
BFN-CVM-2090.2.10 Memorandum from M. Bajestani to J. W. Sabados, Subject: Steam Packing  
Exhauster flow (R40 911018 914).

2.11 Stack Post Mod. Test for DCN W17999 (PMT-256) 20 April, 1993.

2.12 Technical Requirements Manual

2.13 Memorandum from Rick Givens to Phil Chadwell, Subject: Stack Flow  
Requirements (R70 980730 843) [BFPER980545].3.0 PRECAUTIONS AND LIMITATIONS3.1 [NRC/C] Radiation monitors may be removed from service for maintenance,  
calibration, or testing for periods not to exceed 4 hours. If it becomes  
apparent that a monitor cannot be returned to service within the 4  
hours, the Unit Supervisor shall be immediately notified to ensure  
compensatory sampling has been initiated. [LER 260/89021]3.2 The night shifts and day shifts are defined by the day on which the  
shift begins. (i.e. Friday dayshift is Friday 0700-1900, Friday night  
shift is Friday 1900 to Saturday 0700.)4.0 PREREQUISITESThis SI must be verified as the most current approved revision with all  
approved urgent changes attached.5.0 SPECIAL TOOLS AND EQUIPMENT RECOMMENDED

NONE

## 6.0 ACCEPTANCE CRITERIA

- 6.1 Responses which fail to meet the acceptance criteria constitute unsatisfactory surveillance instruction results and require immediate notification of the Unit Supervisor at the time of failure. Failure of release rate acceptance criteria requires notification of the Chemistry Manager. Failure of release rate acceptance criteria will require a National Response Center reportability determination in accordance with Part 302 to Title 40 of the Code of Federal Regulation (40 CFR 302).
- 6.2 The noble gas release rate must be limited such that the off site dose and dose rates are in compliance with ODCM Control 1.2.2.1. This will be accomplished by establishing release rate limits for the building/ground and the stack/elevated release points. The corresponding release rate limits will be checked in accordance with the values listed below.
- 6.2.1 The sum of the building release rate fraction must be less than or equal to 0.90. The building release rate fraction is defined as the radioactive noble gas release rate at each monitored building release point divided by the ODCM building release limit of  $1.50 \text{ E}+05 \text{ } \mu\text{Ci/sec}$ .
- 6.2.2 The stack release rate fraction must be less than or equal to 0.10. The stack release rate fraction is defined as the radioactive noble gas release rate at the stack divided by the ODCM release rate limit of  $1.44 \text{ E}+07 \text{ } \mu\text{Ci/sec}$ .
- 6.2.3 The total site release rate fraction must be less than or equal to 1.00. The total site release rate fraction is defined as the sum of the building and stack release rate fractions.
- 6.2.4 Compensatory sampling measures must be initiated whenever a radiation monitor is out of service and effluent releases are continuing via that release point.

6.3 The radioactive gaseous effluent instrumentation operability shall be demonstrated by performance of shiftly and/or daily instrument checks as noted below.

6.3.1 Shiftly Checks. The following instrumentation checks must be accomplished at least once per shift during the noted periods of required operability. These instrumentation checks will be used to satisfy ODCM Surveillance Requirements in 2.2.2.1.1.a, Table 2.1-2, TRM Table 3.3.5-1, and TRM TSR 3.3.9.1 (noble gas monitor and hydrogen analyzer daily requirements only).

Monitor(s)	Required Period of Operability
1-, 2-, 3-RM-90-249, 1-, 2-, 3-RM-90-250, 1-, 2-, 3-RM-90-251, and 0-RM-90-252	When actively releasing an airborne effluent stream (i.e., vents are open and the ventilation fans are on).
0-RM-90-147 and/or 148	When actively releasing an airborne effluent stream.
0-RM-90-306, and 0-RR-90-360	When one or more of the site units are in either <b>MODES</b> 1 or 2.
1-, 2-, 3-RM-90-265, and/or 1-, 2-, 3-RM-90-266	When actively processing an off gas stream (i.e., unit FCV-66-28 is open).
1-, 2-, 3-H2R-66-96 (Channels A and/or B)	During main condenser offgas treatment system operations.

The shiftly checks shall be accomplished by recording the release rates or release concentrations as displayed on the appropriate control room recorders. If a monitor is out of service during a required period of operability, compensatory sampling measures will be initiated in accordance with the instructions given in Steps 7.7.5, 7.8.1.3, and/or 7.9.1.3.

## 6.3 (Continued)

6.3.2 Daily Checks. The following instrumentation checks must be accomplished at least once per day during the noted periods of required operability. These instrumentation checks will be used to satisfy ODCM surveillance requirements in Table 2.1-2 (sample flow instrumentation and sample flow annunciators only).

Instrumentation	Required Period of Operability
1-, 2-, 3-RM-90-249, 1-, 2-, 3-RM-90-250, 1-, 2-, 3-RM-90-251, and 0-RM-90-252 sample flow instrumentation	When actively releasing an airborne effluent stream (i.e., vents are open and the ventilation fans are on).
0-RM-90-147/148 sample flow rate and 0-FA-90-150 flow abnormal alarm	When actively releasing an airborne effluent stream.
1-, 2-, 3-PA-90-262 sample pressure abnormal alarm	When actively processing an off gas stream (i.e., unit FCV-66-28 is open).

The daily checks shall be accomplished by recording the sample flow rates from the appropriate control room instrumentation and/or testing the alarm annunciator condition. Satisfactory sample flow rate checks must fall within the range specified in the following table. Satisfactory annunciator test results will consist of a simple "go/no-go" test.

If a monitor is out of service during a required period of operability, compensatory sampling measures will be initiated in accordance with the instructions given in Steps 7.7.5, 7.8.1.3, and/or 7.9.1.3. Compensatory sample flow rate measurements are required to be made every four hours, but are not required to satisfy the sample rate limits in the following table.

Monitor	Sample Flow (scfm)	
	Low	High
1-, 2-, 3-RM-90-249 1-, 2-, 3-RM-90-251	1.73	2.27
0-RM-90-252	1.12	1.87
1-, 2-, 3-RM-90-250	3.6	4.4
0-RM-90-147/148	1.1	1.5

- 6.4 The concentration of hydrogen gas in the off gas shall be less than or equal to 4 percent by volume (TRM LCO 3.7.2) as measured by the applicable unit H2R-66-96 Hydrogen Analyzer or as determined from off gas grab samples.
- 6.5 Acceptance criteria determination steps will be designated by (AC).
- 6.6 The off gas pretreatment radiation levels (2-, and 3-RM-90-157) and the off gas flow rate (2-FR-66-111, and 3-FR-66-111) instrumentation readings are required for monitoring system performance and for failed fuel performance calculations. There are no Technical Specification surveillance requirements associated with these observations. The observation will be made shiftly during periods of main condenser/offgas treatment system operation.

Date \_\_\_\_\_

## 7.0 PROCEDURE STEPS

INITIALS

**NOTES:**

- (1) All notes, remarks, and comments are to be recorded on Attachment 1. Each statement is to be numbered and cross-referenced to the appropriate attachment or SI step.
- (2) Attachments not used in the performance of this SI do not need to be included in the completed SI package.

- 7.1 **OBTAIN** permission from the Unit 2 and Unit 3 Supervisors to perform this instruction.

\_\_\_\_\_  
U2

- 7.2 [NRC/C] **NOTIFY** the Unit Operator (U2) of the intent to begin this instruction. [RPT 82-16, LER 259/8232]

\_\_\_\_\_  
U3

- 7.3 **RECORD** the date/time started and the plant conditions on Attachment 1, Surveillance Instruction Review Form.

**NOTE:**

SI step performance and acceptance criteria verification are to be noted on the appropriate SI attachments for Steps 7.4 through 7.13.

- 7.4 **REVIEW** the Precautions and Limitations in Section 3.0. **INITIAL** on Attachment 2.

- 7.5 **ENSURE** that all Prerequisites in Section 4.0 have been met. **INITIAL** on Attachment 2.

7.6 **OBTAIN** the following information.

- 7.6.1 Once per shift, **RECORD** on Attachment 2 each unit's 8 hour average power level in megawatts thermal (MWT). If shutdown enter 0.

**NOTE:**

Due to variations in required performance frequency and to minimize impact on personnel, Steps 7.7 and 7.8, 7.9 through 7.13 can be completed independently. If the stack flow instrumentation (0-FI-90-271) is inoperable or out of service and 0-FI-90-348 is not used, Attachment 7 must be completed before Step 7.9 can be completed.

7.7 **Fan Status Determination**

7.7.1 RM-90-249

- 7.7.1.1 Once per shift: **RECORD** on Attachment 3 the operating status of each ventilation fan monitored by this CAM. The status shall be indicated with "X" in the appropriate ON/OFF column.

- 7.7.1.2 Once per day (night shift): If all fans serviced by this CAM are off and the monitor is out of service, **VERIFY** the exhausts' fan control switches are tagged out of service and **VERIFY** the fan dampers are closed.

7.7.2 RM-90-250

Once per shift: **CHECK** the status of each fan contributing flow to the ventilation path monitored by the RM-90-250 CAM. **USE** an "A" or "B" to denote which fan is operating. **INDICATE** the fan status by using the "O" column for all fans off (if applicable), the "S" column for fans on slow, or the "F" column for fans on fast.

7.7 Fan Status Determination (Continued)

## 7.7.3 RM-90-251

7.7.3.1 Once per shift: RECORD on Attachment 3 the operating status of each ventilation fan monitored by this CAM. The status shall be indicated with "X" in the appropriate ON/OFF column.

7.7.3.2 Once per day (Night shift): If all fans serviced by this CAM are off and the monitor is out of service, ENSURE the exhausts' fan control switches are tagged out of service and VERIFY the fan dampers are closed.

## 7.7.4 0-RM-90-252 (Unit 1 Only)

Once each shift: RECORD the operating status of fans monitored by this CAM with an "X" in the appropriate column of Attachment 3. USE column "0" for all fans off, column "1" for one fan on, or column "2" for two fans on.

7.7 Fan Status Determination (Continued)

- 7.7.5 If any of the indicated fans (stack dilution or CAM) are operating and the corresponding monitor is declared inoperable, **CONTACT** the Chemical Laboratory and **ENSURE** that compensatory sampling in accordance with 0-SI-4.8.B.1.a.2 is being conducted.
- 7.7.6 Prior to 0659 Friday morning, **TOTAL** the number of shifts each column of Attachment 3 was marked. **RECORD** the totals at the bottom of Attachment 3.
- 7.8 **DETERMINE** the building ventilation noble gas release rate once per shift by completing the following steps and VERIFY that all monitors with an open release path are not in standby:
- 7.8.1 For each monitor listed on Attachment 4, **COMPLETE** one of the following four steps:
- 7.8.1.1 From the CONTINUOUS AIR MONITORING SYSTEM OPERATOR CONSOLE, 0-CONS-90-361A or 0-CONS-90-362A, Panel 1-9-44, **OBTAIN** the noble gas release rate by entering the keystrokes shown below. **RECORD** the noble gas release rate ( $\mu\text{Ci/sec}$ ) in the appropriate columns of Attachment 4 for each operable building ventilation radiation monitor. If the release rate is negative, **RECORD** 0.000.

**NOTE:**

Leading zeros do not have to be entered for CAM code.

## Keystrokes:

[DATA], 3-Digit CAM Code, [-], [1], [ENTER],  
[PRINT], [FILE], [ENTER]

CAM	Code	CAM	Code
0-RM-90-252	001	2-RM-90-251	006
1-RM-90-249	002	3-RM-90-251	007
2-RM-90-249	003	3-RM-90-250	008
3-RM-90-249	004	1-RM-90-250	009
1-RM-90-251	005	2-RM-90-250	010

## 7.8 (Continued)

- 7.8.1.2 If the operator consoles 0-CONS-90-361A or 0-CONS-90-362A are not available and the CAMs are operating, OBTAIN the release rate data from the local display on each CAM by selecting channel 1 with the CAM thumb wheel. If the release rate is negative, RECORD 0.000.

**NOTE:**

If 0-SI-4.8.B.1.a.2 is in effect for the CAMs, the Chemical Laboratory will report the release rate in  $\mu\text{Ci/sec}$  for each grab sample. The reported release rate will assume a maximum flow rate and will yield a conservative (high) release value.

- 7.8.1.3 For out of service and/or inoperable CAMs with ventilation system in service, CONTACT the Chemical Laboratory and ENSURE that manual sampling is being accomplished in accordance with 0-SI-4.8.B.1.a.2. RECORD on Attachment 4 the release rate for each inoperable CAM as reported by the Chemical Laboratory.
- 7.8.1.4 If the ventilation system for a CAM is totally isolated (i.e., no environmental releases occurring), RECORD "OOS" in all three columns on Attachment 4.
- 7.8.2 For each monitor, USE Attachments 3 and 5 and DETERMINE the release factor based on fan status. RECORD the release factors in the appropriate columns on Attachment 4.
- 7.8.3 MULTIPLY the release rate by the release factor and RECORD the answer under the column labeled "Actual Rate" on Attachment 4.
- 7.8.4 For each unit, SUM the actual rates for the RM-90-249, RM-90-250, and RM-90-251 monitors. RECORD the unit total release rates in the appropriate columns on Page 4 of Attachment 4.

## 7.8 (Continued)

- 7.8.5 **SUM** the three unit total release rates and the 0-RM-90-252 actual rate. **RECORD** the building ventilation release rate on Page 4 of Attachment 4.

**NOTE:**

For reporting purposes, the release fraction should only be recorded to three decimal places. For examples:

1. A release fraction of 0.12345 should be recorded as 0.123.
2. A release fraction of 0.00012 should be recorded as 0.000.

- 7.8.6 **DETERMINE** the building ventilation release fraction by dividing the total building ventilation release rate by  $1.50 \text{ E}+05$  (or 150,000)  $\mu\text{Ci/sec}$ . **RECORD** the fraction on both Attachment 2 and Attachment 4.
- 7.8.7 **VERIFY** the acceptance criteria as given in Step 6.2.1 has been met. The building ventilation release fraction must be less than or equal to 0.90. If the acceptance criteria has failed, immediately **CONTACT** the Unit Supervisors. (AC)
- 7.9 **DETERMINE** the elevated (stack) noble gas release rate once per shift by completing the following steps:
- 7.9.1 **RECORD** the highest noble gas count rates (counts per second, cps) for the 0-RM-90-147 and 0-RM-90-148 monitors in the appropriate columns of Attachment 6 in accordance with one of the following steps:
- 7.9.1.1 If both the 0-RR-90-147 and at least one of the radiation monitors are operable, **OBTAIN** the necessary information from 0-RR-90-147 on Panel 9-2. If applicable, **RECORD** "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.

## 7.9 (Continued)

- 7.9.1.2 If 0-RR-90-147 is inoperable and at least one of the radiation monitors is operable, OBTAIN the necessary data from the 0-RM-90-147B and/or 0-RM-90-148B monitors located on Panel 1-9-10. If applicable, RECORD "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.
- 7.9.1.3 If both monitors are inoperable, CONTACT the Chemical Laboratory and ENSURE that manual sampling has been initiated in accordance with 0-SI-4.8.B.1.a.2. RECORD "OOS" in the appropriate columns of Attachment 6.

**NOTE:**

If 0-SI-4.8.B.1.a.2 is in effect for the stack monitors, the Chemical Laboratory will report the stack release rate in  $\mu\text{Ci/sec}$  for each grab sample. The reported release rate will assume a maximum flow rate and will yield a conservative (high) release value. In this case, Steps 7.9.2 and 7.9.3 are not applicable.

- 7.9.2 DETERMINE the stack flow rate and RECORD in the appropriate column of Attachment 6.
- 7.9.2.1 If 0-FI-90-271 on Panel 1-9-53 is operable, RECORD the stack flow in standard cubic feet per minute (scfm).
- 7.9.2.2 If 0-FI-90-271 on Panel 1-9-53 is inoperable, the flow can be determined from 0-FI-90-348 on Panel 25-412 in the WRGERMS building. If 0-FI-90-348 is used for the flow, MAKE a note in the remarks log that 0-FI-90-348 was used.
- 7.9.2.3 If 0-FI-90-271 on Panel 1-9-53 is inoperable and 0-FI-90-348 is not used, ESTIMATE the stack flow every four hours using Attachment 7. RECORD the total stack flow in scfm on Attachment 7. RECORD on Attachment 6 the most current value of the 4 hour observations from Attachment 7.

## 7.9 (Continued)

- 7.9.3 **DETERMINE** the stack release rate by using the gross count rate and total stack flow in accordance with the following equation. When there are two gross count rate readings, **USE** the highest gross count rate. **IF** both monitors (0-RM-90-147/8) **are INOP** **CONTINUE** with Step 7.9.4.

$$\frac{\text{Total Stack Flow} \times \text{Gross Count Rate} \times 1.23 \text{ E-03 } \mu\text{Ci/sec}}{(\text{scfm}) \quad (\text{cps}) \quad \text{cps-scfm}}$$

- 7.9.4 **RECORD** in the appropriate column of Attachment 6 either the release rate calculated in Step 7.9.3 or as reported by the Chemical Laboratory for an inoperable monitor.

**NOTE:**

Alternative sampling for the WRGERM monitor is satisfied by taking readings from the normal stack release monitors, 0-RM-90-147 and/or 0-RM-90-148, when operable or by manual sampling in accordance with 0-SI-4.8.B.1.a.2 when the normal stack monitors are inoperable. This alternate sampling succession satisfies the requirement for a preplanned alternate method as required in TABLE 3.3.5-1 of the TRM.

- 7.9.5 Wide Range Gaseous Effluent Radiation Monitor (WRGERM), 0-RM-90-306, Panel 2-9-10.
- 7.9.5.1 If the monitor is inoperable, **RECORD** "INOP" in the appropriate column of Attachment 6 and **CONTINUE** with Step 7.9.6. Otherwise, **CONTINUE** with Step 7.9.5.2.
- 7.9.5.2 **ENSURE** 0-RM-90-306 is in the Sample Mode.
- 7.9.5.3 **RECORD** the noble gas release rate in  $\mu\text{Ci/sec}$  in the appropriate column of Attachment 6. **RECORD** results to two decimal places (e.g. 2.95E 00).
- 7.9.6 If the WRGERM monitor is inoperable for a period greater than one day, **CONTACT** the Chemistry Manager. If the monitor remains inoperable for a period of seven days, a special report must be submitted to the NRC in accordance with the ODCM.

---

7.9 (Continued)

- 7.9.7 If all release streams to the stack are isolated, USE a release rate factor of 0.00. Otherwise, USE 1.00. RECORD the release rate factor in the appropriate column of Attachment 6.
- 7.9.8 CALCULATE the actual release rate by multiplying the highest release rate (0-RM-90-147/148 or 0-RM-90-306) by the release factor. RECORD the information in the Actual Release Rate column on Attachment 6.

**NOTE:**

For reporting purposes, the release fractions should only be recorded to three decimal places. For example, a release fraction of 0.12345 should be recorded only as 0.123.

- 7.9.9 CALCULATE the stack release fraction by dividing the actual release rate by  $1.44 \text{ E}+07$  (or 14,400,000)  $\mu\text{Ci/sec}$ . RECORD this information on both Attachment 2 and Attachment 6.
- 7.9.10 VERIFY the acceptance criteria as given in Step 6.2.2 has been met. The stack release fraction must be less than or equal to 0.10. If the acceptance criteria has failed, immediately CONTACT the Unit Supervisors. (AC)
- 7.10 CALCULATE the total site release fraction by adding the building ventilation and stack release fractions on Attachment 2. VERIFY the site release fraction acceptance criteria as given in Step 6.2.3 has been met. If the acceptance criteria has failed, immediately CONTACT the Unit Supervisors. (AC)

- 7.11 Once per shift, RECORD the Unit 2, and 3 offgas instrumentation readings on Attachment 8. (Unit 1 log has been deleted.)
- 7.11.1 In the "FCV-66-28" column PLACE an "X" in the appropriate box (open or closed).
- 7.11.2 If the unit's FCV-66-28 is CLOSED, RECORD all other offgas readings as "NA" (not applicable). CONTINUE with Step 7.11.6.
- 7.11.3 If the unit is not under main condenser/offgas treatment system operations, RECORD the offgas flowrate recorder, offgas pretreatment radiation monitor, and the offgas recombiner readings as "NA" (not applicable, i.e., not required). CONTINUE with Step 7.11.5.
- 7.11.4 RECORD the offgas flowrate recorder [Readings from FR-66-20 (Units 2 and 3) should be recorded if FR-66-111 is inoperable. If readings are taken from FR-66-20 on Units 2 or 3, MAKE a note in the remarks log that readings were taken from FR-66-20], offgas pretreatment radiation monitor, the offgas post-treatment radiation monitors, and the offgas recombiner readings. If the instrumentation is inoperable, RECORD the readings as "INOP". For the FR-66-111, if the narrow range is saturated (upscale; most readings are greater than 30 scfm), use the wide range recorder; otherwise use the narrow range.
- 7.11.5 If both of the offgas post-treatment monitors (RM-90-265 and RM-90-266) for a particular unit are inoperable and the unit FCV-66-28 valve is OPEN, CONTACT the Chemical Laboratory and ENSURE that manual sampling has been initiated in accordance with the applicable units 1-, 2-, 3-SI-4.8.B.1.a.3.
- 7.11.6 If the observations have been complete for all units, CONTINUE with Step 7.12. Otherwise, CONTINUE with the next unit.

7.12 Once per day (day shift), **RECORD** on Attachment 9 the various radiation monitor's sample flow rate and/or the abnormal sampling annunciator response in accordance with the following instructions:

7.12.1 GE Stack Gas Monitor: **RECORD** the sample flow rate from the STACK GAS SAMPLE FLOW indicator/transmitter, 0-FIT-90-153.

7.12.2 Continuous Air Monitors:

7.12.2.1 From the CONTINUOUS AIR MONITORING SYSTEM OPERATOR CONSOLE, 0-CONS-90-361A or 0-CONS-90-362A, Panel 1-9-44, **OBTAIN** the noble gas sampling rate by entering the keystrokes shown below. **RECORD** the noble gas sampling rate (scfm) in the appropriate columns of Attachment 9 for each operable building ventilation radiation monitor.

7.12.2.2 If the operator consoles 0-CONS-90-361A or 0-CONS-90-362A are not available and the CAMs are operating, **OBTAIN** the sampling rate data from the local display on each CAM by selecting channel 15 with the CAM thumb wheel.

7.12.2.3 If the sampling flow rate data is not available, **REQUEST** the US to declare the CAM inoperable, **CONTACT** the Chemical Laboratory, and **ENSURE** manual sampling has been initiated in accordance with 0-SI-4.8.B.1.a.2.

Keystrokes:

[DATA], 3-Digit CAM Code, [-], [15], [ENTER],  
[PRINT], [FILE], [ENTER]

CAM	Code	CAM	Code
0-RM-90-252	001	2-RM-90-251	006
1-RM-90-249	002	3-RM-90-251	007
2-RM-90-249	003	3-RM-90-250	008
3-RM-90-249	004	1-RM-90-250	009
1-RM-90-251	005	2-RM-90-250	010

## 7.12 (Continued)

**NOTE:**

The following alarm annunciators will be tested during the performance of Steps 7.12.3 and 7.12.4. Appropriate communications must be established with the unit control room(s) prior to initiating the alarm.

0-FA-90-150	STACK GAS SAMPLE FLOW ABNORMAL (1-XA-55-3A, Window 27)
1-PA-90-262	OFFGAS SAMPLE LINE PRESSURE ABNORMAL (1-XA-55-4C, Window 28)
2-PA-90-262	OG POST TRTMT SAMPLE LINE PRESS ABNORMAL (2-XA-55-4C, Window 28)
3-PA-90-262	OFFGAS SAMPLE LINE PRESSURE ABNORMAL (3-XA-55-4C, Window 28)

## 7.12.3 Stack Sample Flow Abnormal

**NOTE:**

All manipulations are performed from the Stack unless noted otherwise.

- 7.12.3.1 **ESTABLISH** communications with Unit 1 Operator.
- 7.12.3.2 **VERIFY** 0-FA-90-150, STACK GAS SAMPLE FLOW ABNORMAL on 1-XA-55-3A window 27 on Panel 1-9-3 RESET.
- 7.12.3.3 **OBSERVE** 0-FIT-90-153, STACK GAS SAMPLE FLOW indication.
- 7.12.3.4 **PLACE** 0-FC-90-153, STACK GAS SAMPLE FLOW CONTROLLER to MAN.
- 7.12.3.5 **PLACE** 0-FC-90-153, STACK GAS SAMPLE FLOW CONTROLLER valve positioner to OPEN.
- 7.12.3.6 **WHEN** 0-FIT-90-153, STACK GAS SAMPLE FLOW indicates 3.0 SCFM or greater, THEN  
**VERIFY** 0-FA-90-150, STACK GAS SAMPLE FLOW ABNORMAL IN ALARM.
- 7.12.3.7 **PLACE** 0-FC-90-153, STACK GAS SAMPLE FLOW CONTROLLER valve positioner to STOP.
- 7.12.3.8 **PLACE** 0-FC-90-153, STACK GAS SAMPLE FLOW CONTROLLER to AUTO.

## 7.12 (Continued)

- 7.12.3.9 **OBSERVE** 0-FIT-90-153, STACK GAS SAMPLE FLOW indication returns to approximately the value observed in Step 7.12.3.3.
- 7.12.3.10 **VERIFY** 0-FA-90-150, STACK GAS SAMPLE FLOW ABNORMAL will RESET.
- 7.12.3.11 IF 0-FA-90-150, STACK GAS SAMPLE FLOW ABNORMAL fails to alarm or reset and 0-RM-90-147/148 are operable, THEN
- PERFORM** Attachment 10 to record sample flow readings every four hours.
- 7.12.4 Offgas Post-Treatment Sample Flow Abnormal
- 7.12.4.1 **NOTIFY** the Unit UOs that they will receive annunciation on the following alarms:
- |             |   |
|-------------|---|
| 1-PA-90-262 | OFFGAS SAMPLE LINE PRESSURE ABNORMAL<br>(1-XA-55-4C, Window 28)     |
| 2-PA-90-262 | OG POST TRTMT SAMPLE LINE PRESS<br>ABNORMAL (2-XA-55-4C, Window 28) |
| 3-PA-90-262 | OFFGAS SAMPLE LINE PRESSURE ABNORMAL<br>(3-XA-55-4C, Window 28)     |
- 7.12.4.2 On Panel 25-94 in the Offgas Post-Treatment Building, **CLOSE** the unit 90-319A valve.
- 7.12.4.3 **VERIFY** with the UO that the annunciator is in ALARM.  
(AC)
- 7.12.4.4 **OPEN** the unit 90-319A valve.
- 7.12.4.5 **VERIFY** with the UO that the annunciator will CLEAR when reset. (AC)
- 7.12.4.6 If PA-90-262 fails the AC and RM-90-265/266 are operable with the FCV-66-28 valve open, **USE** Attachment 10 to record the sample flow readings every 4 hours.
- 7.12.4.7 **CONTINUE** with the next unit, until all three unit offgas post-treatment system have been completed.

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1

Date \_\_\_\_\_

INITIALS

- 7.13 **PERFORM** the following reviews at the completion of each shift or as stated:
- 7.13.1 Unit Supervisor: **PERFORM** Independent Verification of calculations and Acceptance Criteria on Attachments 2, 4, 6, 7, 8, and 9.
- 7.13.2 STA: **REVIEW** the data for Technical Requirements Manual and ODCM compliance.
- 7.14 **PERFORM** the following during night shift:
- 7.14.1 **MAKE** a copy of the up-to-date Attachments 3, 6, and 8. **PLACE** the copies in a folder marked for the Radiochemical Laboratory pickup. **KEEP** the folder at the log AUO's desk until picked up by a Chemistry person.

**NOTE:**

The following steps are to be performed and initialed at the end of the SI performance week.

- 7.15 **REVIEW** all applicable attachments and **VERIFY** they are complete. \_\_\_\_\_
- 7.16 **ENSURE** all initials which appear in this instruction have been properly recorded and identified as required on Attachment 1. This includes, but is not limited to AUOs, Unit Supervisors, Shift Manager, and STAs. \_\_\_\_\_
- 7.17 **ENSURE** all Acceptance Criteria listed in Step 6.0 were met. \_\_\_\_\_
- 7.18 For each Acceptance Criteria failure, **ENSURE** test deficiency packages have been initiated. **ENSURE** each TD has been identified in the Remarks Log. **NA** if no TDs have been identified. \_\_\_\_\_
- 7.19 **COMPLETE** Attachment 1 up to the Unit Supervisor review. \_\_\_\_\_
- 7.20 **NOTIFY** the Unit 2 UO and the Unit Supervisors that this instruction is complete. \_\_\_\_\_

8.0 ILLUSTRATIONS/ATTACHMENTS

- 8.1 Attachment 1, Surveillance Instruction Review Form
- 8.2 Attachment 2, Site Effluent Release Rate Summary
- 8.3 Attachment 3, Fan Status Report
- 8.4 Attachment 4, Building Effluent Release Rate Log
- 8.5 Attachment 5, Building Ventilation System Release Factors
- 8.6 Attachment 6, Elevated Effluent Release Rate Log
- 8.7 Attachment 7, Airborne Effluent for Total Stack Flow Rates
- 8.8 Attachment 8, Offgas Instrumentation Log
- 8.9 Attachment 9, Monitor Sample Flow Rate and Annunciator Log
- 8.10 Attachment 10, Sample Flow Abnormal Log
- 8.11 Attachment 11, EPIP Release Rate Log

END OF TEXT

SURVEILLANCE INSTRUCTION REVIEW FORM

REASON FOR TEST: \_\_\_\_\_  
\_\_\_\_\_ Scheduled Surveillance \_\_\_\_\_ DATE/TIME STARTED \_\_\_\_\_  
\_\_\_\_\_ System Inoperable (Explain in Remarks) \_\_\_\_\_ DATE/TIME COMPLETED \_\_\_\_\_  
\_\_\_\_\_ Maintenance (WO/WR# \_\_\_\_\_) PLANT CONDITIONS U1: \_\_\_\_\_  
\_\_\_\_\_ Other (Explain in Remarks) \_\_\_\_\_ U2: \_\_\_\_\_  
PRE-TEST REMARKS: \_\_\_\_\_ U3: \_\_\_\_\_

PERFORMED BY: \_\_\_\_\_  
\_\_\_\_\_ Initials \_\_\_\_\_ Name (Print) \_\_\_\_\_ Name (Signature) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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 Supervisors shall  
determine if an LCO exists LCO \_\_\_\_\_ Yes \_\_\_\_\_ No

U2 Unit Supervisor - \_\_\_\_\_ Date \_\_\_\_\_  
U3 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 QUALIFIED REVIEWER (OPS) - \_\_\_\_\_ Date \_\_\_\_\_  
=====

SCHEDULING COORDINATOR - \_\_\_\_\_ Date \_\_\_\_\_  
=====

POST-TEST REMARKS: \_\_\_\_\_  
\_\_\_\_\_ FREQ - O/W  
\_\_\_\_\_ FREQ IN RO -  
\_\_\_\_\_ KEY -  
\_\_\_\_\_  
\_\_\_\_\_

UNIT 0

0-SI-4.8.B.1.a.1

ATTACHMENT 1

(Page 2 of 3)

Week From \_\_\_\_\_ To \_\_\_\_\_

STA DAILY REVIEW (INITIALS/TIME)

[illegible]

Night Shift	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
Shift Technical	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>	<u>    </u> / <u>    </u>
Advisor (STA)							

Continued from Attachment 1, Page 1:

PERFORMED BY: (List All Persons Whose Initials Appear in Instruction)

INITIALS

NAME (PRINT)

NAME (SIGNATURE)

[illegible]

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 1  
(Page 3 of 3)

---

Remarks Log

Week From \_\_\_\_\_ To \_\_\_\_\_

Remark Number	Attachment or Step	Remarks	Time	Date	Initials

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 2  
 (Page 1 of 1)

Week From THIS WEEK To \_\_\_\_\_

Site Effluent Release Rate Summary

D A Y	S H I F T	SI STEP		Reactor Power (MWT)			Building Ventilation Release Rate Fraction (7.8.6)	Stack Release Rate Fraction (7.9.9)	Total Site Release Rate Fraction (7.10)	Acceptance Criteria	Initials	
		7.4	7.5	Unit 1 (7.6.1)	Unit 2 (7.6.1)	Unit 3 (7.6.1)					A U O	Unit Super- visor
FRI	D	TS	TS	0	3453	3455				≤ 1.00		
	N									≤ 1.00		
SAT	D									≤ 1.00		
	N									≤ 1.00		
SUN	D									≤ 1.00		
	N									≤ 1.00		
MON	D									≤ 1.00		
	N									≤ 1.00		
TUE	D									≤ 1.00		
	N									≤ 1.00		
WED	D									≤ 1.00		
	N									≤ 1.00		
THU	D									≤ 1.00		
	N									≤ 1.00		

\*Initials added as a result of BFPER960634.

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 3  
 (Page 1 of 3)

**Fan Status Report****Unit 1 Fan Status**

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	REACTOR BUILDING									TURBINE BUILDING																RADWASTE BUILDING			AUO INIT.	
		1-RM-90-250									1-RM-90-251								1-RM-90-249								0-RM-90-252				
		Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H		J				
		O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	0		1
FRI	D																														
	N																														
SAT	D																														
	N																														
SUN	D																														
	N																														
MON	D																														
	N																														
TUE	D																														
	N																														
WED	D																														
	N																														
THU	D																														
	N																														
TOTAL																															

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 3  
(Page 2 of 3)

Fan Status Report

Unit 2		Fan Status									Week From _____ To _____																	
D A Y	S H I F T	REACTOR BUILDING									TURBINE BUILDING																AUO INIT.	
	2-RM-90-250									2-RM-90-251								2- RM-90-249										
	Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H		J		
	O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON		OFF
FRI	D																											
	N																											
SAT	D																											
	N																											
SUN	D																											
	N																											
MON	D																											
	N																											
TUE	D																											
	N																											
WED	D																											
	N																											
THU	D																											
	N																											
TOTAL																												

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 3  
 (Page 3 of 3)

**Fan Status Report****Unit 3****Fan Status**

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	REACTOR BUILDING												TURBINE BUILDING																AUO INIT.
		3-RM-90-250												3- RM-90-251								3-RM-90-249								
		Refuel			Reactor			Turbine			A		B		C		D		E		F		G		H		J			
		O	S	F	O	S	F	O	S	F	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF		
FRI	D																													
	N																													
SAT	D																													
	N																													
SUN	D																													
	N																													
MON	D																													
	N																													
TUE	D																													
	N																													
WED	D																													
	N																													
THU	D																													
	N																													
TOTAL																														

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 4  
(Page 1 of 4)Building Effluent Release Rate Log - Unit 1

Week From \_\_\_\_\_ To \_\_\_\_\_

## Unit 1

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		1-RM-90-250 [009]			1-RM-90-249 [002]			1-RM-90-251 [005]				
		Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D											
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 4  
(Page 2 of 4)Building Effluent Release Rate Log - Unit 2

Week From \_\_\_\_\_ To \_\_\_\_\_

## Unit 2

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		2-RM-90-250 [010]			2-RM-90-249 [003]			2-RM-90-251 [006]				
		Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D											
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 4  
 (Page 3 of 4)

Building Effluent Release Rate Log - Unit 3

Week From \_\_\_\_\_ To \_\_\_\_\_

## Unit 3

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		3-RM-90-250 [008]			3-RM-90-249 [004]			3-RM-90-251 [007]				
		Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D											
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 4  
 (Page 4 of 4)

Building Effluent Release Rate Log - Unit 0

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	Radwaste Building			Unit Total Release Rates			Building Ventilation Release Rate (μCi/sec) (7.8.5)	Building Ventilation release Fraction (7.8.6)		Initials	
		0-RM-90-252 [001]			(μCi/sec)						A U O	Unit Super- visor
		Release Rate (μCi/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate (μCi/sec) (7.8.3)	Unit 1 (7.8.4)	Unit 2 (7.8.4)	Unit 3 (7.8.4)					
FRI	D									≤ 0.90		
	N									≤ 0.90		
SAT	D									≤ 0.90		
	N									≤ 0.90		
SUN	D									≤ 0.90		
	N									≤ 0.90		
MON	D									≤ 0.90		
	N									≤ 0.90		
TUE	D									≤ 0.90		
	N									≤ 0.90		
WED	D									≤ 0.90		
	N									≤ 0.90		
THU	D									≤ 0.90		
	N									≤ 0.90		

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 5  
 (Page 1 of 1)

## Building Ventilation System Release Factors

1-, 2-, and 3- RM-90-250					
Fan Status (Note 1)			Release Factor		
Refuel	Reactor	Turbine	Unit 1	Unit 2	Unit 3
Off	Off	Off	0.00	0.00	0.00
Slow	Slow	Slow	0.49	0.53	0.49
Fast	Slow	Slow	0.63	0.60	0.59
Slow	Fast	Slow	0.64	0.73	0.69
Slow	Slow	Fast	0.72	0.73	0.71
Fast	Fast	Slow	0.77	0.80	0.78
Fast	Slow	Fast	0.86	0.80	0.81
Slow	Fast	Fast	0.87	0.94	0.91
Fast	Fast	Fast	1.00	1.00	1.00

0-RM-90-252			
Number Fans On	0	1	2 Fans
Release Factor	0.00	0.62	1.00

1-RM-90-249, 2-RM-90-249, and 3-RM-90-251					
Number Fans On	0	1	2	3	4
Release Factor	0.00	0.25	0.50	0.75	1.00

1-RM-90-251, 2-RM-90-251, and 3-RM-90-249						
Number Fans On	0	1	2	3	4	5
Release Factor	0.00	0.20	0.40	0.60	0.80	1.00

**NOTE 1:**

If one or more of the fans are off and one or more of the fans are on, assume off fans are on "slow". (This will cover the case where the fans are off, off, slow; off, slow, off; etc.)

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 6  
 (Page 1 of 2)

Elevated Effluent Release Rate Log

Week From \_\_\_\_\_ To \_\_\_\_\_

		0-RM-90-147	0-RM-90-148		STACK			NOTES FOR PAGE 1
	S	Red Pen	Green Pen		FLOW RATE		STACK	
D	H	GROSS	GROSS	HIGHEST	0-FI-90-271		RELEASE	NOTE 1: MINIMUM ACCEPTABLE FLOWRATE
A	I	COUNT	COUNT	GROSS	INOP<16,366		RATE	FOR 0-FI-90-271 OPERABILITY IS
Y	F	RATE	RATE	COUNT	(NOTES 1 & 5)	CONVER-	(NOTE 2)	16,366 SCFM (SEE NOTE 5)
	T	(CPS)	(CPS)	RATE	-OR-	SION	( $\mu$ Ci/SEC)	NOTE 2: DATA FROM MANUAL SAMPLING
		(7.9.1)	(7.9.1)	(CPS)	ATTACH 7	FACTOR	(7.9.3 &	RESULTS OR 0-90-147/148[(STACK FLOW) X
-	-	-----	-----	-----	(7.9.2)	-----	7.9.4)	(HIGHEST GROSS COUNT RATE) X 1.23E-03].
F	D					1.23E-03		NOTE 5: THE MINIMUM STACK FLOW RATE WAS
R	N					1.23E-03		REVISED TO 16,366 SCFM (BEPER980545).
S	D					1.23E-03		NOTES FOR PAGE 2
A	N					1.23E-03		NOTE 3: USE THE HIGHER OF THE STACK
S	D					1.23E-03		RELEASE RATE OR THE WRGERMS RELEASE
U	N					1.23E-03		RATE.
M	D					1.23E-03		NOTE 4: DIVIDE ACTUAL STACK RELEASE RATE
O	N					1.23E-03		( $\mu$ Ci/SEC) BY 1.44E+07 $\mu$ Ci/SEC.
T	D					1.23E-03		
U	N					1.23E-03		
W	D					1.23E-03		
E	N					1.23E-03		
T	D					1.23E-03		
H	N					1.23E-03		

TITLE: AIRBORNE EFFLUENT RELEASE RATE

 UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 6  
 (Page 2 of 2)
Building Effluent Release Rate Log - Unit 0

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	DATA RECORDED IN STEP 7.9.4	WRGERMS Noble Gas Release Rate 0-RM-90-306 ( $\mu$ Ci/sec) (7.9.5)	Highest Stack Release Rate ( $\mu$ Ci/sec) (Note 3. Page 1)	Release Rate Factor (0.00 or 1.00) (7.9.7)	Actual Release Rate ( $\mu$ Ci/sec) (7.9.8)	Stack Release Fraction (Note 4. Page 1) (7.9.9)	Acceptance Criteria	Initials	
									A U O	Unit Super- visor
FRI	D							$\leq 0.10$		
	N							$\leq 0.10$		
SAT	D							$\leq 0.10$		
	N							$\leq 0.10$		
SUN	D							$\leq 0.10$		
	N							$\leq 0.10$		
MON	D							$\leq 0.10$		
	N							$\leq 0.10$		
TUE	D							$\leq 0.10$		
	N							$\leq 0.10$		
WED	D							$\leq 0.10$		
	N							$\leq 0.10$		
THU	D							$\leq 0.10$		
	N							$\leq 0.10$		

REV 0044

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 7  
(Page 1 of 1)

AIRBORNE EFFLUENT  
FOR TOTAL STACK FLOW RATES

WEEK FROM

TO

Date:									
Time:									
	1	SGTS A = 9145 scfm (m) B = 9048 scfm (m) C = 9500 scfm (m)							
	2	FC Exhaust A = 3600 scfm (m) B = 4775 scfm (m)							
	3	Off Gas Flow Rate ( ) scfm (m) 1-FR-66-20							
UNIT I	4	Dilution Fan A = 7370 scfm (m) B = 7033 scfm (m)							
	5	Steam Packing Exhauster Flow = 1410 scfm (o)							
UNIT II	6	Off gas Flow Rate ( ) scfm (m) 2-FR-66-20							
	7	Dilution Fan A = 6594 scfm (m) B = 6766 scfm (m)							
	8	Steam Packing Exhauster Flow = 1410 scfm (o)							
UNIT III	9	Off Gas Flow Rate ( ) scfm (m) 3-FR-66-III							
	10	Dilution Fan A = 6375 scfm (m) B = 6055 scfm (m)							
	11	Steam Packing Exhauster Flow = 1410 scfm (o)							
	12	Off Gas Treatment Building Exhaust Flow = 1708 scfm (m)							
	13	Total (scfm) (1-12)							
		AUO Initials							
	Unit Supervisor's Initials								

Remarks:

Directions: ENTER given flow rate values for individual equipment in operation into blank columns. Total stack flow rate equals sum of values in Columns 1 through 12.

NOTES: (m) Measured Flows  
(o) Based on average flow measurements

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 8  
 (Page 1 of 2)

### Offgas Instrumentation Log

Week From \_\_\_\_\_ To \_\_\_\_\_

#### UNIT 2

D A Y	S H I F T	Unit 2 Off Gas Instrumentation Readings (SI Step 7.11)									Initials	
		Pretreat- Monitor RM-90-157 (mR/hr)	FCV-66-28 Position		Off Gas Flow rate FR-66-111 (scfm)	Post Treatment Monitor (cps)		Hydrogen Recombiner (Percent H2)		Acceptance Criteria for Percent H2	A U O	Unit Super- visor
			X appr col	Open  Closed		RM-90-266 Red Pen	RM-90-265 Green Pen	H2R-66-96 Red Pen	H2R-66-96 Green Pen			
FRI	D									≤ 4.0%		
	N									≤ 4.0%		
SAT	D									≤ 4.0%		
	N									≤ 4.0%		
SUN	D									≤ 4.0%		
	N									≤ 4.0%		
MON	D									≤ 4.0%		
	N									≤ 4.0%		
TUE	D									≤ 4.0%		
	N									≤ 4.0%		
WED	D									≤ 4.0%		
	N									≤ 4.0%		
THU	D									≤ 4.0%		
	N									≤ 4.0%		

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 8  
 (Page 2 of 2)

### Offgas Instrumentation Log

UNIT 3

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	Unit 3 Off Gas Instrumentation Readings (SI Step 7.11)									Initials	
		Pretreat- Monitor RM-90-157 (mR/hr)	FCV-66-28 Position		Off Gas Flow rate FR-66-111 (scfm)	Post Treatment Monitor (cps)		Hydrogen Recombiner (Percent H2)		Acceptance Criteria for Percent H2	A U O	Unit Super- visor
			X appr col			RM-90-266 Red Pen	RM-90-265 Green Pen	H2R-66-96 Red Pen	H2R-66-96 Green Pen			
			Open	Closed								
FRI	D									≤ 4.0%		
	N									≤ 4.0%		
SAT	D									≤ 4.0%		
	N									≤ 4.0%		
SUN	D									≤ 4.0%		
	N									≤ 4.0%		
MON	D									≤ 4.0%		
	N									≤ 4.0%		
TUE	D									≤ 4.0%		
	N									≤ 4.0%		
WED	D									≤ 4.0%		
	N									≤ 4.0%		
THU	D									≤ 4.0%		
	N									≤ 4.0%		

## TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0

0-SI-4.8.B.1.a.1

ATTACHMENT 9

(Page 1 of 1)

Week From \_\_\_\_\_ To \_\_\_\_\_

BFN Unit	Radiation Monitor or Annunciator	AC Range*		Units	Day of the Week							Notes
		Low	High		Fri	Sat	Sun	Mon	Tue	Wed	Thu	
U-0	RM-90-147	1.1	1.5	scfm								1
	RM-90-252 [001]	1.12	1.87	scfm								2
	FA-90-150	Yes		NA								3
U-1	RM-90-249 [002]	1.73	2.27	scfm								2
	RM-90-250 [009]	3.6	4.4	scfm								2
	RM-90-251 [005]	1.73	2.27	scfm								2
	PA-90-262	Yes		NA								4
U-2	RM-90-249 [003]	1.73	2.27	scfm								2
	RM-90-250 [010]	3.6	4.4	scfm								2
	RM-90-251 [006]	1.73	2.27	scfm								2
	PA-90-262	Yes		NA								4
U-3	RM-90-249 [004]	1.73	2.27	scfm								2
	RM-90-250 [008]	3.6	4.4	scfm								2
	RM-90-251 [007]	1.73	2.27	scfm								2
	PA-90-262	Yes		NA								4
Acceptance Criteria		AUO Initials										
Satisfied		Unit Supervisor Init										

**NOTES:**

1. Reference SI Step 7.12.1. Actual reading from 0-FIT-90-153. If 0-FIT-90-153 is inoperable, compensatory sampling must be initiated in accordance with 0-SI-4.8.B.1.a.2.
  2. Reference SI Step 7.12.2. If the sample flow rate is not available for any CAM, compensatory sampling must be initiated in accordance with 0-SI-4.8.B.1.a.2.
  3. Reference SI Step 7.12.3. If the annunciator fails and 0-RM-90-147/148 is operable, the sample flow rate must be recorded every four hours on Attachment 10.
  4. Reference SI Step 7.12.4. If the annunciator fails and RM-90-265/266 is operable, the sample rate must be recorded every four hours on Attachment 10.
- \* Acceptance range changed for BFPER960679.

MONITOR ID: \_\_\_\_\_

[illegible]

0-SI-4.8.B.1.a.1

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 11  
(Page 1 of 8)

---

**EPIP RELEASE RATE LOG**

---

**NOTES:**

1. This attachment is used to record data during EOIs and REP conditions. Page 2 of 8 is similar to Attachment 2. 3 of 8 through 6 of 8 is similar to Attachment 4, and 7 of 8 and 8 of 8 is similar to Attachment 6.
2. Pages from this attachment may be used to document plant release data on as frequent a basis as needed.
3. Multiple copies of forms from this attachment may be used as needed.
4. Any entries on this form may be NA'ed as needed.

**Special Instructions for this attachment.**

- 1.0 **RECORD** the "From To" dates.
- 2.0 **RECORD** the day of the month (under DAY) and time on each line as needed.
- 3.0 Instructions for recording the data for each item is as given in the main body of the SI.











UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 11  
(Page 7 of 8)

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 11  
(Page 7 of 8)

UNIT 0  
0-SI-4.8.B.1.a.1  
ATTACHMENT 11  
(Page 7 of 8)



## HANDOUT TO OPERATOR

You are the Unit One Control Room Operator.

The Shift Manager has decided that the Control Room must be abandoned.

What Are the Immediate actions that must be taken?

**(NOTE: Simulate any actions that can affect plant equipment)**

**Region II  
Initial Operator License Exam  
Browns Ferry**

**RO Admin A.4**

**Question #1**

**No References Allowed.**

You are the Unit One Control Room Operator.

The Shift Manager has decided that the Control Room must be abandoned.

What Are the Immediate actions that must be taken?

**(NOTE: Simulate any actions that can affect plant equipment)**

**Answer:**

**4.1     Immediate Action**

**NOTE:**

This instruction is not intended to support Unit 1 when fuel is in the Reactor vessel. This instruction will require major revision prior to loading fuel in Unit 1.

- 4.1.1     ACTIVATE the Automatic Paging System (APS).
- 4.1.2     OBTAIN a hand-held radio.
- 4.1.3     PROCEED to 4kV Shutdown Board A and await instruction from Unit 2 Backup Control Panel.

Reference 1-AOI-100-2

KA: Gen 2.4.11 Knowledge of abnormal condition procedures.  
RO 3.4/SRO 3.6

## **Grading Standards**

### **4.1.1      ACTIVATE the Automatic Paging System (APS).**

Applicant locates APS terminal and SIMULATES activating touch screen.

Examiner Note: This JPMs is conducted in the Unit 1 control room, a fully functional mockup of this device is located in the Simulator and can be used if needed.

### **4.1.2      OBTAIN a hand-held radio.**

Applicant locates a hand-held radio in the control room.

CUE: You have a radio, you may leave the radio here.
--

### **4.1.3      PROCEED to 4kV Shutdown Board A and await instruction from Unit 2 Backup Control Panel.**

Applicant leaves the control room heads toward the Shutdown Board Room A (1A Electric Board Room)

**TENNESSEE VALLEY AUTHORITY**

**BROWNS FERRY NUCLEAR PLANT**

**ABNORMAL OPERATING INSTRUCTION**

**1-AOI-100-2**

**CONTROL ROOM ABANDONMENT**

**REVISION 13**

PREPARED BY: JEFFERY MORRISON

PHONE: 7338

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: GILBERT LITTLE

DATE: 02/27/98

EFFECTIVE DATE: 03/12/98

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE:

**QUALITY-RELATED**

# REVISION LOG

Procedure Number: 1-AOI-100-2

Revision Number: 13

Pages Affected:3

Description of Change: - NIC-14-ISTS

A review of CTS, ITS Submittal, and the TRM was completed to support this procedure change which adds ITS/TRM references/requirements (as indicated in Parenthesis). At this time there are no changes to CTS required to support this procedure change. CTS requirements/references will be replaced by the ITS/TRM requirements/references when final NRC approval of the submittal is given. When final NRC approval of the submittal is given, no ITS/TRM changes will be required to support the procedure change removing CTS references/requirements.

---

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 PURPOSE .....	2
2.0 SYMPTOMS .....	2
3.0 AUTOMATIC ACTIONS .....	2
4.0 OPERATOR ACTIONS .....	3
4.1 Immediate Actions .....	3
5.0 REFERENCES .....	3

ILLUSTRATIONS/ATTACHMENTS

NONE

1.0 PURPOSE

The purpose of this instruction is to provide instructions for the Unit 1 Control Room operator in the event of a Main Control Room evacuation.

2.0 SYMPTOMS

- 2.1 Dense smoke in the Unit 1 and/or Unit 2 Control Room.
- 2.2 Toxic gas released through the ventilation system.
- 2.3 Fire in Unit 1/2 Control Room that does not meet the entry conditions of an Appendix R fire.

3.0 AUTOMATIC ACTIONS

None

---

#### 4.0 OPERATOR ACTIONS

##### NOTES:

- (1) The Shift Manager/Unit Supervisor (SRO) has primary responsibility for implementation and coordination of this instruction, for all situations the Shift Manager/Unit Supervisor (SRO) makes an assessment of the situation and attempts corrective measures to preclude evacuation. If abandonment becomes necessary, the Shift Manager/Unit Supervisor (SRO) has the authority to assign personnel as deemed necessary for implementation of this instruction.
- (2) Evacuation or anticipated evacuation is classified by EPIP-1 as an alert. If the control room is evacuated and backup control from Panel 25-32 is not established within 20 minutes, EPIP-1 classifies event as a Site Area Emergency.
- (3) This procedure cannot be properly executed, nor will it support, shutting down the reactor during any type of accident.

#### 4.1 Immediate Action

##### NOTE:

This instruction is not intended to support Unit 1 when fuel is in the Reactor vessel. This instruction will require major revision prior to loading fuel in Unit 1.

4.1.1 ACTIVATE the Automatic Paging System (APS).

4.1.2 OBTAIN a hand-held radio.

4.1.3 PROCEED to 4kV Shutdown Board A and await instruction from Unit 2 Backup Control Panel.

#### 5.0 REFERENCES

##### 5.1 Technical Specifications

(Improved Technical Specifications - ITS/Requirements)

Section 6.8, Procedures/Instructions and Programs.  
(ITS Section 5.4, Procedures/Section 5.5, Programs and Manuals).

##### 5.2 Final Safety Analysis Report

5.1.1 Section 7.18, Backup Control System.

5.1.2 Appendix G, Section G.5.3.5.4, Special Event 44-Loss of Habitability of the Control Room.

END OF TEXT

## **Handout to Operator**

What Actions are taken upon receipt of a fire emergency report, and what individual is responsible for these actions?

**Region II  
Initial Operator License Exam  
Browns Ferry**

**RO Admin A.4**

**Question # 2**

**References Allowed.**

What Actions are taken upon receipt of a fire emergency report, and what individual is responsible for these actions?

Answer:

3.2.1 Upon receiving a fire emergency call, the Unit 1 Control Room Unit Operator will:

Obtain the name of the caller

Obtain the location of the fire.

Obtain nature of fire.

Obtain telephone number from caller

3.2.2 Initiate the "Fire Alarm Bell".

3.2.3 Announce fire location over the plant public address (PA) system, repeating at regular intervals until instructed otherwise by Shift Manager of the fire.

3.2.4 Notify the Fire Protection Personnel using the Operations/Fire Protection Radio.

3.2.5 Notify the Shift Manager of the fire.

Reference EPIP-21.

K/A:2.4.39 Knowledge of the RO's responsibilities in emergency plan implementation.  
RO 3.3/SRO 3.1

**TENNESSEE VALLEY AUTHORITY**

**BROWNS FERRY NUCLEAR PLANT**

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**EPIP-21**

**FIRE EMERGENCY PROCEDURE**

**REVISION 3**

PREPARED BY: T. W. CORNELIUS

PHONE: 2038

RESPONSIBLE ORGANIZATION: EMERGENCY PREPAREDNESS

APPROVED BY: GILBERT LITTLE

DATE: 05/15/2000

EFFECTIVE DATE: 05/15/2000

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: NOT REQUIRED

**QUALITY-RELATED**

## REVISION LOG

Procedure Number: EPIP-21

Revision Number: 3

Pages Affected: All

Pagination Pages: NONE

Description of Change:

IC-05 - This is a general revision to EPIP-21. The revision is being conducted to re-format the procedure, apply the document control storage filter, and at step 3.3.1 (page 1) add direction for the Shift Manager to refer to SSI-001 as applicable based upon the severity of the fire.

**1.0 PURPOSE**

To provide timely response to fire emergencies at Browns Ferry and a mechanism to notify additionally emergency personnel or resources as needed.

**2.0 SCOPE**

This procedure applies to all fire emergencies at Browns Ferry.

**3.0 INSTRUCTIONS****3.1 General**

- 3.1.1 All members of the fire response team will proceed to the scene upon hearing the announcement.

**3.2 Initial Notification by Unit Operator**

- 3.2.1 Upon receiving a fire emergency call, the Unit 1 Control Room Unit Operator will:

- Obtain name of caller.
- Obtain location of fire.
- Obtain nature of fire.
- Obtain telephone number from caller.

- 3.2.2 Initiate the "Fire Alarm Bell".

- 3.2.3 Announce fire location over the plant public address (PA) system, repeating at regular intervals until instructed otherwise by Shift Manager or Unit Supervisor.

- 3.2.4 Notify the Fire Protection Personnel using the Operations/Fire Protection Radio.

- 3.2.5 Notify the Shift Manager of the fire.

**3.3 Shift Manager Responsibilities**

- 3.3.1 The Shift Manager will:

- Dispatch Unit Supervisor or designee to the scene to act as Incident Commander.
- Establish and maintain communications with the Incident Commander.
- Refer to SSI-001 for applicability based on the severity of the fire.

- 3.3.2 When requested by the Incident Commander notify the off-duty BFN fire protection personnel. Notify the off-duty BFN fire protection personnel from list in the Shift Manager office. This list will be maintained by the Fire Protection Organization.

**3.3 Shift Manager Responsibilities (Continued)**

- 3.3.3 When requested by the Incident Commander notify of the Clements Volunteer Fire Department. Notify the Clements Volunteer Fire Department by calling the Limestone County Sheriff's Dispatcher (233-3473).
- 3.3.4 Following an "Appendix R Fire" - direct the Operations Support Center (OSC) to provide ventilation of Shutdown Board Rooms by MSI-0-000-PRO005, Electrical Equipment Room Emergency Ventilation.

**3.4 Incident Commander Responsibilities**

- 3.4.1 The Incident Commander will:
- Establish radio communication with the Shift Manager.
  - Keep Shift Manager advised of situation.
  - Request Shift Manager to call in off-site support as needed.

**3.5 RADCON Representative Responsibilities**

- 3.5.1 The RADCON Representative will:
- Advise the Incident Commander of radiological hazards.
  - Ensure the Incident Commander is aware of areas of significant radiation exposure and airborne radioactivity that may affect stay time for team members.
  - Notify the Incident Commander of any team members limitations in regards to stay time.

**4.0 ATTACHMENTS**  
None

LAST PAGE

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 181

TITLE: CLASSIFY THE EVENT PER THE REP (GASEOUS  
RELEASE RATE--0-SI-4.8.B.1.a.1)

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	10/28/98	3,6,7,12	PROCEDURE REVISION AND UPDATE
3	11/16/99	2,3,4	PROCEDURE REVISION
4	9/8/01	3,5,6,8,12,13	PROCEDURE REVISION

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 181

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

TASK TITLE: CLASSIFY THE EVENT PER THE REP

K/A NUMBER: 2.4.38 K/A RATING: RO 2.2 SRO: 4.0

\*\*\*\*\*

TASK STANDARD: THE EVENT IS CLASSIFIED AS AN NOUE BASED ON 0-SI-4.8.B.1.a.1 RELEASE FRACTION > 2.0 FOR GREATER THAN 1 HOUR.

LOCATION OF PERFORMANCE: SIMULATOR X PLANT \_\_\_\_\_ CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: EPIP-1, REV. 29, EPIP-2, REV. 22

VALIDATION TIME: CONTROL ROOM: 12 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

\*\*\*\*\*

**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 SHIFT MANAGER/SRO. Unit 2 has just scrambled on low level from 100% power. The Unit 2 Board Operator acknowledges alarm "Reactor Zone Exhaust Radiation High", 2-RA-90-142A, and refers to ARP 2-XA-55-3A, Window 21. The Operator acknowledges that the Control Room, Reactor Zone, and Refueling Zone Isolates, and all SBTG trains start. "Rx Bldg Area Radiation High" is also in alarm, and the Operator verifies that RCIC Room 2-RE-90-26 is reading 350 MR/HR and trending upward. "RCIC Steam Line Leak Detection Temp. High" is alarming due to FCV 71-2 and 3 failing to close automatically on an isolation signal (Operator closes valves manually).

**INITIATING CUES:** The Log AUO informs you that he/she has just completed 0-SI-4.8.B.1.a.1 and the release fraction is 3.1 at 1400 hours. The Log AUO continues to monitor the gaseous release rate and informs you that the release fraction is trending downward. At 1515 hours the release fraction is 2.1. 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--968 psig  
DW Pressure--1.38 psig  
DW Temperature--148 degrees F  
DW Radiation--RR-90-256 reading normal  
Torus Temperature--89 degrees F  
Torus Pressure--1.42 psig  
Torus Level--(+3 inches on normal band)  
0-SI-4.8.B.1.a Release Fraction--2.1

**NOTE:** Unit 2 conditions are fairly stable.

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 4.0, Radioactivity Releases and declares an NOUE (4.1-U) based on gaseous release rates exceeding ANY limit (SI-4.8.B.1.a.1 Release Fraction 2.1) in Table 4.1-U and Duration of > 1 hour.

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 X Not Critical   

3.1.1 Complete Attachment A (Initial Notification  
Form).

Standard:

ATTACHMENT A is complete with EAL Designator 4.1-U  
NOTIFICATION OF UNUSUAL EVENT status on Unit 2. Unit 2 was at  
100% power and scrambled on low water level. RCIC developed a steam  
leak in the Reactor Building due to FCV 71-2 and 3 failing to close  
automatically. Valves were closed manually. 0-SI-4.8.B.1.a  
release fraction is presently 2.1 and has exceeded 2.0 for 1 hour  
and 15 minutes. Unit 2 is fairly stable with the release fraction  
trending downward. (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  
5-1-751-1700  
5-1-751-2495

**If** the ODS cannot be reached, **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 within **5 minutes** from the time of declaration of event and **provides** the information from Attachment A.

SAT    UNSAT    N/A    COMMENTS:   

---

\*\*\*\*\*

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  
5-1-751-8620

AL Rad Health  
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: REQUEST SIMULATOR CONSOLE OPERATOR TO CALL AND  
CONFIRM THAT ODS HAS NOTIFIED THE STATE OF ALABAMA

SAT	UNSAT	N/A	COMMENTS:

\*\*\*\*\*

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 made giving name, SHIFT MANAGER'S  
Position, NOTIFICATION OF UNUSUAL EVENT status on Unit 2, and  
informing crew that the SHIFT MANAGER has the duties of SED.

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 by calling  
the Simulator Console Operator.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical\_X

### 3.3 OFFSITE DOSE ASSESSMENT

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

**CUE: DOSE ASSESSMENT STEP IS NOT APPLICABLE.**

- 3.3.1.1 When offsite dose assessment is required obtain the information from the CECC when operational.
- 3.3.1.2 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
1. The project manager is responsible for the project's success or failure.		
2. The project manager is responsible for the project's budget.		
3. The project manager is responsible for the project's timeline.		
4. The project manager is responsible for the project's quality.		
5. The project manager is responsible for the project's communication.		
6. The project manager is responsible for the project's risk management.		
7. The project manager is responsible for the project's stakeholder management.		
8. The project manager is responsible for the project's team management.		
9. The project manager is responsible for the project's resource management.		
10. The project manager is responsible for the project's change management.		

### 3.4 NOTIFICATION OF THE NRC

3.4.1 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, by dialing 9-1- "The TEN Digit Number Listed on the ENS Telephones". IF the number is busy, THEN select in order, the alternate numbers until a connection is achieved.

Standard:

PERFORMER notified NRC on the Simulator by calling the console operator and requesting NRC. Informing NRC that the SHIFT MANAGER/SED has declared a NOTIFICATION OF UNUSUAL EVENT status on Unit 2.

SAT	UNSAT	N/A	COMMENTS:
-----	-------	-----	-----------

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

3.5 PERIODIC EVALUATION OF THE EVENT

- 3.5.1 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 \_\_\_\_\_

## CLASSIFICATION INSTRUCTIONS

### 1.0 PURPOSE

Provide guidance to the Shift Manager or Site Emergency Director (SED) for proper declaration and classification of emergencies and ensure emergency classifications are consistent with those used by state and local governments and the Nuclear Regulatory Commission (NRC).

### 2.0 SCOPE

This procedure applies to site events that constitute an emergency consistent with those site specific events outlined in NUMARC/NESP-007 August 1992. The Shift Manager and the SED are the only persons authorized to make the emergency classification determination.

### 3.0 INSTRUCTION

- 3.1 Following plant events or transients, review EPIP-1 Section II, 1.0 through 8.0 and determine if an event should be classified as an emergency.

**Note:** (1) If an emergency action level for a higher classification was exceeded, but the present situation indicates a lower classification, the fact that the higher classification occurred shall be reported to the NRC and the CECC, if staffed, or ODS if the CECC is not staffed. The higher classification should not be declared.  
(2) If an emergency action level was met but the emergency has been totally resolved, the emergency class that was appropriate shall be reported to the ODS and the NRC but should not be declared.

- 3.1.1 EPIP-1 Section II, 1.0 through 8.0 captures events in eight major categories as listed on the event classification index.
- 3.1.2 Each actual condition in a category is given a numeric designator indicating the section followed by the numeric designator for the specific EAL within the section and an alpha numeric designator for the event class.

Example: 5.2-U

These designators provide for cross-reference between the specific EALs and the basis document which provides technical supporting information for the EALs and may aid the Shift Manager/SED in classifying events.

(3.1 Continued)

Notes, curves, or tables contained in the Event Classification Matrix, are identified by a flag in the event classification window. The window contains an appropriate symbol to alert the user that a corresponding note, curve, or table applies to the step.

Example:



Notes, curves, or tables contained in the Event Classification Matrix, that are identified by a flag that contains an asterisk shall alert the user that the corresponding note, curve, or table is unit specific. The user must insure that the information being applied to the EAL is associated with the applicable unit.

Example:



- 3.2 If the event is determined to be one of the four emergency classifications, the Shift Manager assumes the responsibility of SED until relieved by the Plant Manager or designee.

3.2.1 Implement one of the following procedures as applicable:

EPIP-2	Notification of Unusual Event
EPIP-3	Alert
EPIP-4	Site Area Emergency
EPIP-5	General Emergency

3.2.2 Continue to review the emergency conditions in the event classification matrix and escalate, terminate, or implement recovery as appropriate. Refer to EPIP-16 for termination or recovery.

- 3.3 If the event is determined not to be one of the four event classifications, continue to monitor plant conditions for possible changes that could result in reaching an event classification.

END OF TEXT

## ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

The following is a list of terms and phrases found in EPIP-1. Each term or phrase is provided with a meaning, to ensure consistent use and understanding.

<u>TERM/PHRASE</u>	<u>MEANING/DEFINITION</u>
ADS	Automatic Depressurization System
AOI	Abnormal Operating Instruction
ARI	Alternate Rod Insertion
ARM	Area Radiation Monitor
ARP	Alarm Response Procedure
ATWS	Anticipated Transient Without Scram
Auto	Automatic
Bomb	An explosive device
BWR	Boiling Water Reactor
Can/Cannot be determined	The current value or status of an identified parameter relative to that specified in the instruction can/cannot be ascertained using all available indications (direct and indirect, singly or in combination).
Can/Cannot be Maintained Above/Below	The value of the identified parameter(s) is/is not able to be kept above/below specified limits. This definition includes making an evaluation that considers both current and future system performance in relation to the current value and trend of the parameter(s). "Cannot" does not imply that the actual value of the parameter must first exceed the specified limit.
Can/Cannot be Restored Above/Below	The value of the identified parameter(s) is/is not able to be returned to above/below specified limits within a reasonable time after having exceeded the specified limits. This determination includes making an evaluation that considers both current and future system performance in relation to the current value and trend of the parameter(s).

(CONTINUED)  
TERM/PHRASE

MEANING/DEFINITION

CAD	Containment Atmosphere Dilution
CAS	Central Alarm Station
CDE	Committed Dose Equivalent
CECC	Central Emergency Control Center
Ci	Curie
Civil Disturbance	A group of 20 or more persons violently protesting station operations or activities at the site.
cm <sup>3</sup>	Cubic Centimeters
CS	Core Spray
deg	Degrees
DG	Diesel Generator
Drywell	The upper portion of the Primary Containment which encloses the Reactor Pressure Vessel.
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
ECL	Effluent Concentration Limit
EPA	Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
EQ	Environmental Qualification
Event	Assessment of an EVENT commences when recognition is made that one or more of the conditions associated with the event exists. Implicit in this definition is the need for timely assessment, i.e. within 15 minutes.
Explosion	A rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures required for safe operation.
F	Fahrenheit

**(CONTINUED)  
TERM/PHRASE**

**MEANING/DEFINITION**

Fire	Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical components do not constitute fires. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed.
Flammable Gas	Combustible gasses maintained at concentrations less than the lower explosive limit. Will not explode due to ignition.
GOI	General Operating Instruction
gm	Gram
HCTL	Heat Capacity Temperature Limit
Hostage	A person(s) held as leverage against the station to ensure that demands will be met by the station.
HPCI	High Pressure Coolant Injection
HR	Hour
IN.	Inches
KV	Kilovolt
LCO	Limiting Condition for Operation
LOCA	Loss Of Coolant Accident
LPCI	Low Pressure Coolant Injection
MRFP	Minimum RPV Flooding Pressure
MCUTL	Maximum Core Uncovery Time Limit
MIN	Minute

(CONTINUED)

**TERM/PHRASE**

**MEANING/DEFINITION**

Modes of Operation

Mode	Title	Reactor Mode Switch Position	Avg. Reactor Coolant Temperature (°F)
1	Power Operation	Run	NA
2	Startup	Refuel <sup>(a)</sup> or Startup/Hot Standby	NA
3	Hot Shutdown <sup>(a)</sup>	Shutdown	> 212
4	Cold Shutdown <sup>(a)</sup>	Shutdown	≤ 212
5	Refueling <sup>(b)</sup>	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

MPH

Miles per Hour

mrem

Millirem

MSIV

Main Steam Isolation Valve

MSL

Main Steam Line

MSRV

Main Steam Relief Valve

NESP

National Environmental Studies Project

NUMARC

Nuclear Management and Resources Council

ODS

Operations Duty Specialist

OI

Operating Instruction

OSC

Operations Support Center

PCIS

Primary Containment Isolation System

**(CONTINUED)  
TERM/PHRASE**

**MEANING/DEFINITION**

Primary Containment	The drywell, the vent system, and the torus.
Primary System	Primary systems comprise the pipes, valves and other equipment connected to the RPV such that a reduction in RPV pressure will effect a decrease in the flow of steam or water being discharged through an unisolable break in the system.
Projectile	An object ejected, thrown, or launched towards a plant structure. The source of a projectile may be offsite or onsite. Damage is sufficient to cause concern regarding the integrity of the affected structure or the operability or reliability of safety equipment contained therein.
Protected Area	Protected Area encompasses all areas within the security protected area fence.
PSIG	Pounds Per Square Inch Gauge
R	Rad
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
REP	Radiological Emergency Plan
RHR	Residual Heat Removal
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
Sabotage	Deliberate damage, misalignment, misoperation of plant equipment with the intent to render equipment inoperable.
SEC	Second
Secondary Containment	The spaces immediately adjacent to, or surrounding, the primary containment from which the Reactor Building Ventilation System and the Standby Gas Treatment System provides a filtered elevated release.
SED	Site Emergency Director
SGTS	Standby Gas Treatment System

(CONTINUED)  
TERM/PHRASE

MEANING/DEFINITION

Significant Transient	An unplanned event involving one or more of the following: (1) Automatic turbine runback >25% thermal reactor power: (2) Electrical load reduction >25% full electrical load: (3) Reactor scram: (4) Valid ECCS initiation: or (5) <u>thermal</u> power oscillations > 10%.
SI	Surveillance Instruction
Site Boundary	The Site Boundary is that line beyond which the land or property is not owned, leased, or otherwise controlled by TVA.
Subcritical	Reactor power below the heating range and not trending upward.
Suppression Pool	The water volume contained in the suppression chamber intended to condense steam from a primary system break inside the drywell.
Suppression Chamber	The structure enclosing the suppression pool water and the atmosphere above it.
TAF	Top of Active Fuel
TEDE	Total Effective Dose Equivalent
Torus	The lower portion of the primary containment which encloses the suppression pool.
Toxic Gas	A gas that is dangerous to life or limb by reason of inhalation or skin contact.
TSC	Technical Support Center
Valid	An indication, report, or condition is considered to be valid when it is conclusively verified by redundant indicators or actual observation by plant personnel.
Visible Damage	Damage to equipment that is readily observable without measurements, testing, or analysis. Damage is sufficient enough to cause concern regarding the continued operability or reliability of affected safety structure, system, or component.
Vital Area	An area that contains equipment necessary for the safe operations and shutdown of the plant.
WRGERMS	Wide Range Gaseous Effluent Radiation Monitoring System
yr	Year

END OF TEXT

**EVENT CLASSIFICATION INDEX**

<b>SECTION 1.0</b>	<b>REACTOR</b>	<b>1.1 WATER LEVEL 1.2 SCRAM FAILURE 1.3 REACTOR COOLANT ACTIVITY 1.4 MSL/OFFGAS RADIATION 1.5 LOSS OF DECAY HEAT REMOVAL</b>
<b>SECTION 2.0</b>	<b>PRIMARY CONTAINMENT</b>	<b>2.1 PRIMARY CONTAINMENT PRESSURE 2.2 PRIMARY CONTAINMENT HYDROGEN 2.3 DRYWELL RADIATION 2.4 DRYWELL INTERNAL LEAKAGE 2.5 LOSS OF PRIMARY CONTAINMENT</b>
<b>SECTION 3.0</b>	<b>SECONDARY CONTAINMENT</b>	<b>3.1 SECONDARY CONTAINMENT TEMPERATURE 3.2 SECONDARY CONTAINMENT RADIATION</b>
<b>SECTION 4.0</b>	<b>RADIOACTIVITY RELEASES</b>	<b>4.1 GASEOUS EFFLUENT 4.2 MAIN STEAM LINE BREAK 4.3 LIQUID EFFLUENT</b>
<b>SECTION 5.0</b>	<b>LOSS OF POWER</b>	<b>5.1 LOSS OF AC POWER 5.2 LOSS OF DC POWER</b>
<b>SECTION 6.0</b>	<b>HAZARDS</b>	<b>6.1 RADIOLOGICAL 6.2 CONTROL ROOM EVACUATION 6.3 TURBINE FAILURE 6.4 FIRE/EXPLOSION 6.5 TOXIC GASES 6.6 FLAMMABLE GASES 6.7 SECURITY 6.8 VEHICLE CRASH</b>
<b>SECTION 7.0</b>	<b>NATURAL EVENTS</b>	<b>7.1 EARTHQUAKE 7.2 TORNADO/HIGH WINDS 7.3 FLOOD</b>
<b>SECTION 8.0</b>	<b>EMERGENCY DIRECTOR JUDGEMENT</b>	<b>8.1 TECHNICAL SPECIFICATIONS 8.2 LOSS OF COMMUNICATION 8.3 LOSS OF ASSESSMENT CAPABILITY 8.4 OTHER</b>

**THIS PAGE INTENTIONALLY BLANK**

# **RADIOACTIVITY RELEASES 4.0**

## NOTES:

**NOTE 4.1-U** Prior to making this emergency classification based upon the WRGERMS indication, assess the release by either of the following:

1. Actual field measurements exceed the limits in Table 4.1-U
2. SI 4.8.B.1.a.1 Release Fraction exceeds 2.0

If neither assessment can be conducted within 60 minutes then the declaration must be made on the valid WRGERMS reading.

**NOTE 4.1-A** Prior to making this emergency classification based upon the WRGERMS indication, assess the release by either of the following:

1. Actual field measurements exceed the limits in Table 4.1-A
2. SI 4.8.B.1.a.1 Release Fraction exceeds 200

If neither assessment can be conducted within 15 minutes then the declaration must be made on the valid WRGERMS reading.

**NOTE 4.1-S** Prior to making this emergency classification based upon the Gaseous Release Rate indication, assess the release by either of the following methods:

1. Actual field measurements exceed the limits in Table 4.1-S.
2. Projected or Actual Dose Assessments exceed 100 mrem TEDE or 500 mrem CDE.

If neither assessment can be conducted within 15 minutes then the declaration must be made based on the valid WRGERMS reading.

**NOTE 4.1-G** Prior to making this emergency classification based upon the Gaseous Release Rate indication, assess the release by either of the following methods:

1. Actual field measurements exceed the limits in Table 4.1-G.
2. Projected or Actual Dose Assessments exceed 1000 mrem TEDE or 5000 mrem CDE.

If neither assessment can be conducted within 15 minutes then the declaration must be made based on the valid WRGERMS reading.

## CURVES/TABLES:

**Table 4.1-U**  
**RELEASE LIMITS FOR UNUSUAL EVENT**

TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$2.88 \times 10^{-7} \mu\text{Ci/sec}$	1 HOUR
GASEOUS RELEASE RATE	SI 4.8.B.1.a.1	RELEASE FRACTION 2.0	1 HOUR
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	0.10 MREM/HR $\gamma - \beta$	1 HOUR

**Table 4.1-A**  
**RELEASE LIMITS FOR ALERT**









TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$2.88 \times 10^{-9} \mu\text{Ci/sec}$	15 MINUTES
GASEOUS RELEASE RATE	SI 4.8.B.1.a.1	RELEASE FRACTION 200	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	10 MREM/HR $\gamma - \beta$	15 MINUTES

**Table 4.1-S**  
**RELEASE LIMITS FOR SITE AREA EMERGENCY**

TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$5.9 \times 10^{-9} \mu\text{Ci/sec}$	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	100 MREM/HR $\gamma - \beta$	1 HOUR
SITE BOUNDARY IODINE-131	FIELD ASSESSMENT TEAM	$3.9 \times 10^{-7} \mu\text{Ci/cm}^3$	1 HOUR

**Table 4.1-G**  
**RELEASE LIMITS FOR GENERAL EMERGENCY**

TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$5.9 \times 10^{-10} \mu\text{Ci/sec}$	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	1000 MREM/HR $\gamma - \beta$	1 HOUR
SITE BOUNDARY IODINE-131	FIELD ASSESSMENT TEAM	$3.9 \times 10^{-6} \mu\text{Ci/cm}^3$	1 HOUR

GASEOUS EFFLUENT		MAIN STEAM LINE BREAK	
DESCRIPTION		DESCRIPTION	
4.1-U	 	4.2-U	UNUSUAL EVENT
Gaseous release exceeds ANY limit and duration in Table 4.1-U.		Main Steam Line break outside Primary Containment with isolation.	
		OPERATING CONDITION: - Mode 1 - Mode 2	
		- Mode 3	
4.1-A	 		ALERT
Gaseous release exceeds ANY limit and duration in Table 4.1-A.			
OPERATING CONDITION: - All			
4.1-S	 	4.2-S	SITE EMERGENCY
EITHER of the following conditions exists: • Gaseous release exceeds or is expected to exceed ANY limit and duration in Table 4.1-S.  • Dose assessment indicates actual or projected dose consequences above 100 mrem TEDE or 500 mrem thyroid CDE.		Unisolable Main Steam Line break outside Primary Containment.	
OPERATING CONDITION: - All		OPERATING CONDITION: - Mode 1 - Mode 2	
		- Mode 3	
4.1-G	 		GENERAL EMERGENCY
EITHER of the following conditions exists: • Gaseous release exceeds or is expected to exceed ANY limit and duration in Table 4.1-G.  • Dose assessment indicates actual or projected dose consequences above 1000 mrem TEDE or 5000 mrem thyroid CDE.			
OPERATING CONDITION: - All			

NOTES:

---

CURVES/TABLES:

LIQUID EFFLUENT		
DESCRIPTION	DESCRIPTION	
<b>4.3-U</b>  Liquid release rate exceeds 20 times ECL as determined by chemistry sample <b>AND</b> Release duration exceeds or will exceed 60 minutes.  OPERATING CONDITION: - All		UNUSUAL EVENT
<b>4.3-A</b>  Liquid release rate exceeds 2000 times ECL as determined by chemistry sample <b>AND</b> Release duration exceeds or will exceed 15 minutes.  OPERATING CONDITION: - All		ALERT
		SITE EMERGENCY
		GENERAL EMERGENCY

**THIS PAGE INTENTIONALLY BLANK**

**TENNESSEE VALLEY AUTHORITY**

**BROWNS FERRY NUCLEAR PLANT**

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**EPIP- 2**

**NOTIFICATION OF UNUSUAL EVENT**

**REVISION 22**

PREPARED BY: TIM CORNELIUS

PHONE: 2038

RESPONSIBLE ORGANIZATION: EMERGENCY PREPAREDNESS

APPROVED BY: GILBERT LITTLE

DATE: 03/09/2001

EFFECTIVE DATE: 03/31/2001

**LEVEL OF USE: REFERENCE USE**

**QUALITY-RELATED**

## REVISION LOG

Procedure Number: EPIP-2

Revision Number: 22

Pages Affected: 2, 7, 8, 9, 10

### Description of Change:

- IC-27      This change is being conducted to incorporate the management of NRC Commitment changes as prescribed in the correspondence from site licensing RIMS R08000217713, to remove the Public Information Officer from the notification form and to human factor the notification and follow-up notification forms.
- Page 2 - change to step 3.1.1 involves human factoring the Notification Form Title.
- Page 7 - changes involves removing the "NRC Commitment Brackets to step requiring the review of PORC and the human factoring of applicable steps.
- Page 7 - change involves human factoring attachment title.
- Page 8 - change involves human factoring attachment title and modifying information to ensure consistency with NRC guidance.
- Page 9 - change involves removing the Public Information Officer from the Attachment B notifications along with the NRC Commitment Brackets
- Page 10 - change involved adding a clarify statement concerning the appropriate use of the Follow-up Notification Form.

**1.0 PURPOSE**

- 1.1** Provide for timely notification of appropriate individuals or organizations when the Shift Manager has determined by EPIP-1 that an incident has occurred which is classified as a NOTIFICATION OF UNUSUAL EVENT.
- 1.2** Provide for periodic analysis of the current situation by the Shift Manager/Site Emergency Director (SED) to determine whether the NOTIFICATION OF UNUSUAL EVENT should be terminated, continued, or upgraded to a more serious classification.

**2.0 SCOPE**

This procedure applies to emergency events that are classified as a Notification of Unusual Event by EPIP-1, Emergency Classification Procedure.

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.

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

3.1.1 Complete Attachment A (Initial Notification Form).

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**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

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

ODS Fax  
5-751-8620

AL Rad Health  
9-1-334-206-5387

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).

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

3.0 INSTRUCTIONS (CONTINUED)

3.2 NOTIFICATION OF SITE PERSONNEL

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

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.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

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

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

3.3 OFFSITE DOSE ASSESSMENT

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

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

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

**3.0 INSTRUCTIONS (CONTINUED)**

**3.4 NOTIFICATION OF THE NRC**

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

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**Note:** Utilize the Emergency Notification System (ENS) when making this notification. Dial the first number listed on the sticker affixed to the ENS telephone, by dialing 9-1-"The Ten Digit Number Listed on the ENS Telephones". If the number is busy, Then select in order, the alternate numbers until a connection is achieved. No access codes are required.

**3.0 INSTRUCTIONS (CONTINUED)**

**3.5 PERIODIC EVALUATION OF THE EVENT**

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

**3.5.2** **If** other EAL conditions exist indicating the current emergency classification or significant changes in plant conditions have occurred since the last update to the ODS, and the CECC is not staffed, **Then, Complete** the "Follow-Up" Notification Form (Attachment C), notify the ODS and provide the new information. Utilize the direct ring-down ODS phone when making this notification or as applicable dial direct.

ODS - 5-751-2495, 1700

**Note** **If** the ODS cannot be reached, **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

**3.5.3** **If** the conditions warrants upgrading to a higher classifications, **Then** initiate the appropriate EPIP.

**3.5.4** **If** the conditions warrant termination of the classification, **Then** enter the Termination section of **this** procedure at step 3.6.

**3.5.5** **Re-enter** this procedural section as conditions warrant at step 3.5.1 or until directed to exit this procedure by steps 3.5.3 or 3.5.4.

**3.0 INSTRUCTIONS (CONTINUED)**

**3.6 TERMINATION OF THE EVENT**

If the situation no longer exists terminate the event and notify the following:

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

- 3.6.1 Notify** the ODS of the termination of the emergency or the state directly if the ODS cannot be contacted.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

- 3.6.2 Notify** the NRC of the termination of the emergency.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

- 3.6.3 Notify** the Plant Manager or Alternate of the termination of the emergency.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

- 3.6.4 Complete** Attachment A by providing the time and date of termination.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

- 3.6.4 Notify** the Unit 1, Unit Operator. Provide the Unit 1, Unit Operator with the termination time and date and direct the Unit 1, Unit Operator to notify the individuals contacted on Attachment B of the termination of the emergency.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**3.0 INSTRUCTIONS (CONTINUED)**

**3.7 CLOSURE OF THE NOTIFICATION OF UNUSUAL EVENT**

**3.7.1** Upon termination of the Notification of Unusual Event, the Shift Manager shall send the completed EPIP-2 and all attachments to Emergency Preparedness (EP).

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**3.7.2** EP shall forward to the PORC Secretary the completed EPIP and all attachments for review by PORC.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**3.7.3** PORC Review Completed.

\_\_\_\_\_  
PORC Chairman / \_\_\_\_\_  
DATE

**3.7.4** After PORC review is completed the PORC secretary shall forward the signed EPIP-2 with all attachments to EP for documentation storage.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

**4.0 ATTACHMENTS**

Attachment A - Initial Notification Form

Attachment B - Unit 1, Unit Operator Notification

Attachment C - Follow Up Information Form

ATTACHMENT A (Page 1 of 1)  
**INITIAL NOTIFICATION FORM**  
**NOTIFICATION OF UNUSUAL EVENT**

☐ THIS IS AN ACTUAL EVENT

☐ THIS IS AN EXERCISE

This is \_\_\_\_\_  
NAME

A **NOTIFICATION OF UNUSUAL EVENT** has been declared at Browns Ferry affecting:

☐ Unit 1

☐ Unit 2

☐ Unit 3

☐ Common

**Event Declared:** \_\_\_\_\_ **Time:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**EAL Designator:** \_\_\_\_\_

**Brief Description of the Event:**

---

---

---

---

---

**Radiological Conditions:**

- ☐ No Abnormal Releases Offsite
- ☐ Airborne Release Offsite
- ☐ Liquid Release Offsite
- ☐ Release Information Not Known at this time

☐ **There is no Protective Action Recommendation at this time.**

☐ Ask, "Please repeat the information you have received to ensure accuracy."

ATTACHMENT B (Page 1 of 1)  
UNIT 1, UNIT OPERATOR NOTIFICATIONS

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Note:** All notifications should be made utilizing the information located on EPIP 2, Attachment A

**Received** a completed copy of EPIP 2, Attachment A from the  
Site Emergency Director.

\_\_\_\_\_  
INITIALS

\_\_\_\_\_  
TIME

Personnel Notifications	Initial Notifications		Termination Notifications	
<b>Notify</b> the Operations Manager (from the weekly duty list)	_____ Initials	_____ Time	_____ Initials	_____ Time
<b>Notify</b> the Vice President (from the weekly duty list)	_____ Initials	_____ Time	_____ Initials	_____ Time
<b>Notify</b> the REP manager (from the weekly duty list)	_____ Initials	_____ Time	_____ Initials	_____ Time
<b>Notify</b> the Nuclear Security Shift Supervisor. Ext. 3150 or 2219	_____ Initials	_____ Time	_____ Initials	_____ Time
<b>Notify</b> the NRC Resident Ext. 2573, or 2572 or from the weekly duty list.	_____ Initials	_____ Time	_____ Initials	_____ Time

This is a Quality Assurance record with a retention of five years.

ATTACHMENT C (Page 1 of 1)  
**FOLLOW-UP INFORMATION FORM**  
**NOTIFICATION OF UNUSUAL EVENT**

☐ THIS IS A REAL EVENT      ☐ THIS IS A DRILL

Note: This form is for conducting Follow-up Information only.

This is \_\_\_\_\_ at Browns Ferry.

Name

There has been a NOTIFICATION OF UNUSUAL EVENT declared at Browns Ferry affecting:

☐ Unit 1      ☐ Unit 2      ☐ Unit 3      ☐ Common

The Reactor is ☐ Shutdown      ☐ At Power

Plant Conditions are ☐ Stable      ☐ Deteriorating

"Follow-Up" Information (e.g., Key Events, Status Changes)

---

---

---

---

Current Radiological Conditions are:

- ☐ No Abnormal Releases Offsite
- ☐ Airborne Release Offsite
- ☐ Liquid Release Offsite
- ☐ Release Information Not Known

Additional Rad information: (e.g., release duration)

---

---

---

☐ There is no Protective Action Recommendation at this time.

Please repeat the information you have received to ensure accuracy.

The time for this follow up is:      Time: \_\_\_\_\_      Date: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

Facility: Browns Ferry  
Exam Level (circle one): **RO** / SRO(I) / SRO(U)

Date of Examination: 9/17-9/19 2001  
Operating Test No.: 1

**B.1 Control Room Systems**

	System / JPM Title	Type Code*	Safety Function
a.	CROSSTIE CAD TRAINS A AND B TO DRYWELL CONTROL AIR IN ACCORDANCE WITH 2-EOI APPENDIX 8G. (191F)	M,A,C	3
b.	2-EOI APPENDIX 12- PRIMARY CONTAINMENT VENTING FROM DRYWELL THROUGH FCV-84-20 (51F-MOD).	M,A,S	9
c.	START A RECIRC PUMP DURING POWER OPERATION.(JPM 90).	D,S	1
d.	PERFORM CONTROL ROOM ACTIONS REQUIRED TO ESTABLISH THE CONDENSATE/FEEDWATER SYSTEM AS AN RPV INJECTION SYSTEM. (14).	D,S	2
e.	OPERATE RHR SYSTEM IN SUPPRESSION POOL COOLING MODE IN ACCORDANCE WITH 2-EOI APPENDIX 17A. (69)	M,S	5
f.	RESPOND TO CONTROL ROD DRIFT IN. (80F MODIFIED)	M,A,S	7
g.	LINE UP INJECTION SYSTEMS - RCIC IN ACCORDANCE WITH EOI APPENDIX 5C (18 modified).	M,A,S	4

**B.2 Facility Walk-Through**

a.	2/3-SSI-2-1 ATTACHMENT 1, SECTION 1.0, UNIT 2 REACTOR BUILDING FIRE. (16TC).	D	8
b.	LINE UP ALTERNATE RPV INJECTION SYSTEM - FIRE SYSTEM IN ACCORDANCE WITH 2-EOI APPENDIX 7K (27F)	D,R	2
c.	JPM NRC-2 FILL AND VENT THE STATOR COOLING SYSTEM 2-O1-35A	N	4

\* 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

Facility: Browns FerryDate of Examination: 9/17-9/19 2001Exam Level (circle one): RO / SRO(I) / SRO(U)Operating Test No.: 1**B.1 Control Room Systems**

System / JPM Title	Type Code*	Safety Function
a. CROSSTIE CAD TRAINS A AND B TO DRYWELL CONTROL AIR IN ACCORDANCE WITH 2-EOI APPENDIX 8G. (191F).	M,A,C	3
b. 2-EOI APPENDIX 12- PRIMARY CONTAINMENT VENTING FROM DRYWELL THROUGH FCV-84-20 (51F-MOD).	M,A,S	9
c. START A RECIRC PUMP DURING POWER OPERATION.(JPM 90).	D,S	1
d. N/A		
e. N/A		
f. N/A		
g. N/A		

**B.2 Facility Walk-Through**

a. 2/3-SSI-2-1 ATTACHMENT 1, SECTION 1.0, UNIT 2 REACTOR BUILDING FIRE. (16TC).	D	8
b. LINE UP ALTERNATE RPV INJECTION SYSTEM - FIRE SYSTEM IN ACCORDANCE WITH 2-EOI APPENDIX 7K (27F)	D,R	2
c. N/A		

\* 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

JPM NUMBER: 39 NRC - Modified for control room use

TITLE: EOI APPENDIX 8G - CROSSTIE CAD TO DRYWELL CONTROL AIR

TASK NUMBER: U-000-EM-74

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

VALIDATED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

### REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
2	11/28/94	1,2,3,4	REVISE TO NEW FORMAT
3	10/23/96	4,10	ADDEDED NON-CRITICAL STEP
4	11/02/97	ALL	FORMAT, CHANGED MGT. EXPECT. TO PLANT WORK EXPECTATIONS, ADDED 3-WAY
5	7/30/01	ALL	NRC Revised JPM to include CR cues

OPERATOR: \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER:: 39 NRC

TASK NUMBER: U-000-EM-74

TASK TITLE: CROSSTIE CAD TRAINS A AND B TO DRYWELL CONTROL AIR IN  
ACCORDANCE WITH EOI APPENDIX 8G

K/A NUMBER: 218000A2.03 K/A RATING: RO3.4 SRO: 3.6

\*\*\*\*\*

TASK STANDARD: PERFORM MANIPULATIONS REQUIRED TO ALIGN CONTAINMENT AIR  
DILUTION SYSTEMS A AND B TO THE DRYWELL CONTROL AIR  
SYSTEM

LOCATION OF PERFORMANCE: SIMULATOR \_\_\_\_\_ PLANT \_\_\_\_\_ CONTROL ROOM X

REFERENCES/PROCEDURES NEEDED: 3-EOI APPENDIX 8G, REV 4

VALIDATION TIME: \_\_\_\_\_ CONTROL ROOM: 4 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: \_\_\_\_\_ DATE: \_\_\_\_\_

\*\*\*\*\*

**IN-CONTROL ROOM** I will explain the initial conditions and state the task to be performed. I will provide initiating cues, instrument readings, indication, and reports on other actions when directed by you. **You will simulate all actions.** 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 3 reactor has scrammed due to low RPV level. EOI-1 has been followed to RC/P-9.

**INITIATING CUES:** The UNIT SUPERVISOR has directed you to perform Appendix 8G.

START TIME\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not CriticalX

**WHEN REQUESTED BY EXAMINER**Identify/obtain copy of required procedure.

Standard:

**IDENTIFIED OR OBTAINED**copy of 3-EOI APPENDIX 8G.

SAT\_UNSAT\_N/A\_ COMMENTS:\_\_\_\_\_

Performance Step: Critical X Not Critical   

1. **OPEN** the following valves:
  - 0-FCV-84-5, CAD SYSTEM A N2 SHUTOFF VALVE (Unit 3, Panel 9-54)

**CUE: AFTER applicant placed 0-HS-84-5A in the OPEN position. RED valve position indicating lamp is illuminated.**

**Standard:**

**PLACED 0-HS-84-5A in the OPEN position and VERIFIED illuminated RED valve position indicating lamp.**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical X Not Critical   

- 0-FCV-84-16, CAD SYSTEM B N2 SHUTOFF VALVE (Unit 3, Panel 9-55).

**CUE: After applicant places 0-FCV-84-16A in the OPEN position. RED valve position indicating lamp is illuminated.**

**Standard:**

**PLACED** 0-FCV-84-16A in the **OPEN** position and **VERIFIED** illuminated **RED** valve position indicating lamp.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

Circumstance	Percentage of respondents (%)
If someone is attacking you	85
If someone is threatening you	75
If someone is harassing you	65
If someone is insulting you	55
If someone is annoying you	45

\*\*\*\*\*

Performance Step:                      Critical\_ Not CriticalX

2.     **VERIFY** 0-PI-84-6/3, VAPORIZER A OUTLET PRESS, and 0-PI-84-17/3, N2 VAPORIZER B OUTLET PRESS, indicate approximately 100psig (Unit 3, Panel 9-54 and 9-55).

**CUE:** When checked, 0-PI-84-6 and 0-PI-84-17 indicate approximately 100 psig.

Standard:

**VERIFIED** 0-PI-84-6/3 and 0-PI-84-17/3 indicating approximately 100psig.

SAT\_\_\_\_\_UNSAT\_\_\_\_\_N/A\_\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

Performance Step:                      Critical\_ Not Critical X

4.        **CHECK OPEN3-FSV-84-48, CAD A CROSS TIE TO DW CONTROL AIR (Unit 3, Panel 9-54).**

**CUE: AFTER applicant simulates placing 3-HS-84-48 in the OPEN position and checks light indications. RED valve position indicating lamp is illuminated.**

Standard:

**VERIFIED** illuminated RED valve position indicating lamp above 3-HS-84-48.

SAT\_\_\_\_\_UNSAT\_\_\_\_\_N/A\_\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Critical X Not Critical\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

6. CHECK OPEN3-FSV-84-49, CAD B CROSS TIE TO DW CONTROL AIR (Unit 3, Panel 9-55).

Standard:

VERIFIED illuminated RED valve position indicating lamp above 3-HS-84-49.

CUE: AFTER applicant performed all steps correctly, then RED valve position indicating lamp is illuminated.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

7. CHECK MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW, 3-PA-32-31, alarm cleared (3-XA-55-3D, Window 18).

Standard:

VERIFIED MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW alarm cleared.

CUE: When trainee checks 3-9-3D alarm panel, MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW alarm did not clear.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_ Not CriticalX

8. IF... MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW, 2-PA-32-3 annunciator is or remains in alarm on Panel 9-3 (2-XA-55-3D, Window 18),

THEN **DETERMINE** which Drywell Control Air header is depressurized as follows:

- a. Dispatch personnel to Unit 3, RB, El 565 ft, to monitor the following indication for low pressure:
- 3-PI-84-51, CAD A CROSSTIE TO DWCA PRESS INDR, for CAD A (R-17 S-line, by Drywell Access Door)
  - 3-PI-84-50, DW CONTROL AIR N2 SUPPLY PRESS indicator, for CAD B (R-19 U-line, behind 480V RB Vent Board 3B).

Standard:

Dispatched personnel to monitor 3-PI-84-51 and 3-PI-84-50.

**CUE:** When personnel dispatched, 3-PI-84-51 indicates 63psig and lowering, 3-PI-84-50 indicates 98 psig and stable.

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A\_\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

NOTE: CAD System A to Drywell Control Air supplies the following MSIVs:

- 3-FCV-1-14, MSIV LINE A INBOARD
- 3-FCV-1-26, MSIV LINE B INBOARD

Note: CAD System B to Drywell Control Air supplies the following MSIVs:

- 3-FCV-1-37, MSIV LINE C INBOARD
- 3-FCV-1-51, MSIV LINE D INBOARD

\*\*\*\*\*

Performance Step

Critical\_ Not Critical X

- c. **MONITOR** inboard MSIV indication status for valves drifting closed

Standard:

Checked MSIV position indications on Panel 3-9-3 and determined no MSIVs drifting closed.

**Cue: When checked, all MSIVs indicate fully open**

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Critical X Not Critical   

---

\*\*\*\*\*

\*\*\*\*\*

Performance Step

Critical X Not Critical   

10. IF.....Drywell Control Air header supplied from CAD System B shows indication of being depressurized,,  
THEN...CLOSE the following valves:
- 0-FCV-84-16, CAD SYSTEM B N2 SHUTOFF VALVE (Unit 3, Panel 3-9-55).
  - 3-FSV-84-49, CAD B CROSS TIE TO DW CONTROL AIR (Unit 3, Panel 3-9-55).

Standard:

Did not close 0-FCV-84-16 or 3-FSV-84-49.

**Cue:** If simulated, 0-FCV-84-16 and 3-FSV-84-49 GREEN position indicating lamps are illuminated.

SAT    UNSAT    N/A    COMMENTS:   

\*\*\*\*\*

\*\*\*\*\*

Performance Step

Critical    Not Critical X

**PERFORMER** demonstrated proper plant work expectations while performing this JPM.

Standard:

3 way communications, attention to detail, touch STAAR.

SAT    UNSAT    N/A    COMMENTS:   

\*\*\*\*\*

END OF TASK

STOP TIME

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EOI PROGRAM MANUAL SECTION IX**

**3-EOI APPENDIX-8G**

**CROSSTIE CAD TO DRYWELL CONTROL AIR**

**REVISION 1**

PREPARED BY: M. Morrow

PHONE: 3708

RESPONSIBLE ORGANIZATION: Operations

APPROVED BY: A. S. Bhatnagar

EFFECTIVE DATE: 10/26/00

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: 04/03/93

QUALITY-RELATED

HISTORY OF REVISION/REVIEW  
3-EOI APPENDIX-8G

<u>REV.</u> <u>NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
0	10/5/97	ALL	New procedure. Necessary to support implementation of BFNP Unit 3 EOIs.
1	10/26/00	All	Converted to MS-Word.

**3-EOI APPENDIX-8G****CROSSTIE CAD TO DRYWELL CONTROL AIR**

LOCATION: Unit 3 Control Room

ATTACHMENTS: None

(✓)

1. **OPEN** the following valves:

- 0-FCV-84-5, CAD SYSTEM A N2 TANK OUTLET VALVE  
(Unit 3, Panel 3-9-54) \_\_\_\_\_
- 0-FCV-84-16, CAD SYSTEM B N2 TANK OUTLET VALVE  
(Unit 3, Panel 3-9-55). \_\_\_\_\_

2. **VERIFY** 0-PI-84-6/3, VAPOR A OUTLET PRESS, and  
0-PI-84-17/3, VAPOR B OUTLET PRESS, indicate approximately  
100 psig (Unit 3, Panel 3-9-54 and 3-9-55). \_\_\_\_\_3. **PLACE** keylock switch 3-HS-84-48, CAD A CROSS TIE TO DW  
CONTROL AIR, in OPEN (Unit 3, Panel 3-9-54). \_\_\_\_\_4. **CHECK OPEN** 3-FSV-84-48, CAD A CROSS TIE TO DW CONTROL  
AIR, (Unit 3, Panel 3-9-54). \_\_\_\_\_5. **PLACE** keylock switch 3-HS-84-49, CAD B CROSS TIE TO DW  
CONTROL AIR, in OPEN (Unit 3, Panel 3-9-55). \_\_\_\_\_6. **CHECK OPEN** 3-FSV-84-49, CAD B CROSS TIE TO DW CONTROL  
AIR (Unit 3, Panel 3-9-55). \_\_\_\_\_7. **CHECK** MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW,  
3-PA-32-31, alarm cleared (3-XA-55-3D, Window 18). \_\_\_\_\_

8. IF.....MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW,  
3-PA-32-31, annunciator is or remains in alarm  
(3-XA-55-3D, Window 18),  
THEN....**DETERMINE** which Drywell Control Air header is  
depressurized as follows:

a. **DISPATCH** personnel to Unit 3, RB, El 565 ft, to  
monitor the following indications for low pressure:

- 3-PI-84-51, CAD A CROSSTIE TO DWCA PRESS INDR,  
for CAD A (R-17 S-line, by Drywell Access Door) \_\_\_\_\_
- 3-PI-84-50, DW CONT AIR N2 SUPPLY PRESS  
indicator, for CAD B (R-19 U-line, behind  
480V RB Vent Board 3B). \_\_\_\_\_

b. **MONITOR** 0-FI-84-7/3(18/3), CAD A(B) N2 SYSTEM FLOW,  
on Panel 3-9-54(55) for high flow. \_\_\_\_\_

NOTE: CAD System A to Drywell Control Air supplies the  
following MSIVs:

- 3-FCV-1-14, MSIV LINE A INBOARD
- 3-FCV-1-26, MSIV LINE B INBOARD.

NOTE: CAD System B to Drywell Control Air supplies the  
following MSIVs:

- 3-FCV-1-37, MSIV LINE C INBOARD
- 3-FCV-1-51, MSIV LINE D INBOARD.

c. **MONITOR** inboard MSIV indication status for valves  
drifting closed. \_\_\_\_\_

9. IF.....Drywell Control Air header supplied from CAD System  
A shows indications of being depressurized,  
THEN....**CLOSE** the following valves:

- 0-FCV-84-5, CAD SYSTEM A N2 SHUTOFF VALVE  
(Unit 3, Panel 3-9-54) \_\_\_\_\_
- 3-FSV-84-48, CAD A CROSS TIE TO DW CONTROL AIR  
(Unit 3, Panel 3-9-54). \_\_\_\_\_

10. IF.....Drywell Control Air header supplied from  
CAD B shows indications of being depressurized,  
THEN....**CLOSE** the following valves:

- 0-FCV-84-16, CAD SYSTEM B N2 SHUTOFF VALVE  
(Unit 3, Panel 3-9-55) \_\_\_\_\_
- 3-FSV-84-49, CAD B CROSS TIE TO DW CONTROL AIR  
(Unit 3, Panel 3-9-55). \_\_\_\_\_

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 51F (MOD)

TITLE: 2-EOI APPENDIX 12 - PRIMARY CONTAINMENT  
VENTING FROM DRYWELL THROUGH FCV-84-20

TASK NUMBER: U-000-EM-61

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 VALIDATED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 TRAINING  
 PLANT CONCURRENCE: \_\_\_\_\_ DATE: \_\_\_\_\_  
 OPERATIONS

\* Examination JFMS 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	11/28/94	1,2,3,4	REVISE TO NEW FORMAT
4	10/28/95	ALL	GENERAL REVISION
5	10/24/96	4, 15	ADDED NON-CRIT. STEP ON TOUCH STAAR, AND CHANGED ASOS TO US.
6	10/1/97	ALL	FORMAT, CHANGED MGT. EXPECTATIONS TO PLANT WORK EXPECTATIONS AND ADDED 3-WAY COMM.
7	01/04/99	ALL	NEW EOI REVISION
8	10/21/99	ALL	PROCEDURE REVISION
9	9/22/00	ALL	GENERAL REVISION

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 51F (MOD)

TASK NUMBER: U-000-EM-61

TASK TITLE: VENT PRIMARY CONTAINMENT IN ACCORDANCE WITH 2-EOI  
APPENDIX 12

K/A NUMBER: 295024EA1.20 K/A RATING: RO 3.5 SRO: 3.6

K/A NUMBER: 288000A2.01 K/A RATING: RO 3.3 SRO 3.4

\*\*\*\*\*

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO VENT THE PRESSURE  
SUPPRESSION CHAMBER AS DIRECTED BY 2-EOI APPENDIX  
12.

LOCATION OF PERFORMANCE: SIMULATOR X PLANT \_\_\_\_\_ CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 12, REV. 2

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 a Unit 2 Operator. Unit 2 reactor has scrammed. A leak exists in primary containment. EOI-2 has been followed to PC/P-1.

**INITIATING CUES:** The UNIT SUPERVISOR directs you to vent containment in accordance with 2-EOI Appendix 12.

**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 12.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

CAUTION

Stack release rates exceeding  $1.4 \times 10^7$   $\mu\text{Ci/sec}$ , or 0-SI  
4.8.B.1.a.1 release fraction above 1.0 will result in ODCM  
release limits being exceeded.

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

1. **VERIFY** at least one SGTS train in service.

Standard:

**VERIFIED** A, B or C SGT Trains in service by illuminated red  
SGT status indicating lamps on Panel 2-9-20.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

2. **VERIFY CLOSED** the following valves (Panel 2-9-3 or Panel 2-9-54):

- 2-FCV-64-31, DRYWELL INBOARD ISOLATION VLV,
- 2-FCV-64-29, DRYWELL VENT INBD ISOL VALVE,
- 2-FCV-64-34, SUPPR CHBR INBOARD ISOLATION VLV,
- 2-FCV-64-32, SUPPR CHBR VENT INBD ISOL VALVE.

Standard:

**VERIFIED** 2-FCV-64-31, 29, 34, AND 32 are closed by illuminated green status indicating lamps on Panel 2-9-3 or Panel 2-9-54.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

3. IF. . . . While executing this procedure to vent the Suppression Chamber, Suppression Pool water level can not be determined to be below 20 ft,  
THEN. . . **PERFORM** step 13 to secure the vent path and re-enter this procedure if further venting is required.

Standard:

**VERIFIED** level < 20 ft on narrow or wide range indicators/recorder on Panel 2-9-3, i.e. 2-LI-64-159A or 2-LI-64-54A and **CONTINUED** with Step 4.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

4. IF. . . . While executing this procedure the desired vent path is lost or can not be established,  
THEN. . . **PERFORM** step 13 to secure the vent path and re-enter this procedure if further venting is required.

Standard:

**NONE:** Operator read step 4 and continued to step 5.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

CAUTION

Venting Primary Containment during CAD addition is outside the CAD system FSAR design basis.

\*\*\*\*\*

CUE: EOIs ARE THE GOVERNING PROCEDURE

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

5. IF. . . . While executing this procedure, CAD addition per SAMG-2, Step G-4 OR G-9, is to begin,  
THEN. . . BEFORE CAD is initiated, **PERFORM** Step 13 to secure the vent path.

NOTE: Venting may be accomplished using EITHER:

- 2-FIC-84-19, PATH B VENT FLOW CONT,

OR

- 2-FIC-84-20, PATH A VENT FLOW CONT.

NOTE: Venting the Drywell should be performed ONLY if the Suppression Chamber can NOT be vented.

CUE: EOIs ARE THE GOVERNING PROCEDURE

Standard:

Operator determines that since EOIs are in effect the SAMG's are not continued to step 6.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

6. IF.....EITHER of the following exists:

- Suppression Pool water level can not be determined to be below 20 ft,

OR

- Suppression Chamber can not be vented,

OR

- SRO orders Direct drywell venting

THEN...**CONTINUE** in this procedure at:

- Step 10 to vent the Drywell through 2-FCV-84-19,

OR

- Step 11 to vent the Drywell through 2-FCV-84-20.

Standard:

**VERIFIED** level < 20 ft on narrow or wide range indicators/recorder on Panel 2-9-3, i.e. 2-LI-64-159A or 2-LI-64-54A and **CONTINUED** with Step 7.

JPM NO. 51F  
REV. NO. 9  
PAGE 10 OF 26

SAT \_\_\_ UNSAT \_\_\_ N/A \_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

7. **CONTINUE** in this procedure at:

- Step 8 to vent the Suppression Chamber through 2-FCV-84-19,

OR

- Step 9 to vent the Suppression Chamber through 2-FCV-84-20.

Standard:

**CONTINUED** in this procedure at Step 8 to vent the Suppression Chamber through 2-FCV-84-19.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



\*\*\*\*\*

Performance Step :                      Critical X Not Critical\_\_\_\_

- c.     **PLACE** 2-FIC-84-19, PATH B VENT FLOW CONT, in AUTO  
with setpoint at 100 scfm (Panel 2-9-55).

Standard:

**PLACED** 2-FIC-84-19 in AUTO at 100 scfm.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_    COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step :                      Critical X Not Critical\_\_\_\_

- d.     **PLACE** keylock switch 2-HS-84-19, 2-FCV-84-19  
CONTROL, in OPEN (Panel 2-9-55).

Standard:

**PLACED** 2-HS-84-19 in the OPEN position.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_    COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step : Critical X Not Critical \_\_\_\_\_

- e. **VERIFY** 2-FIC-84-19, PATH B VENT FLOW CONT, is indicating approximately 100 scfm.

Standard:

**OBSERVED** 2-FIC-84-19 and **DETERMINED** flow was **NOT** being developed . **REALIZED** THAT PSC COULD NOT BE VENTED VIA 2-FCV-84-19 AND OPERATOR TRANSITIONS TO **STEP 13 AS DIRECTED BY STEP 4.**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical X Not Critical \_\_\_\_\_

13. WHEN . . . .ANY of the following exist:

- Venting is no longer required,

OR

- Pressure in the space being vented approaches zero,

OR

- Directed by SRO,

OR

- Directed by Step 3, 4, or 5,

THEN. . .**SECURE** venting as follows:

\*\*\*\*\*

Performance Step :            Critical\_\_\_Not Critical\_X

- a.    **VERIFY** the following keylock switches in OFF  
      (Panel 2-9-54):

- 2-HS-84-35, SUPPR CHBR/DW VENT ISOL BYP SELECT,
- 2-HS-84-36, SUPPR CHBR/DW VENT ISOL BYP SELECT.

Standard:

**VERIFIED** 2-HS-84-35 and 36, SUPPR CHBR/DW VENT ISOL BYP  
SELECT in OFF position.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_    COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step :            Critical\_\_\_Not Critical\_X

- b.    **VERIFY** keylock switch 2-HS-84-20, 2-FCV-84-20  
      ISOLATION BYPASS, in NORMAL (Panel 2-9-55).

Standard:

**VERIFIED** keylock switch 2-HS-84-20, 2-FCV-84-20 ISOLATION  
BYPASS, in NORMAL on Panel 2-9-55.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_    COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step :            Critical X Not Critical   

- c. **VERIFY** keylock switch 2-HS-84-19, 2-FCV-84-19 CONTROL, in CLOSE (Panel 2-9-55).

Standard:

**VERIFIED** keylock switch 2-HS-84-19, 2-FCV-84-19 CONTROL, in CLOSE on Panel 2-9-55.

SAT	UNSAT	N/A	COMMENTS:

---

---

\*\*\*\*\*

Performance Step : Critical\_\_\_Not Critical\_X

- d. **VERIFY CLOSED** the following valves (Panel 2-9-3 or Panel 2-9-54):

- 2-FCV-64-31, DRYWELL INBOARD ISOLATION VLV,
- 2-FCV-64-29, DRYWELL VENT INBD ISOL VALVE,
- 2-FCV-64-34, SUPPR CHBR INBOARD ISOLATION VLV,
- 2-FCV-64-32, SUPPR CHBR VENT INBOARD ISOL VLV,

Standard:

**VERIFIED CLOSED** 2-FCV-64-31, 29, 34, AND 32 by **VERIFYING** position indicating light **GREEN** on all the listed valves.

SAT      UNSAT      N/A      COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_\_\_Not Critical X

- e. **VERIFY CLOSED** 2-FCV-64-141, DRYWELL DP COMP BYPASS VALVE (Panel 2-9-3).

Standard:

**VERIFIED CLOSED** 2-FCV-64-141, DRYWELL DP COMP BYPASS VALVE Panel 2-9-3 by **VERIFYING GREEN** position indicating light on said valve.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

**INSTRUCTOR NOTE:** STUDENT RE-ENTERS APPENDIX AND WINDS UP VENTILATOR THE Drywell VIA FCV 84-20 PER STEP 11. RECHECK ALL STEPS UP THROUGH STEP 6 AND THEN PROCEED WITH STEP 1

**NOTE:** SIMULATOR INSTRUCTOR ENSURE 2-LI-64-159A AND 2-LI-54A TO > Feet.

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_\_\_Not Critical X

1. **VERIFY** at least one SGTS train in service.

Standard:

**VERIFIED** A, B or C SGT Trains in service by illuminated red SGT status indicating lamps on Panel 2-9-20.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

3. **VERIFY CLOSED** the following valves (Panel 2-9-3 or Panel 2-9-54):

- 2-FCV-64-31, DRYWELL INBOARD ISOLATION VLV,
- 2-FCV-64-29, DRYWELL VENT INBD ISOL VALVE,
- 2-FCV-64-34, SUPPR CHBR INBOARD ISOLATION VLV,
- 2-FCV-64-32, SUPPR CHBR VENT INBD ISOL VALVE.

Standard:

**VERIFIED** 2-FCV-64-31, 29, 34, AND 32 are closed by illuminated green status indicating lamps on Panel 2-9-3 or Panel 2-9-54.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

NOTE: Applicant may elect to re-enter on this step.

Performance Step: Critical\_\_ Not Critical X

4. IF. . . . While executing this procedure to vent the Suppression Chamber, Suppression Pool water level can not be determined to be below 20 ft,  
THEN. . . **PERFORM** step 13 to secure the vent path and re-enter this procedure if further venting is required.

Standard:

**VERIFIED** level < 20 ft on narrow or wide range indicators/recorder on Panel 2-9-3, i.e. 2-LI-64-159A or 2-LI-64-54A and **CONTINUED** with Step 4.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X

4. IF. . . . While executing this procedure the desired vent path is lost or can not be established,  
THEN. . . **PERFORM** step 13 to secure the vent path and re-enter this procedure if further venting is required.

Standard:

**NONE:** Operator read step 4 and continued to step 5.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

CAUTION

Venting Primary Containment during CAD addition is outside the CAD system FSAR design basis.

\*\*\*\*\*

CUE: EOIs ARE THE GOVERNING PROCEDURE

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

5. IF. . . . While executing this procedure, CAD addition per SAMG-2, Step G-4 OR G-9, is to begin,  
THEN. . . BEFORE CAD is initiated, **PERFORM** Step 13 to secure the vent path.

NOTE: Venting may be accomplished using EITHER:

- 2-FIC-84-19, PATH B VENT FLOW CONT,

OR

- 2-FIC-84-20, PATH A VENT FLOW CONT.

NOTE: Venting the Drywell should be performed ONLY if the Suppression Chamber can NOT be vented.

CUE: EOIs ARE THE GOVERNING PROCEDURE

Standard:

Operator determines that since EOIs are in effect the SAMG's are not continued to step 6.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical  x  Not Critical\_\_\_

6. IF.....EITHER of the following exists:

- Suppression Pool water level can not be determined to be below 20 ft,

OR

- Suppression Chamber can not be vented,

OR

- SRO orders Direct drywell venting

THEN...CONTINUE in this procedure at:

- Step 10 to vent the Drywell through 2-FCV-84-19,

OR

- Step 11 to vent the Drywell through 2-FCV-84-20.

Standard:

**VERIFIED** level > 20 ft on narrow or wide range indicators/recorder on Panel 2-9-3, 2-LI-64-54A and **CONTINUED** with Step 7.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

Performance Step : Critical X Not Critical \_\_\_\_\_

11. **VENT** the Drywell using 2-FIC-84-20, PATH A VENT FLOW  
CONT, as follows:

- a. **VERIFY CLOSED** 2-FCV-64-141, DRYWELL DP COMP BYPASS  
VALVE (Panel 2-9-3).

Standard:

**PLACED** 2-HS-64-141, Panel 2-9-3, in the CLOSED position and  
**VERIFIED** illuminated GREEN valve position indicating lamp  
above associated hand switch.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step : Critical X Not Critical \_\_\_\_\_

- b. **PLACE** keylock switch 2-HS-84-35, SUPPR CHBR/DW VENT ISOL  
BYP SELECT, to DRYWELL position (Panel 2-9-54).

Standard:

**PLACED** 2-HS-84-35 in the DRYWELL position.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

- c. **VERIFY OPEN** 2-FCV-64-31, DRYWELL INBOARD ISOLATION VLV  
(Panel 2-9-54)

Standard:

**VERIFIED** illuminated RED valve position indicating lamp above  
2-HS-64-31.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

- d. **VERIFY** 2-FIC-84-20, PATH A VENT FLOW CONT, in AUTO with  
setpoint at 100 scfm (Panel 2-9-55).

Standard:

**PLACED** 2-FIC-84-20 in AUTO at 100 scfm.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_\_

- e. **PLACE** keylock switch 2-HS-84-20, 2-FCV-84-20 ISOLATION

BYPASS, IN BYPASS, (Panel 2-9-55).

Standard:

**PLACED** 2-HS-84-20 in the BYPASS position.

SAT\_\_\_\_UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

---

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_\_\_\_

- f. **VERIFY** 2-FIC-84-20, PATH A VENT FLOW CONT, is indicating approximately 100 scfm.

Standard:

**DETERMINED** vent flow was stable at 100 scfm as indicated on 2-FIC-84-20 and **continued** with the **next step** proceeded to step 12 of this procedure.

SAT\_\_\_\_UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

---

\*\*\*\*\*

Performance Step : Critical X Not Critical     

12. **ADJUST** 2-FIC-84-19, PATH B VENT FLOW CONTR, or 2-FIC-84-20, PATH A VENT FLOW CONT, as applicable, to maintain ALL of the following:

- Stable flow as indicated on controller

AND

- 2-PA-84-21, VENT PRESS TO SGT HIGH, alarm light extinguished,

AND

- Release rates as determined below:
  - i. IF. .PRIMARY CONTAINMENT FLOODING per C-1, Alternate Level Control, is in progress,  
THEN. **.MAINTAIN** release rates below those specified in Attachment 2.

CUE: PRIMARY CONTAINMENT FLOODING IS NOT REQUIRED.

- ii. IF. . Severe Accident Management Guidelines are being executed,

THEN. **.MAINTAIN** release rates below those specified by the TSC SAM Team.

CUE: EOIs are still in effect.

iii. IF. .Venting for ANY other reason than items i  
or ii above,  
THEN. . **MAINTAIN** release rates below

- Stack release rate of  $1.4 \times 10^7$   
 $\mu\text{Ci/sec}$

**AND**

- 0-SI-4.8.B.1.a.1 release fraction  
of 1.

Standard:

**ADJUSTED** 2-FIC-84-20 (as necessary) to obtain maximum  
indicated flow without 2-PA-84-21 yellow alarm light  
illuminating. **REQUESTED** release rates from Log AUO.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

**CUE: [WHEN CHECKED] STACK RELEASE RATES ARE  $1.0 \times 10^2$   
 $\mu\text{Ci/sec}$  AND THE STACK RELEASE FRACTION IS  $<1$ .**

**When flow is established at 100 scfm and the release rate is  
checked another operator will continue to monitor the release.**

\*\*\*\*\*  
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:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*  
Performance Step: Critical\_\_\_\_ Not Critical X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

END OF TASK

STOP TIME: \_\_\_\_\_

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

JPM NUMBER: 90 JPM B.I.f  
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

- \* LOR 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

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

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 88

VALIDATION TIME: SIMULATOR: 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 \_\_\_\_\_

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. All prerequisites have been met and 2-SR-3.4.9.3 & 4 has been successfully completed. The startup procedure has been completed through step 5.2.16.

**This JPM is Time Critical.**

**INITIATING CUES:** The US directs you to continue the return of 2A Recirc Pump to service as directed by 2-OI-68 starting at Step 5.2.17 and balance jet pump flows.

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: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

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.

\*\*\*\*\*

Performance Step : Critical X Not Critical\_\_

5.2.17 VERIFY RECIRC LOOP A(B) DIFF PRESS LOW  
ANNUNCIATION, 2-XA-55-4A (4B), WINDOW 31 IN ALARM.

5.2.18 VERIFY CLOSED, RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

Standard:

VERIFIED 2-XA-55-4A WIN 31 IN ALARM, AND, PLACED 2-HS-68-3A in the CLOSE position and VERIFIED 2-FCV-68-3 TRAVELS FULLY CLOSED.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

**Performance Step :** Critical X Not Critical     

5.2.19 **DEPRESS** pushbutton, SCOOP TUBE 2A(2B) RESET, 2-HS-96-15(16).

**Standard:**

**DEPRESSED 2-HS-96-15 ON Panel 2-9-4**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

Figure 1. The effect of the concentration of the inhibitor on the rate of polymerization of the monomer. The reaction conditions were:  $[M] = 0.05 \text{ mol/L}$ ,  $[AIBN] = 0.001 \text{ mol/L}$ ,  $[I] = 0.001 \text{ mol/L}$ ,  $[I] = 0.002 \text{ mol/L}$ ,  $[I] = 0.004 \text{ mol/L}$ ,  $[I] = 0.008 \text{ mol/L}$ ,  $[I] = 0.016 \text{ mol/L}$ ,  $[I] = 0.032 \text{ mol/L}$ ,  $[I] = 0.064 \text{ mol/L}$ ,  $[I] = 0.128 \text{ mol/L}$ ,  $[I] = 0.256 \text{ mol/L}$ ,  $[I] = 0.512 \text{ mol/L}$ ,  $[I] = 1.024 \text{ mol/L}$ ,  $[I] = 2.048 \text{ mol/L}$ ,  $[I] = 4.096 \text{ mol/L}$ ,  $[I] = 8.192 \text{ mol/L}$ ,  $[I] = 16.384 \text{ mol/L}$ ,  $[I] = 32.768 \text{ mol/L}$ ,  $[I] = 65.536 \text{ mol/L}$ ,  $[I] = 131.072 \text{ mol/L}$ ,  $[I] = 262.144 \text{ mol/L}$ ,  $[I] = 524.288 \text{ mol/L}$ ,  $[I] = 1048.576 \text{ mol/L}$ ,  $[I] = 2097.152 \text{ mol/L}$ ,  $[I] = 4194.304 \text{ mol/L}$ ,  $[I] = 8388.608 \text{ mol/L}$ ,  $[I] = 16777.216 \text{ mol/L}$ ,  $[I] = 33554.432 \text{ mol/L}$ ,  $[I] = 67108.864 \text{ mol/L}$ ,  $[I] = 134217.728 \text{ mol/L}$ ,  $[I] = 268435.456 \text{ mol/L}$ ,  $[I] = 536870.912 \text{ mol/L}$ ,  $[I] = 1073741.824 \text{ mol/L}$ ,  $[I] = 2147483.648 \text{ mol/L}$ ,  $[I] = 4294967.296 \text{ mol/L}$ ,  $[I] = 8589934.592 \text{ mol/L}$ ,  $[I] = 17179869.184 \text{ mol/L}$ ,  $[I] = 34359738.368 \text{ mol/L}$ ,  $[I] = 68719476.736 \text{ mol/L}$ ,  $[I] = 137438953.472 \text{ mol/L}$ ,  $[I] = 274877906.944 \text{ mol/L}$ ,  $[I] = 549755813.888 \text{ mol/L}$ ,  $[I] = 1099511627.776 \text{ mol/L}$ ,  $[I] = 2199023255.552 \text{ mol/L}$ ,  $[I] = 4398046511.104 \text{ mol/L}$ ,  $[I] = 8796093022.208 \text{ mol/L}$ ,  $[I] = 17592186044.416 \text{ mol/L}$ ,  $[I] = 35184372088.832 \text{ mol/L}$ ,  $[I] = 70368744177.664 \text{ mol/L}$ ,  $[I] = 140737488355.328 \text{ mol/L}$ ,  $[I] = 281474976710.656 \text{ mol/L}$ ,  $[I] = 562949953421.312 \text{ mol/L}$ ,  $[I] = 1125899906842.624 \text{ mol/L}$ ,  $[I] = 2251799813685.248 \text{ mol/L}$ ,  $[I] = 4503599627370.496 \text{ mol/L}$ ,  $[I] = 9007199254740.992 \text{ mol/L}$ ,  $[I] = 18014398509481.984 \text{ mol/L}$ ,  $[I] = 36028797018963.968 \text{ mol/L}$ ,  $[I] = 72057594037927.936 \text{ mol/L}$ ,  $[I] = 144115188075855.872 \text{ mol/L}$ ,  $[I] = 288230376151711.744 \text{ mol/L}$ ,  $[I] = 576460752303423.488 \text{ mol/L}$ ,  $[I] = 1152921504606846.976 \text{ mol/L}$ ,  $[I] = 2305843009213693.952 \text{ mol/L}$ ,  $[I] = 4611686018427387.904 \text{ mol/L}$ ,  $[I] = 9223372036854775.808 \text{ mol/L}$ ,  $[I] = 18446744073709551.616 \text{ mol/L}$ ,  $[I] = 36893488147419103.232 \text{ mol/L}$ ,  $[I] = 73786976294838206.464 \text{ mol/L}$ ,  $[I] = 147573952589676412.928 \text{ mol/L}$ ,  $[I] = 295147905179352825.856 \text{ mol/L}$ ,  $[I] = 590295810358705651.712 \text{ mol/L}$ ,  $[I] = 1180591620717411303.424 \text{ mol/L}$ ,  $[I] = 2361183241434822606.848 \text{ mol/L}$ ,  $[I] = 4722366482869645213.696 \text{ mol/L}$ ,  $[I] = 9444732965739290427.392 \text{ mol/L}$ ,  $[I] = 18889465931478580854.784 \text{ mol/L}$ ,  $[I] = 37778931862957161709.568 \text{ mol/L}$ ,  $[I] = 75557863725914323419.136 \text{ mol/L}$ ,  $[I] = 151115727451828646838.272 \text{ mol/L}$ ,  $[I] = 302231454903657293676.544 \text{ mol/L}$ ,  $[I] = 604462909807314587353.088 \text{ mol/L}$ ,  $[I] = 1208925819614629174706.176 \text{ mol/L}$ ,  $[I] = 2417851639229258349412.352 \text{ mol/L}$ ,  $[I] = 4835703278458516698824.704 \text{ mol/L}$ ,  $[I] = 9671406556917033397649.408 \text{ mol/L}$ ,  $[I] = 19342813113834066795298.816 \text{ mol/L}$ ,  $[I] = 38685626227668133590597.632 \text{ mol/L}$ ,  $[I] = 77371252455336267181195.264 \text{ mol/L}$ ,  $[I] = 154742504910672534362390.528 \text{ mol/L}$ ,  $[I] = 309485009821345068724781.056 \text{ mol/L}$ ,  $[I] = 618970019642690137449562.112 \text{ mol/L}$ ,  $[I] = 1237940039285380274899124.224 \text{ mol/L}$ ,  $[I] = 2475880078570760549798248.448 \text{ mol/L}$ ,  $[I] = 4951760157141521099596496.896 \text{ mol/L}$ ,  $[I] = 9903520314283042199192993.792 \text{ mol/L}$ ,  $[I] = 19807040628566084398385987.584 \text{ mol/L}$ ,  $[I] = 39614081257132168796771975.168 \text{ mol/L}$ ,  $[I] = 79228162514264337593543950.336 \text{ mol/L}$ ,  $[I] = 158456325028528675187087900.672 \text{ mol/L}$ ,  $[I] = 316912650057057350374175801.344 \text{ mol/L}$ ,  $[I] = 633825300114114700748351602.688 \text{ mol/L}$ ,  $[I] = 1267650600228229401496703205.376 \text{ mol/L}$ ,  $[I] = 2535301200456458802993406410.752 \text{ mol/L}$ ,  $[I] = 5070602400912917605986812821.504 \text{ mol/L}$ ,  $[I] = 10141204801825835211973625643.008 \text{ mol/L}$ ,  $[I] = 20282409603651670423947251286.016 \text{ mol/L}$ ,  $[I] = 40564819207303340847894502572.032 \text{ mol/L}$ ,  $[I] = 81129638414606681695789005144.064 \text{ mol/L}$ ,  $[I] = 162259276829213363391578010288.128 \text{ mol/L}$ ,  $[I] = 324518553658426726783156020576.256 \text{ mol/L}$ ,  $[I] = 649037107316853453566312041152.512 \text{ mol/L}$ ,  $[I] = 1298074214633706907132624082305.024 \text{ mol/L}$ ,  $[I] = 2596148429267413814265248164610.048 \text{ mol/L}$ ,  $[I] = 5192296858534827628530496329220.096 \text{ mol/L}$ ,  $[I] = 10384593717069655257060992658440.192 \text{ mol/L}$ ,  $[I] = 20769187434139310514121985316880.384 \text{ mol/L}$ ,  $[I] = 41538374868278621028243970633760.768 \text{ mol/L}$ ,  $[I] = 83076749736557242056487941267521.536 \text{ mol/L}$ ,  $[I] = 16615349947311448411297$

\*\*\*\*\*

Performance Step : Critical\_ Not Critical X

5.2.20 **VERIFY RESET, RECIRC FLUID DRIVE A(B) SCOOP TUBE LOCK 2-XA-96-15(16)**  
2 XA-55-4A(B), Window 28.

Standard:

**RESET** annunciator Panel 2-9-4A and **VERIFIED** window 28 extinguished.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### CAUTION

Recirc System operation is restricted by criteria in Illustrations 1 and 2.

\*\*\*\*\*



\*\*\*\*\*

Performance Step : Critical\_\_ Not Critical X

- Pump DP increases to above 5 psid as indicated on PUMP DP, 2-PDI-68-65(82).

Standard:

**VERIFIED** 2-PDI-68-65 indicated increase above 5 psid.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_\_ Not Critical X

- Recirc Generator A(B) speed rises to about 40 percent and then lowers to 28 percent, as indicated on RECIRC MG SET 2A(2B) GEN SPEED, 2-SI-96-2A(2B).

Standard:

**VERIFIED** 2-SI-96-3A indicated rises to ~ 40% and then lowers to 28%.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

- RECIRC LOOP A(B) DIFF PRESS LOW 2-PDS-68-65(2-PDA-68-82), 2-XA-55-4A(B), Window 31, is reset.

Standard:

**RESET** Panel 2-9-4 annunciators and **VERIFIED** Panel 2-9-4A, Window 31, **CLEARED**.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_ Not Critical X

- RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79), begins to open by the automatic jogging circuit.

Standard:

**VERIFIED** illuminated both RED and GREEN valve position indicating lamps above 2-HS-68-3A.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

- RECIRC MG SET A(B) STARTUP SEQ INCOMPLETE 2-XA-96-40(41), 2-XA-55-4A(B), Window 4 is clear.

Standard:

**VERIFIED** annunciator Panel 2-9-4A, Window 4 EXTINGUISHED.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_ Not Critical X

- **VERIFY** locally, RECIRC PUMP 2A (2B) breaker closing spring recharged by observing amber breaker spring charged light is on and closing spring target indicates charged.

Standard:

**DISPATCHED** AUO to **VERIFY** Recirc Pump 2A breaker closing spring recharged.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

**CUE:[WHEN DISPATCHED] THE AUO REPORTS RECIRC PUMP 2A BREAKER CLOSING SPRING IS CHARGED.**

**NOTES:**

- (1) In order to achieve balanced jet pump flows, the Recirc Pumps speed may require a mismatch.
- (2) Recirc Pump speed cannot be increased above 28% (~320 RPM generator speed) until total Feedwater flow is greater than 19 percent. Recirc Pump speed can be controlled between 20% (~320 RPM generator speed) using the Recirc Pump Speed Controllers.
- (3) Recirc Pump A(B) will trip 85 seconds after initiation of the automatic jogging sequence if RECIRC PUMP A3(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.

Performance Step : Critical\_ Not Critical X

5.2.22 **VERIFY** fully open, RECIRC PUMP 2A(2B) DISCHARGE VALVE, 2-FCV-68-3(79).

**Standard:**

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  
\*\*\*\*\*

5.2.23      **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.

5.2.23.1      2-SR-3.4.1(DLO), Reactor Recirculation System Dual Loop Operation.

**OR**

5.2.23.2      2-SR-3.4.1(SLO), Reactor Recirculation System Single Loop Operation.

Standard:

**NOTIFIED** Reactor Engineer to verify 2-SR-3.4.1(DLO) has been performed.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ **COMMENTS:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**CUE: REACTOR ENGINEER VERIFIED 2-SR-3.4.1 (DLO) HAS BEEN PERFORMED.**

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

5.2.24 VERIFY BAILEY NULL SWITCH A(B) pushbutton, 2-HS-96-3A(3B) backlight  
extinguished.

Standard:

**VERIFIED** Bailey Null Switch A push-button, 2-HS-96-3A back-light is not illuminated.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical X Not Critical\_\_\_

5.2.25 PLACE in AUTO, RECIRC MG 2A(2B) AUTO/MAN SELECT, 2-XS-57-16A(13A). (N/A  
if Recirc MG Set is supplied by alternate feeder.

Standard:

**PLACED** AUTO/MAN SELECT 2-XS-57-16A in AUTO.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

5.2.26 **DEPRESS** pushbutton RECIRC PUMP 2A(2B) RUNBACK RESET 2-HS-68-32(41).

Standard:

**DEPRESSED** 2-HS-68-32.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step : Critical\_ Not Critical X

5.2.27 **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:

**VERIFIED** 2-PI-68-63A indicating approximately one-half the indication of 2-PI-68-64A.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step : Critical\_\_\_ Not Critical X

5.2.28 MAINTAIN fluid drive oil temperature from cooler at 110F to 130F, on RECIRC  
MG SET 2A(2B) FLUID CLPG AND BRG TEMP, 2-TR-68-97(98), Point 9, (Panel  
2-9-21).

Standard:

**VERIFIED** Point 9 on 2-TR-68-97 indicating 110F to 130F.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ 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.

\*\*\*\*\*

**CUE:[IF ASKED] THE UNIT SUPERVISOR DIRECTS THE OPERATOR TO  
BALANCE RECIRC FLOWS.**

\*\*\*\*\*

\*\*\*\*\*

Performance Step : Critical\_ Not Critical X

5.2.29 ADJUST Recirc Pump speeds 2A(2B) using RAMP UP/RAMP DOWN pushbuttons on RECIRC PUMP 2A(2B) SPEED INDICATING CONTROL, 2-SIC-96-3A(3B), to achieve balanced jet pump flows. (N/A for Single Loop Operation)

Standard:

RAISED 2-SIC-96-3A to balance jet pump flows.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**INSTRUCTOR NOTE: WHEN COMPETENCY DEMONSTRATED ON ADJUSTING 2A RECIRC SPEED THEN TERMINATE THE JPM BY STATING "WE WILL STOP HERE".**

\*\*\*\*\*

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 .

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_\_\_Not Critical X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION .

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

**END OF TASK**

**STOP TIME**\_\_\_\_\_

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 14 JPM B.1.d (MODIFIED)

TITLE: 2-EOI APPENDIX 5A - INJECTION SYSTEMS LINEUP -  
CONDENSATE/FEEDWATER

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
3	12/6/94	1,2,3,4	REVISE TO NEW FORMAT
4	5/26/95	8,10	Typos and changed light indication from red to amber on RFP trips.
5	10/14/95	ALL	Procedure revision
6	10/30/96	ALL	PROCEDURE UPGRADE FOR NEW RFW MOD, ADDED NON-CRITICAL STEP ON TOUCH STAAR, CHANGED ASOS TO US.
7	09/17/97	ALL	FORMAT, ADDED 3-WAY COMM., CHANGED MGT EXPECTATIONS TO PLANT WORK EXP.
8	08/08/01	ALL	Matched EOI-App 5A rev Modified step 4 and 7, and made editorial changes.

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 14 (Modified)

TASK NUMBER: U-000-EM-29

TASK TITLE: LINE UP INJECTION SYSTEMS - CONDENSATE/FEEDWATER IN  
ACCORDANCE WITH 2-EOI APPENDIX 5A

K/A NUMBER: 295031EA1.08 K/A RATING: RO 3.8 SRO: 3.9

\*\*\*\*\*

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 6

VALIDATION TIME: \_\_\_\_\_ CONTROL ROOM: 8:00 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 has scrammed and EOI-1 has been entered.

**INITIATING CUES:** The UNIT SUPERVISOR has directed you to establish and maintain RPV water level +2" to +51" as directed by 2-EOI Appendix 5A, using Reactor Feed pump 2A.

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:

**Identify that the** illuminated RED valve position indicating  
lamps above 2-HS-1-121, on Panel 2-9-6 is lit for RFPT 2A.  
and take actions to close valve.

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.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

\*\*\*\*\*

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\_\_\_ Not Critical X

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:

**VERIFIED OPEN** 2-FCV-3-75 (76) OR (77) HP HTR FW OUTLET ISOL VLVS.

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** illuminated RED valve position indicating light above 2-HS-3-20, Panel 2-9-6.

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** 2-HS-46-112A, RFPT 2A START/LOCAL ENABLE, 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 2A 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** illuminated RED valve position indicating light above 2-HS-3-19.

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 2A 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: \_\_\_\_\_

---

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), REPT 2A (2B) (2C) SPEED CONTROL PDS in AUTO.

Standard:

**ADJUSTED** speed of 2A RFPT as required utilizing one of the above methods.

SAT	UNSAT	N/A	COMMENTS:

CUE: WHEN RX WATER LEVEL IS RISING AND EXAMINEE  
DEMONSTRATES CONTROL OF RX FEED PUMP:

"ANOTHER OPERATOR WILL RELIEVE YOU OF WATER LEVEL CONTROL."

"THAT WILL BE ALL FOR NOW."

\*\*\*\*\*

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:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step:

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

END OF TASK

STOP TIME\_\_\_\_\_

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EOI PROGRAM MANUAL SECTION IX**

**2-EOI APPENDIX-5A**

**INJECTION SYSTEMS LINEUP  
CONDENSATE/FEEWATER**

**REVISION 6**

PREPARED BY: M. Morrow

PHONE: 3708

RESPONSIBLE ORGANIZATION: Operations

APPROVED BY: A. S. Bhatnagar

EFFECTIVE DATE: 10/26/00

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: 02/14/92

QUALITY-RELATED

HISTORY OF REVISION/REVIEW  
2-EOI APPENDIX-5A

<u>REV. NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
0	6/15/92	ALL	New procedure. Necessary to support implementation of Revision 4 EPGs into BFNP EOIs.
1	7/10/92	ALL	Incorporate Writer's Guide discrepancies, typos, and plant nomenclature discrepancies.
2	4/21/93	ALL	Converted from WordPerfect 5.1 to Pagemaker 4.0 to better support desktop publishing capabilities.
		2	References to Control Room Labels corrected.
			Phrase "maintain RPV level" replaced with "control injection" to address cases of usage with C4 flowchart.
		1,2	Incorporated Changes as result of NRC comments:
		1	<ul style="list-style-type: none"> <li>Control Panel label information added for reference to RFPT HP and LP Stop Valves.</li> </ul>
		1	<ul style="list-style-type: none"> <li>UNID info for RFPT high RPV level trips added.</li> </ul>
		1	<ul style="list-style-type: none"> <li>Added step for placing MGU in manual.</li> </ul>
3	8/3/95	1	Revised Step 9 to require verification that all RX WTR LVL HI RFPT TRIP RESET amber lights are extinguished.
4	10/26/95	2	Corrected nomenclature for stop valves in Step 11.
5		ALL	Digital Feedwater Control: DCN's W25841A, W25842A, W25843A, added new controllers.
6	10/26/00	All	Converted to MS-Word.

**2-EOI APPENDIX-5A****INJECTION SYSTEMS LINEUP  
CONDENSATE/FEEWATER**

LOCATION: Unit 2 Control Room

ATTACHMENTS: None

(✓)

1. **VERIFY** Condensate System in service, supplying suction to RFPs. \_\_\_\_\_
2. **VERIFY OPEN** MSIVs, supplying steam to RFPTs. \_\_\_\_\_
3. **VERIFY** Hotwell Pressure below -7 in. Hg. \_\_\_\_\_
4. **VERIFY CLOSED** 2-FCV-1-121(129)(137), RFPT 2A(2B)(2C) LP STEAM SUPPLY VALVE. \_\_\_\_\_
5. **VERIFY OPEN** 2-FCV-1-125(133)(141), RFPT 2A(2B)(2C) HP STEAM SUPPLY VALVE. \_\_\_\_\_
6. **DEPRESS** 2-HS-8A(9A)(10A), RFPT 2A(2B)(2C) SPEED CONT RAISE/LOWER, and **VERIFY** amber light is illuminated. \_\_\_\_\_
7. **VERIFY** a Main Oil Pump is running for RFPT to be started. \_\_\_\_\_
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. \_\_\_\_\_

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. \_\_\_\_\_

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, as applicable:
  - ◇ 2-HS-3-108, RFPT 2A HP STOP VLV TEST \_\_\_\_\_
  - ◇ 2-HS-3-134, RFPT 2B HP STOP VLV TEST \_\_\_\_\_
  - ◇ 2-HS-3-159, RFPT 2C HP STOP VLV TEST. \_\_\_\_\_
- LP Stop Valve OPEN as indicated by red light above the following, as applicable:
  - ◇ 2-HS-3-107, RFPT 2A LP STOP VLV TEST \_\_\_\_\_
  - ◇ 2-HS-3-133, RFPT 2B LP STOP VLV TEST \_\_\_\_\_
  - ◇ 2-HS-3-158, RFPT 2C LP STOP VLV TEST. \_\_\_\_\_

11. **VERIFY OPEN** 2-FCV-3-20(13)(6), RFP 2A(2B)(2C) MIN FLOW VALVE. \_\_\_\_\_12. **PLACE** 2-HS-3-112A(138A)(163A), RFPT 2A(2B)(2C) START/LOCAL ENABLE, in START. \_\_\_\_\_13. **CHECK** RFPT 2A(2B)(2C) speed increases to approximately 600 rpm. \_\_\_\_\_14. **VERIFY OPEN** 2-FCV-3-19(12)(5), RFP 2A(2B)(2C) DISCHARGE VALVE. \_\_\_\_\_

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. \_\_\_\_\_

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. \_\_\_\_\_

17. **ADJUST** RFPT speed as necessary to control injection 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. \_\_\_\_\_

18. WHEN....RPV level is approximately equal to desired level AND automatic level control is desired,  
THEN....**PLACE** 2-LIC-46-5, REACTOR WATER LEVEL CONTROL PDS, in AUTO with individual 2-SIC-46-8(9)(10), RFPT 2A(2B)(2C) SPEED CONTROL PDS in AUTO. \_\_\_\_\_

LAST PAGE

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

JPM NUMBER: 69 JPM B.1.c Modified

TITLE: 2-EOI APPENDIX 17A - RHR IN SUPPRESSION POOL COOLING WITH A  
LPCI INITIATION SIGNAL PRESENT

TASK NUMBER: U-000-EM-79

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

VALIDATED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED : \_\_\_\_\_ DATE: \_\_\_\_\_

TRAINING

PLANT CONCURRENCE: \_\_\_\_\_ DATE: \_\_\_\_\_

OPERATIONS

- \* LOR 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	12/7/94	1,2,3,4	REVISE TO NEW FORMAT
4	5/1/96	ALL	GENERAL REVISION DUE TO PROCEDURE REV
5	8/4/96	ALL	ADDED CRITICAL STEP ON TOUCH STAAR, UNID, AND CHANGED COMM STD
6	10/2/97	ALL	FORMAT, CHANGED MGT EXPECTATIONS TO PLANT WORK EXPECTATIONS, ADDED 3-WAY COMM.
7	10/28/98	ALL	GENERAL REVISION
8	01/04/99	ALL	PROCEDURE REVISION ADDED STEP TO MONITOR RHR NPSH, & CHANGED STEP NUMBERS.
9	10/16/00	4,10,13	REVIEWED FOR ACCURACY. REMOVED NON-CRITICAL STEPS. REVERSED THE ORDER OF STEPS 2G AND 2H TO MATCH THE EOI APPENDIX. CORRECTED STEP 2.1 ON PAGE 13 TO BE STEP 2.M TO CORRECT MISNUMBERING.

### REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
10	8/8/01	ALL	Exchanged sequence of step 2.g and 2.h in order to sequence suppression pool cooling valve and pump operation identically to that used in the operating instruction 2-OI-74. Add direction to verify power available to RHR min flow valves if required to verify valve closed (TACF 2-00-012-074,TACF 3-00-008-074).

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

OPERATOR: \_\_\_\_\_

RO \_\_\_\_ SRO \_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 69

TASK NUMBER: U-000-EM-79

TASK TITLE: OPERATE RHR SYSTEM IN SUPPRESSION POOL COOLING MODE IN  
ACCORDANCE WITH 2-EOI APPENDIX 17A

K/A NUMBER: 295026EA1.01 K/A RATING: RO 4.1 SRO: 4.1

\*\*\*\*\*

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO PLACE RHR LOOP II IN  
SUPPRESSION POOL COOLING WITH A LPCI SIGNAL PRESENT AS  
DIRECTED BY 2-EOI APPENDIX 17A

LOCATION OF PERFORMANCE: SIMULATOR X PLANT \_\_\_\_ CONTROL ROOM \_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 17A, REV 8

VALIDATION TIME: CONTROL ROOM: 8:00 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. Unit 2 reactor has scrammed. Due to a LOCA, EOI-2 has been followed to SP/T-3. 2-EOI Appendices 16F and 16G, Bypassing RHR Injection Valve Timers HAVE been completed.

**INITIATING CUES:** The Unit Supervisor directs you to place RHR Loop II, "D" RHR Pump in Suppression Pool Cooling mode as directed by 2-EOI Appendix 17A.

START TIME\_\_\_\_\_

\*\*\*\*\*

Performance Step:

Critical\_\_ Not Critical X

**WHEN REQUESTED BY EXAMINER** identify/obtain copy of required EOI Appendix.17A

Standard:

**IDENTIFIED OR OBTAINED** copy of 2-EOI Appendix 17A.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step:

Critical\_\_ Not Critical X

1. IF.....Adequate core cooling is assured,  
THEN...**BYPASS** LPCI Injection Valve Timers as necessary using EOI Appendices 16F and 16G.

Standard:

None. Given in initial conditions.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X

2. PLACE RHR SYSTEM II in Suppression Pool Cooling as follows:

a. VERIFY at least one RHRSW pump supplying each EECW header.

Standard:

VERIFIED A3 or C3 AND B3 or D3 EECW pumps running by red light above handswitch on panel 2-9-3..

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_

b. VERIFY RHRSW pump supplying desired RHR Heat Exchanger(s).

Standard:

STARTED RHRSW Pump(s) D1 or D2 using handswitch and observed RED light illuminated above associated handswitch.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical  X  Not Critical

c. **THROTTLE** the following in-service RHRSW outlet valves to obtain between 1350 and 4500 gpm RHRSW flow:

- 2-FCV-23-34, RHR HX 2A RHRSW OUTLET VLV
- 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV
- 2-FCV-23-40, RHR HX 2C RHRSW OUTLET VLV
- 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV.

Standard:

**THROTTLED** valves for HX(s) in service to obtain 1350-4500 gpm RHRSW flow.

SAT   UNSAT   N/A   COMMENTS:

\*\*\*\*\*

\*\*\*\*\*

Performance Step:                      Critical X Not Critical\_\_

d.        IF.....Directed by SRO,  
          THEN...PLACE the following keylock switches in MANUAL OVERRIDE:

- 2-XS-74-122, RHR SYS I LPCI 2/3 CORE HEIGHT OVRD.
- 2-XS-74-130, RHR SYS II LPCI 2/3 CORE HEIGHT OVRD.

**CUE:    SRO DIRECTS OVERRIDE OF 2/3 CORE HEIGHT INTERLOCK**

Standard:

**PLACED** 2-XS-74-122 and 2-XS-74-130 to MANUAL OVERRIDE. Both interlock switches are required to place suppression pool cooling if a accident signal is present.

SAT\_\_\_UNSAT\_\_\_N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical  X  Not Critical

- e. IF.....LPCI INITIATION Signal exists,  
THEN...**MOMENTARILY PLACE** the following in select:
- 2-XS-74-121, RHR SYS I CTMT SPRAY/CLG VLV SELECT.
  - 2-XS-74-129, RHR SYS II CTMT SPRAY/CLG VLV SELECT.

Standard:

**MOMENTARILY PLACED** 2-XS-74-121 and 2-XS-74-129 in the SELECT position.

SAT   UNSAT   N/A   COMMENTS:

\*\*\*\*\*

Performance Step: Critical  X  Not Critical

- f. IF.....2-FCV-74-53(67), RHR SYS I(II) LPCI INBD  
INJECT VALVE is open,  
  
THEN...**VERIFY CLOSED** 2-FCV-74-52(66), RHR SYS I(II) LPCI  
OUTBD INJECT VALVE.

Standard:

**VERIFIED** open 2-FCV-74-67 by red light above handswitch. **PLACED** 2-HS-74-66A in the CLOSE position and **VERIFIED** illuminated GREEN valve position indicating lamp above associated control switch.

SAT   UNSAT   N/A   COMMENTS:

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical X Not Critical   

g. **OPEN** 2-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL ISOL VLV.

Standard:

**PLACED** 2-HS-74-71 in **OPEN** and **VERIFIED** illuminated RED valve position indicating lamp above associated control switch.

SAT    UNSAT    N/A    COMMENTS:   

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical   

h. **VERIFY** desired RHR pump(s) for Suppression Pool Cooling are operating.

Standard:

**STARTED** RHR Pump "D" using handswitch and observed illuminated red lights above associated handswitches or other 9-3 indications.

SAT    UNSAT    N/A    COMMENTS:   

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

- Between 7000 and 10,000 gpm for one-pump operation.

**OR**

- At or below 13,000 gpm for two-pump operation.

Standard:

**THROTTLED** open 2-FCV-74-73 to obtain 7,000 to 10,000 gpm for one pump or ~13,000 gpm for two pumps on 2-FI-74-64, and if, BLUE LOCA Closing Time indicating light extinguishes, then close valve to illuminate lamp.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- j. **VERIFY CLOSED 2-FCV-74-7(30), RHR SYSTEM I(II) MIN FLOW VALVE (VERIFY CLOSED 2-BKR-074-0007(0030) on 480V RMOV Board 2D(2E), Compartment 5E(4E), if required).**

Standard:

**VERIFIED** illuminated GREEN valve position indicating lamp above 2-HS-74-30.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- k. MONITOR RHR Pump NPSH using Attachment 1.

Standard:

PERFORMER MONITORED RHR Pump NPSH per Attachment 1.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- l. NOTIFY Chemistry that RHRSW is aligned to in-service RHR Heat Exchangers.

Standard:

NOTIFIED Chemistry that RHRSW is aligned to RHR Heat Exchangers 2D.

**CUE: CHEMISTRY REPEATS BACK "RHRSW IS ALIGNED TO RHR HEAT EXCHANGER 2D".**

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- m. IF.....Additional Suppression Pool Cooling flow is necessary,  
THEN...PLACE additional RHR and RHRSW pumps in service using Steps 2.b through 2.I.

**CUE: US DETERMINES NO ADDITIONAL PUMPS ARE NECESSARY.**

Standard:

Starts additional RHR pumps and/or RHRSW pumps, if not done previously, with associated handswitches and observing illuminated red indicating lights above associated handswitches in accordance with Steps 2.b through 2.I.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**CUE: LEAVE SUPPRESSION POOL COOLING IN SERVICE UNTIL FURTHER NOTICE.**

\*\*\*\*\*

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

SAT\_\_UNSAT\_\_N/A\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_Not Critical X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION

SAT\_\_UNSAT\_\_N/A\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

**END OF TASK**

**STOP TIME**\_\_\_\_\_

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EOI PROGRAM MANUAL SECTION IX**

**2-EOI APPENDIX-17A**

**RHR SYSTEM OPERATION  
SUPPRESSSION POOL COOLING**

**REVISION 8**

PREPARED BY: M. Morrow

PHONE: 3708

RESPONSIBLE ORGANIZATION: Operations

APPROVED BY: A. S. Bhatnagar

EFFECTIVE DATE: 10/26/00

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: 06/28/94

QUALITY-RELATED

HISTORY OF REVISION/REVIEW  
2-EOI APPENDIX-17A

<u>REV. NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
0	6/15/92	ALL	New procedure. Necessary to support implementation of Revision 4 EPGs into BFNP EOIs.
1	7/10/92	ALL	Incorporate Writer's Guide discrepancies, typos, and plant nomenclature discrepancies.
2	4/21/93	ALL	Converted from WordPerfect 5.1 to Pagemaker 4.0 to better support desktop publishing capabilities. References to Control Room Labels corrected. Steps that used "Perform the following:" were reworded to summarize the tasks presented by the associated substeps.
		2,3	Changed Note and Action step regarding the test isolation valve to reference the red light indication extinguishing for indication of valve closure.
		4	Changed the system pressure requirement from 48 psig to 45 psig to provide a readable value on available instrumentation.
3	12/28/93	1	Corrected methodology for bypass of LPCI 2/3 Core Height Override logic associated with containment sprays and containment spray valve select logic.
		3,4	Changed methodology for reset of LPCI Initiation Logic to direct both System I and System II be reset during return to normal when initiation signals have cleared.
		1,3	Changed terminology from RHR System initiation to LPCI initiation.

HISTORY OF REVISION/REVIEW

2-EOI APPENDIX-17A

(continued)

<u>REV. NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
4	8/24/94	1	Changed to clarify when EOI Appendix 16F and 16G may be performed.
		2	Revised caution concerning system flow to make consistent with OI.
5	9/8/95	2	Deleted Step 2.k regarding controlling cooldown rate while in suppression pool cooling mode of RHR.
6	12/17/98	2, 5	Added an Attachment 2 for monitoring NPSH curve, as well as, a step in the Appendix directing its usage.
7	04/28/00	2	Exchanged sequence of step 2.g and 2.h in order to sequence suppression pool cooling valve and pump operation identically to that used in the operating instruction 2-OI-74. Corrected format and numbering of step 2.m.
8	10/26/00	2	Add direction to verify power available to RHR min flow valves if required to verify valve closed (TACF 2-00-012-074, TACF 3-00-008-074).

**2-EOI APPENDIX-17A****RHR SYSTEM OPERATION  
SUPPRESSSION POOL COOLING**

LOCATION: Unit 2 Control Room

ATTACHMENTS: 1. NPSH Monitoring

(✓)

1. IF.....Adequate core cooling is assured,  
THEN....**BYPASS** LPCI Injection Valve Timers as necessary  
using EOI Appendices 16F and 16G. \_\_\_\_\_

2. **PLACE** RHR SYSTEM I(II) in Suppression Pool Cooling as  
follows:

a. **VERIFY** at least one RHRSW pump supplying each EECW  
header. \_\_\_\_\_

b. **VERIFY** RHRSW pump supplying desired RHR Heat  
Exchanger(s). \_\_\_\_\_

c. **THROTTL**E the following in-service RHRSW outlet  
valves to obtain between 1350 and 4500 gpm RHRSW  
flow:

- 2-FCV-23-34, RHR HX 2A RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-40, RHR HX 2C RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV. \_\_\_\_\_

d. IF .....Directed by SRO,  
THEN ...**PLACE** the following keylock switches in  
MANUAL OVERRIDE:

- 2-XS-74-122, RHR SYS I LPCI 2/3 CORE  
HEIGHT OVRD \_\_\_\_\_
- 2-XS-74-130, RHR SYS II LPCI 2/3 CORE  
HEIGHT OVRD. \_\_\_\_\_

e. IF .....LPCI Initiation signal exists,  
THEN ...**MOMENTARILY PLACE** the following in select:

- 2-XS-74-121, RHR SYS I CTMT SPRAY/CLG VLV  
SELECT \_\_\_\_\_
- 2-XS-74-129, RHR SYS II CTMT SPRAY/CLG VLV  
SELECT. \_\_\_\_\_

2. (continued from previous page)

- f. IF ..... 2-FCV-74-53(67), RHR SYS I(II) LPCI INBD  
INJECT VALVE, is OPEN,  
THEN ... **VERIFY CLOSED** 2-FCV-74-52(66), RHR SYS I(II)  
LPCI OUTBD INJECT VALVE. \_\_\_\_\_
- g. **OPEN** 2-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL  
ISOL VLV. \_\_\_\_\_
- h. **VERIFY** desired RHR pump(s) for Suppression Pool  
Cooling are operating. \_\_\_\_\_

\*\*\*\*\*  
CAUTION

RHR System flows below 7,000 gpm or above 10,000 gpm for  
one-pump operation may result in excessive vibration and  
equipment damage.  
\*\*\*\*\*

- i. **THROTTLE OPEN** 2-FCV-74-59(73), RHR SYS I(II) SUPPR  
POOL CLG/TEST VLV, to maintain EITHER of the  
following as indicated on 2-FI-74-50(64), RHR SYS  
I(II) FLOW:

- Between 7,000 and 10,000 gpm for one-pump  
operation. \_\_\_\_\_

OR

- At or below 13,000 gpm for two-pump operation. \_\_\_\_\_
- j. **VERIFY CLOSED** 2-FCV-74-7(30), RHR SYSTEM I(II) MIN  
FLOW VALVE (**VERIFY CLOSED** 2-BKR-074-0007(0030) on  
480V RMOV Board 2D(2E), Compartment 5E(4E), if  
required). \_\_\_\_\_
- k. **MONITOR** RHR Pump NPSH using Attachment 1. \_\_\_\_\_
- l. **NOTIFY** Chemistry that RHRSW is aligned to in-service  
RHR Heat Exchangers. \_\_\_\_\_
- m. IF ..... Additional Suppression Pool Cooling flow is  
necessary,  
THEN ... **PLACE** additional RHR and RHRSW pumps in  
service using Steps 2.b through 2.l. \_\_\_\_\_

3. WHEN....Suppression Pool Cooling is NO longer required,  
THEN....**SECURE** System I(II) Suppression Pool Cooling as  
follows:

NOTE: Handswitches for 2-FCV-74-59 and 2-FCV-74-73 are held  
in CLOSE during closing cycle approximately 6 seconds  
AFTER red light extinguishes to ensure valve closure.

- a. **CLOSE** 2-FCV-74-59(73), RHR SYS I(II) SUPPR POOL  
CLG/TEST VLV, as follows:
  - 1) **PLACE** and **HOLD** 2-HS-74-59A(73A), RHR SYS I(II)  
SUPPR POOL CLG/TEST VLV, handswitch in CLOSE. \_\_\_\_\_
  - 2) WHEN ...Approximately 6 seconds elapse AFTER  
the red light extinguishes,  
THEN ...**RETURN** 2-HS-74-59A(73A), RHR SYS I(II)  
SUPPR POOL CLG/TEST VLV, handswitch to  
NORMAL. \_\_\_\_\_
- b. **VERIFY OPEN** 2-FCV-74-7(30), RHR SYSTEM I(II) MIN  
FLOW VALVE. \_\_\_\_\_
- c. IF .....RHR operation is desired in ANY other mode,  
THEN ...**EXIT** this EOI Appendix. \_\_\_\_\_
- d. **STOP** RHR PUMPS 2A and 2C (2B and 2D). \_\_\_\_\_
- e. **CLOSE** 2-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL  
ISOL VLV. \_\_\_\_\_

3. (continued from previous page)

f. IF .....ALL of the following conditions exist:

- LPCI Initiation Signal,  
                                  **AND**
- Drywell pressure below 2.4 psig,  
                                  **AND**
- RPV water level above -120 in.,

THEN ...**RESTORE** RHR System I and II logic to normal  
as follows:

- 1) **DEPRESS** 2-HS-74-151, LPCI AUTO-INIT LOGIC  
A RESET, and **CHECK** amber light  
extinguished. \_\_\_\_\_
- 2) **DEPRESS** 2-HS-74-152, LPCI AUTO-INIT LOGIC  
B RESET, and **CHECK** amber light  
extinguished. \_\_\_\_\_
- 3) **DEPRESS** 2-XS-74-125, CTMT SPRAY/CLG VLV  
INTLK LOGIC A RESET, push-button and  
**CHECK** amber light extinguished. \_\_\_\_\_
- 4) **DEPRESS** 2-XS-74-131, CTMT SPRAY/CLG VLV  
INTLK LOGIC B RESET, and **CHECK** amber  
light extinguished. \_\_\_\_\_
- 5) **DEPRESS** 2-XS-74-123, RECIRC DISCH VALVES  
ISOL LOGIC A RESET. \_\_\_\_\_
- 6) **DEPRESS** 2-XS-74-128, RECIRC DISCH VALVES  
ISOL LOGIC B RESET. \_\_\_\_\_
- 7) **MOMENTARILY PLACE** 2-XS-74-121, RHR SYS I  
CTMT SPRAY/CLG VLV SELECT, in RESET. \_\_\_\_\_
- 8) **MOMENTARILY PLACE** 2-XS-74-129, RHR SYS II  
CTMT SPRAY/CLG VLV SELECT, in RESET. \_\_\_\_\_
- 9) **VERIFY** the following keylock switches in  
NORM and key removed:
  - 2-XS-74-122, RHR SYS I LPCI 2/3 CORE  
HEIGHT OVRD. \_\_\_\_\_
  - 2-XS-74-130, RHR SYS II LPCI 2/3 CORE  
HEIGHT OVRD. \_\_\_\_\_

3. (continued from previous page)

g. **VERIFY CLOSED** the following valves:

- 2-FCV-23-34, RHR HX 2A RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-40, RHR HX 2C RHRSW OUTLET VLV \_\_\_\_\_
- 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV. \_\_\_\_\_

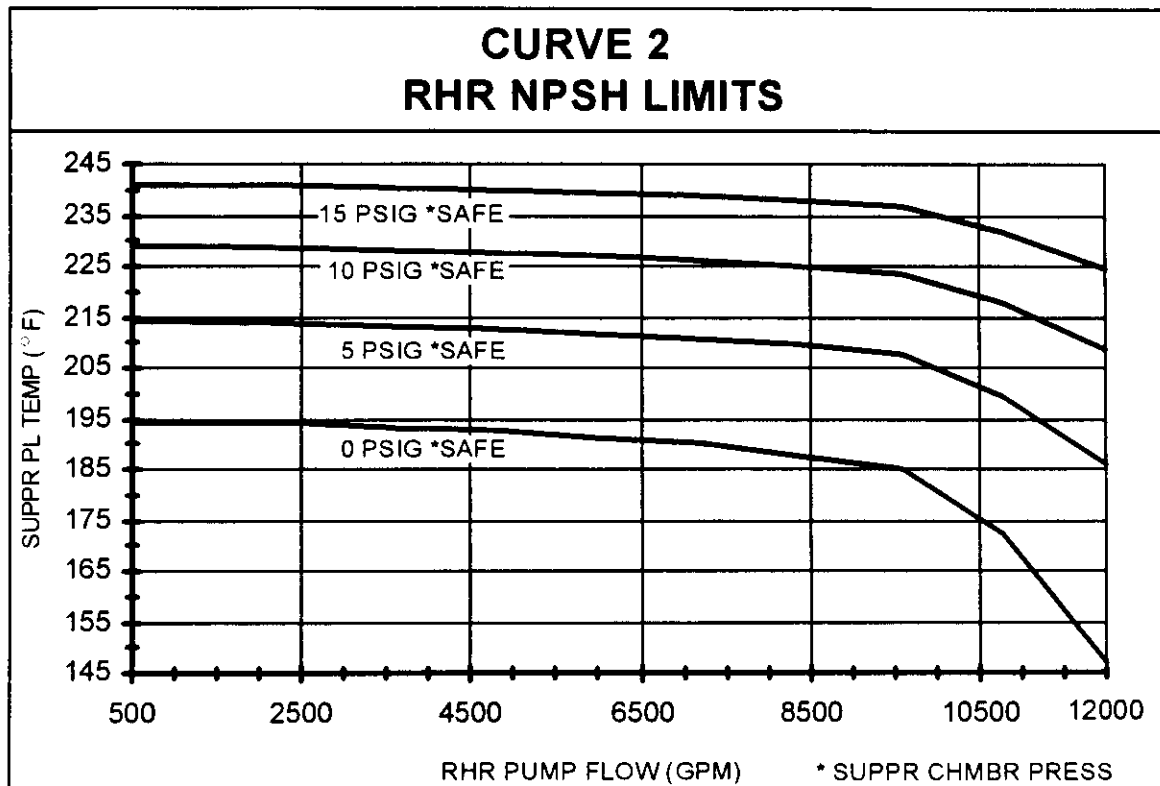
h. **STOP** RHRSW pumps supplying ANY Unit 2 RHR Heat Exchanger. \_\_\_\_\_

i. **VERIFY** RHR system discharge header pressure above 45 psig on 2-PI-74-51(65), RHR SYS I(II) DISCH PRESS. \_\_\_\_\_

END OF TEXT

### NPSH MONITORING

Adequate NPSH is assured by maintaining pump flow rates below the curve for the applicable Suppression Chamber pressure. For Suppression Chamber pressures between the values on the curves extrapolation must be used.



Other indications of inadequate NPSH are:

- Suppression Pool level below 10.0 FT
- System flowrate decreasing with constant valve position
- System flowrate or discharge pressure less than expected for present system conditions
- Pump discharge pressure lower than expected or fluctuating excessively
- Pump Motor amps lower than expected or fluctuating excessively
- Pump Suction pressure low (local indication)

## JOB PERFORMANCE MEASURE

TASK NUMBER: U-000-AB-05

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	09/23/99	ALL	NEW JPM
1	10/04/00	ALL	GENERAL REVISION
2	09/07/01	ALL	GENERAL REVISION

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 80F

TASK NUMBER: U-085-AB-05

TASK TITLE: RESPOND TO CONTROL ROD DRIFT IN

K/A NUMBER: 201002A2.03 K/A RATING: RO 3.4 SRO: 3.7

\*\*\*\*\*

TASK STANDARD: PERFORM OPERATIONS NECESSARY TO RESPOND TO A  
CONTROL ROD DRIFT IN AS DIRECTED BY 2-AOI-85-5

LOCATION OF PERFORMANCE: SIMULATOR X PLANT \_\_\_\_\_ CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2-AOI-85-5, REV 12

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 an Operator. Unit 2 is at 100% power.

**INITIATING CUES:** STATE: I (INSTRUCTOR/EVALUATOR) WILL ACT AS YOUR UNIT SUPERVISOR. YOU ARE TO RESPOND TO THE NEXT EVENT.

START TIME \_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical \_\_\_\_\_

EXAMINEE recognize CR Drift in and responds per 2-AOI-85-5.

Standard:

Responds per 2-AOI-85-5.

SAT \_\_\_ UNSAT \_\_\_ N/A \_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

#### 4.0 OPERATOR ACTIONS

##### 4.1 Immediate Actions

\*\*\*\*\*

Performance Step: Critical \_\_\_ Not Critical X

4.1.1 If multiple rods are drifting into the core,  
THEN

Manually SCRAM Reactor. REFER TO 2-AOI-100-1.

Standard:

CHECKED periodically for multiple drift lights on full  
core display.

SAT \_\_\_ UNSAT \_\_\_ N/A \_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_ Not Critical X

4.2.1 IF the Control Rod travels greater than two  
(2) notches from its intended position; THEN

INSERT Control Rod to position 00 using  
continuous in

Standard:

**PERFORMER** recognizes rod travel greater than two notches from  
its intended position, SELECTS & uses continuous in to drive  
the rod full in.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_\_

4.2.2 INFORM Reactor Engineer.

Standard:

**Contacts RE.**

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step:                      Critical\_\_\_ Not Critical X

4.2.3              Checks Thermal Limits on ICS (Run Official 3D)

Standard:

Proceeds to ICS Terminal NSSS Menu & selects "Run Official 3D".

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_      COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step :                      Critical\_\_\_ Not Critical X

4.2.4            ADJUSTS CONTROL ROD PATTERN AS DIRECTED BY  
                 REACTOR ENGINEER AND CHECKS THERMAL LIMITS ON  
                 ics (RUN OFFICIAL 3D)

CUE: REACTOR ENGINEER (IF REQUESTED) REPORTS THERMAL LIMITS  
SATISFACTORY, AND INSERTION OF SYMMETRICAL CONTROL RODS  
ARE NOT NECESSARY AT THIS TIME.

CUE: ENSURE SIMULATOR OPERATOR INSERTS BAT JPM80F.

Standard:

FOLLOWS RE RECOMMENDATIONS.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_    COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step:                      Critical\_\_\_ Not Critical X

4.2.5                      IF CRD Cooling Water Header DP is excessive  
and causing the control rod drift, THEN

Alternately ADJUST the tape setpoint CRD  
SYSTEM FLOW CONTROL, 2-FIC-85-11, and position  
of CRD DRIVE WATER PRESS CONTROL VLV, 2-HS-85-  
23A, to establish the following:

- CRD CLG WTR HDR DP, 2-PDI-85-18A, of  
about 20 psid, and
- CRD DRIVE WTR HDR DP, 2-PDI-85-17A,  
between 250 and 270 psid, and
- CRD SYSTEM FLOW CONTROL, 2-FIC-85-11A,  
between 40 and 65 gpm.

Standard:

**VERIFIED:**

Cooling water DP approximately 60 psid on 2-PDI-85-18A  
and attempts to throttle open 2-FCV-85-27.

Drive Water DP 250-270 psid on 2-PDI-85-17A.

CRD Flow 40-65 gpm on 2-FI-85-11A.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS: \_\_\_\_\_

---

#### 4.0 OPERATOR ACTIONS

##### 4.1 Immediate Actions

\*\*\*\*\*

Performance Step:                      Critical X Not Critical \_\_\_\_\_

4.1.1            If multiple rods are drifting into the core,  
THEN

Manually SCRAM Reactor. REFER TO 2-AOI-100-1.

##### Standard:

**OPERATOR** recognizes multiple rod drifts and manually **SCRAMS**  
the Reactor and REFERS TO 2-AOI-100-1.

- Depresses both scram pushbuttons. \_\_\_\_\_
- Places mode switch in shutdown. \_\_\_\_\_
- Verifies All Rods in. \_\_\_\_\_

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

**CUE: AFTER OPERATOR SCRAMS REACTOR AND PERFORMS ABOVE ACTIONS THEN  
"STATE" THAT WILL BE ALL FOR NOW**

\*\*\*\*\*

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:\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_\_Not Critical\_ X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT\_\_\_\_UNSAT\_\_\_\_N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

END OF TASK

**STOP TIME** \_\_\_\_\_

✖Á?Á?ÁÁÁÁÁÁÁÁ Á`

ABNORMAL OPERATING INSTRUCTIONS

2-AOI-85-5

ROD DRIFT IN

REVISION 12

PREPARED BY: Michael K Teggin

PHONE: 3728

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: PHILLIP CHADWELL

DATE :06/08/2001

EFFECTIVE DATE: 06/11/2001

LEVEL OF SE: REFERENCE SE

ALITY RELATED

# REVISION LOG

Procedure Number: 2-AOI-85-5

Revision Number: 12

Pages Affected: 3

Description of Change: IC-14 - ENHANCEMENT

Changed the note prior to step 4.2.8.2 stating the CRD accumulator is inop when the charging water is isolated for that CRD. The referenced Tech Spec was changed from 3.1.3 to 3.1.5.

1.0 **PURPOSE**

This abnormal operating instruction provides symptoms, automatic actions and operator actions for a control rod drift in.

2.0 **SYMPTOMS**

- 2.1 CONTROL ROD DRIFT annunciator, (2-XA-55-5A, Window 28) in alarm.
- 2.2 DRIFT status light on Full Core Display in alarm.
- 2.3 Control rod position number on Full Core Display changes.
- 2.4 If selected, control rod position number on 4-Rod Display changes.
- 2.5 If selected, LPRM readings around control rod change.

3.0 **AUTOMATIC ACTIONS**

None

**4.0    OPERATOR ACTIONS****4.1    Immediate Actions**

4.1.1    **IF** multiple rods are drifting into core, **THEN**

Manually **SCRAM** Reactor. REFER TO 2-AOI-100-1.

**4.2    Subsequent Actions**

4.2.1    **IF** the Control Rod travels greater than two (2) notches from it's intended position, **THEN**

**INSERT** Control Rod to position 00 using CONTINUOUS IN.

4.2.2    **INFORM** Reactor Engineer.

4.2.3    **CHECK** Thermal Limits on ICS (RUN OFFICIAL 3D).

4.2.4    **ADJUST** Control Rod pattern as directed by the Reactor Engineer AND **CHECK** Thermal Limits on ICS (RUN OFFICIAL 3D).

4.2.5    **IF** CRD Cooling Water Header DP is excessive and causing the control rod drift, **THEN**

Alternately **ADJUST** tape setpoint of CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, and position of CRD DRIVE WATER PRESS CONTROL VLV, 2-HS-85-23A, to establish the following conditions:

- CRD CLG WTR HDR DP, 2-PDI-85-18A, of about 20 psid,  
and
- CRD DRIVE WTR HDR DP, 2-PDI-85-17A, between 250 and 270 psid,  
and
- CRD SYSTEM FLOW CONTROL, 2-FIC-85-11A, between 40 and 65 gpm.

**4.2 Subsequent Actions (Continued)****NOTE:**

All observations and checks made in the following steps should be made as a comparison and relative to the other Hydraulic Control Units.

- 4.2.6 **VERIFY** scram pilot air header aligned to scram inlet and outlet valves.
- 4.2.7 **CHECK** CRD SCRAM OUTLET, 2-FCV-085-39B, for leakage as indicated by the following:
- Scram riser for affected HCU has higher than normal temperature.
  - CRD SCRAM OUTLET, 2-FCV-085-39B, producing flow noise.
- 4.2.8 **CHECK** CRD SCRAM INLET VALVE, 2-FCV-085-39A, for leakage as follows:
- 4.2.8.1 **CHECK** insert riser for affected HCU for higher than normal temperature.

**NOTE:**

The CRD accumulator shall be considered inoperable per Technical Specifications 3.1.5 when the charging water is isolated.

- 4.2.8.2 **CLOSE** CHARGING WATER SOV, 2-SHV-085-588, and **OBSERVE** CRD ACCUMULATOR NITROGEN SIDE PRESS, 2-PI-85-34, for a lowering trend.

**4.2    Subsequent Actions (Continued)****NOTE:**

- (1) If either the Scram Inlet or Outlet valve is found to be leaking, the preferred action is to scram the affected rod at Panel 2-9-16, and initiate corrective maintenance if necessary.
- (2) Individual control rod scram to attempt to reset scram valves may be performed at discretion of UNIT SUPERVISOR. Reactor Engineer will determine impact on core thermal limits and preconditioning envelope.

4.2.9    **IF** either Scram Inlet or Outlet Valve is found to be leaking, **THEN**

**PERFORM** the following to scram the control rod:

4.2.9.1    ESTABLISH communications between Control Room and the following locations:

- Hydraulic control unit affected, elevation 565, Reactor Building.
- Panel 2-9-16 in Auxiliary Instrument Room, elevation 593, Control Bay.

4.2.9.2    **VERIFY CLOSED** CHARGING WATER SOV, 2-SHV-085-588.

**NOTE:**

Panel 2-9-16, containing the Rod Scram Switches is locked and a key from the Unit 2 Control Room Key Cabinet will be required to perform the next step.

4.2.9.3    **INITIATE** individual rod scram by actuating selected rod scram switch on Panel 2-9-16 to its scram (DOWN) position.

4.2.9.4    **VERIFY** control rod has reached FULL IN on Panel 2-9-5.

4.2.9.5    **IF** attempting to reseal scram valves, **THEN**

          At Panel 2-9-16, RETURN rod scram switch for associated control rod to its normal (UP) position.

**4.2 Subsequent Actions (Continued)**

- 4.2.9.6 **CHECK** solenoids of CRD SCRAM INLET and OUTLET valves, 2-FCV-085-39A and 2-FCV-085-39B, function normally without chatter or abnormal buzzing.
- 4.2.9.7 **CHECK** stem travel indicators on CRD SCRAM INLET and OUTLET valves, 2-FCV-085-39A and 2-FCV-085-39B, in CLOSE position.
- 4.2.9.8 **CHECK** blue Scram indicator light on Full Core Display extinguished.
- 4.2.9.9 **RESET** Rod Drift Alarm and **CHECK** DRIFT indicator light on Full Core Display extinguished.
- 4.2.9.10 **CHECK** annunciator CONTROL ROD DRIFT (2-XA-55-5A, Window 28) clear.
- 4.2.9.11 **SLOWLY OPEN** CHARGING WATER SOV, 2-SHV-085-588.
- 4.2.9.12 **CHECK** amber ACCUM indicator light on Full Core Display extinguished.
- 4.2.9.13 On local Panel 2-25-4(2-25-22), **CHECK** red indicating light for associated HCU extinguished.
- 4.2.9.14 **WITHDRAW** control rod to its original position in accordance with UNIT SUPERVISOR and Reactor Engineer instructions.
- 4.2.10 **IF** insert directional control valve is suspected of leaking, **THEN**  
ATTEMPT to reseal valve as follows:
  - 4.2.10.1 INSERT control rod one notch.
  - 4.2.10.2 WITHDRAW control rod to original position in accordance with UNIT SUPERVISOR and Reactor Engineer instructions.
- 4.2.11 **IF** attempts to stop control rod drifting are unsuccessful, **THEN**  
INSERT control rod drive to position 00.
- 4.2.12 **REMOVE** associated HCU from service. REFER TO 2-OI-85 and Tech Spec 3.1.3.

5.0 REFERENCES

5.1 Technical Specifications

Section 3.1, Reactivity Control Systems.

Section 5.4, Procedures.

Section 5.5, Programs and Manuals.

5.2 Final Safety Analysis Report

Section 3.4, Reactivity Control Mechanical Design

5.3 Plant Instructions

2-ARP-9-5, Panel 2-9-5 Annunciator Response Procedures

2-AOI-100-1, Reactor Scram

2-OI-85, Control Rod Drive System

5.4 Plant Drawings

2-45N620-6, Wiring Diagram Annunciator

2-47E610-85-1, Mechanical Control Diagram CRD Hydraulic System

104B2506 Sheet 2, Connection Diagram Position Indicator Probe

730E321 Sheet 10, Elementary Diagram Reactor Manual Control System

5.5 Vendor Manuals

GEK-9585/9586, BFN Controlled Manual Number 9, General Electric, Control Rod Drive System, Contract 90744

5.6 Miscellaneous Documents

INPO SER 90-15, Suspending Testing After Equipment Failure

6.0 ILLUSTRATIONS/ATTACHMENTS

None

END OF TEXT

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

JPM NUMBER: 18 (NRC Modified) B.1.g

TITLE: EOI APPENDIX 5C - INJECTION SYSTEM LINEUP - RCIC

TASK NUMBER: U-000-EM-31

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	11/29/94	1,2,3,4	REVISE TO NEW FORMAT
4	9/11/95	ALL	DESIGNATED U-2 ITEMS AND FORMATTING
5	9/29/97	ALL	FORMAT, ADDED PLANT WORK EXPECTATIONS TOUCH STAAR AND 3 WAY COMM., CHANGED ASOS TO US.
6	9/08/99	ALL	PROCEDURE REVISION
7	10/03/00	4	EDITORIAL CHANGE

**BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE**

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_ SRO \_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 18 NRC Modified.

TASK NUMBER: U-000-EM-31

TASK TITLE: LINE UP INJECTION SYSTEMS - RCIC IN ACCORDANCE WITH EOI APPENDIX 5C

K/A NUMBER: 217000A4.04

K/A RATING: RO 3.6 SRO: 3.6

\*\*\*\*\*

TASK STANDARD: MANIPULATE CONTROLS REQUIRED TO INJECT WATER TO THE RPV USING  
THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM AND MAINTAIN  
LEVEL AS REQUIRED.

LOCATION OF PERFORMANCE: SIMULATOR \_\_ PLANT \_\_ CONTROL ROOM \_\_

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 5C - INJECTION SYSTEM LINEUP - RCIC, REV 3

VALIDATION TIME: CONTROL ROOM: 5:00 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 the Unit 2 Operator. The reactor has scrammed and RPV water level is decreasing slowly. EOI-1 has been entered and followed to RC/L-4.

**INITIATING CUES:** The US has directed you to restore RPV water level +2 to +51 inches using the Reactor Core Isolation Cooling System as directed by 2-EOI Appendix 5C, INJECTION SYSTEM LINEUP - RCIC.

START TIME\_\_\_\_\_

**EXAMINERS'S NOTE: UNLESS OTHERWISE NOTED, ALL COMPONENTS TO BE OPERATED AND ALL INDICATIONS ARE LOCATED ON PANEL 2-9-3.**

\*\*\*\*\*

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 5C.

SAT\_\_UNSAT\_\_N/A\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X

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

- Rx Pressure is at or below 50 psig,

**AND**

- Bypass of RCIC low RPV pressure isolation interlocks is necessary,

**THEN...EXECUTE** EOI Appendix 16A concurrently with this procedure.

Standard:

**DETERMINED** RPV PRESSURE >50 PSIG, as indicated by 2-PI-207A, Panel 2-9-5.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A \_\_\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X ,

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

- High temperature exists in the RCIC area,
- AND**
- SRO directs bypass of RCIC High Temperature Isolation interlocks,

THEN...**EXECUTE** EOI Appendix 16K concurrently with  
this procedure.

Standard:

**DETERMINED** high temperature does not exist in the RCIC area, as indicated by Panel 2-9-21 (2-TS-69-71-41A,B,C) alarms clear or no alarm on Panel 2-9-3D window 10 (2-TA-71-41).

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

CAUTION

- Operating RCIC turbine below 2100 rpm may result in unstable system operation and equipment damage.
- High Suppression Chamber pressure may trip RCIC. (Trips at 25#)
- Operating RCIC Turbine with suction (CST Suction) temperatures above 140°F may result in equipment damage.

\*\*\*\*\*

\*\*\*\*\*

Performance Step:      Critical\_\_ Not Critical X

3.      **VERIFY RESET** and **OPEN** 2-FCV-71-9, RCIC TURB TRIP/  
THROT VALVE RESET.

Standard:

**VERIFIED** illuminated RED indicating lamp 2-ZI-71-9.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A \_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

4. **VERIFY** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller in AUTO with set-point at 600 gpm.

Standard:

**VERIFIED** 2-FIC-71-36A in AUTO and tape set-point at 60 (X10).

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_

5. **OPEN** the following valves:
- 2-FCV-71-39, RCIC PUMP INJECTION VALVE.

Standard:

**PLACED** 2-HS-71-39A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch.

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE.

Standard:

**PLACED** 2-HS-71-34A in the OPEN position and **OBSERVED** illuminated RED valve position  
indicating lamp above associated control switch.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_

- 2-FCV-71-25, RCIC LUBE OIL CLR COOLING WTR VLV.

Standard:

**PLACED** 2-HS-71-25A in the OPEN position and **OBSERVED** illuminated RED valve position indicating  
lamp above associated control switch.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

6. **PLACE** 2-HS-71-31A, RCIC VACUUM PUMP, handswitch in START.

Standard:

**PLACED** 2-HS-71-31A in the START position and **OBSERVED** illuminated RED motor breaker position indicating lamp above associated handswitch.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**EXAMINER NOTE : AFTER 71-8 OPENS, THE FLOW CONTROLLER WILL FAIL TO CONTROL IN AUTOMATIC.**

Performance Step: Critical X Not Critical\_\_\_\_

7. **OPEN** 2-FCV-71-8, RCIC TURBINE STEAM SUPPLY VLV, to start RCIC Turbine.

Standard:

**PLACED** 2-HS-71-8A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch. (Steam flow and turbine speed increase)

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_\_\_ Not Critical X

8. **CHECK** proper RCIC operation by observing the following:

- a. RCIC Turbine speed accelerates above 2100 rpm.

Standard:

**VERIFIED** RCIC turbine speed > 2100 by **OBSERVING** 2-SI-71-42A.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X

- b. RCIC flow to RPV stabilizes and is controlled automatically at 600 gpm.

Standard:

**OBSERVED** 2-FIC-71-36A and **VERIFIED** RCIC flow to RPV stabilized at 600 GPM.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- c. 2-FCV-71-40, RCIC Testable Check Vlv, opens by observing 2-ZI-71-40A, DISC POSITION, red light illuminated.

Standard:

**OBSERVED** illuminated RED check valve DISC POSITION indicating lamp.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_ Not Critical X

- d. 2-FCV-71-34, RCIC PUMP MINIMUM FLOW VLV, closes as flow rises above 120 gpm.

Standard:

**OBSERVED** RCIC system flow to RPV > 120 GPM as indicated on 2-FIC-71-36A and **VERIFIED** illuminated GREEN valve position indicating lamp above 2-HS-71-34A.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X ,

9. 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 MIN FLOW VALVE.

Standard:

**VERIFIED** RCIC initiation signal not present as indicated by 2-IL-71-52, RCIC AUTO-INIT, amber lamp being extinguished.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A \_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

.....

Performance Step: Critical X Not Critical\_\_\_\_

10. **ADJUST** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller as necessary to control injection.

Standard:

**DETERMINES** the automatic flow controller is failed and takes manual control of RCIC. Adjusted 2-FIC-71-36A setpoint as necessary to obtain 600 gpm flow, or a level of +2 inches.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A \_\_\_\_ COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**EXAMINER'S NOTE: IT WILL NOT BE NECESSARY FOR THE PERFORMER TO OBTAIN A LEVEL > +2". AN INCREASING RPV WATER LEVEL WILL SUFFICE.**

\*\*\*\*\*

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: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step:

Critical\_ Not Critical X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during is JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_ COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

END OF TASK

STOP TIME \_\_\_\_\_

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EOI PROGRAM MANUAL SECTION IX**

**2-EOI APPENDIX-5C**

**INJECTION SYSTEM LINEUP RCIC**

**REVISION 3**

PREPARED BY: J. R. STEELE

PHONE: 3708

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: R. G. JONES

DATE: 12/17/98

EFFECTIVE DATE: 12/28/98

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: 12/7/98

QUALITY-RELATED

**HISTORY OF REVISION/REVIEW**  
**2-EOI APPENDIX-5C**

<u>REV. NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
0	6/15/92	ALL	New procedure. Necessary to support implementation of Revision 4 EPGs into BFNP EOIs.
1	7/10/92	ALL	Incorporate Writer's Guide discrepancies, typos, and plant nomenclature discrepancies.
2	4/21/93	ALL	Converted from WordPerfect 5.1 to Pagemaker 4.0 to better support desktop publishing capabilities.
			References to Control Room Labels corrected.
		2	Phrase "maintain RPV level" replaced with "control injection" to address cases of usage with C4 flowchart.
		1	Step 7 - Changed action verb from "Verify" to "Check."
3	12/17/98	ALL	Converted text to MS WORD. Added guidance to perform EOI Appendix 16K to allow RCIC operation with elevated temperatures in the area. Added procedural steps for aligning RCIC suction to either the CST or Suppression Pool.

## 2-EOI APPENDIX-5C

### INJECTION SYSTEM LINEUP RCIC

LOCATION: Unit 2 Control Room

ATTACHMENTS: None

(✓)

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

- RPV Pressure is at or below 50 psig,

AND

- Bypass of RCIC low RPV pressure isolation interlocks is necessary,

THEN....**EXECUTE** EOI Appendix 16A concurrently with this procedure.

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

- High temperature exists in the RCIC area,

AND

- SRO directs bypass of RCIC High Temperature Isolation interlocks,

THEN....**EXECUTE** EOI Appendix 16K concurrently with this procedure.

\*\*\*\*\*  
CAUTION

- Operating RCIC turbine below 2100 rpm may result in unstable system operation and equipment damage.
- High Suppression Chamber pressure may trip RCIC.
- Operating RCIC Turbine with suction temperatures above 140°F may result in equipment damage.

\*\*\*\*\*  
3. **VERIFY RESET** and **OPEN** 2-FCV-71-9, RCIC TURB TRIP/THROT VALVE RESET.

4. **VERIFY** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller in AUTO with setpoint at 600 gpm. \_\_\_\_\_
5. **OPEN** the following valves:
  - 2-FCV-71-39, RCIC PUMP INJECTION VALVE \_\_\_\_\_
  - 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE \_\_\_\_\_
  - 2-FCV-71-25, RCIC LUBE OIL COOLING WTR VLV. \_\_\_\_\_
6. **PLACE** 2-HS-71-31A, RCIC VACUUM PUMP, handswitch in START. \_\_\_\_\_
7. **OPEN** 2-FCV-71-8, RCIC TURBINE STEAM SUPPLY VLV, to start RCIC Turbine. \_\_\_\_\_
8. **CHECK** proper RCIC operation by observing the following:
  - a. RCIC Turbine speed accelerates above 2100 rpm. \_\_\_\_\_
  - b. RCIC flow to RPV stabilizes and is controlled automatically at 600 gpm. \_\_\_\_\_
  - c. 2-FCV-71-40, RCIC Testable Check Vlv, opens by observing 2-ZI-71-40A, DISC POSITION, red light illuminated. \_\_\_\_\_
  - d. 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE, closes as flow rises above 120 gpm. \_\_\_\_\_
9. 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 MIN FLOW VALVE. \_\_\_\_\_
10. **ADJUST** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller as necessary to control injection. \_\_\_\_\_

11. IF.....It is desired to align RCIC suction to the  
Suppression Pool,

THEN.....**PERFORM** the following:

- a. **OPEN** 2-FCV-71-17, RCIC SUPPR POOL INBD SUCT VALVE. \_\_\_\_\_
- b. **OPEN** 2-FCV-71-18, RCIC SUPPR POOL OUTBD SUCT VALVE. \_\_\_\_\_
- c. WHEN .. 2-FCV-71-17, RCIC SUPPR POOL INBD SUCT VALVE,  
AND 2-FCV-71-18, RCIC SUPPR POOL OUTBD SUCT  
VALVE, are fully open,  
THEN .. **VERIFY CLOSED** 2-FCV-71-19, RCIC CST SUCTION  
VALVE. \_\_\_\_\_

NOTE: Step 12.b must be performed promptly following Step  
12.a to avoid loss of suction path.

12. IF.....It is desired to align RCIC suction to the  
Condensate Storage Tank,

THEN.....**PERFORM** the following:

- a. **CLOSE** 2-FCV-71-17, RCIC SUPPR POOL INBD SUCT VALVE. \_\_\_\_\_
- b. WHEN .. 2-FCV-71-17, RCIC SUPPR POOL INBD SUCT VALVE  
starts traveling closed,  
THEN .. **OPEN** 2-FCV-71-19, RCIC CST SUCTION VALVE. \_\_\_\_\_
- c. **CLOSE** 2-FCV-71-18, RCIC SUPPR POOL OUTBD SUCT VALVE. \_\_\_\_\_

LAST PAGE

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 16TC

TITLE: 2/3-SSI-2-1, ATTACHMENT 1, SECTION 1.0: U2 REACTOR  
BUILDING FIRE

TASK NUMBER: U-000-SS-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
3	11/26/94	1,2,3,4 5	REVISE TO NEW FORMAT DELETE REFERENCE TO BKR 610
4	9/17/95	ALL	NEW PROCEDURE
5	12/3/95	ALL	CHANGED PROCEDURE REV, REPAGINATION & ADDED CUES, MODIFIED FORMAT
6	5/1/96	2,3,5,6.	CHANGED PROCEDURE REV, MODIFIED FORMAT (MINOR WORD CHANGES)
7	11/6/96	3, 4, 9	ADDED NON-CRITICAL STEPS ON TOUCH STAAR AND SAFETY, CHANGED ASOS TO US.
8	09/17/97	ALL	FORMAT, CHANGED MGT EXPECTATIONS TO PLANT WORK EXPECTATIONS, ADDED 3-WAY COMM.
9	09/08/98	2,4,5,6	PROCEDURE CHANGE (Minor)
10	09/08/98	3,6,7,8,9	UPDATE PROCEDURE REV AND RENUMBER STEPS

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 16TC

TASK NUMBER: U-000-SS-01

TASK TITLE: 2/3-SSI-2-1, ATT. 1, SECTION 1.0: RX BLDG FIRE

K/A NUMBER: 262001G9 K/A RATING: RO 3.6 SRO: 3.6

\*\*\*\*\*

TASK STANDARD: SIMULATE OPENING OF BREAKERS 902 AND 952, AND  
PLACING 250V CHGR 2A PWR SW IN EMERGENCY ON BATTERY  
BOARD 2; SIMULATE PLACING BKR 710 TO OFF, PLACING  
250V CHGR 3 PWR SW IN EMERGENCY ON BATTERY BOARD 3;  
AND SIMULATE PLACING 250V CHGR 1 PWR SW IN  
EMERGENCY. ATTACHMENT 1 SECTION 1 MUST BE  
COMPLETED AND THE UNIT 2 US NOTIFIED WITHIN 10  
MINUTES OF ENTRY INTO 2/3-SSI-2-1.

LOCATION OF PERFORMANCE: SIMULATOR \_\_\_\_\_ PLANT X CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2/3-SSI-2-1, ATTACHMENT 1, OPERATOR  
1 MANUAL ACTIONS (REV 0005)

VALIDATION TIME: \_\_\_\_\_ CONTROL ROOM: \_\_\_\_\_ \* LOCAL: \_\_\_\_\_ \*

MAX. TIME ALLOWED: \_\_\_\_\_ \* (Completed for Time Critical JPMs only)

PERFORMANCE TIME: \_\_\_\_\_ \* CONTROL ROOM \_\_\_\_\_ LOCAL \_\_\_\_\_

COMMENTS: \_\_\_\_\_ \* (Each section has different  
times and stands alone)

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 shall be simulated. 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.

\*\*\*\*\*

**NON-CRITICAL STEPS:** At the end of this JPM, **PERFORMER** will be evaluated on **PLANT WORK EXPECTATIONS:**

1. **PERFORMER** shall abide by all **SAFETY RULES** (hardhats, safety glasses, sashes, and hearing protection shall be worn **AS REQUIRED**). **Electrical Safety** shall also be in compliance: Exposed conductive articles such as rings, metal wristwatches, bracelets, metal necklaces, key chains, and metal belt buckles shall not be worn by employees within **REACHING DISTANCE** of exposed energized electrical conductors of 50 volts or greater. **CAUTION IS WARRANTED** when utilizing a laser pointer to perform **TOUCH STAAR** around electrical components during plant JPM's.

2. **PERFORMER** shall demonstrate the use of **TOUCH STAAR** during this JPM.

3. **PERFORMER** shall demonstrate the use of **3-WAY COMMUNICATION**.

\*\*\*\*\*

**INITIAL CONDITIONS:** Unit 2 was at 100% power and Unit 3 at 60 % power. The SSIs have been entered due to a fire in the Unit 2 Reactor Building. You are an Operator and have a hand-held radio with you.

**INITIATING CUES:** The Unit 2 **UNIT SUPERVISOR** directs you to complete 2/3-SSI-2-1, Attachment 1, Section 1.0.

START TIME \_\_\_\_\_

CUE: WHEN THE OPERATOR REPEATS THE TASK, HAND HIM/HER A  
COPY OF 2/3-SSI-2-1, ATTACHMENT 1 AND RECORD THE  
START TIME.

\*\*\*\*\*

Performance Step: Critical X Not Critical \_\_\_\_\_

1.0 RPS Trip and 250VDC Battery Charger Resetting

(10 Min)

1.1 PROCEED to Battery Board 2 AND PLACE the  
following Breakers in OFF:

1.1.1 BKR NO. 902 RPS MG SET A TIE TO BAT  
BD 2.

Standard:

At Battery Board 2, **SIMULATED PLACING** breaker 902 in the OFF  
position.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

CUE: [WHEN SIMULATED] BREAKER NO. 902 IS IN THE OFF  
POSITION.

\*\*\*\*\*

Performance Step :                      Critical X    Not Critical \_\_\_\_\_

1.1.2              BKR. NO. 952 RPS MG SET B TIE TO BAT  
BD U-2.

Standard:

At Battery Board 2, **SIMULATED PLACING** breaker 952 in the OFF position within 10 minutes of START TIME.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_    COMMENTS: \_\_\_\_\_

CUE: [WHEN SIMULATED] BREAKER NO. 952 IS IN THE OFF POSITION.

INSTRUCTOR'S NOTE:

RECORD COMPLETION TIME OF STEP 1.1.2 HERE \_\_\_\_\_.

NOTE:

The following steps will place battery chargers in service with 480V load shed logic trip bypassed.

\*\*\*\*\*

Performance Step :                      Critical X    Not Critical \_\_\_\_\_

1.2    PROCEED to 250VDC BATTERY CHARGER 2A AND PLACE  
250V CHGR 2A PWR SW in EMERG.

Standard:

**SIMULATED PLACING** 250V BATTERY CHARGER 2A PWR SW in EMERG.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_    COMMENTS: \_\_\_\_\_

CUE: [WHEN SIMULATED] 250 VOLT BATTERY CHARGER 2A POWER SWITCH IS IN THE EMERGENCY POSITION.

\*\*\*\*\*

Performance Step : Critical X Not Critical     

- (20 Min) 1.3 PROCEED to Battery Board Room 3. |  
1.4 PLACE BKR NO. 710 DPO ENGINEERING SHOP in OFF. |

Standard:

SIMULATED PLACING BKR NO. 710 on Battery Board 3 in OFF.

SAT      UNSAT      N/A      COMMENTS:                                     

---

CUE: [WHEN SIMULATED] BREAKER NO. 710 IS IN THE OFF POSITION.

\*\*\*\*\*

Performance Step :                      Critical X   Not Critical     

1.5   PROCEED to 250VDC BATTERY CHARGER 3 AND PLACE  
250V CHGR 3 PWR SW in EMERG.

Standard:

**SIMULATED** PLACING 250 V BATTERY CHARGER 3 PWR SW in EMERG.

SAT      UNSAT      N/A         COMMENTS:                                     

CUE: [WHEN SIMULATED] 250 VOLT CHARGER 3 POWER SWITCH IS IN  
THE EMERGENCY POSITION.

\*\*\*\*\*

Performance Step :                      Critical X   Not Critical     

1.6   PROCEED to 250VDC BATTERY CHARGER 1 AND PLACE 250V  
CHGR 1 PWR SW in EMERG.

Standard:

**SIMULATED** PLACING 250VDC BATTERY CHGR 1 PWR SW in EMERG within  
20 minutes of START TIME.

SAT      UNSAT      N/A         COMMENTS:                                     

CUE: [WHEN SIMULATED] 250 VOLT BATTERY CHARGER 1 POWER  
SWITCH IS IN THE EMERGENCY POSITION.

INSTRUCTOR'S NOTE:

RECORD COMPLETION TIME OF STEP 1.7 HERE                                     .

\*\*\*\*\*

Performance Step : Critical\_\_ Not Critical X

1.7 NOTIFY the Unit 2 Unit Supervisor of completion of this section.

Standard:

**SIMULATED** contacting Unit 2 UNIT SUPERVISOR by PHONE or RADIO and informing SM that ATTACHMENT 1, SECTION 1 OF 2/3-SSI-2-1 is complete.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS:\_\_\_\_\_

CUE: [WHEN THE OPERATOR NOTIFIES THE UNIT 2 "UNIT SUPERVISOR" OF COMPLETION] REPEAT " ATTACHMENT 1, SECTION 1 OF 2/3-SSI-2-1 IS COMPLETE."  
THAT WILL BE ALL FOR NOW.

\*\*\*\*\*

Performance Step: Critical\_\_ Not Critical X

**PERFORMER** complied with all safety rules and regulations.

Standard:

**PERFORMER** complied with all safety rules and regulations (hardhat, safety glasses, sideshields, and hearing protection was worn **AS REQUIRED**.) (INSTRUCTOR determines if N/A due to plant conditions)

**ELECTRICAL SAFETY** was also adhered to: Exposed conductive articles such as rings, metal wristwatches, bracelets, and metal necklaces shall not be worn by employees within reaching distance of exposed energized electrical conductors of 50 volts or greater.

SAT\_\_ UNSAT\_\_ N/A\_\_ COMMENTS:\_\_\_\_\_

\*\*\*\*\*

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: \_\_\_\_\_

\*\*\*\*\*

### Performance Step:

PERFORMER demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT	UNSAT	N/A	COMMENTS:

END OF TASK

STOP TIME

---

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS (INFORMATION COPY)

1.0 RPS Trip and 250VDC Battery Charger Resetting CHECKED  
(10 Min)

1.1 PROCEED to Battery Board 2 AND PLACE the  
following Breakers in OFF:

1.1.1 BKR NO. 902 RPS MG SET A TIE TO BAT BD 2. \_\_\_\_\_

1.1.2 BKR NO. 952 RPS MG SET B TIE TO BAT BD 2  
U-2. \_\_\_\_\_

NOTE:

The following steps will place battery chargers in service with 480V load shed logic trip bypassed.

- (20 Min)
- 1.2 PROCEED to 250VDC BATTERY CHARGER 2A AND PLACE  
250V CHGR 2A PWR SW in EMERG. \_\_\_\_\_
- 1.3 PROCEED to Battery Board Room 3. \_\_\_\_\_
- 1.4 PLACE BKR NO. 710 DPO ENGINEERING SHOP in OFF. \_\_\_\_\_
- 1.5 PROCEED to 250VDC BATTERY CHARGER 3 AND PLACE  
250V CHGR 3 PWR SW in EMERG. \_\_\_\_\_
- 1.6 PROCEED to 250VDC BATTERY CHARGER 1 AND PLACE  
250V CHGR 1 PWR SW in EMERG. \_\_\_\_\_
- 1.7 NOTIFY the Unit 2 Unit Supervisor of completion  
of this section. \_\_\_\_\_
- 1.8 PROCEED to 480V Reactor MOV Board 2B in  
preparation of performing Section 2.0. \_\_\_\_\_

---

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS (INFORMATION COPY)

2.0 Align 480V Reactor MOV Boards 2A and 2B  
(60 Min)

- 2.1 Notification has been received from the Unit 2 Unit Supervisor to perform this section. \_\_\_\_\_
- 2.2 PROCEED to 480V Reactor MOV Board 2B AND PLACE the following breakers in OFF:
  - 2.2.1. Compartment 4A, DRYWELL BLOWER 2B-3. \_\_\_\_\_
  - 2.2.2. Compartment 15A, DRYWELL BLOWER 2B-4. \_\_\_\_\_
- 2.3 PROCEED to 480V Reactor MOV Board 2A AND PLACE the following breakers in OFF: \_\_\_\_\_
  - 2.3.1 Compartment 17A, DRYWELL BLOWER 2A-3 \_\_\_\_\_
  - 2.3.2 Compartment 18A, DRYWELL BLOWER 2A-4. \_\_\_\_\_
- 2.4 PROCEED to 480V Shutdown Board 2A, Compartment 3A, AND VERIFY CLOSED NORMAL FEEDER 480V REACTOR MOV BOARD 2A. \_\_\_\_\_
- 2.5 PROCEED to 480V Shutdown Board 2B, Compartment 3B, AND VERIFY CLOSED NORMAL FEEDER 480V REACTOR MOV BOARD 2B. \_\_\_\_\_
- 2.6 PROCEED to 480V Reactor MOV Board 2A AND PERFORM the following:
  - 2.6.1 PROCEED to Compartment 3D AND DEPRESS RESET/TRIP pushbutton. \_\_\_\_\_
  - 2.6.2 PROCEED to Compartment 3A AND PLACE NORMAL FEEDER CONTROL SWITCH in CLOSE. \_\_\_\_\_
- 2.7 NOTIFY Unit 2 Unit Supervisor of completion of this section. \_\_\_\_\_
- 2.8 PROCEED to Control Room AHU 1B located in Unit 1 Mechanical Equipment room El 617 in preparation of performing Section 3.0. \_\_\_\_\_

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS

- 3.0 Align and Start B Train Control Bay HVAC CHECKED  
(60 Min)
- 3.1 Notification has been received from the Unit 2  
Unit Supervisor to perform this section. \_\_\_\_\_
- 3.2 PROCEED to Control Room AHU 1B AND OPEN TCV-31-19  
BYPASS, 1-31-526. \_\_\_\_\_
- 3.3 PLACE CONTROL RM AIR HANDLING UNIT 1A,  
0-HS-031-0081, in OFF. \_\_\_\_\_
- 3.4 PLACE CONTROL RM AIR HANDLING UNIT 1B,  
0-HS-31-82, in ON. \_\_\_\_\_
- 3.5 PROCEED to Panel 0-LPNL-925-0165 AND PERFORM  
the following (3C unit 1 mech equip room)
- 3.5.1 PLACE BATTERY & BOARD RM EXH FAN A/B,  
0-HS-031-0074A, in ON 1B. (panel A) \_\_\_\_\_
- (120 Min)
- 3.5.2 PLACE ELEC BD RM AHU 2A FAN CONTROL,  
2-HS-031-2320B, in STOP. (panel D) \_\_\_\_\_
- 3.5.3 PLACE ELEC BD RM AHU 2B FAN REMOTE CONTROL  
SWITCH, 2-HS-031-2330B, in START. (panel E) \_\_\_\_\_
- 3.5.4 PLACE ELEC BD RM AHU 1B FAN REMOTE CONTROL  
SWITCH, 1-HS-031-2310B, in STOP. (panel E) \_\_\_\_\_
- 3.5.5 PLACE ELEC BD RM AHU 1A FAN REMOTE CONTROL  
SWITCH, 1-HS-031-2300B, in START. (panel D) \_\_\_\_\_
- 3.6 PROCEED to Unit 1 Mechanical Equipment Room  
El 606. \_\_\_\_\_
- (60 Min)
- 3.7 PLACE HOT WATER CIRCULATING PUMPS A&B,  
0-HS-31-141, to OFF (Located on west wall  
behind pumps.) \_\_\_\_\_

---

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS (INFORMATION COPY)

- 3.0 Align and Start B Train Control Bay HVAC CHECKED  
(60 Min) (Continued)
- 3.8 PROCEED to Control Bay el. 593 AHU 1B AND OPEN  
1-TCV-31-22 BYPASS, 1-31-530. \_\_\_\_\_
- 3.9 PROCEED to AHU 1A AND PLACE EL 593 AIR HANDLING  
UNIT 1A, 0-HS-031-0088, in OFF. \_\_\_\_\_
- 3.10 PROCEED to AHU 1B AND PLACE EL 593 AIR HANDLING  
UNIT 1B, 0-HS-31-89, in ON. \_\_\_\_\_
- 3.11 VERIFY the following at the local 4KV Shutdown Boards:
- 3.11.1 PROCEED to 4KV Shutdown Board D, Compartment  
12, 4KV SUPPLY FOR 1&2 CONTROL BAY CHILLER B,  
0-BKR-031-2200, AND PERFORM the following:
- 3.11.1.1 PLACE CB CHILLER B TRANSFER SWITCH,  
0-XS-031-2200A, in EMERG. \_\_\_\_\_
- 3.11.1.2 PLACE CONTROL BAY CHILLER B control  
switch, 0-HS-031-2200B, in CLOSE. \_\_\_\_\_
- 3.11.2 PROCEED to 4KV Shutdown Board B, Compartment  
18, 4KV SUPPLY FOR 1&2 CONTROL BAY CHILLER A,  
0-BKR-031-2100, AND PERFORM the following:
- 3.11.2.1 PLACE CB CHILLER A TRANSFER SWITCH,  
0-XS-031-2100A, in EMERG. \_\_\_\_\_
- 3.11.2.2 PLACE CONTROL BAY CHILLER A control  
switch, 0-HS-031-2100B, in TRIP. \_\_\_\_\_

---

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS (INFORMATION COPY)

<u>3.0 Align and Start B Train Control Bay HVAC</u> (Continued)	<u>CHECKED</u>
3.12 PROCEED to the Control Bay Chiller enclosure above the Unit 1 & 2 DG Building.	_____
3.13 VERIFY 1&2 CONT BAY CHW PUMP B TRANSFER SWITCH, 0-XS-31-2201, in LOCAL.	_____
3.14 VERIFY 1&2 CONT BAY CHW PUMP B EMERG STOP SWITCH, 0-HS-31-2201D, in RESET.	_____
3.15 PLACE 1&2 CONT BAY CHW PUMP B LOCAL SWITCH, 0-HS-31-2201C, in START.	_____
3.16 VERIFY the following switch positions:	
3.16.1 CONTROL PANEL MODE SELECT, 0-HS-31-2210BA(HS1), in DIGITAL CONTROL.	_____
3.16.2 ANALOG CONTROL MODE SELECT, 0-HS-31-2210BB(HS2), in ANALOG STOP.	_____
3.16.3 Unit 1&2 CB CHILLER B REMOTE HS APPENDIX R DISC SW, 0-HS-31-2210, in LOCAL.	_____
3.16.4 CONTROL BAY CHILLER B, 0-BKR-31-2210, in ON.	_____

NOTE:

There is approximately a 2 minute time delay between when the switch is placed in AUTO LOCAL and when the chiller actually starts.

3.17 START Control Bay Chiller B at Local Display Panel 0-PMC-31-2200A, by placing switch in AUTO LOCAL.	_____
3.18 NOTIFY the Unit 2 Unit Supervisor of completion of this section.	_____
3.19 PROCEED to 480V DSL Aux Bd B in preparation of performing Section 4.0.	_____

ATTACHMENT 1  
OPERATOR 1 MANUAL ACTIONS (INFORMATION COPY)

4.0 Deenergize 0-FCV-67-48 (EECW SOUTH HDR SUPPLY VALVE)

CHECKED

4.1 Notification has been received from the Unit 2  
Unit Supervisor to perform this section.  
(120 Min)

4.2 PROCEED to Compartment 12C AND OPEN RHRSW  
PUMP D1 SPLY TO EECW FCV-67-48, Breaker.

4.3 PROCEED to 480V RMOV Bd 1B, Compartment 14C2  
AND PERFORM one of the following:

4.3.1 VERIFY CLOSED RHR HEAT EXCHANGER B SW OUTLET  
VALVE 1-FCV-23-46, AND THEN  
OPEN the breaker,

or

4.3.2 OPEN the breaker AND THEN locally  
VERIFY CLOSED 1-FCV-23-46. (RB EL 565 SE)

4.4 PROCEED to 480V RMOV Bd 1B, Compartment 15C  
AND PERFORM one of the following:

4.4.1 VERIFY CLOSED RHR HEAT EXCHANGER D SW OUTLET  
VALVE 1-FCV-23-52, AND THEN  
OPEN the breaker,

or

4.4.2 OPEN the breaker AND THEN locally  
VERIFY CLOSED 1-FCV-23-52. (RB EL 565 SE)

4.5 NOTIFY the Unit 2 Unit Supervisor of completion  
of this attachment.

NAME (print)

INITIALS

Performed by:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed by:

\_\_\_\_\_

US

DATE

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

JPM NUMBER: 27F

TITLE: 2-EOI APPENDIX 7K - ALTERNATE RPV INJECTION SYSTEM  
LINEUP - FIRE SYSTEM (THROUGH RHR SYSTEM II)

TASK NUMBER: U-000-EM-14

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	12/6/94	1,2,3,4	REVISE TO NEW FORMAT
3	11/8/95	ALL	UPDATE TO MATCH BASE PROCEDURE REVS
4	8/1/96	ALL	ADDED CRITICAL STEP FOR MGT EXPECTATIONS. CHANGED FORMAT FOR ACKNOWLEDGING TASK, AND UNIT 2 SPECIFIC JPM.
5	9/6/96	2, 4	ADD TO INITIATING CUE TO VERIFY CLOSED RSW STRG TNK ISOL VLVS LOCALLY
6	9/13/99	ALL	CHANGED MGT. EXPECT TO PLANT WORK EXPECT. WITH CRIT STEPS TO NON-CRIT. STEPS, FORMAT DOCUMENT, AND ADDED 3-WAY COMM.
7	10/03/00	4	Deleted non-critical steps.
8	09/01/01	ALL	General Revision.

BROWNS FERRY NUCLEAR PLANT  
JOB PERFORMANCE MEASURE

OPERATOR: \_\_\_\_\_ SS# \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_ DATE: \_\_\_\_\_

JPM NUMBER: 27F

TASK NUMBER: U-000-EM-44

TASK TITLE: LINE UP ALTERNATE RPV INJECTION SYSTEM - FIRE  
SYSTEM IN ACCORDANCE WITH 2-EOI APPENDIX 7K

K/A NUMBER: 295031EA1.01 K/A RATING: RO 4.4 SRO: 4.4

\*\*\*\*\*

TASK STANDARD: SIMULATE PERFORMING VALVE MANIPULATIONS REQUIRED TO  
ALIGN THE FIRE SYSTEM TO INJECT INTO THE RPV VIA  
THE RHR SYSTEM AS DIRECTED BY 2-EOI APPENDIX 7K

LOCATION OF PERFORMANCE: SIMULATOR \_\_\_\_\_ PLANT X CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 7K, REV 6

VALIDATION TIME: \_\_\_\_\_ CONTROL ROOM: 25:00 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 shall be simulated. 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 extra operator. A tornado has caused Unit 2 reactor to scram and no AC power is available, all Diesel Genrators failed. Due to an un-isolable leak and several equipment failures the RPV inventory cannot be maintained above TAF. The diesel fire pump is running. The fire system injection into RHR System II is to be used as a source of makeup to the RPV. (RHR System I is tagged)

**INITIATING CUES:** The Unit 2 Operator directs you to perform manual valve alignments per Attachment 1 of 2-EOI Appendix 7K, verifying RSW STORAGE TANK ISOL. VALVES closed and align RHR System II for injection to the RPV. You have a radio.

Evaluator Note: Actual field performance steps start on page 10. Cues are provided at critical points to simulate the control room operator directing manipulations of plant valves due to loss of AC power.

\*\*\*\*\*

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 7K.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

NOTE:With AC power NOT available, valve manipulations are manual and performed locally.

1. IF ..... ALL AC Power is NOT available,  
THEN ... **REFER TO** Attachment 1 and **DISPATCH** personnel to manually operate the listed valves while performing the following steps.

\*\*\*\*\*  
\* CAUTION \*  
\* \*  
\* Automatic initiation of fire system will divert water \*  
\* from the RPV during performance of this procedure. \*  
\*\*\*\*\*

2. **NOTIFY** Unit 1 Operator to perform the following:
  - a. **VERIFY** at least one electric or diesel driven fire pump running (Unit 1, Panel 9-20).
  - b. IF ..... Diesel Driven fire pump is running,  
THEN .... **DISPATCH** personnel to diesel fire pump as soon as possible to check proper operation.

- c. **VERIFY CLOSED** the following valves (Unit 1, Panel 9-20):
- 0-FCV-25-32, RSW STRG TNK ISOLATION VALVE.
  - 0-FCV-25-70, RSW STRG TNK ISOLATION VALVE.
- d. **OPEN** FCV-23-57, STANDBY COOLANT VALVE FROM RHRSW (Unit 1, Panel 9-3).
3. **VERIFY** RHR pumps 2A and 2C shutdown (Unit 2, Panel 9-3).
4. **OPEN** 2-FCV-74-100, RHR SYS I U-1 DISCH XTIE, (Unit 2, Panel 9-3).
5. **VERIFY CLOSED** 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV (Unit 2, Panel 9-3).
6. **VERIFY OPEN** the following valves (Unit 2, Panel 9-3):
- 2-FCV-74-52, RHR SYS I LPCI OUTBD INJECT VALVE
  - 2-FCV-74-53, RHR SYS I LPCI INBD INJECT VALVE.
7. IF ..... Additional injection flow is required,  
THEN .... **INJECT** using RHR System II as follows:
- a. **VERIFY** RHR pumps 2B and 2D shut down (Unit 2, Panel 9-3).
  - b. **OPEN** 2-FCV-23-57, STANDBY COOLANT VLV FROM RHRSW, (Unit 2, Panel 9-3).
- NOTE: Breaker compartment for 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE, valve is maintained in the open position as an Appendix R requirement.
- c. **DISPATCH** personnel to close 480V ACB to 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE, (480V RMOV BD 3B, Compartment 19E).
  - d. **OPEN** 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE (Unit 2, Panel 9-3).

- e. **VERIFY CLOSED** 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV,  
(Unit 2, Panel 9-3).
- f. **VERIFY OPEN** the following valves (Unit 2, Panel 9-3):
- 2-FCV-74-67, RHR SYS II LPCI INBD INJECT VALVE
  - 2-FCV-74-66, RHR SYS II LPCI OUTBD INJECT VALVE.

END OF TEXT

(ATTACHMENT 1)

<b><u>VALVE LOCATIONS AND POSITIONS</u></b>		
NOTE: The valves listed below are operated <u>ONLY</u> when directed by the Unit Operator.		
VALVE	POSITION	LOCATION
0-FCV-25-32, RSW STRG TNK ISOLATION VALVE	CLOSED	UNIT 1 RB NW, El 639 ft, SLC Area, West wall by Gland Seal Water tank
0-FCV-25-70, RSW STRG TNK ISOLATION VALVE	CLOSED	
SYSTEM I		
1-FCV-023-0057, STANDBY COOLANT VLV	OPEN	Unit 1 RB SE, El 565 ft, overhead above equipment air lock
2-FCV-74-100, RHR HTX A-C DISCH XTIE (TO U-1) VLV	OPEN	Unit 2 RB SW, El 565 ft, overhead at west wall above door to elevator and stairs
2-FCV-23-52, RHR HEAT EXCHANGER D SW OUTLET VALVE	CLOSED	UNIT 2 RB SE, El 565 ft, by SW Stairwell
2-FCV-74-53, RHR SYSTEM I INBD INJECTION VLV	OPEN	Unit 2 RB, El 580 ft above drywell personnel access
2-FCV-74-52, RHR SYSTEM I OUTBD INJECTION VLV	OPEN	

SYSTEM II		
2-FCV-074-0101, RHR HTX B-D DISCH XTIE (TO U-3) VLV	OPEN	Unit 2 RB SE, El 565 ft, overhead on platform
2-FCV-23-57, STANDBY COOLANT VALVE	OPEN	Unit 2 RB SE, El 565 ft overhead on platform
2-FCV-23-46, RHR HX B RHRSW OUTLET VLV	CLOSED	UNIT 2 RB SE, El 565 ft, by SE Stairwell
2-FCV-074-0067, RHR SYSTEM II INBD INJECTION VLV	OPEN	Unit 2 RB, El 580 ft, above drywell personnel access
2-FCV-074-0066, RHR SYSTEM II OUTBD INJECTION VLV	OPEN	

CUE: U2 Operator directs you to verify CLOSED the valves in Step 2.C locally per Attachment 1, 0-FCV-25-32 and 0-FCV-25-70.

\*\*\*\*\*

Performance Step :                      Critical X   Not Critical       

**CLOSE** 0-FCV-25-32, RSW STRG TNK ISOLATION VALVE.

Standard:

SIMULATED CLOSING 0-FCV-25-32.

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_ COMMENTS: \_\_\_\_\_

CUE: [WHEN SIMULATED] 0-FCV-25-32 IS CLOSED.

\*\*\*\*\*

Performance Step :                      Critical X   Not Critical       

CLOSE 0-FCV-25-70, RSW STRG TNK ISOLATION VALVE.

Standard:

SIMULATED CLOSING 0-FCV-25-70.

SAT	UNSAT	N/A	COMMENTS:

CUE: [WHEN SIMULATED] 0-FCV-25-70 IS CLOSED.

CUE: [WHEN SIMULATED] THE HANDWHEEL IS TURNING AND THE VALVE STEM IS MOVING OUTWARD. [PAUSE] THE HANDWHEEL IS NOW SNUG.

CUE: VERIFY CLOSED 2-FCV-23-46 locally.

\*\*\*\*\*

Performance Step :                      Critical\_\_\_ Not Critical X

VERIFY CLOSED 2-FCV-23-46, RHR HEAT EXCHANGER B SW OUTLET  
VALVE.

Standard:

VERIFIED 2-FCV-23-46 valve position indicator indicating  
CLOSED or **SIMULATED** engaging handwheel and rotating handwheel  
in the CLOCKWISE direction.

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_ COMMENTS:\_\_\_\_\_

CUE: [IF HANDWHEEL MANIPULATION SIMULATED] THE HANDWHEEL IS  
SNUG.

CUE: [WHEN SIMULATED] THE HANDWHEEL IS TURNING AND THE VALVE STEM IS MOVING OUTWARD. [PAUSE] THE HANDWHEEL IS NOW SNUG.

\*\*\*\*\*

Performance Step :                  Critical X Not Critical\_\_\_

**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: \_\_\_\_\_

**Figure 1.** The effect of the number of nodes ( $n$ ) on the performance of the proposed algorithm. The figure shows two plots side-by-side. The left plot shows the execution time (in seconds) on the y-axis (ranging from 0 to 10) versus the number of nodes ( $n$ ) on the x-axis (ranging from 10 to 100). The right plot shows the error rate (%) on the y-axis (ranging from 0 to 10) versus the number of nodes ( $n$ ) on the x-axis (ranging from 10 to 100).

Performance Step :

Critical X Not Critical   

**PERFORMER** complied with all safety rules and regulations.

Standard:

**PERFORMER** complied with all safety rules and regulations (hardhat, safety glasses, sideshields, and hearing protection was worn **AS REQUIRED**.) (INSTRUCTOR determines if N/A due to plant conditions)

**ELECTRICAL SAFETY** was also adhered to: Exposed conductive articles such as rings, metal wristwatches, bracelets, metal necklaces, key chains, and metal belt buckles shall not be worn by employees within reaching distance of exposed energized electrical conductors of 50 volts or greater.

SAT      UNSAT      N/A      COMMENTS: \_\_\_\_\_

\*\*\*\*\*  
Performance Step:                      Critical\_\_ Not Critical X

**PERFORMER** demonstrated the use of 3-WAY COMMUNICATION during this JPM.

Standard:

**PERFORMER** utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT            UNSAT            N/A            COMMENTS: \_\_\_\_\_

END OF TASK

STOP TIME:

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EOI PROGRAM MANUAL SECTION IX**

**2-EOI APPENDIX-7K**

**ALTERNATE RPV INJECTION SYSTEM LINEUP  
FIRE SYSTEM**

**REVISION 6**

PREPARED BY: M. Morrow

PHONE: 3708

RESPONSIBLE ORGANIZATION: Operations

APPROVED BY: A. S. Bhatnagar

EFFECTIVE DATE: 10/26/00

**LEVEL OF USE: REFERENCE USE**

VALIDATION DATE: 04/03/93

QUALITY-RELATED

HISTORY OF REVISION/REVIEW  
2-EOI APPENDIX-7K

<u>REV. NO.</u>	<u>DATE:</u>	<u>REVISED PAGES</u>	<u>REASON FOR CURRENT REVISION</u>
0	6/15/92	ALL	New procedure. Necessary to support implementation of Revision 4 EPGs into BFNP EOIs.
1	7/10/92	ALL	Incorporate Writer's Guide discrepancies, typos, and plant nomenclature discrepancies.
2	11/13/92	ALL	Revised notes concerning loss of all AC power and App R breaker position.
3	4/21/93	ALL	Converted from WordPerfect 5.1 to Pagemaker 4.0 to better support desktop publishing capabilities. References to Control Room Labels corrected. Added use of the Electric Driven Fire Pumps to the procedure. Changed the procedure to provide instruction for control room operations and added an attachment for valve locations if manual operation is required during loss of power conditions. Changed procedure methodology to have System I as preferred and System II to be used if required. Provided control panel information regarding location of operations.
4	12/28/93	3  1,2	Corrected location information associated with RSW tank isolation valves. Added steps to ensure RHR HTX outlet valves are closed and RHR pumps shutdown to prevent diversion of flow.
5	11/1/94	2,3	Corrected typos, Corrected Attachment 1 to match plant valve labeling and locations.
6	10/26/00	All	Converted to MS-Word.

## 2-EOI APPENDIX-7K

### ALTERNATE RPV INJECTION SYSTEM LINEUP FIRE SYSTEM

LOCATION: Unit 2 Control Room

ATTACHMENTS: 1. Valve Locations and Positions

(✓)

NOTE: With AC power NOT available, valve manipulations are manual and performed locally.

1. IF.....ALL AC Power is NOT available,  
THEN....REFER TO Attachment 1 and **DISPATCH** personnel to manually operate the listed valves while performing the following steps. \_\_\_\_\_

\*\*\*\*\*  
**CAUTION**

Automatic initiation of fire system will divert water from the RPV during performance of this procedure.  
\*\*\*\*\*

2. **NOTIFY** Unit 1 Operator to perform the following:
  - a. **VERIFY** at least one electric or the diesel driven fire pump running (Unit 1, Panel 9-20). \_\_\_\_\_
  - b. IF ..... The diesel fire pump is running,  
THEN .... **DISPATCH** personnel to diesel fire pump as soon as possible to check proper operation. \_\_\_\_\_
  - c. **VERIFY CLOSED** the following valves (Unit 1, Panel 9-20):
    - 0-FCV-25-32, RSW STRG TNK ISOLATION VALVE \_\_\_\_\_
    - 0-FCV-25-70, RSW STRG TNK ISOLATION VALVE. \_\_\_\_\_
  - d. **OPEN** 1-FCV-23-57, STANDBY COOLANT VALVE FROM RHRSW (Unit 1, Panel 9-3). \_\_\_\_\_
3. **VERIFY** RHR pumps 2A and 2C shut down (Unit 2, Panel 9-3). \_\_\_\_\_

4. **OPEN** 2-FCV-74-100, RHR SYS I U-1 DISCH XTIE, (Unit 2, Panel 9-3). \_\_\_\_\_
  5. **VERIFY CLOSED** 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV (Unit 2, Panel 9-3). \_\_\_\_\_
  6. **VERIFY OPEN** the following valves (Unit 2, Panel 9-3):
    - 2-FCV-74-52, RHR SYS I LPCI OUTBD INJECT VALVE \_\_\_\_\_
    - 2-FCV-74-53, RHR SYS I LPCI INBD INJECT VALVE. \_\_\_\_\_
  7. IF.....Additional injection flow is required,  
THEN....**INJECT** using RHR System II as follows:
    - a. **VERIFY** RHR pumps 2B and 2D shut down (Unit 2, Panel 9-3). \_\_\_\_\_
    - b. **OPEN** 2-FCV-23-57, STANDBY COOLANT VLV FROM RHRSW, (Unit 2, Panel 9-3). \_\_\_\_\_
- NOTE: Breaker compartment for 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE, is maintained in the OPEN position as an Appendix R requirement.
- c. **DISPATCH** personnel to **CLOSE** 480V ACB to 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE (480V RMOV Board 3B Compartment 19E). \_\_\_\_\_
  - d. **OPEN** 2-FCV-74-101, RHR SYS II U-3 DISCH XTIE (Unit 2, Panel 9-3). \_\_\_\_\_
  - e. **VERIFY CLOSED** 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV (Unit 2, Panel 9-3). \_\_\_\_\_
  - f. **VERIFY OPEN** the following valves (Unit 2, Panel 9-3):
    - 2-FCV-74-67, RHR SYS II LPCI INBD INJECT VALVE \_\_\_\_\_
    - 2-FCV-74-66, RHR SYS II LPCI OUTBD INJECT VALVE. \_\_\_\_\_

END OF TEXT

**VALVE LOCATIONS AND POSITIONS**

NOTE: The valves listed below are operated ONLY when directed by the Unit Operator.

VALVE	POSITION	LOCATION
0-FCV-025-0032, RSW STRG TNK ISOLATION VALVE	CLOSED	Unit 1 RB NW, el 639 ft, SLC area, west wall by gland seal water tank
0-FCV-025-0070, RSW STRG TNK ISOLATION VALVE	CLOSED	Unit 1 RB NW, el 639 ft, SLC area, west wall by gland seal water tank
<b>SYSTEM I</b>		
1-FCV-023-0057, STANDBY COOLANT VLV	OPEN	Unit 1 RB SE, el 565 ft, overhead above equipment air lock
2-FCV-074-0100, RHR HTX A-C DISCH XTIE (TO U-1) VLV	OPEN	Unit 2 RB SW, el 565 ft, overhead at west wall above door to Unit 1 elevator/stairs
2-FCV-023-0052, RHR HEAT EXCHANGER D SW OUTLET VALVE	CLOSED	Unit 2 RB SE, el 565 ft, by SE stairwell
2-FCV-074-0053, RHR SYSTEM I INBD INJECTION VLV	OPEN	Unit 2 RB, el 580 ft, above drywell personnel access
2-FCV-074-0052, RHR SYSTEM I OUTBD INJECTION VLV.	OPEN	Unit 2 RB, el 580 ft, above drywell personnel access
<b>SYSTEM II</b>		
2-FCV-074-0101, RHR HTX B-D DISCH XTIE (TO U-3) VLV	OPEN	Unit 2 RB SE, el 565 ft, overhead on platform
2-FCV-023-0057, STANDBY COOLANT VALVE	OPEN	Unit 2 RB SE, el 565 ft, overhead on platform
2-FCV-023-0046, RHR HEAT EXCHANGER B SW OUTLET VALVE	CLOSED	Unit 2 RB SE, el 565 ft, by SE stairwell
2-FCV-074-0067, RHR SYSTEM II INBD INJECTION VLV	OPEN	Unit 2 RB, el 580 ft, above drywell personnel access
2-FCV-074-0066, RHR SYSTEM II OUTBD INJECTION VLV	OPEN	Unit 2 RB, el 580 ft, above drywell personnel access

JPM NUMBER: NRC -2

TITLE: Fill and Vent the Stator Cooling System

KA 245000 K6.05 (2.9/2.9)

OPERATOR: \_\_\_\_\_

RO \_\_\_\_\_ SRO \_\_\_\_\_

DATE: \_\_\_\_\_

JPM NUMBER: NRC 2

K/A NUMBER: KA 245000 K6.05

K/A RATING: RO 2.9 SRO: 2.9

\*\*\*\*\*

TASK STANDARD: SUCCESSFULLY FILL AND VENT THE STATOR COOLING SYSTEM

LOCATION OF PERFORMANCE: SIMULATOR \_\_\_\_\_ PLANT X CONTROL ROOM \_\_\_\_\_

REFERENCES/PROCEDURES NEEDED: 2-OI-35A, REV 26

VALIDATION TIME: CONTROL ROOM: \_\_\_\_\_ LOCAL: 30

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: \_\_\_\_\_

\*\*\*\*\*

**INITIAL CONDITIONS:** You are an Operator. The stator cooling water system is shutdown, the system has been partially drained and you have been tasked with filling and venting the system.

The following conditions exist at the beginning of this task:

Recovery from Refueling Outage is in progress.  
Stator Cooling Water Pumps are locked out.  
Nothing is tagged on the system.  
Appropriate tools and hoses are available at the job site.

**INITIATING CUES:** Fill and vent the stator cooling water system on Unit 2 and call the control room when the task is complete.

\*\*\*\*\*

**CAUTION:** This JPM will be conducted in the plant, **PLANT EQUIPMENT SHALL NOT BE OPERATED**, all actions will be simulated. Caution must be exercised when near plant equipment, do not do anything that would jeopardize your personal safety or plant operation.

Performance Step : 1

Critical\_ Not Critical X

8.1.1 REVIEW all Precautions and Limitations in Section 3.0.

Standard:

**VERIFIED** all Precautions and Limitations in Section 3.0.

- 3.1 Generator stator inlet water conductivity should be maintained less than 0.5 m siemen.
- 3.2 The stator coolant pumps trip if a generator differential current condition is detected.
- 3.3 Operation of only one stator cooling pump is required to provide normal system flow. The standby pump will automatically start on low system discharge pressure.
- 3.4 A main turbine trip will occur after 70 seconds if 2 out of 3 signals are received from either of the following conditions:  
Generator stator current greater than 7726 amps and stator inlet cooling water flow less 542 gpm.  
Stator cooling water temperature greater than 81°C.  
If the above trips are inoperable, the turbine should be removed from service within 12 hours.
- 3.5 The following pressure differential limits are placed on the filters and deionizer in the stator cooling system:
  - 3.5.1 Stator Water Deionizer- 15 psid.
  - 3.5.2 Stator Filter- 8 psid.
  - 3.5.3 Rectifier Filter- 8 psid.
- 3.6 Filter cartridges should be replaced at the first scheduled shutdown after the pressure drop across the filter has risen to 8 psid or after 18 to 20 months of service.
- 3.7 If conductivity of the stator cooling water cannot be maintained below 0.5 m siemen, the deionizer resin bed should be replaced.
- 3.8 The generator should not be operated above its "No Liquid Flow Capability" (7726 amps stator current at 75 psig H<sub>2</sub> pressure) when any part of the Stator Cooling System is subjected to freezing ambient conditions.
- 3.9 If adjustments are to be made to the Stator Cooling System while the generator is in operation, the generator load should not be above the "No Liquid Flow Capability" (7726 amps stator current at 75 psig H<sub>2</sub> pressure).
- 3.10 On a loss of stator cooling flow, the turbine shall be manually tripped within the following time limits:
  - 3.10.1 Three minutes with conductivity greater than 0.5 m siemens prior to the loss of stator cooling water flow.
  - 3.10.2 Forty minutes with conductivity less than 0.5 m siemens prior to the loss of stator cooling water flow.

**NOTE:**

Without flow, conductivity readings are inaccurate and should be disregarded.

- 3.11 Normal cooling water flow to rectifiers is 30 gpm at 45°C (113°F) inlet temperature; rectifier high temperature alarm occurs at 93.3°C (200°F).
- 3.12 Main generator rating is 1,280,000 kVA at 0.93PF; 75 psig H<sub>2</sub> pressure. With one stator cooler out of service, maximum main generator rating is 896,000 kVA at 0.9PF; 75 psig H<sub>2</sub> pressure.
- 3.13 If rectifier cooling water flow is lost, 4964 amps of field current can be carried for 5 minutes, followed by a reduction to 2482 amps at 77°F ambient, or 122°F ambient continuous.
- 3.16 [PER/C] Frequent attention to the stator cooling surge tank level should be exercised during maintenance, filling, and venting. [SQ941193PER]

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_

COMMENTS: \_\_\_\_\_

\*\*\*\*\*

Performance Step: 2 Critical\_ Not CriticalX

8.1.2 ROUTE outlet of DEMIN WATER MAKEUP DRAIN valve, 2-DRV-035-0840(Y-62) to floor drain.

Standard:

Simulate routing outlet to floor drain

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: 3 Critical\_X\_ Not Critical\_\_\_\_

8.1.3 OPEN DEMIN WATER MAKEUP DRAIN valve, 2-DRV-035-0840(Y-62).

Standard:

Simulate opening 2-DRV-035-0840(Y-62)

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**CUE: When Flush has started : TWO MINUTES HAVE PASSED**

**Standard:**

**Simulate closing 2-SHV-035-0839(Y-61) and 2-DRV-035-0840(Y-62) after 2 minute flush.**

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Performance Step:       7                      Critical\_ Not Critical\_ X

8.1.7 CLOSE the DEIONIZER INLET valve, 2-CKV-035-0852(Y-19).

## Standard:

Simulate closing 2-CKV-035-0852(Y-19)

SAT\_\_\_\_\_ UNSAT\_\_\_\_\_ N/A\_\_\_\_\_

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\*\*\*\*\*

**Performance Step:** 8 **Critical** X **Not Critical**   

8.1.8 OPEN the DEMIN WATER MAKEUP valve, 2-SHV-035-0839(Y-61).

**Standard:**

Simulate opening 2-SHV-035-0839(Y-61)

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ N/A \_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

Performance Step:        11                      Critical\_\_\_ Not Critical X

8.1.11 CLOSE MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21)

Standard:

Simulate closing 2-CKV-035-0851(Y-21)

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step:        12                      Critical\_\_\_ Not Critical X

8.1.12 CLOSE STATOR COOLING DEMIN WTR SPLY valve, 2-SHV2-1595

Standard:

Simulate closing 2-SHV2-1595

SAT\_\_\_ UNSAT\_\_\_ N/A\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

\*\*\*\*\*

Performance Step: 13

Critical X Not Critical   

8.1.13 LOOSEN the following vent plugs, one at a time, and WHEN water is seen flowing through/around the plug threads, THEN

RETIGHTEN the vent plug:

Cooler A Vent Plug

CUE: water is seen flowing through/around the plug threads

Cooler B Vent Plug

CUE: water is seen flowing through/around the plug threads

Deionizer Vent Plug

CUE: water is seen flowing through/around the plug threads

Secondary Filter Vent Plug

CUE: water is seen flowing through/around the plug threads

Primary Filter Vent Plug

CUE: water is seen flowing through/around the plug threads

Standard:

Loosen plugs individually, verify water flowing from them, then retighten.

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

Performance Step: Critical X Not Critical\_\_

8.1.14 THROTTLE OPEN DEIONIZER INLET, 2-CKV-035-0852(Y-19) to maintain ~55% flow as indicated on 2-FI-035-0079.

CUE: 2-FI-035-0079. Is indicating ~ 45%

CUE:after flow is adjusted 2FI-035-0079 Is indicating ~55%

Standard:

Adjust flow to reach ~ 55%

SAT\_\_\_\_ UNSAT\_\_\_\_ N/A\_\_\_\_

COMMENTS:\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**TENNESSEE VALLEY AUTHORITY**

**BROWNS FERRY NUCLEAR PLANT**

**OPERATING INSTRUCTION**

**2-OI-35A**

**STATOR COOLING SYSTEM**

**REVISION 28**

PREPARED BY: REGGIE KEMP

PHONE: 2431

RESPONSIBLE ORGANIZATION: OPERATIONS

APPROVED BY: PHILLIP CHADWELL

DATE: 05/17/2001

EFFECTIVE DATE: 05/17/2001

**LEVEL OF USE:**      **INFORMATION USE - SECTIONS 6.1 AND 6.3**  
                             **REFERENCE USE - REMAINDER OF**  
   **INSTRUCTION**

**QUALITY-RELATED**

REVISION LOG

Procedure Number: 2-OI-35A

Revision Number: 28

Pages Affected: 7,10,11,12,16,17,21, Att 4 page 2

Description of Change: IC-032 DCNs 50579A, PIC 50820A

Changed the operating parameters for stator cooling flow and pressure. .

\*\*\*\*\*

THIS REVISION MAKES A CHANGE TO SYSTEM STATUS

Att 4 page 2, Changed tag legend for 2-PI-035-0052

\*\*\*\*\*

---

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 PURPOSE .....	2
2.0 REFERENCES.....	2
3.0 PRECAUTIONS AND LIMITATIONS.....	4
4.0 PRESTARTUP/STANDBY READINESS.....	6
5.0 STARTUP .....	7
6.0 SYSTEM OPERATIONS.....	10
6.1 Daily System Checks .....	10
6.2 System Checks .....	10
6.3 Pump Alternating .....	12
7.0 SHUTDOWN .....	13
8.0 INFREQUENT OPERATIONS.....	14
8.1 Fill and Vent of Stator Cooling System .....	14
8.2 Adding Water to Stator Cooling Water Storage Tank .....	15
8.3 Isolating One Stator Cooler While Maintaining Generator Operation .....	16
8.4 Return of Isolated Stator Cooler to Operation .....	21
8.5 Draining water from Stator Cooling Water Storage tank	25
8.6 Isolating Stator Cooling Demineralizer .....	26

ATTACHMENTS

Attachment 1 -	Stator Cooling System Valve Lineup Checklist Unit 2
Attachment 2 -	Stator Cooling System Panel Lineup Checklist Unit 2
Attachment 3 -	Stator Cooling System Electrical Lineup Checklist Unit 2
Attachment 4 -	Stator Cooling System Instrument Inspection Checklist Unit 2

---

## 1.0 PURPOSE

This operating instruction provides Precautions and Limitations, Prestartup/Standby Readiness Requirements and procedural steps for operation of the Stator Cooling System.

## 2.0 REFERENCES

### 2.1 Plant Instructions

2-GOI-100-1A, Unit Startup from Cold Shutdown to Power Operation and Return to Full Power from Power Reductions.

0-OI-2C, Demineralized Water System.

2-OI-24, Raw Cooling Water System.

0-OI-32, Control Air System.

0-OI-57B, 480V/240V AC Electrical System.

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

0-OI-57D, DC Electrical System.

SSP-12.6, Verification Program.

### 2.2 Plant Drawings

45N606-1 & 2, Wiring Diagrams Stator Cooling Water System Schematic Diagram.

2-45N2605, Wiring Diagrams Stator Cooling Water System Connection Diagram.

2-45E2646-2, Wiring Diagrams Unit Control Boards Panel 9-8.

2-45E2658-2, Wiring Diagrams Unit Control Boards Panel 9-47.

2-45E747-1,2, Wiring Diagrams 480V Unit Board 2A(2B) Single Line.

2-47E610-35-1, Mechanical Control Diagram Generator Cooling Systems.

2-47E610-43-2, Mechanical Control Diagram Sampling and Water Quality Sys.

2-47E844-1, Flow Diagram Raw Cooling Water.

---

### 2.3 Vendor Manuals

Stator Winding Cooling Water System, 234R277 Sheet 1.

GEK-5584, Vol. II, Steam Turbine-Generator Instruction, Generator Section. General Electric Co., Contract No. GE-75789. Generator Section Tab 17-24 and Stator Cooling System Tab 30-33 (BFN-CVM-0787).

### 2.4 Other References

GE TIL 1098-3, Inspection of Generators with Water Cooled Stator Windings.

GE TIL 1098-3R2, Inspection of Generators with Water Cooled Stator Windings.

SQ941193PER REV 0, Clogged Stator Cooling Water Filter.

SEOPR 96-0-024-004, RCW Header Discharge Pressure.

SEOPR 96-0-024-006, Generator Stator Cooling Water Heat Exchangers.

NEDC-32751P, Power Uprate Safety Analysis for the Browns Ferry Nuclear Plant (RIMS R08-980316-888)

TVA-BFN-TS-384, Technical Specification(TS) Change TS-384 - Request For License Amendment For Power Uprate Operation (RIMS R08-980316-888)

GE-NE-B13-01866-39, Summary of System Evaluations and Proposed Changes to Design Criteria Documents (RIMS W79-980827-003)

---

### 3.0 PRECAUTIONS AND LIMITATIONS

3.1 Generator stator inlet water conductivity should be maintained less than 0.5  $\mu$  siemen.

3.2 The stator coolant pumps trip if a generator differential current condition is detected.

3.3 Operation of only one stator cooling pump is required to provide normal system flow. The standby pump will automatically start on low system discharge pressure.

3.4 A main turbine trip will occur after 60 seconds if 2 out of 3 signals are received from either of the following conditions:

- Generator stator current greater than 7726 amps  
and stator inlet cooling water flow less 468 gpm.
- Stator cooling water temperature greater than 85°C.

If the above trips are inoperable, the turbine should be removed from service within 12 hours.

3.5 The following pressure differential limits are placed on the filters and deionizer in the stator cooling system:

Stator Water Deionizer - 15 psid,                      Stator Filter - 8 psid.  
Rectifier Filter - 8 psid.

3.6 Filter cartridges should be replaced at the first scheduled shutdown after the pressure drop across the filter has risen to 8 psid or after 18 to 20 months of service.

3.7 If conductivity of the stator cooling water cannot be maintained below 0.5  $\mu$  siemen, the deionizer resin bed should be replaced.

3.8 The generator should not be operated above its "No Liquid Flow Capability" (7726 amps stator current at 75 psig H<sub>2</sub> pressure) when any part of the Stator Cooling System is subjected to freezing ambient conditions.

3.9 If adjustments are to be made to the Stator Cooling System while the generator is in operation, the generator load should not be above the "No Liquid Flow Capability" (7726 amps stator current at 75 psig H<sub>2</sub> pressure).

3.10 On a loss of stator cooling flow, the turbine shall be manually tripped within the following time limits (Without flow, conductivity readings are inaccurate and should be disregarded).

3.10.1 2.5 minutes with conductivity greater than 0.5  $\mu$  siemens prior to the loss of stator cooling water flow.

3.10.2 60 minutes with conductivity less than 0.5  $\mu$  siemens prior to the loss of stator cooling water flow.

---

### 3.0 PRECAUTIONS AND LIMITATIONS (Continued)

- 3.11 Normal cooling water flow to rectifiers is 30 gpm at 45°C (113°F) inlet temperature; rectifier high temperature alarm occurs at 93.3°C (200°F).
- 3.12 Main generator rating is 1,280,000 kVA at 0.93 PF; 75 psig H<sub>2</sub> pressure. With one stator cooler out of service, maximum main generator rating is 896,000 kVA at 0.93 PF; 75 psig H<sub>2</sub> pressure.
- 3.13 If rectifier cooling water flow is lost, 4964 amps of field current can be carried for 5 minutes, followed by a reduction to 2482 amps at 77°F ambient, or 122°F ambient continuous.
- 3.14 [NER/C] To preclude potential insulation damage, the stator cooling system should not be operated without gas pressure except when absolutely necessary. Exceptions include stator cooling water flow testing and winding electrical tests that require water flow in the winding. [GE TIL 1098-3]
- 3.15 [NER/C] Optimum resin performance and reduction of clip to strand braze joint leaks can be facilitated by placing the stator cooling system in one of the following alignments during outages with a duration of two or more days.
- Maintain stator cooling water flow with main generator hydrogen gas pressure higher than stator water pressure.
  - Short-cycle stator cooling inlet and outlet for main generator stator with temporary pipe to remove stator winding from system. Stator cooling water system flow may now be maintained with hydrogen gas pressure at 0 psig. Notify Tech Support and mechanical maintenance to write a WR to support this evolution. REFER TO TI-273.
  - Shut down stator cooling water system and replace the resin bed at the end of the outage. [GE TIL 1098-3R2]
- 3.16 [PER/C] Frequent attention to the stator cooling surge tank level should be exercised during maintenance, filling, and venting. [SQ941193PER]
- 3.17 If stator cooling is operated with the demineralizer isolated conductivity readings are inaccurate and should be disregarded.
- 3.18 The time stator cooling is operated with the demineralizer isolated should be minimized.
- 3.19 Anytime machine gas pressure is raised above 50 psig the stator cooling pressure control 2-PCV-035-0055 should be verified at its high limit stop.

---

4.0 PRESTARTUP/STANDBY READINESS REQUIREMENTS

## 4.1 VERIFY the following related system requirements are satisfied:

4.1.1 The following panels are energized. REFER to 0-OI-57B,C,D:

4.1.1.1 480V Unit Board 2A

4.1.1.2 480V Unit Board 2B

4.1.1.3 Panel 2-9-9, Unit Preferred 120V Distribution Cabinet 6

4.1.1.4 Panel 2-9-9, Plant Preferred 120V Distribution Cabinet 4

4.1.1.5 Panel 2-9-9, 250V and 48V DC Distribution Cabinet 1

4.1.1.6 250V DC Turbine Building Distribution Board 2

## 4.1.2 The following system lineup checklists are current:

4.1.2.1 Attachment 1, Stator Cooling System Valve Lineup  
Checklist, Unit 24.1.2.2 Attachment 2, Stator Cooling System Panel Lineup  
Checklist, Unit 24.1.2.3 Attachment 3, Stator Cooling System Electrical Lineup  
Checklist, Unit 24.1.2.4 Attachment 4, Stator Cooling System Instrument  
Inspection Checklist, Unit 24.1.3 The Stator Cooling Water System has been filled and vented.  
REFER TO Section 8.1.

## 4.2 VERIFY the following support system requirements are satisfied:

4.2.1 The Raw Cooling Water System is in operation to provide cooling  
water to the stator cooling heat exchangers. REFER TO 2-OI-24.4.2.2 The Control Air System is available to provide control air to  
controllers and air operated valves in the Stator Cooling  
System. REFER TO 0-OI-32.4.2.3 Generator Machine Gas pressure is  $\geq 42$  psig.

---

5.0 STARTUP

5.1 VERIFY the Stator Cooling System is in Prestartup/Standby Readiness Alignment. REFER TO Section 4.0.

5.2 REVIEW all Precautions and Limitations in Section 3.0.

NOTE:

Normal stator cooling water storage tank level is at the center of the tank sightglass but for system startup, level should be raised to the top of the sightglass to allow for system fill.

5.3 CHECK the stator cooling water storage tank level is at the top of the sightglass.

5.4 CHECK stator coolant pump A and B oilers greater than one-half full.

NOTE:

When the pumps are started, the system will vent to the storage tank. During this time, it may be necessary to add makeup water to the storage tank to maintain level.

5.5 START the preferred Stator Cooling Pump A(B) by placing GEN STATOR CLG WATER PUMP 2A(B), 2-HS-35-35A(36A) from Control Room Panel 2-9-8, to START.

5.6 Locally MONITOR storage tank level and PERFORM Section 8.2 if makeup water is to be added to the storage tank to maintain normal level.

5.7 PLACE the STATOR COOLING WATER PUMPS SEL, 2-HS-35-40, on Panel 25-114, in B(A) - RES.

5.8 IF previously locked out, THEN

PLACE GEN STATOR CLG WATER PUMP 2B(A), 2-HS-35-36A(35A) in Control Room Panel 2-9-8, to AUTO.

5.9 THROTTLE the DEIONIZER INLET, 2-CKV-035-0852(Y-19), to establish ~55% on STATOR COOLING WATER DEIONIZER FLOW, 2-FI-035-0079.

5.10 CHECK the following conditions:

NOTE:

If conductivity is greater than or equal to 0.5  $\mu$  siemens, then Step 5.11 can be performed to aid in lowering conductivity.

5.10.1 Generator stator inlet and outlet conductivity less than 0.5  $\mu$  siemen.

5.10.2 STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, on Panel 25-114 is between 552 and 620 gpm (normally 590-620 gpm at rated load).

5.10.3 STATOR COOLING WATER GEN INLET TEMP, 2-TI-035-0063, on Panel 25-114 indicates less than 45°C (Min. 40°C - Max. 45°C).

5.10.4 STATOR COOLING WATER GEN INLET PRESS, 2-PI-035-0090, on Panel 25-114 indicates between 36 and 46 psig.

---

5.0 STARTUP (Continued)

5.11 To aid in quickly reducing stator cooling water conductivity to within limits, the following may be performed:

5.11.1 CHECK CLOSED the MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21).

5.11.2 OPEN the DEMIN WATER MAKEUP DRAIN, 2-DRV-035-0840(Y-62).

5.11.3 FLUSH makeup water line for two minutes by throttling open DEMIN WATER MAKEUP, 2-SHV-035-0839(Y-61).

5.11.4 After a two-minute flush, CLOSE DEMIN WATER MAKEUP DRAIN, 2-DRV-035-0840(Y-62).

5.11.5 CLOSE the DEIONIZER INLET, 2-CKV-035-0852(Y-19).

5.11.6 ESTABLISH system feed and bleed using STATOR WATER TANK DRAIN, 2-DRV-035-0892(Y-44), and MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21), as follows:

5.11.6.1 NOTIFY Chem Lab to DISCONNECT the O2 injection line from the Stator Water Tank Drain, Y-44 (2-DRV-035-0892) REFER TO CI-410.

5.11.6.2 THROTTLE OPEN the MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21).

5.11.6.3 THROTTLE OPEN the STATOR WATER TANK DRAIN, 2-DRV-035-0892(Y-44).

5.11.6.4 THROTTLE 2-CKV-035-0851(Y-21) and 2-CKV-035-0852(Y-19) until STATOR COOLING WATER DEIONIZER FLOW, 2-FI-35-79, indicates between 75 and 100 gpm and storage tank level is maintained in the normal range.

5.11.7 WHEN stator cooling water conductivity is less than 0.5  $\mu$  siemen, THEN

PERFORM the following:

NOTE: Simultaneous closure of MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21), and STATOR WATER TANK DRAIN, 2-CKV-035-0852(Y-19), will ensure normal level is maintained in the storage tank.

5.11.7.1 Simultaneously CLOSE the STATOR WATER TANK DRAIN, 2-CKV-035-0852(Y-19) and MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21).

5.11.7.2 THROTTLE OPEN the DEIONIZER INLET, 2-CKV-035-0852(Y-19), to establish ~55% STATOR COOLING WATER DEIONIZER FLOW, 2-FI-035-0079.

5.11.7.3 CLOSE the DEMIN WATER MAKEUP, 2-SHV-035-0839(Y-61).

5.0 STARTUP (Continued)

5.11.7.4 NOTIFY Chem Lab to CONNECT the injection equipment to the Stator Water Tank Drain, Y-44 (2-DRV-035-0892) REFER TO CI-410.

5.12 IF it is desired to begin O2 injection, THEN

NOTIFY Chem Lab that the Stator Cooling System is in service and ready for O2 injection.  
REFER TO CI-410.

5.13 OPERATE Stator Cooling System. REFER to Section 6.0.

---

## 6.0 SYSTEM OPERATION

### 6.1 Daily System Checks

#### NOTE:

This section should be performed daily when the Stator Cooling System is in operation and after placing the system in service.

- 6.1.1 REVIEW all Precautions and Limitations in Section 3.0.
- 6.1.2 VERIFY stator coolant pumps A and B oilers greater than one-half full.
- 6.1.3 VERIFY stator coolant storage tank level is at the center of the tank sightglass.
- 6.1.4 VERIFY the temperatures indicate as follows on Panel 25-114:
  - 6.1.4.1 STATOR COOLING WATER GEN INLET TEMP, 2-TI-035-0063, or Computer Point DO71 reads 40°C (104°F) to 45°C (113°F).
  - 6.1.4.2 STATOR COOLING WATER GEN OUTLET TEMP, 2-TIS-035-0072, or Computer Point DO72 reads 55°C (131°F) to 68°C (154°F).
- 6.1.5 VERIFY the STATOR COOLING WATER DEIONIZER FLOW, 2-FI-035-0079, is ~55%
- 6.1.6 VERIFY the STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, indicates 552 to 620 gpm (normally 590-620 gpm at rated load) on Panel 25-114.
- 6.1.7 OPEN the STATOR WATER TANK VENT LINE DRAIN, 2-DRV-035-0885(Y-80), until all condensate is drained, then CLOSE 2-DRV-035-0885(Y-80).

### 6.2 System Checks

#### NOTE:

This section should be performed Weekly when the Stator Cooling System is in operation and after placing the system in service.

- 6.2.1 VERIFY stator filter differential pressure is less than 8 psid (2-PI-035-0056 minus 2-PI-035-0057).
- 6.2.2 VERIFY rectifier filter differential pressure is less than 8 psid (2-PI-035-0068 minus 2-PI-035-0069).

---

6.2 System Checks (Continued)

NOTE: The stator cooling water pumps should be alternated monthly during system operation.

- 6.2.3 VERIFY deionizer differential pressure is less than 15 psid (2-PI-035-0077 minus 2-PI-035-0078).
- 6.2.4 VERIFY the following initial conditions are present prior to attempting a stator cooling water pump automatic start test.
  - 6.2.4.1 EITHER stator cooling water pump A or B is operating.
  - 6.2.4.2 GEN STATOR CLG WATER PUMP 2A(B) handswitch, 2-HS-35-35A(36A), in the AUTO position on Panel 2-9-8 for the operating pump.
  - 6.2.4.3 GEN STATOR COOLING WATER PUMP A(B) handswitch, 2-HS-035-0035B(0036B), in the NOR position on Panel 25-114 for the operating pump.
  - 6.2.4.4 STATOR COOLING WATER PUMPS SEL, 2-HS-035-0040, on Panel 25-114 A-RES - CO - B-RES) is selected to the Non-Operating Pump.
  - 6.2.4.5 The standby stator cooling water pump is available for service.

NOTE: Once each month of operation, pressure switches 2-PS-035-0052A and 2-PS-035-0052B, operation should be verified by cycling the STATOR COOLING WATER RESERVE PUMP TEST SV, 2-PSV-035-0053, which automatically starts the reserve pump on low header pressure.

- 6.2.5 To start the reserve stator cooling pump, operate solenoid valve 2-PSV-035-0053, by momentarily DEPRESSING the STATOR COOLING WATER RESERVE PUMP TEST pushbutton, 2-HS-035-0053, (located on side of junction box on Stator Coolant Skid).
- 6.2.6 VERIFY both stator cooling water pumps A and B operating (reserve pump started).
- 6.2.7 For the stator cooling water pump A(B) that has operated for one month, on Panel 2-9-8, PLACE the GEN STATOR CLG WATER PUMP 2A(B), 2-HS-35-35A(36A) to STOP.
- 6.2.8 SELECT STATOR COOLING WATER PUMPS SEL, 2-HS-035-0040 (A-RES-CO-B-RES) on Panel 25-114 to the non-operating pump.
- 6.2.9 VERIFY the pump control switch for the stator cooling water pump stopped in Step 6.2.7 is returned to AUTO on Panel 2-9-8.
- 6.2.10 VERIFY the STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, indicates 552 to 620 gpm (normally 590-620 gpm at rated load) on Panel 25-114.
- 6.2.11 VERIFY the STATOR COOLING WATER GEN INLET PRESS, 2-PI-035-0090, indicates 36 to 46 psig on Panel 25-114.

---

6.3 Pump AlternatingNOTE:

This section need only be performed when pump is being alternated other than during Section 6.2.

- 6.3.1 START the Standby Stator Cooling Water Pump A(B) by placing GEN STATOR CLG WATER PUMP 2A(B), 2-HS-35-35A(36A) on Panel 2-9-8 to START.
- 6.3.2 STOP the Stator Cooling Water Pump B(A) by placing GEN STATOR CLG WATER PUMP 2B(A), 2-HS-35-36A(35A) on Panel 2-9-8 to STOP.
- 6.3.3 VERIFY the STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, indicates 552 to 620 gpm(normally 590-620 gpm at rated load) on Panel 25-114.
- 6.3.4 VERIFY the STATOR COOLING WATER GEN INLET PRESS, 2-PI-035-0090, indicates 36 to 46 psig on Panel 25-114.
- 6.3.5 VERIFY the pump control switch for the stator cooling water pump stopped in Step 6.3.2 is returned to AUTO on Panel 2-9-8.
- 6.3.6 SELECT STATOR COOLING WATER PUMPS SEL, 2-HS-035-0040 (A-RES-CO-B-RES) on Panel 25-114 to the non-operating pump.

7.0 SHUTDOWN

- 7.1 REVIEW all Precautions and Limitations in Section 3.0.
- 7.2 NOTIFY Chem Lab to REMOVE O2 injection system from service.  
REFER TO CI-410
- 7.3 CHECK the following initial conditions are satisfied:
  - 7.3.1 Generator stator current is less than 7726 amps at 75 psig H<sub>2</sub> pressure (maximum generator capability without stator cooling liquid flow).
  - 7.3.2 The UNIT SUPERVISOR. has been informed that the Stator Cooling System is to be shut down.
- 7.4 PLACE STANDBY GEN STATOR CLG WATER PUMP switch, 2-HS-35-35A or 2-HS-35-36A, on Panel 2-9-8, in PULL TO LOCK.
- 7.5 PLACE RUNNING GEN STATOR CLG WATER PUMP switch, 2-HS-35-36A or 2-HS-35-35A, on Panel 2-9-8, in PULL TO LOCK.

---

## 8.0 INFREQUENT OPERATIONS

### 8.1 Fill and Vent of Stator Cooling System

- 8.1.1 REVIEW all Precautions and Limitations in Section 3.0.
- 8.1.2 ROUTE outlet of DEMIN WATER MAKEUP DRAIN valve, 2-DRV-035-0840(Y-62) to floor drain.
- 8.1.3 OPEN DEMIN WATER MAKEUP DRAIN valve, 2-DRV-035-0840(Y-62).
- 8.1.4 OPEN STATOR COOLING DEMIN WTR SPLY valve, 2-SHV-2-1595
- 8.1.5 OPEN the DEMIN WATER MAKEUP valve, 2-SHV-035-0839(Y-61).
- 8.1.6 AFTER a 2-minute flush CLOSE the following valves:
  - 8.1.6.1 DEMIN WATER MAKEUP, 2-SHV-035-0839(Y-61).
  - 8.1.6.2 DEMIN WATER MAKEUP DRAIN, 2-DRV-035-0840(Y-62).
- 8.1.7 CLOSE the DEIONIZER INLET valve, 2-CKV-035-0852(Y-19).
- 8.1.8 OPEN the DEMIN WATER MAKEUP valve, 2-SHV-035-0839(Y-61).
- 8.1.9 THROTTLE OPEN the MAKEUP WATER FILTER OUTLET valve, 2-CKV-035-0851(Y-21) until deionizer flow is ~55%, as indicated on 2-FI-035-0079.
- 8.1.10 WHEN Stator Cooling Water Storage Tank Level is at the top of the sightglass, THEN
  - CLOSE DEMIN WATER MAKEUP valve, 2-SHV-035-0839(Y-61).
- 8.1.11 CLOSE MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21)
- 8.1.12 CLOSE STATOR COOLING DEMIN WTR SPLY valve, 2-SHV-2-1595
- 8.1.13 LOOSEN the following vent plugs, one at a time, and WHEN water is seen flowing through/around the plug threads, THEN
  - RETIGHTEN the vent plug:
    - Cooler A Vent Plug
    - Cooler B Vent Plug
    - Deionizer Vent Plug
    - Secondary Filter Vent Plug
    - Primary Filter Vent Plug
- 8.1.14 THROTTLE OPEN DEIONIZER INLET, 2-CKV-035-0852(Y-19) to maintain ~55% flow as indicated on 2-FI-035-0079.

---

**8.2 Adding Water to Stator Cooling Water Storage Tank**

- 8.2.1 REVIEW all Precautions and Limitations in Section 3.0.
- 8.2.2 CHECK CLOSED MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21).
- 8.2.3 OPEN DEMIN WATER MAKEUP DRAIN, 2-DRV-035-0840(Y-62).
- 8.2.4 OPEN STATOR COOLING DEMIN WTR SPLY valve, 2-SHV-002-1595
- 8.2.5 FLUSH makeup water line for two minutes by throttling open DEMIN WATER MAKEUP, 2-SHV-035-0839(Y-61).
- 8.2.6 AFTER a two-minute flush, CLOSE DEMIN WATER MAKEUP DRAIN, 2-DRV-035-0840(Y-62).
- 8.2.7 CLOSE DEIONIZER INLET, 2-CKV-035-0852(Y-19).
- 8.2.8 To add makeup water to the storage tank, THROTTLE OPEN the MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21) and MAINTAIN DEIONIZER FLOW, 2-FI-035-0079, less than ~55%.
- 8.2.9 WHEN storage tank is at the desired level, THEN  
CLOSE MAKEUP WATER FILTER OUTLET, 2-CKV-035-0851(Y-21).
- 8.2.10 THROTTLE OPEN DEIONIZER INLET, 2-CKV-035-0852(Y-19), to maintain ~55% flow as indicated on 2-FI-035-0079.
- 8.2.11 CLOSE DEMIN WATER MAKEUP, 2-SHV-035-0839(Y-61).
- 8.2.12 CLOSE STATOR COOLING DEMIN WTR SPLY valve, 2-SHV-002-1595.

---

### 8.3 Isolating One Stator Cooler While Maintaining Generator Operation

8.3.1 REVIEW all Precautions and Limitations in Section 3.0.

8.3.2 CHECK the following initial conditions are satisfied:

- 8.3.2.1 Generator load is less than 70% of rated load, or 21 kilo amperes, as indicated on GEN PHASE A (B or C), EI-057-0047 (0048 or 0049) (896,000 kVA at 0.93 PF; 75 psig H<sub>2</sub> pressure).
- 8.3.2.2 With generator voltage normal, reactive load (MVARs) has been reduced to the minimum achievable (zero MVARs are desirable).
- 8.3.2.3 Both stator coolers are in service.

#### NOTE:

If stator inlet temperature exceeds 50°C (122°F), deionizer resin damage can occur resulting in dramatic rise in stator coolant conductivity.

8.3.3 MONITOR the following parameters before, during and after the isolation of the stator cooler.

8.3.3.1 GEN STATOR COOLANT CONDUCTIVITY, 2-CI-43-16A, on Panel 2-9-8 indicates less than 0.3  $\mu$  siemen.

8.3.3.2 CHECK the following temperatures on Panel 25-114:

8.3.3.2.1 STATOR COOLING WATER GEN INLET TEMP, 2-TIS-035-0063, 40° to 45°C.

8.3.3.2.2 STATOR COOLING WATER GEN OUTLET TEMP, 2-TIS-035-0072, 55° to 68°C.

8.3.3.3 STATOR COOLING WATER GEN INLET PRESS, 2-PI-035-0090, on Panel 25-114 indicates 36 to 46 psig.

8.3.3.4 STATOR COOLING WATER HEADER PRESS, 2-PI-035-0052, on Panel 25-114 indicates 132 to 143 psig.

---

8.3 Isolating One Stator Cooler While Maintaining Generator Operation  
(Continued)

8.3.3.5 STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, on Panel 25-114 indicates 552 to 620 gpm (normally 590-620 gpm at rated load).

8.3.3.6 The following stator cooling winding temperatures are between Min. 55°C (131°F) and Max. 68°C (154°F):

Computer Point D065 GEN STAT WIND 1.

Computer Point D066 GEN STAT WIND 2.

Computer Point D067 GEN STAT WIND 3.

Computer Point D068 GEN STAT WIND 4.

Computer Point D069 GEN STAT WIND 5.

Computer Point D070 GEN STAT WIND 6.

8.3.3.7 The following hydrogen cooling temperatures are less than 45°C (113°F) at 75 psig H<sub>2</sub> pressure:

Computer Point D074 GEN H2 FROM CLR 1.

Computer Point D076 GEN H2 FROM CLR 2.

Computer Point D078 GEN H2 FROM CLR 3.

Computer Point D080 GEN H2 FROM CLR 4.

---

### 8.3 Isolating One Stator Cooler While Maintaining Generator Operation (Continued)

\*\*\*\*\*

#### CAUTION

To prevent a loss of stator cooling water, the stator water valves should be operated in the order indicated in Steps 8.3.4.1 or 8.3.4.2.

\*\*\*\*\*

#### NOTE:

For isolation of Stator Cooler A, Step 8.3.4.1 shall be performed. For isolation of Stator Cooler B, Step 8.3.4.2 shall be performed.

- 8.3.4 For the stator cooler to be isolated, PLACE the following stator cooling water valves to the positions indicated:

8.3.4.1 Stator Cooler A stator water isolation:

- 8.3.4.1.1 CHECK CLOSED the COOLER B BYPASS,  
2-BYV-035-0835(Y-11).
- 8.3.4.1.2 SLOWLY OPEN the COOLER A BYPASS,  
2-BYV-035-0900(Y-09).
- 8.3.4.1.3 CLOSE the COOLER A INLET,  
2-SHV-035-0865(Y-08).
- 8.3.4.1.4 CLOSE the COOLER A OUTLET,  
2-SHV-035-0864(Y-12).

8.3.4.2 Stator cooler B stator water isolation:

- 8.3.4.2.1 CHECK CLOSED the COOLER A BYPASS,  
2-DRV-035-0900(Y-09).
- 8.3.4.2.2 SLOWLY OPEN the COOLER B BYPASS,  
2-BYV-035-0835(Y-11).
- 8.3.4.2.3 CLOSE the COOLER A OUTLET,  
2-SHV-035-0864(Y-12).
- 8.3.4.2.4 CLOSE the COOLER B OUTLET,  
2-SHV-035-0834(Y-10).

---

### 8.3 Isolating One Stator Cooler While Maintaining Generator Operation (Continued)

NOTE: RCW pumps should be started as required to maintain RCW header pressure >48 psig.

[SEOPR] RCW pumps should be secured when the following conditions are reached to prevent RCW pump degradation due to impeller wear:

- RCW header pressure >61 psig with only 3 pumps operating in parallel.
- RCW header pressure >59 psig with only 4 pumps operating in parallel.
- RCW header pressure >58 psig with only 5 pumps operating in parallel.
- RCW header pressure >57 psig with 6 or more pumps operating in parallel.

Securing RCW pumps as directed above should ensure adequate supply header pressure remains to prevent auto start of standby pump when normally securing RCW pumps. [SEOPR 95-024-004]

8.3.5 ISOLATE the desired cooler raw cooling water valves as follows:

8.3.5.1 [SEOPR] Establish communications with Unit 2 control room, and Monitor RCW Header Pressure using 2-PI-024-0018 at Panel 2-9-20, THEN

8.3.5.2 SLOWLY OPEN Stator CLR OUTLET A(B) VALVE 2-HCV-024-0620 A(B) to the cooler to remain in service.  
[SEOPR 96-0-024-006]

8.3.5.3 [SEOPR] IF RCW Header Pressure drops to 48 psig, THEN  
  
START additional RCW pumps as necessary to restore RCW Header Pressure > 48 psig [SEOPR 96-0-024-004]

8.3.5.4 Stator Cooler A Raw Cooling Water Isolation:

8.3.5.4.1 CLOSE STATOR CLR INLET A VALVE,  
2-SHV-024-0619A.

8.3.5.4.2 CLOSE STATOR CLR OUTLET A VALVE,  
2-THV-024-0620A.

8.3.5.5 Stator Cooler B Raw Cooling Water Isolation:

8.3.5.5.1 CLOSE STATOR CLR INLET B VALVE,  
2-SHV-024-0619B.

8.3.5.5.2 CLOSE STATOR CLR OUTLET B VALVE,  
2-THV-024-0620B.

---

### 8.3 Isolating One Stator Cooler While Maintaining Generator Operation (Continued)

\*\*\*\*\*  
CAUTION

Since maximum water temperature in the windings is always greater than the average outlet temperature of the stator water; it should be understood that average stator water outlet temperature can only detect widespread overheating of the windings. Overheating of individual armature bars must be detected by winding temperatures.

- \*\*\*\*\*
- 8.3.6 IF a stator water high outlet temperature (76°C) or high winding temperature (68°C) is indicated, THEN

Immediately REDUCE generator load until stator current is less than 7726 amps.

- 8.3.7 MONITOR the System Parameters listed in Step 8.3.3 until stable readings are indicated.

- 8.3.8 IF A(B) cooler is to remain out of service, THEN  
REMOVE tube side and shell drain plugs.

- 8.3.9 IF stator winding and cooling water temperatures are normal, THEN

SLOWLY RAISE generator load until one of the following conditions are reached (whichever comes first):

- Generator load matches demand by the Load Dispatcher.
- Any generator stator winding temperature reaches 68°C (154°F).
- Generator stator cooling water temperature reaches 45°C (113°F).
- Generator load reaches 21 kilo amperes as indicated on GEN PHASE A (B or C), EI-057-0047 (48 or 49) (896,000 kva at 0.93 PF; 75 psig H<sub>2</sub> pressure).

---

#### 8.4 Return of Isolated Stator Cooler to Operation

- 8.4.1 REVIEW all Precautions and Limitations in Section 3.0.
- 8.4.2 MONITOR the following parameters before, during and after the process of returning the stator cooler to service:
- 8.4.2.1 GEN STATOR COOLANT CONDUCTIVITY, 2-CI-43-16A, on Panel 2-9-8, indicates less than 0.5  $\mu$  siemen.
- 8.4.2.2 VERIFY the following temperatures on Panel 25-114:
- STATOR COOLING WATER GEN INLET TEMP, 2-TI-035-063, (40° to 45°C)
  - STATOR COOLING WATER GEN OUTLET TEMP, 2-TIS-035-0072, (55° to 68°C)
- 8.4.2.3 STATOR COOLING WATER GEN INLET PRESS, 2-PI-035-0090, on Panel 25-114 (Normal 36 to 46 psig).
- 8.4.2.4 STATOR COOLING WATER HEADER PRESS, PI-035-0052, on Panel 25-114 (Normal 132 to 143 psig).
- 8.4.2.5 STATOR COOLING WATER GEN INLET FLOW, 2-FIS-035-0065, on Panel 25-114 indicates 552 to 620 gpm (normally 590-620 gpm at rated load).
- 8.4.2.6 Stator cooling winding temperatures, Computer Points D065 through D070, (Normal 55°C (131°F) to 68°C (154°F)).
- 8.4.2.7 Stator cooling storage tank level (Normal center of sightglass).
- 8.4.3 CHECK that generator load is at or below 21 kilo amperes as indicated on GEN PHASE A (B or C), EI-057-0047 (48 or 49) (896,000 kva at 0.93 PF).
- 8.4.4 CHECK that the isolated stator cooler is ready to be returned to service and drain plugs are installed.

---

8.4 Return of Isolated Stator Cooler to Operation (Continued)

- (1) RCW pumps should be started as required to maintain RCW header pressure >48 psig.
- (2) [SEOPR] RCW pumps should be secured when the following conditions are reached to prevent RCW pump degradation due to impeller wear:
  - RCW header pressure >61 psig with only 3 pumps operating in parallel.
  - RCW header pressure >59 psig with only 4 pumps operating in parallel.
  - RCW header pressure >58 psig with only 5 pumps operating in parallel.
  - RCW header pressure >57 psig with 6 or more pumps operating in parallel.

Securing RCW pumps as directed above should ensure adequate supply header pressure remains to prevent auto start of standby pump when normally securing RCW pumps. [SEOPR 95-024-004]

## 8.4.5 Return to service the desired cooler as follows:

8.4.5.1 [SEOPR] Establish communications with Unit 2 Control Room, AND MONITOR Raw Cooling Water Header Pressure using 2-PI-024-0018 at Panel 2-90-20.

8.4.5.2 IF RCW Header Pressure drops to 48 psig, THEN  
  
START an additional RCW pump as necessary to restore RCW Header pressure >48 psig.  
[SEOPR 96-0-024-004]

8.4.5.3 OPEN the following stator Cooler A Raw Cooling Water Isolation valves:

8.4.5.3.1 STATOR CLR INLET A VALVE,  
2-SHV-024-0619A.

8.4.5.3.2 [SEOPR] STATOR CLR OUTLET A VALVE, 2-THV-024-0620A to 13 turns throttled from the Full Open Position.  
[SEOPR 96-0-024-006]

8.4.5.4 OPEN the following stator Cooler B Raw Cooling Water Isolation valves:

8.4.5.4.1 STATOR CLR INLET B VALVE,  
2-SHV-024-0619B.

8.4.5.4.2 [SEOPR] STATOR CLR OUTLET B VALVE, 2-THV-024-0620B to 13 turns throttled from the Full Open position. [SEOPR 96-0-024-006]

---

8.4 Return of Isolated Stator Cooler to Operation (Continued)

- 8.4.5.5 [SEOPR] THROTTLE the RCW from STATOR COOLER A(B)  
2-THV-24-620 A(B) 13 TURNS FROM THE Full OPEN  
position. [SEOPR 96-0-024-006]

\*\*\*\*\*

CAUTION

To prevent a loss of stator cooling water, the stator valves should be operated in the order indicated in Steps 8.4.6.1 or 8.4.6.2.

\*\*\*\*\*

NOTE: Section 8.4.6. is for returning a cooler to service, after Stator Cooler A(B) was isolated per section 8.3.4.1(8.3.4.2).

- 8.4.6 For the Stator Cooler to be returned to service, PLACE the following stator cooling water valves in the positions indicated:

8.4.6.1 Stator Cooler A:

- 8.4.6.1.1 CHECK CLOSED COOLER B BYPASS  
2-BYV-035-0835(Y-11).

- 8.4.6.1.2 Slowly OPEN COOLER A INLET,  
2-SHV-035-0865(Y-08).

- 8.4.6.1.3 IF the shell side(stator cooling water  
side) of the cooler was drained, THEN

LOOSEN the cooler vent plugs one at a time  
and WHEN the cooler is vented and full,  
THEN

TIGHTEN the plugs.

- 8.4.6.1.4 OPEN COOLER A OUTLET, 2-SHV-035-0864(Y-12).

- 8.4.6.1.5 CLOSE COOLER A BYPASS, 2-BYV-035-0900(Y-09).

8.4.6.2 Stator Cooler B:

- 8.4.6.2.1 CHECK CLOSED COOLER A BYPASS  
2-BYV-035-0900(Y-09).

- 8.4.6.2.2 Slowly OPEN COOLER A OUTLET,  
2-SHV-035-0864(Y-12).

---

8.4 Return of Isolated Stator Cooler to Operation (Continued)

8.4.6.2.3 IF the shell side(stator cooling water side) of the cooler was drained, THEN

LOOSEN the cooler vent plugs one at a time and WHEN the cooler is vented and full, THEN

TIGHTEN the plugs.

8.4.6.2.4 OPEN COOLER B OUTLET, 2-SHV-035-0834(Y-10).

8.4.6.2.5 CLOSE COOLER B BYPASS, 2-BYV-035-0835(Y-11).

8.4.7 If stator winding and cooling water temperatures are normal, slowly RAISE generator load to match load demand or maximum (1,280,000 kva at 0.93 PF; 75 psig H<sub>2</sub> pressure) REFER TO 2-GOI-100-1A.

---

**8.5    Draining water from Stator Cooling Water Storage Tank**

- 8.5.1    REVIEW all Precautions and Limitations in section 3.0.
- 8.5.2    NOTIFY Unit Operator water is about to be drained from Stator Cooling Water Storage Tank.
- 8.5.3    NOTIFY Chem Lab to DISCONNECT the O2 injection line from the Stator Water Tank Drain, Y-44 (2-DRV-035-0892) REFER TO CI-410.
- 8.5.4    OBTAIN a hose with a Chicago fitting on at least one end. (Long enough to reach the floor drain from the bottom of tank)
- 8.5.5    ATTACH the hose to the fitting at STATOR WATER TANK DRAIN, 2-DRV-035-0892(Y-44), (located on the bottom of the Stator Cooling Water Storage Tank) and ROUTE to a floor drain.
- 8.5.6    SLOWLY OPEN STATOR WATER TANK DRAIN, 2-DRV-035-0892(Y-44) using caution to not exceed the capacity of the floor drain.
- 8.5.7    NOTIFY Rad Waste that water is being sent to the floor drain.
- 8.5.8    When storage tank level is at the desired level THEN,  
CLOSE STATOR WATER STORAGE TANK 2-DRV-035-0892(Y-44).
- 8.5.9    REMOVE hose from drain and return hose to proper storage location.
- 8.5.10    NOTIFY Chem Lab to CONNECT the injection equipment to the Stator Water Tank Drain, Y-44 (2-DRV-035-0892)  
REFER TO CI-410.

## 8.6 Isolating Stator Cooling Demineralizer

\*\*\*\*\*

CAUTION

With Stator Cooling Demineralizer isolated, conductivity monitors 2-O2AN-043-0012 & 13 will be without flow and conductivity readings should be considered inaccurate and should be disregarded.

\*\*\*\*\*

**NOTE:** The time stator cooling is operated with the demineralizer isolated should be minimized.

8.6.1 SLOWLY CLOSE STATOR WATER TANK DRAIN, 2-CKV-035-0852(Y-19).

8.6.2 CLOSE DEIONIZER OUTLET VLV, 2-SHV-035-0884(Y31).

8.6.3 IF Stator Cooling Demineralizer will be isolated longer than one hour THEN,

CONTACT Chem Lab to perform stator cooling water conductivity checks.

8.6.4 WHEN it is desired to return Stator Cooling Demineralizer to service THEN,

8.6.4.1 OPEN DEIONIZER OUTLET VLV, 2-SHV-035-0884(Y31).

8.6.4.2 SLOWLY OPEN STATOR WATER TANK DRAIN, 2-CKV-035-0852(Y-19).

8.6.5 IF Chem Lab was sampling stator cooling water THEN,

NOTIFY Chem Lab stator cooling water conductivity checks are no longer required.