

OPERATOR: _____

RO _____ DATE: _____

JPM NUMBER: RO A1a

TASK NUMBER: Conduct of Operations

TASK TITLE: Work Hour Limitations

K/A NUMBER: 2.1.5 K/A RATING: RO 2.9

TASK STANDARD: Determine Work Hour limitations were exceeded

LOCATION OF PERFORMANCE: Class Room

REFERENCES/PROCEDURES NEEDED: NPG-SPP 3.21

VALIDATION TIME: 15 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

Rec'd
4/8/13

INITIAL CONDITIONS: You are a Reactor Operator on Unit 2 for the outage. Unit 1 and 3 are operating at 100%. Unit 2 is in day 22 of a scheduled 45 day refueling outage that commenced on April 7. Below is the work schedule you worked.

INITIATING CUES: Review your hours worked and determine your compliance with the guidelines of NPG-SPP 3.21 Fatigue Management and Work Hour Limits.

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT in compliance with?

Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/7	4/8	4/9	4/10	4/11	4/12	4/13
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	Off

Sun	Mon	Tues	Wed	Thu	Fri	*Sat
4/14	4/15	4/16	4/17	4/18	4/19	4/20
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1500	0700-1200

Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/21	4/22	4/23	4/24	4/25	4/26	4/27
Off	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900

*On Saturday 4/20 you were scheduled OFF but you were called in to perform covered work

Class Room

INITIAL CONDITIONS: You are a Reactor Operator on Unit 2 for the outage. Unit 1 and 3 are operating at 100%. Unit 2 is in day 22 of a scheduled 45 day refueling outage that commenced on April 7. Below is the work schedule you worked.

INITIATING CUES: Review your hours worked and determine your compliance with the guidelines of NPG-SPP 3.21 Fatigue Management and Work Hour Limits.

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT in compliance with?

Sun 4/7	Mon 4/8	Tues 4/9	Wed 4/10	Thu 4/11	Fri 4/12	Sat 4/13
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	Off
Sun 4/14	Mon 4/15	Tues 4/16	Wed 4/17	Thu 4/18	Fri 4/19	*Sat 4/20
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1500	0700-1200
Sun 4/21	Mon 4/22	Tues 4/23	Wed 4/24	Thu 4/25	Fri 4/26	Sat 4/27
Off	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900

*On Saturday 4/20 you were scheduled OFF but you were called in to perform covered work

START TIME_____

Performance Step 1:

Critical ☒ Not Critical

3.2.1 10 Code of Federal Regulations (CFR) 26 Overtime Limits [R.21]

A. The following limits apply to covered individuals regardless of unit status [R22, 23]:

1. No more than 16 work hours in any 24 hour period
2. No more than 26 work hours in any 48 hour period
3. No more than 72 work hours in any 7 day period
4. At least a 10 hour break between successive work periods.
5. A continuous break of at least 34 hours in any 9 day period.

Standard:

Evaluates Schedule and determines that they exceeded 72 work hours in any 7 day period.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 2:Critical X Not Critical

C. Outage Requirements [R.25]

1. While working on an outage unit, and without issuance of a waiver, an individual's required days off shall adhere to the requirements listed in Table 2 below (not an average):

Table 2. Required Minimum Days Off (MDO) for Outages			
Group	8 Hour Shift Days Off	10 Hour Shift Days Off	12 Hour Shift Days Off
Maintenance	1 day off per week	1 day off per week	1 day off per week
Operations, Radiation Protection, Chemistry, Fire Brigade (Incident Commander)	3 days off in each successive (i.e., non-rolling) 15 day period	3 days off in each successive (i.e., non-rolling) 15 day period	3 days off in each successive (i.e., non-rolling) 15 day period

Standard:

Evaluates Schedule and determines that they also exceeded 3 days off in a 15 day period.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 3:

Critical X Not Critical

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT on compliance with?

Standard:

Determines that they are NOT in compliance with NPG-SPP-03.21 Step 3.21 A and C OR 10CFR26 Overtime Limits R.22, 23 and R.25.

SAT__ UNSAT__ N/A __ COMMENTS: _____

END OF TASK

STOP TIME ____

OPERATOR: _____

SRO _____ DATE: _____

JPM NUMBER: SRO A1a

TASK NUMBER: Conduct of Operations

TASK TITLE: Work Hour Limitations

K/A NUMBER: 2.1.5 K/A RATING: SRO 3.9

TASK STANDARD: Determine Work Hour limitations were exceeded and determine actions required due to violations of fatigue rule NPG-SPP 3.21.

LOCATION OF PERFORMANCE: Class Room

REFERENCES/PROCEDURES NEEDED: NPG-SPP 3.21

VALIDATION TIME: 15 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

Rec'd
4/8/13

INITIAL CONDITIONS: You are the Work Control SRO on Unit 2 for the outage. Unit 1 and 3 are operating at 100%. Unit 2 is in day 22 of a scheduled 45 day refueling outage that commenced on April 7. Below is the work schedule you worked.

INITIATING CUES: Review your hours worked and determine your compliance with the guidelines of NPG-SPP 3.21 Fatigue Management and Work Hour Limits.

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT in compliance with?

If your hours were outside the requirements of NPG-SPP 3.21 identify the requirements that should have been completed.

Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/7	4/8	4/9	4/10	4/11	4/12	4/13
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	Off

Sun	Mon	Tues	Wed	Thu	Fri	*Sat
4/14	4/15	4/16	4/17	4/18	4/19	4/20
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1500	0700-1200

Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/21	4/22	4/23	4/24	4/25	4/26	4/27
Off	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900

*On Saturday 4/20 you were scheduled OFF but you were called in to perform covered work

Class Room

INITIAL CONDITIONS: You are the Work Control SRO on Unit 2 for the outage. Unit 1 and 3 are operating at 100%. Unit 2 is in day 22 of a scheduled 45 day refueling outage that commenced on April 7. Below is the work schedule you worked.

INITIATING CUES: Review your hours worked and determine your compliance with the guidelines of NPG-SPP 3.21 Fatigue Management and Work Hour Limits.

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT on compliance with?

If your hours were outside the requirements of NPG-SPP 3.21 identify the requirements that should have been completed.

Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/7	4/8	4/9	4/10	4/11	4/12	4/13
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	Off
Sun	Mon	Tues	Wed	Thu	Fri	*Sat
4/14	4/15	4/16	4/17	4/18	4/19	4/20
0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1500	0700-1200
Sun	Mon	Tues	Wed	Thu	Fri	Sat
4/21	4/22	4/23	4/24	4/25	4/26	4/27
Off	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900	0700-1900

*On Saturday 4/20 you were scheduled OFF but you were called in to perform covered work

START TIME_____

Performance Step 1:

Critical ☒ Not Critical

3.2.1 10 Code of Federal Regulations (CFR) 26 Overtime Limits [R.21]

A. The following limits apply to covered individuals regardless of unit status [R22, 23]:

1. No more than 16 work hours in any 24 hour period
2. No more than 26 work hours in any 48 hour period
3. No more than 72 work hours in any 7 day period
4. At least a 10 hour break between successive work periods.
5. A continuous break of at least 34 hours in any 9 day period.

Standard:

Evaluates Schedule and determines that they exceeded 72 work hours in any 7 day period.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 2:Critical X Not Critical

C. Outage Requirements [R.25]

1. While working on an outage unit, and without issuance of a waiver, an individual's required days off shall adhere to the requirements listed in Table 2 below (not an average):

Table 2. Required Minimum Days Off (MDO) for Outages			
Group	8 Hour Shift Days Off	10 Hour Shift Days Off	12 Hour Shift Days Off
Maintenance	1 day off per week	1 day off per week	1 day off per week
Operations, Radiation Protection, Chemistry, Fire Brigade (Incident Commander)	3 days off in each successive (i.e., non-rolling) 15 day period	3 days off in each successive (i.e., non-rolling) 15 day period	3 days off in each successive (i.e., non-rolling) 15 day period

Standard:

Evaluates Schedule and determines that they also exceeded 3 days off in a 15 day period.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 3:

Critical X Not Critical

If you are NOT in compliance with the work hour limit guidelines designate what guidelines you are NOT on compliance with?

Standard:

Determines that they are NOT in compliance with NPG-SPP-03.21 Step 3.21 A and C OR 10CFR26 Overtime Limits R.22, 23 and R.25.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:

Critical X Not Critical

3.1.2 Individual

9. Notifying the appropriate Department Nuclear Fatigue Rule (NFR) Administrator, appropriate Department Head, and Site NFR Subject Matter Expert in the event that a violation has occurred or appears to have occurred.

Standard:

Identifies that Operations Department Nuclear Fatigue Rule (NFR) Administrator, Operations Manager and Site NFR Subject Matter Expert must be notified.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 5:

Critical ☒ Not Critical

3.2.3 Work Hour Scheduling [R.3]

- F. Deviations from 10 CFR 26 overtime limits may occur as the result of administrative errors or unforeseen circumstances. A problem evaluation report (PER) shall be generated, in accordance with NPG-SPP-03.1, Corrective Action Program for each individual when this occurs.

Standard:

Identifies that Operations Department Nuclear Fatigue Rule (NFR) Administrator, Operations Manager and Site NFR Subject Matter Expert must be notified.

SAT__ UNSAT__ N/A __ COMMENTS:_____

END OF TASK

STOP TIME ____

OPERATOR: _____

RO _____ DATE: _____

JPM NUMBER: Admin RO A1b

TASK NUMBER: Conduct of Operations

TASK TITLE: 2-SR-2

K/A NUMBER: 2.1.18 K/A RATING: RO 3.6 SRO 3.8

PRA: N/A

TASK STANDARD: Perform Operator logs in accordance with 2-SR-2 Instrument Checks and Observations for log tables 4.1 through 4.7. Verify acceptance criteria are satisfied in accordance with notes.

LOCATION OF PERFORMANCE: Unit 2 Simulator

REFERENCES/PROCEDURES NEEDED: 2-SR-2

VALIDATION TIME: 15 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ___ NO ___

RESULTS: SATISFACTORY ___ UNSATISFACTORY ___

SIGNATURE: _____ DATE: _____
EXAMINER

Rec'd
4/8/13

INITIAL CONDITIONS: You are a Unit Operator assigned to Unit 2, and it is Friday evening at 2000. 2-SR-2, Instrument Checks and Observations, is being performed.

The plant is in MODE 5.

- Vessel Head is removed
- Reactor Water Level is greater than 22 feet above the RPV Flange
- Refuel gates are removed
- Core Alterations are scheduled to start Saturday evening
- NO Tech Spec Special Operations are in progress
- Signal to Noise Ratio 2-SR-3.3.1.2.4, was last performed on dayshift Friday at 0800.

INITIATING CUE: The Unit Supervisor directs you as the Unit Operator to complete 2-SR-2 for Friday at 2000.

NOTE: If a reading is outside the acceptance criteria and it can be corrected, perform the action necessary to correct.

All readings that are already completed are correct and need not be checked by you.

Simulator

INITIAL CONDITIONS: You are a Unit Operator assigned to Unit 2, and it is Friday evening at 2000. 2-SR-2, Instrument Checks and Observations, is being performed.

The plant is in MODE 5.

- Vessel Head is removed
- Reactor Water Level is greater than 22 feet above the RPV Flange
- Refuel gates are removed
- Core Alterations are scheduled to start Saturday evening
- NO Tech Spec Special Operations are in progress
- Signal to Noise Ratio 2-SR-3.3.1.2.4, was last performed on dayshift Friday at 0800.

INITIATING CUE: The Unit Supervisor directs you as the Unit Operator to complete 2-SR-2 for Friday at 2000.

NOTE: If a reading is outside the acceptance criteria and it can be corrected, perform the action necessary to correct.

All readings that are already completed are correct and need not be checked by you.

START TIME _____

Performance Step 1:Critical ☒ Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.1

TABLE 4.1		IRM INSTRUMENTATION		NIGHT SHIFT		WEEK: _____ to _____						
APPLICABILITY:		Mode 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies. OR Mode 4 when in Special Operations LCO 3.10.4										
Surveillance Requirements:		3.3.1.1.1 (f1.a)										
LOCATION:		Panel 2-9-5										
		Review Initials										
		IRM RANGE (ENTER 1 THROUGH 10) (Note 1)										
		A	C	E	G	B	D	F	H	MAX DEV (Note 2) (AC)	UO	Unit Supvr
Friday										2 Ranges with conditions of Note 1 satisfied		
Saturday												
Sunday												
Monday												
Tuesday												
Wednesday												
Thursday												

- (1) IRM's must be full in and onscale (i.e., $25 \leq \text{IRM value} \leq 75$) excluding downscale (i.e., $\text{IRM value} < 25$) on range 1.
- (2) During operation under SPECIAL OPERATIONS LCO 3.10.5, "Single CRD Removal - Refueling," MAX DEV acceptance criteria is not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.5).

Standard:

Record a 1 under each IRM. Initials under UO. NA is also acceptable since the applicability is NOT met.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 2:Critical X Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.2

TABLE 4.2 SRM INSTRUMENTATION						NIGHT SHIFT				WEEK: _____ to _____				
APPLICABILITY:		Mode 4 & 5 Count Rate will be recorded at all times.												
Surveillance Requirements: 3.3.1.2.1, 3.3.1.2.2, 3.3.1.2.3, 3.3.1.2.4, 3.3.1.2.5&6						TSRs: 3.3.4.1 & 3.3.5.3								
LOCATION:		Panel 2-9-5				Review Initials								
	SRM Count Rate (cps) Note 1					LIMITS (AC) Note 2	MAX (AC) Note 3	SRM System Signal to Noise Ratio 2-SR-3.3.1.2.4 SAT / INOP (Note 4)				All Data SAT/ UNSAT (Note 5)	UO	Unit Supvr
	TIME	A	C	B	D			A	C	B	D			
Friday	2000					OPERABLE SRMs count rate must be ≥ 3 cps	OPERABLE SRMs count rate must be < 1 E ⁵ cps							
Saturday	2000													
Sunday	2000													
Monday	2000													
Tuesday	2000													
Wednesday	2000													
Thursday	2000													

- (1) Count Rate should be recorded with SRM's fully inserted.
- (2) LIMITS are not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.
- (3) IRM/SRM overlap should occur before SRMs > 1 E5 cps (should occur between 1 E4 cps & 1 E5 cps). Unexpected deviations from this relationship and excessive noise spikes shall be investigated.
- (4) Signal to Noise Ratio is required to be determined by performing 2-SR-3.3.1.2.4 as follows: (SRM's will become INOP after the SR's specified Frequency has been exceeded.)
 - SAT A. MODE 4 • Every 24 Hours. (This may be N/A'ed if the SR was performed SAT on the previous shift.)
 - Prior to going to Mode 2 or 3 from Mode 4.
 - B. MODE 5 • "DURING Core Alterations" Every 12 Hours.
 - Every 24 Hours (This may be N/A'ed if the SR was performed SAT on the previous shift and no Core Alterations in progress and not expected to be performed in the next 12 hours.)
 - Prior to going to Mode 2 or 3 from Mode 5
 - INOP An SRM fails its Signal to Noise Ratio section of 2-SR-3.3.1.2.4.
- (5) The All Data UNSAT column is UNSAT, if one or more SRM's are inoperable. Refer to Tech Spec 3.3.1.2.

Standard:

Records less than 3 cps for SRM A and an UNSAT in the all data column due to SRM A being INOPERABLE. Records a count rate for SRM C and B of between 150 and 300 cps. Determines SRM D is less than 3 cps due to being withdrawn and inserts SRM D. Then records a count rate for SRM D of between 150 and 300 cps. Records and acceptable count rate for SRM D. Initials under UO. Records NA or a SAT in signal to noise ratio column for SRMs B, C, and D.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 3:Critical Not Critical X

Refers to 2-SR-2, Instrument Checks and Observations, table 4.3

TABLE 4.3 REACTOR WATER LEVEL INSTRUMENTATION - NARROW RANGE NIGHT SHIFT WEEK: _____ to _____
(COMPENSATED)

APPLICABILITY: Reactor Water Level in Narrow Instrument Range							
Criteria Source: FSAR 7.10.4							
LOCATION: Panel 2-9-5						Review Initials	
Reference Leg	A	B	C	D	MAX DEV	UO	Unit Supvr
	2-LI-3-53 (in.)	2-LI-3-60 (in.)	2-LI-3-206 (in.)	2-LI-3-253 (in.)			
Friday					3.0 inches		
Saturday							
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							

(1) Refer to Attachment 4 during off-normal operating conditions.

Standard:

Records the level reading from the above instruments, records 69 to 71 inches for each indicator. Initials under UO.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 4:Critical X Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.4.a

TABLE 4.4.a		CONTROL RODS		NIGHT SHIFT	WEEK: _____	to _____	
APPLICABILITY:		Mode 5 OR Mode 4 when in Special Operations LCO 3.10.4					
Surveillance Requirements:		3.9.3.1, 3.9.5.2, (Reference 3.9.4.1)					
LOCATION:		Panel 2-9-5 Full Core Display And/Or Four Rod Display with Applicable Control Rod Selected and/or ICS Control Rod Position Indication, Local HCU Accumulator Pressure Indicators (Reactor Building Elevation 565)					Review Initials
		COL A	COL B				
		Verify Control Rod Positions	Verify HCU Scram Accumulator Pressure ≥ 940 psig and Position Indication has no full-in indication (no Green LEDs) for each withdrawn Control Rod. (Notes 1, 2, 3)				
		ALL RODS FULL-IN/ROD WITHDRAWN	SAT / UNSAT / N/A	LIMITS (AC)			UO Unit Supvr
Friday	2000			All Rods Full-In when loading Fuel Assemblies into the Core (Note 4) and HCU Scram Accumulator Pressure ≥ 940 psig and No full-in indication (no Green LEDs) for each withdrawn Control Rod (Note 2)			
Saturday	2000						
Sunday	2000						
Monday	2000						
Tuesday	2000						
Wednesday	2000						
Thursday	2000						

- Technical Specification LCO 3.9.5 requires a Control Rod to be OPERABLE (e.g., accumulator ≥ 940 psig) before withdrawal in Mode 5. Technical Specification SR 3.9.4.1 requires verification of the absence of full-in indication (no Green LEDs) each time a Control Rod is withdrawn from the full-in position in Mode 5. To reinforce the awareness of these requirements and provide additional verification of operability, currently this surveillance requires verification of accumulator pressure and absence of full-in indication of each withdrawn Control Rod every 12 hours. This surveillance satisfies the periodic verification of SR 3.9.5.2 (Technical Specification frequency for SR 3.9.5.2 is every 7 days). This surveillance does not satisfy SR 3.9.4.1.
- Column B should be marked "N/A" when "All Rods Full-In" and during operation under SPECIAL OPERATIONS LCO 3.10.5, "Single CRD Removal - Refueling," or LCO 3.10.6, "Multiple Control Rod Withdrawal - Refueling." During operation under these SPECIAL OPERATIONS LCOs the LIMITS for Column B are not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.5 or LCO 3.10.6 as applicable).
- Verification of HCU Scram Accumulator pressure shall include observation of Local HCU Accumulator Pressure Indicator.
- When operating under SPECIAL OPERATIONS LCO 3.10.6, the LIMIT "All Rods Full-In when loading Fuel Assemblies into the Core" is not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.6).

Standard:

Column A - Records ALL RODS FULL IN and for Column - B records NA. Initials under UO.

SAT__ UNSAT__ N/A__ COMMENTS: _____

NOTE: Table 4.4.b is NA

Performance Step 5:Critical ☒ Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.5

TABLE 4.5 REACTOR MODE SWITCH - REFUEL POSITION

NIGHT SHIFT WEEK: _____ to _____

APPLICABILITY: Mode 5 with the Reactor Mode Switch in the Refuel Position and any Control Rod withdrawn OR Mode 4 when In Special Operations LCO 3.10.4					
Surveillance Requirements: 3.9.2.1					
LOCATION: Panel 2-9-5					Review Initials
	TIME	Reactor Mode Switch 2-HS-99-5A-S1 Locked in Refuel Position SAT / UNSAT / N/A	LIMITS (AC)	UO	Unit Supvr
Friday	2000		Reactor Mode Switch Verified Locked in Refuel Position SAT		
Saturday	2000				
Sunday	2000				
Monday	2000				
Tuesday	2000				
Wednesday	2000				
Thursday	2000				

Standard:

Records NA. Initials under UO. SAT is also acceptable since the Mode Switch is Locked in the Refuel position.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 6:Critical ☒ Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.6

TABLE 4.6 REACTOR COOLANT CONDUCTIVITY			NIGHT SHIFT	WEEK: _____ to _____
APPLICABILITY: Modes 4 & 5				
Criteria Source: Technical Requirements Manual TSR-3.4.1.1				
LOCATION: Panel 2-9-4			Review Initials	
	TIME	2-CR-43-11A/12A Ch 1 (μ mho) (Note 1)	MAX (AC)	UO Unit Supvr
Friday	2000		Prior to startup and at steaming rates < 100,000 lb/hr: 2.0 μ mho Reactor not Pressurized With Fuel In Reactor Vessel, Except During Startup Condition: Less than or equal to 10.0 μ mho	
	0200			
Saturday	2000			
	0200			
Sunday	2000			
	0200			
Monday	2000			
	0200			
Tuesday	2000			
	0200			
Wednesday	2000			
	0200			
Thursday	2000			
	0200			

- (1) Whenever there is fuel in the reactor vessel and the continuous conductivity monitor is inoperable, periodic analysis of reactor coolant samples are required by the Technical Requirements Manual. If the reactor coolant continuous conductivity monitor becomes inoperable, notify the Chemistry to sample according to 2-SI-4.6.B.1-4.

Standard:Records Reactor Coolant Conductivity reading of between 3 and 5 μ mho. Initials under UO.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 7:Critical X Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.7 part 1

TABLE 4.7 part 1				RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION				NIGHT SHIFT				WEEK: _____ to _____	
APPLICABILITY:				Modes 4 & 5 (Notes 1, 2)									
Surveillance Requirements:				3.4.8.1, 3.9.7.1, and 3.9.8.1									
LOCATION:		Panel 2-9-4		Panel 2-9-3				REQUIREMENTS (Note 1) Initials (AC)	Review Initials				
DAY	TIME	Recirc Pump I/S (Note 3)		RHR Shutdown Cooling Subsystem I/S (Note 3)					UO	Unit Supvr			
		A	B	A	B	C	D						
Friday	2000												
Saturday	2000												
Sunday	2000												
Monday	2000												
Tuesday	2000												
Wednesday	2000												
Thursday	2000												

The following notes for RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION are from the previous page:

- (1) Initials signify that the requirements listed below, for the unit conditions are met.
 - A. In mode 4, LCO 3.4.8 requires two RHR Shutdown Cooling Subsystems be operable, and with NO Recirc pump in operation, at least One RHR Shutdown Cooling Subsystem SHALL be in operation. SR-3.4.8.1 requires verifying one required RHR Shutdown Cooling Subsystem OR Recirc pump is operating.
 - B. In mode 5, with water level ≥ 22 feet above the top of the RPV flange, LCO 3.9.7 requires One RHR Shutdown Cooling Subsystem to be operable and in operation. SR-3.9.7.1 requires verifying one RHR Shutdown Cooling Subsystem is operating.
 - C. In mode 5, with water level < 22 feet above the top of the RPV flange, LCO 3.9.8 requires two RHR Shutdown Cooling Subsystems to be operable and One RHR Shutdown Cooling Subsystem in operation. SR-3.9.8.1 requires verifying one RHR Shutdown Cooling Subsystem is operating.
 - D. In the event the requirements stated above cannot be met, verify the appropriate LCO Action Statement is entered and documented by recording hourly Reactor Coolant Temperature And Pressure in the narrative log.
- (2) During operation in MODE 4 under SPECIAL OPERATIONS LCO 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," the requirements of LCO 3.4.8 are suspended.
- (3) Place an "X" in the column of the pumps that are in service. To be considered as In Service, the RHR System and its associated Shutdown Cooling Subsystems must be in the Shutdown Cooling Mode alignment with RHR SD CLG FLOW LOW annunciator (2-XA-55-3D, Window 11) is reset.

Standard:

Determines that running RHR Pump is NOT considered in service due to RHR SD CLG FLOW LOW alarm in and flow less than 3700 gpm. Raises flow to clear RHR SD CLG FLOW LOW alarm. Then places an X under RHR Pump B. Initials under UO.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 8:*Critical ☒ Not Critical

Refers to 2-SR-2, Instrument Checks and Observations, table 4.7 part 2

TABLE 4.7 part 2

LOCATION:		Panel 2-9-47: 2-TR-56-4				Panel 2-9-5			
DAY	TIME	COL A		COL B		COL C			
		Rx Dr to RWCU 2-TE-56-8		FW Nozzle Temp 2-TE-56-13		(COL A-COL B)		Rx Pressure (psig) 2-PI-3-54	
		OR Rx Bottom Head 2-TE-56-29		2-TE-56-14 2-TE-56-15 2-TE-56-16				OR 2-PI-3-61	
		(Notes 4 & 5)		(Note 4)				(Notes 4 & 6)	
		Instrument used	°F	Instrument used	°F	Instrument used	PSIG	UO	Unit Supvr
		Friday	2000						
Saturday	2000								
Sunday	2000								
Monday	2000								
Tuesday	2000								
Wednesday	2000								
Thursday	2000								

The following notes for RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION are from the previous page:

- (4) [NRC/C] These parameters provide monitoring to assist in the determination of Reactor Vessel water temperature stratification. [IE Circular 81-11] Only one indication for the parameters are required to be recorded. Record the Indicator used and the reading obtained in the appropriate columns.
- (5) [NER/C] For thermal stratification monitoring, Reactor Drain to RWCU temperature indication is preferred when there is flow in the line. [GE SIL 251 and 430]
- (6) Differential temperatures (COL A - COL B) of 50°F or greater or Reactor pressure greater than atmospheric pressure when reactor coolant temperature indications are less than 212°F indicate potential inadequate mixing and stratification of the water in the RPV. Note that Reactor pressure indications may read slightly positive due to instrument inaccuracies; however, any unexpected upward trend in pressure should be addressed. Reactor Pressure indication should be N/A'd when head is removed. With RCS temperature $\leq 100^\circ\text{F}$ in Mode 4, 2-SR-3.4.9.5-7 must be initiated to monitor reactor vessel flange and head flange temperatures.

Standard:

*In Column C records differential temperature of 9.2 °F. Initials under UO.

Not Critical is Reactor Pressure reading with head removed should record NA, may record 0 psig.

SAT__ UNSAT__ N/A__ COMMENTS: _____

END OF TASK

STOP TIME ____

OPERATOR: _____

RO _____ DATE: _____

JPM NUMBER: Admin RO A1b

TASK NUMBER: Conduct of Operations

TASK TITLE: 3-SR-2

K/A NUMBER: 2.1.18 K/A RATING: RO 3.6 SRO 3.8

PRA: N/A

TASK STANDARD: Perform Operator logs in accordance with 3-SR-2 Instrument Checks and Observations for log tables 4.1 through 4.7. Verify acceptance criteria are satisfied in accordance with notes.

LOCATION OF PERFORMANCE: Unit 3 Simulator

REFERENCES/PROCEDURES NEEDED: 3-SR-2

VALIDATION TIME: 15 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

INITIAL CONDITIONS: You are a Unit Operator assigned to Unit 3, and it is Friday evening at 2000. 3-SR-2, Instrument Checks and Observations, is being performed.

The plant is in MODE 5.

- Vessel Head is removed
- Reactor Water Level is greater than 22 feet above the RPV Flange
- Refuel gates are removed
- Core Alterations are scheduled to start Saturday evening
- NO Tech Spec Special Operations are in progress
- Signal to Noise Ratio 3-SR-3.3.1.2.4, was last performed on dayshift Friday at 0800.

INITIATING CUE: The Unit Supervisor directs you as the Unit Operator to complete 3-SR-2 for Friday at 2000.

NOTE: If a reading is outside the acceptance criteria and it can be corrected, perform the action necessary to correct.

All readings that are already completed are correct and need not be checked by you.

Simulator

INITIAL CONDITIONS: You are a Unit Operator assigned to Unit 3, and it is Friday evening at 2000. 3-SR-2, Instrument Checks and Observations, is being performed.

The plant is in MODE 5.

- Vessel Head is removed
- Reactor Water Level is greater than 22 feet above the RPV Flange
- Refuel gates are removed
- Core Alterations are scheduled to start Saturday evening
- NO Tech Spec Special Operations are in progress
- Signal to Noise Ratio 3-SR-3.3.1.2.4, was last performed on dayshift Friday at 0800.

INITIATING CUE: The Unit Supervisor directs you as the Unit Operator to complete 3-SR-2 for Friday at 2000.

NOTE: If a reading is outside the acceptance criteria and it can be corrected, perform the action necessary to correct.

All readings that are already completed are correct and need not be checked by you.

START TIME _____

Performance Step 1:Critical ☒ Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.1

TABLE 4.1 IRM INSTRUMENTATION

NIGHT SHIFT WEEK: _____ to _____

APPLICABILITY: Mode 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies. OR Mode 4 when in Special Operations LCO 3.10.4 (Refer To P&L Step 3.6A)										
Surveillance Requirements: 3.3.1.1.1 (f1.a)										
LOCATION: Panel 3-9-5								Review Initials		
	IRM RANGE (ENTER 1 THROUGH 10) Note 1							MAX DEV (AC)	UO	Unit Supvr
	A	C	E	G	B	D	F			
Friday									2 Ranges with conditions of Note 1 satisfied Note 2	
Saturday										
Sunday										
Monday										
Tuesday										
Wednesday										
Thursday										

- (1) Irm's must be full in and onscale (i.e., $25 \leq \text{IRM value} \leq 75$) excluding downscale (i.e., $\text{IRM value} < 25$) on range 1.
- (2) During operation under SPECIAL OPERATIONS LCO 3.10.5, "Single CRD Removal - Refueling," MAX DEV acceptance criteria is not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.5).

Standard:

Record a 1 under each IRM. Initials under UO. NA is also acceptable since the applicability is NOT met.

SAT___ UNSAT___ N/A___ COMMENTS:_____

Performance Step 2:Critical X Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.2

TABLE 4.2 SRM INSTRUMENTATION						NIGHT SHIFT	WEEK: _____	to _____						
APPLICABILITY:		Mode 4 & 5 (Refer To P&L Step 3.6A)												
Surveillance Requirements:		3.3.1.2.1, 3.3.1.2.2, 3.3.1.2.3, 3.3.1.2.4, 3.3.1.2.5&6						TSRs: 3.3.4.1 & 3.3.5.3						
LOCATION:		Panel 3-9-5						Review Initials						
	SRM Count Rate (cps) Note 1					LIMITS Note 2 (AC)	MAX Note 3 (AC)	SRM System Signal to Noise Ratio 3-SR-3.3.1.2.4 (Note 4) SAT / UNSAT / INOP				All Data (Note 5) SAT / UNSAT	UO	Unit Supvr
	TIME	A	C	B	D			A	C	B	D			
Friday	2000					OPERABLE SRMs count rate must be ≥ 3 cps	OPERABLE SRMs count rate must be < 1 E ⁶ cps							
Saturday	2000													
Sunday	2000													
Monday	2000													
Tuesday	2000													
Wednesday	2000													
Thursday	2000													

- (1) Count Rate should be recorded with SRM's fully inserted.
- (2) LIMITS are not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.
- (3) IRM/SRM overlap should occur before SRMs > 1 E5 cps (should occur between 1 E4 cps & 1 E5 cps). Unexpected deviations from this relationship and excessive noise spikes shall be investigated.
- (4) Signal to Noise Ratio is required to be determined by performing 3-SR-3.3.1.2.4 as follows: (SRM's will become INOP after the SR's specified Frequency has been exceeded.)
 - SAT A. MODES 4 • Every 24 Hours. (This may be N/A'ed if the SR was performed SAT on the previous shift.)
 - Prior to going to Mode 2 or 3 from Mode 4.
 - B. MODE 5 • "DURING Core Alterations" Every 12 Hours.
 - Every 24 Hours (This may be N/A'ed if the SR was performed SAT on the previous shift and no Core Alterations in progress and not expected to be performed in the next 12 hours.)
 - Prior to going to Mode 2 or 3 from Mode 5.
 - INOP An SRM fails its Signal to Noise Ratio section of 3-SR-3.3.1.2.4.
- (5) The All Data UNSAT column is UNSAT, if one or more SRM's are inoperable. Refer To Tech Spec 3.3.1.2.

Standard:

Records less than 3 cps for SRM A and an UNSAT in the all data column due to SRM A being INOPERABLE. Records a count rate for SRM C and B of between 150 and 300 cps. Determines SRM D is less than 3 cps due to being withdrawn and inserts SRM D. Then records a count rate for SRM D of between 150 and 300 cps. Records and acceptable count rate for SRM D. Initials under UO. Records NA or a SAT in signal to noise ratio column for SRMs B, C, and D.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 3:Critical Not Critical X

Refers to 3-SR-2, Instrument Checks and Observations, table 4.3

TABLE 4.3 REACTOR WATER LEVEL INSTRUMENTATION - NARROW RANGE NIGHT SHIFT WEEK: _____ to _____
(COMPENSATED)

APPLICABILITY: Reactor Water Level in Narrow Instrument Range (Refer To P&L Step 3.6A)							
Criteria Source: FSAR 7.10.4							
LOCATION: Panel 3-9-5						Review Initials	
Reference Leg	A	B	C	D	MAX DEV	UO	Unit Supvr
	3-LI-3-53 (in.)	3-LI-3-60 (in.)	3-LI-3-206 (in.)	3-LI-3-253 (in.)			
Friday					3.0 inches		
Saturday							
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							

- (1) Refer To Attachment 4 during off-normal operating conditions.

Standard:

Records the level reading from the above instruments, records 69 to 71 inches for each indicator. Initials under UO.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:Critical X Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.4a

TABLE 4.4.a		CONTROL RODS		NIGHT SHIFT		WEEK: _____ to _____	
APPLICABILITY:		Mode 5 or Mode 4 when in Special Operations LCO 3.10.4 (Refer To P&L Step 3.6A)					
Surveillance Requirements:		3.9.3.1, 3.9.5.2, (Reference 3.9.4.1)					
LOCATION:		Panel 3-9-5 Full Core Display And/Or Four Rod Display with Applicable Control Rod Selected and/or ICS Control Rod Position Indication, Local HCU Accumulator Pressure Indicators (Reactor Building Elevation 565)				Review Initials	
	TIME	COL A	COL B	LIMITS (AC)	UO	Unit Supvr	
		Control Rod Positions ALL RODS FULL-IN/ ROD WITHDRAWN	HCU Scram Accumulator Pressure \geq 940 psig and Position Indication has no full-in indication (no Green LEDs) for each withdrawn Control Rod. (Notes 1, 2, 3) SAT / UNSAT / N/A				
Friday	2000			All Rods Full-In when loading Fuel Assemblies into the Core (Note 4) <u>AND</u> HCU Scram Accumulator Pressure \geq 940 psig <u>AND</u> No full-in indication (no Green LEDs) for each withdrawn Control Rod (Note 2)			
Saturday	2000						
Sunday	2000						
Monday	2000						
Tuesday	2000						
Wednesday	2000						
Thursday	2000						

- (1) Technical Specification LCO 3.9.5 requires a Control Rod to be OPERABLE (e.g., accumulator \geq 940 psig) before withdrawal in Mode 5. Technical Specification SR 3.9.4.1 requires verification of the absence of full-in indication (no Green LEDs) each time a Control Rod is withdrawn from the full-in position in Mode 5. To reinforce the awareness of these requirements and provide additional verification of operability, currently this surveillance requires verification of accumulator pressure and absence of full-in indication of each withdrawn Control Rod every 12 hours. This surveillance satisfies the periodic verification of SR 3.9.5.2 (Technical Specification frequency for SR 3.9.5.2 is every 7 days). This surveillance does not satisfy SR 3.9.4.1.
- (2) Column B should be marked "N/A" when "All Rods Full-In" and during operation under SPECIAL OPERATIONS LCO 3.10.5, "Single CRD Removal - Refueling," or LCO 3.10.6, "Multiple Control Rod Withdrawal - Refueling." During operation under these SPECIAL OPERATIONS LCOs the LIMITS for Column B are not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.5 or LCO 3.10.6 as applicable).
- (3) Verification of HCU Scram Accumulator pressure shall include observation of Local HCU Accumulator Pressure Indicator.
- (4) When operating under SPECIAL OPERATIONS LCO 3.10.6, the LIMIT "All Rods Full-In when loading Fuel Assemblies into the Core" is not required to be met (alternate requirements and surveillances must be implemented in accordance with LCO 3.10.6).

Standard:

Column A - Records ALL RODS FULL IN and for Column - B records NA. Initials under UO.

SAT___ UNSAT___ N/A___ COMMENTS: _____

NOTE: Table 4.4.b is NA

Performance Step 5:Critical ☒ Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.5

TABLE 4.5 REACTOR MODE SWITCH - REFUEL POSITION

NIGHT SHIFT WEEK: _____ to _____

APPLICABILITY:		Mode 5 with the Reactor Mode Switch in the Refuel Position and any Control Rod withdrawn OR Mode 4 when in Special Operations LCO 3.10.4 (Refer To P&L Step 3.6A)			
Surveillance Requirements:		3.9.2.1			
LOCATION:		Panel 3-9-5			Review Initials
	TIME	Reactor Mode Switch 3-HS-99-5A-S1 Locked in Refuel Position SAT / UNSAT / N/A	LIMITS (AC)	UO	Unit Supvr
Friday	2000		Reactor Mode Switch Verified Locked in Refuel Position performed SAT		
Saturday	2000				
Sunday	2000				
Monday	2000				
Tuesday	2000				
Wednesday	2000				
Thursday	2000				

Standard:

Records NA. Initials under UO. SAT is also acceptable since the Mode Switch is Locked in the Refuel position.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 6:Critical X Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.6

TABLE 4.6 REACTOR COOLANT CONDUCTIVITY			NIGHT SHIFT	WEEK: _____ to _____
APPLICABILITY: Modes 4 & 5 (Refer To P&L Step 3.6A)				
Criteria Source: Technical Requirements Manual TSR-3.4.1.1				
LOCATION: Panel 3-9-4				Review Initials
	TIME	3-CR-43-11A/12A Ch 1 (Note 1) (μ mho)	MAX (AC)	UO Unit Supvr
Friday	2000		Prior To Startup and at Steaming Rates < 100,000 lb/hr: 2.0 μ mho Reactor not Pressurized With Fuel In Reactor Vessel, Except During Startup Condition: Less than or equal to 10.0 μ mho	
	0200			
Saturday	2000			
	0200			
Sunday	2000			
	0200			
Monday	2000			
	0200			
Tuesday	2000			
	0200			
Wednesday	2000			
	0200			
Thursday	2000			
	0200			

- (1) Whenever there is fuel in the reactor vessel and the continuous conductivity monitor is inoperable, periodic analysis of reactor coolant samples are required by the Technical Requirements Manual. If the reactor coolant continuous conductivity monitor becomes inoperable, notify Chemistry to sample according to 3-SI-4.6.B.1-4.

Standard:Records Reactor Coolant Conductivity reading of between 4 and 6 μ mho. Initials under UO.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 7:Critical X Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.7 part 1

TABLE 4.7 part 1		RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION						NIGHT SHIFT		WEEK: _____ to _____	
APPLICABILITY:		Modes 4 & 5 (Notes 1, 2) (Refer To P&L Step 3.6A)									
Surveillance Requirements:		3.4.8.1, 3.9.7.1, and 3.9.8.1									
LOCATION:		Panel 3-9-4 Recirc Pump I/S (Note 3)		Panel 3-9-3 RHR Shutdown Cooling Subsystem I/S (Note 3)				REQUIREMENTS Initials (Note 1) (AC)	Review Initials		
DAY	TIME	A	B	A	B	C	D		UO	Unit Supvr	
Friday	2000										
Saturday	2000										
Sunday	2000										
Monday	2000										
Tuesday	2000										
Wednesday	2000										
Thursday	2000										

The following notes for RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION are from the previous page:

- (1) Initials signify that the requirements listed below, for the unit conditions are met.
 - A. In mode 4, LCO 3.4.8 requires two RHR Shutdown Cooling Subsystems be operable, and with NO Recirc pump in operation, at least One RHR Shutdown Cooling Subsystem SHALL be in operation. SR-3.4.8.1 requires verifying one required RHR Shutdown Cooling Subsystem OR Recirc pump is operating.
 - B. In mode 5, with water level ≥ 22 feet above the top of the RPV flange, LCO 3.9.7 requires One RHR Shutdown Cooling Subsystem to be operable and in operation. SR-3.9.7.1 requires verifying one RHR Shutdown Cooling Subsystem is operating.
 - C. In mode 5, with water level < 22 feet above the top of the RPV flange, LCO 3.9.8 requires two RHR Shutdown Cooling Subsystems to be operable and One RHR Shutdown Cooling Subsystem in operation. SR-3.9.8.1 requires verifying one RHR Shutdown Cooling Subsystem is operating.
 - D. In the event the requirements stated above cannot be met, verify the appropriate LCO Action Statement is entered and documented by recording hourly Reactor Coolant Temperature And Pressure in the narrative log.
- (2) During operation in MODE 4 under SPECIAL OPERATIONS LCO 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," the requirements of LCO 3.4.8 are suspended.
- (3) Place an "X" in the column of the pumps that are in service. To be considered as In Service, the RHR System and its associated Shutdown Cooling Subsystems must be in the Shutdown Cooling Mode alignment with RHR SD CLG FLOW LOW annunciator (3-XA-55-3D, Window 11) is reset.

Standard:

Determines that running RHR Pump is NOT considered in service due to RHR SD CLG FLOW LOW alarm in and flow less than 3700 gpm. Raises flow to clear RHR SD CLG FLOW LOW alarm. Then places an X under RHR Pump B. Initials under UO.

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 8:*Critical X Not Critical

Refers to 3-SR-2, Instrument Checks and Observations, table 4.7 part 2

TABLE 4.7 part 2

LOCATION:		Panel 3-9-47: 3-TR-56-4				Panel 3-9-5		Review Initials	
DAY	TIME	COL A		COL B		COL C			
		Rx Dr to RWCU 3-TE-56-8 OR Rx Bottom Head 3-TE-56-29 (Notes 4 & 5)		FW Nozzle Temp 3-TE-56-13 3-TE-56-14 3-TE-56-15 3-TE-56-16 (Note 4)		(COL A-COL B) (Note 6)			
						Rx Pressure (psig) 3-PI-3-54 OR 3-PI-3-61 (Notes 4 & 6)			
		Instrument used	°F	Instrument used	°F	Instrument used	PSIG		
Friday	2000							UO	Unit Suppr
Saturday	2000								
Sunday	2000								
Monday	2000								
Tuesday	2000								
Wednesday	2000								
Thursday	2000								

The following notes for RHR SHUTDOWN COOLING SUBSYSTEM AND RECIRCULATION PUMP OPERATION are from the previous page:

- (4) [NRC/C] These parameters provide monitoring to assist in the determination of Reactor Vessel water temperature stratification. [IE Circular 81-11] Only one indication for the parameters are required to be recorded. Record the Indicator used and the reading obtained in the appropriate columns.
- (5) [NER/C] For thermal stratification monitoring, Reactor Drain to RWCU temperature indication is preferred when there is flow in the line. [GE SIL 251 and 430]
- (6) Differential temperatures (COL A - COL B) of 50°F or greater or Reactor pressure greater than atmospheric pressure when reactor coolant temperature indications are less than 212°F indicate potential inadequate mixing and stratification of the water in the RPV. Note that Reactor pressure indications may read slightly positive due to instrument inaccuracies; however, any unexpected upward trend in pressure should be addressed. Reactor Pressure indication should be N/A'd when head is removed. With RCS temperature $\leq 100^\circ\text{F}$ in Mode 4, 3-SR-3.4.9.5-7 must be initiated to monitor reactor vessel flange and head flange temperatures.

Standard:

*In Column C records differential temperature of 10.9 °F. Initials under UO.

Not Critical is Reactor Pressure reading with head removed should record NA, may record 0 psig.

SAT__ UNSAT__ N/A__ COMMENTS:_____

END OF TASK

STOP TIME ____

OPERATOR: _____

SRO _____ DATE: _____

JPM NUMBER: SRO A1b

TASK NUMBER: U-068-SU-05

TASK TITLE: 2-SR-3.4.2.1 Jet Pump Mismatch and Operability

K/A NUMBER: 2.1.7 K/A RATING: SRO 4.7

TASK STANDARD: Complete a surveillance requirement on Reactor Recirculation System Jet Pump Mismatch and Operability, determines that an Engineering review is required and determines that the Acceptance Criteria is met even though some parts fail to meet the initial requirements.

PERFORMANCE LOCATION: Unit 2 Simulator

REFERENCES/PROCEDURES NEEDED: 2-SR-3.4.2.1

VALIDATION TIME: 25 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

Rec'd
4/8/13

Classroom

INITIAL CONDITIONS: You are a Unit 2 Operator. Unit 2 is operating near 100% power with core near middle of life.

ICS is NOT Available.

2-SR-3.4.2.1, Jet Pump Mismatch and Operability, is in progress and complete up to Step 7.2.

INITIATING CUE: The Unit Supervisor directs you to complete 2-SR-3.4.2.1 starting at step 7.2 and inform him of the results.

Provide a copy of 2-SR-3.4.2.1 completed up to step 7.2

START TIME _____

Performance Step 1:*Critical X Not Critical**7.2 Data Collections****7.2.1 Core Power and Flow Readings**

[1] **RECORD** the Core thermal power from Core Power and Flow Log. (N/A if ICS is not available) Point CALC002 _____ CMWT

*[2] **RECORD** the Core plate differential pressure from ICS point 68-52 or 2-XR-68-50 (Green Pen). (N/A if not available).

Core Press Drop 68-52 _____ PSID

*[3] **RECORD** the Total Core flow.

Total Core Flow 2-XR-68-50 (Red Pen) _____ Mlb/hr

Standard:

Records the following: Core Thermal Power NA ICS is NOT Available. Core plate differential pressure 14 psid, Total Core Flow 83.8 Mlb/hr.

SAT__ UNSAT__ N/A__ COMMENTS: _____

EXAMINER NOTE: Do NOT allow applicant to use ICS**NOTES**

- 1) If a Recirculation Pump is not in service then the associated instrumentations can be marked as N/A.
- 2) Use the 1-SI-96-61 (or ICS PT 96-61) if both 1-SI-68-59 and 1-SIT-68-59 are not available for the 1A Pump Motor and log the reason in post test Remarks.
- 3) Use the 1-SI-96-73 (or ICS PT 96-73) if both 1-SI-68-71 and 1-SIT-68-71 are not available for the 1B Pump Motor and log the reason in post test Remarks.

Performance Step 2:Critical ☒ Not Critical**7.2.2 Recirculation Pump Loops**

- [1] **RECORD** the Recirc Pump 2A and 2B Mtr Speeds for operating Recirc Pumps and **MARK** instrumentation used.

Pump Mtr 2A	Pump Mtr 2B
2-SI-68-59	2-SI-68-71
2-SIT-068-0059	2-SIT-068-0071
2-SI-96-61	2-SI-96-73
_____ RPM	_____ RPM

- [2] **RECORD** the Recirc Pump Discharge flows.

Loop 2A 2-FI-68-5	Loop 2B 2-FI-68-81
_____ gpm X 1000	_____ gpm X 1000

- [3] **RECORD** the Recirc loop 2A and 2B Jet Pump Flow.

Loop 2A 2-FI-68-46	Loop 2B 2-FI-68-48
_____ Mlb/hr	_____ Mlb/hr

Standard:

Record the following: Motor Speed 2A 1298 rpm if 68-59 is used and 1295 to 1299 if 96-61 is used. Motor Speed 2B 1230 rpm if 68-71 is used and 1227 to 1231 if 96-73 is used. Discharge flow for Loop 2A from 68-5 is 41.5 gpm with a band of 41 to 42 gpm and for Loop 2B from 68-81 is 38 gpm. Jet Pump Flow for Loop 2A from 68-46 is 44.5 Mlb/hr with a band of 44 to 45 and for Loop 2B from 68-48 is 40 Mlb/hr.

SAT___ UNSAT___ N/A___ COMMENTS:_____

NOTE

If a Recirculation Pump is not in service then the associated instrumentations can be marked as N/A.

Performance Step 3:

Critical X Not Critical

7.2.3 Jet Pump Loops

[1] **RECORD** the following Differential Pressure readings below:

Loop 1A			Loop 1B		
INSTRUMENT	JET PUMP	PSID	INSTRUMENT	JET PUMP	PSID
2-PDI-68-38	11		2-PDI-68-15	1	
2-PDI-68-39	12		2-PDI-68-18	2	
2-PDI-68-40	13		2-PDI-68-19	3	
2-PDI-68-42	14		2-PDI-68-21	4	
2-PDI-68-43	15		2-PDI-68-22	5	
2-PDI-68-07	16		2-PDI-68-25	6	
2-PDI-68-08	17		2-PDI-68-26	7	
2-PDI-68-10	18		2-PDI-68-28	8	
2-PDI-68-11	19		2-PDI-68-29	9	
2-PDI-68-13	20		2-PDI-68-30	10	

Standard:

Records Jet Pump Differential Pressure readings:

Jet Pumps **11** – 8.5 to 9, **12** – 8.5 to 9, **13** – 8.5 to 9, **14** – 9 to 9.25, **15** – 8.5 to 9, **16** – 9, **17** – 9.5 to 10, **18** – 8.5 to 9, **19** – 8.5 to 9, **20** – 9.5 to 10.

Jet Pumps **1** – 7 to 7.5, **2** – 7.5 to 8, **3** – 7 to 7.5, **4** – 7-7.5, **5** – 7 to 7.5, **6** – 7 to 7.5, **7** – 7 to 7.5, **8** - 7.5 to 8, **9** – 7.5, and **10** – 7 to 7.5.

SAT___ UNSAT___ N/A___ COMMENTS:_____

NOTES

- 1) Section 7.3 is performed when both Recirculation Pumps are in service. This section should be N/A'ed when in Single Loop Operation.
- 2) To satisfy procedure Acceptance Criteria, either Step 7.3[3] or Step 7.3[4] must be satisfied.

Performance Step 4:Critical X Not Critical
7.3 Tech Spec 3.4.1.1 - Recirculation Loop Mismatch Verification With Both Recirculation Loops In Operation Checks

- [1] **CALCULATE** percent of rated core flow (%WT) using data obtained in Section 7.2.1[3] as follows

(Step 7.2.1[3] ÷ 102.5) X 100 =	% Core Flow
(____ ÷ 102.5) X 100 =	_____

- [2] **CALCULATE** the absolute value for Recirculation Loop Jet Mismatch using data obtained in Section 7.2.2[3] as follows.

2-FI-68-46 - 2-FI-68-48 = Mismatch

_____ Mlb/hr - _____ Mlb/hr = _____ Mlb/hr

Standard:

Calculates a Core Flow % of >70% (81 to 82%) and calculates a core flow mismatch of 4.5 Mlb/hr with a band from 4.0 to 5.0.

SAT___ UNSAT___ N/A___ COMMENTS:_____

Performance Step 5:Critical X Not Critical

[3] IF %WT is < 70% as recorded in Step 7.3[1], THEN

VERIFY Recirculation Loop Jet Pump Flow Mismatch recorded in Step 7.3[2] is
 ≤ 10.25 Mlb/hr. (Otherwise N/A) ____ (AC)

[4] IF %WT is $\geq 70\%$ as recorded in Step 7.3[1], THEN

VERIFY Recirculation Loop Jet Pump Flow Mismatch recorded in Step 7.3[2] is
 ≤ 5.12 Mlb/hr. (Otherwise N/A) ____ (AC)

Standard:

Marks Step [3] N/A due to > 70% AND **Initials** steps [4] mismatch is less than 5.12
 Mlb/hr.

SAT__ UNSAT__ N/A __ COMMENTS: _____

NOTES

- 1) Jet Pump Operability is not required to be performed until 4 hours after associated recirculation loop is in operation and then only within 24 hours after RTP is > 25%.
- 2) If a Recirculation Pump is not in service, then the associated steps can be marked as NO.
- 3) If Data falls on or outside the bold lines on the graph, then the step can be marked as NO.

Performance Step 6:Critical X Not Critical**7.4 Tech Spec 3.4.2.1 - Part A - Jet Pump Performance Checks****7.4.1 Loop 2A Recirculation Pump and Jet Pump Flow to Recirculation Pump Speed**

- [1] Using the 2A Pump Speed recorded in Step 7.2.2[1] and the 2A Pump Flow recorded in Step 7.2.2[2]:

CHECK that the plot falls between the two bold lines on Illustration 1 and **RECORD** below.

Plot falls between the bold lines	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----------------------------------	-----	--------------------------	----	--------------------------

- [2] Using the 2A Pump Speed recorded in Step 7.2.2[1] and the 2A Jet Pump Flow in Step 7.2.2[3]:

CHECK that the plot falls between the two bold lines on Illustration 2 and **RECORD** below.

Plot falls between the bold lines	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----------------------------------	-----	--------------------------	----	--------------------------

- [3] Using Steps 7.4.1[1] and 7.4.1[2] from above:

DETERMINE if the Jet Pump Loop 2A criteria is satisfied by marking below if both steps are marked as Yes.

Jet Pump Loop 2A criteria is satisfied	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
----------------------------------------	-----	--------------------------	----	--------------------------

Standard:

Marks Steps [1] **YES** for a pump speed of 1298 the illustration 1 band at this point is 37.5 to 42.5, the applicant should have a flow of 41.5 within a band of 41 to 42, [2] **YES** for a pump speed of 1298 the illustration 2 band at this point is 42 to 46, the applicant should have a flow of 44.5 within a band of 44 to 45, and [3] **YES** after Checking the plot does fall between the bold lines on Illustration 1 and 2 for step 7.4.1[1 and 2].

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 7:Critical X Not Critical**7.4.2 Loop 2B Recirculation Pump and Jet Pump Flow to Recirculation Pump Speed**

- [1] Using the 2B Pump Speed recorded in Step 7.2.2[1] and 2B Pump Flow recorded in Step 7.2.2[2]:

CHECK that the plot falls between the two bold lines on Illustration 3 and **RECORD** below.

Plot falls between the bold lines	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----------------------------------	-----	--------------------------	----	--------------------------

- [2] Using the 2B Pump Speed recorded in Step 7.2.2[1] and 2B Jet Pump Flow recorded in Step 7.2.2[3]:

CHECK that the plot falls between the two bold lines on Illustration 4 and **RECORD** below.

Plot falls between the bold lines	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----------------------------------	-----	--------------------------	----	--------------------------

- [3] Using Steps 7.4.2[1] and 7.4.2[2] from above:

DETERMINE if the Jet Pump Loop 2B criteria is satisfied by marking below if both steps are marked as Yes.

Jet Pump Loop 2B criteria is satisfied	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
----------------------------------------	-----	--------------------------	----	--------------------------

Standard:

Marks Steps [1] **YES** for a pump speed of 1230 the illustration 3 band at this point is 35 to 39, the applicant should have a flow of 38, [2] **NO** for a pump speed of 1230 the illustration 4 band at this point is 40.5 to 44.5, the applicant should have a flow of 40, and [3] **NO** after Checking the plot does NOT fall between the bold lines on Illustration 4 for step 7.4.2[2].

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 8:Critical X Not Critical**7.4.3 Recirculation Jet Pump Diffuser to Lower Plenum Differential Pressure Verification:**

- [1] Using the individual 2A Jet Pump DP's recorded in Step 7.2.3[1]

CHECK that each individual Jet Pump DP recorded fall between the two bold lines on Illustration 5 for the recorded Total Flow in step 7.2.1[3] and **RECORD** results below.

2A Individual DP's are between the bold lines.	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
------------------------------------------------	-----	--------------------------	----	--------------------------

- [2] Using the individual 2B Jet Pump DP's recorded in Step 7.2.3[1]

CHECK that each individual Jet Pump DP recorded fall between the two bold lines on Illustration 6 for the recorded Total Flow in step 7.2.1[3] and **RECORD** results below.

2B Individual DP's are between the bold lines.	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
------------------------------------------------	-----	--------------------------	----	--------------------------

- [3] Using Steps 7.4.3[1] and 7.4.3[2]

DETERMINE whether the Recirculation Jet Pump Diffuser to Lower Plenum Differential Pressure Verification criteria is satisfied by marking below if both steps are marked as Yes.

Jet Pump Diffuser to Lower Plenum Differential Pressure Verification criteria is satisfied	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
--------------------------------------------------------------------------------------------	-----	--------------------------	----	--------------------------

Standard:

Marks Steps [1] **NO** for a core flow of 83.8 Mlb/hr the illustration 5 band for 2A Jet Pump DP at this point is approximately 6.25 to 9.25, Jet Pumps 17 and 20 should have a DP of between 9.5 and 10. [2] **YES** for a core flow of 83.8 Mlb/hr the illustration 6 band for 2B jet Pump DP at this point is approximately 6.25 to 9.25 all Jet Pumps fall between this band, and [3] **NO** after VERIFYING DP is **NOT** between the two lines on Illustration 5 for step 7.4.3[1] and VERIFYING DP is between the two lines on Illustration 6 for step 7.4.3[2].

SAT__ UNSAT__ N/A__ COMMENTS: _____

CAUTION

An Engineering Judgment/Review may only be utilized until relationships between core flow, jet pump flow, and Recirculation loop flow have been established following a refueling outage or during the initial weeks of extended single loop operation. Engineering judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a jet pump failure. (Reference SR 3.4.2.1 bases)

Performance Step 9:

Critical X Not Critical

7.4.4 Engineering Judgement/Review Criteria

[1] **IF** any of the following conditions apply:

- Following Refueling Outage. (See Caution above)

OR

- The Reactor is in Single Loop Operation (See Caution above)

OR

- If point(s) plotted in sections 7.4.1, 7.4.2 and 7.4.3 fall outside the bolded lines, to determine if the graphs need updating, **THEN**

PERFORM Attachment 1, Engineering Judgment/Review:
(Otherwise N/A if not required.)

Standard:

Both recirc loops are I/S but Steps 7.4.2[3] and 7.4.3[3] do not fall within the lines on the graphs, this Step shall be **initialed** and Attachment 1 completed.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 10:Critical X Not Critical

Attachment 1
Engineering Judgement/Review

Date: _____

CAUTIONS

- 1) Engineering Judgment Evaluation may only be utilized until relationships between Core Flow, Jet Pump Flow, and Recirculation Loop Flow have been established:
 - During the initial weeks of extended Single Loop Operation
 - Following a Refueling Outage until Engineering has provided or determined that the current graphs are good. (At least one evaluation must be performed following a Refueling Outage.)
- 2) Engineering Judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a Jet Pump failure. (Reference SR 3.4.2.1 bases)

[1] Mark the condition that applies:

Following Refueling Outage.	<input type="checkbox"/>
The Reactor is in Single Loop Operation	<input type="checkbox"/>
Point(s) plotted in sections 7.4.1, or 7.4.2 or 7.4.3 fall outside the bolded lines	<input type="checkbox"/>

[2] **REQUEST** System Engineering to perform an Engineering Judgement/Review. _____

Standard:

Marks third box for step [1] and initials and initials step [2].

SAT__ UNSAT__ N/A __ COMMENTS: _____

CUE: Once Step 2 is initialed give Operator Attachment 1

Performance Step 11:Critical X Not Critical**7.4.5 Operability Determination**

- [1] **MARK** the appropriate criteria results for the following.
(N/A any criteria not performed.)

Steps	Criteria Results	Yes	No	N/A
7.4.1[3] and 7.4.2[3]	Both Jet Pump Loops steps are marked as YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4.3[3]	Jet Pump DP to criteria is marked as YES.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attachment 1	Engineering Evaluation is marked as YES.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Standard:

Marks 7.4.1[3] and 7.4.2[3] **NO**, 7.4.3[3] **NO** and ATT 1 **YES (after Operator is given completed attachment 2).**

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 12:Critical X Not Critical

- [2] Using the Criteria Results in Step 7.4.5[1]

VERIFY at least one Criteria Results is satisfied and marked as YES.

Standard:

Initials for acceptance criteria is satisfied and marked as yes.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 13:Critical _ Not Critical X**7.5 Completion and Notifications**[1] **IF** an Engineering Judgment/Review was performed, **THEN****VERIFY** the Engineering Judgment/Review documentation is attached to this SR. (Otherwise N/A)

[2] On the Surveillance Task Sheet (STS),

[2.1] **RECORD** the Completion Date & Time.[2.2] **REVIEW** and **COMPLETE** the Surveillance Task Sheet (STS) through the Test Director/Lead Perform & Date fields.[3] **NOTIFY** the Unit Supervisor that this test is complete.Standard:

Verifies Attachment 1 is attached, completes the STS and notifies Unit Supervisor.

SAT__ UNSAT__ N/A __ COMMENTS: _____

CUE: That completes this task.**END OF TASK****STOP TIME:** _____

Examiner Copy – Give to Candidate when Engineering Review Requested

Attachment 1
(Page 1 of 1)
Engineering Judgement/Review

Date TODAY **CAUTION**

Engineering Judgment Evaluation may only be utilized until relationships between core flow, jet pump flow, and Recirculation loop flow have been established following a refueling outage or during the initial weeks of extended single loop operation. Engineering judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a jet pump failure. Refer to SR 3.4.2.1 bases.

- [1] **MARK** the condition that applies:
- Following Refueling Outage ☐
 - The Reactor is in Single Loop Operation ☐
 - Point(s) plotted in sections 7.4.1 or 7.4.2, AND 7.4.3 fall on or outside the bolded lines. ☒ OP
- [2] **REQUEST** System Engineering to perform an Engineering Judgment/Review. OP
- [3] **IF** the Engineering Judgment/Review was performed following a Refueling Outage or during Single Loop Operation, **THEN DETERMINE** if the Jet Pump Criteria is satisfied and no significant abnormalities which could indicate a jet pump failure are indicated and **RECORD** the results below. (Otherwise **N/A**)
 Jet Pump Criteria is satisfied. Yes ☐ No ☐ NA
- [4] **IF** the Engineering Judgment/Review was performed to determine if the graphs need updating, **THEN**
- REQUEST** a System Engineering to: (Otherwise **N/A**)
- A. **SUPPLY** Operations with new graphs to Operations Procedures. SE
- B. **RECORD** below if Jet Pump Criteria is satisfied
- Jet Pump Criteria is satisfied. Yes ☒ No ☐ SE

INITIAL CONDITIONS: You are a Unit 2 Operator. Unit 2 is operating near 100% power with core near middle of life.

ICS is NOT Available.

2-SR-3.4.2.1, Jet Pump Mismatch and Operability, is in progress and complete up to Step 7.2.

INITIATING CUE: The Unit Supervisor directs you to complete 2-SR-3.4.2.1 starting at step 7.2 and inform him of the results.

OPERATOR: _____

RO _____ DATE: _____

JPM NUMBER: RO A2

TASK NUMBER: S-000-AD-55

TASK TITLE: Condensate Booster Pump 3B Isolation Boundary

K/A NUMBER: 2.2.41 K/A RATING: RO 3.5

TASK STANDARD: Determine the isolation boundary for Condensate Booster Pump 3B

LOCATION OF PERFORMANCE: Class Room / Unit 3 Simulator

REFERENCES/PROCEDURES NEEDED:

VALIDATION TIME: 30 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ___ NO ___

RESULTS: SATISFACTORY ___ UNSATISFACTORY ___

SIGNATURE: _____ DATE: _____
EXAMINER

Neil
4/8/13

INITIAL CONDITIONS: Condensate Booster Pump 3B has a failed lube oil cooler (tube leaks).

INITIATING CUE: The Unit Supervisor directs you as a Reactor Operator to determine the isolation points for the repair work on Condensate Booster Pump 3B lube oil cooler.

Not required to generate clearance. Identify component(s) that would be required to be listed on a clearance to provide personnel and equipment safety and their required position.

Class Room

INITIAL CONDITIONS: Condensate Booster Pump 3B has a failed lube oil cooler (tube leaks).

INITIATING CUE: The Unit Supervisor directs you as a Reactor Operator to determine the isolation points for the repair work on Condensate Booster Pump 3B lube oil cooler.

Not required to generate clearance. Identify component(s) that would be required to be listed on a clearance to provide personnel and equipment safety and their required position.

START TIME_____

Performance Step 1:Critical Not Critical X

Review prints to determine required isolation boundary: 3-45E721, 0-45E763-3,
3-47E804-1, 3-47E610-2-1B, 3-45E753-3, and 3-47E844-1

Standard:

Locates and reviews prints for 3B Condensate Booster Pump lube oil cooler

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 2:Critical X Not Critical

Determines Isolation boundary

Standard:

3-SHV-002-0554 Condensate Booster Pump 3B Suction Valve Closed **and/or**
3-SHV-002-0559 Condensate Booster Pump 3B Discharge Valve Closed

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 3:Critical X Not Critical

Determines Isolation boundary

Standard:

3-SHV-024-0631B RCW to Condensate Booster Pump 3B Closed **and** 3-SHV-024-0632B
RCW from Condensate Booster Pump 3B Closed

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 4:

Critical X Not Critical

Determines Isolation boundary

Standard:

3B 4KV Unit BD Compartment 8 Racked Out, 3B Condensate Booster Pump Power Supply

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 5:

Critical X Not Critical

Determines Isolation boundary

Standard:

3B 480V TMOV BD Compartment 11E Off, Condensate Booster Pump 3B Auxiliary Oil Pump Power Supply

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 6:

Critical Not Critical X

The following equipment may be identified but are not necessary for personnel or equipment protection.

Standard:

3B Auxiliary Oil Pump Handswitch 3-HS-002-0140

3B Condensate Booster Pump Handswitch 3-HS-002-0062A

3B 4KV Unit BD Compartment 8 trip and close circuit fuses 3-FU2-002-0060A and 0060B

3-DRV-024-0674B RCW to CBP 3B Drain

3-SHV-002-0785 3B CBP H2 Injection SOV Closed

SAT__ UNSAT__ N/A __ COMMENTS: _____

END OF TASK

STOP TIME ____

OPERATOR: _____

RO _____ DATE: _____

JPM NUMBER: RO A2

TASK NUMBER: S-000-AD-55

TASK TITLE: Condensate Booster Pump 2B Isolation Boundary

K/A NUMBER: 2.2.41 K/A RATING: RO 3.5

TASK STANDARD: Determine the isolation boundary for Condensate Booster Pump 2B

LOCATION OF PERFORMANCE: Class Room / Unit 2 Simulator

REFERENCES/PROCEDURES NEEDED:

VALIDATION TIME: 30 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ___ NO ___

RESULTS: SATISFACTORY ___ UNSATISFACTORY ___

SIGNATURE: _____ DATE: _____

EXAMINER

Rec'd
4/8/13

INITIAL CONDITIONS: Condensate Booster Pump 2B has a failed lube oil cooler (tube leaks).

INITIATING CUE: The Unit Supervisor directs you as a Reactor Operator to determine the isolation points for the repair work on Condensate Booster Pump 2B lube oil cooler.

Not required to generate clearance. Identify component(s) that would be required to be listed on a clearance to provide personnel and equipment safety and their required position.

Class Room

INITIAL CONDITIONS: Condensate Booster Pump 2B has a failed lube oil cooler (tube leaks).

INITIATING CUE: The Unit Supervisor directs you as a Reactor Operator to determine the isolation points for the repair work on Condensate Booster Pump 2B lube oil cooler.

Not required to generate clearance. Identify component(s) that would be required to be listed on a clearance to provide personnel and equipment safety and their required position.

START TIME _____

Performance Step 1:Critical Not Critical X

Review prints to determine required isolation boundary: 2-45E721, 0-45E763-3,
2-47E804-1 and 2, 2-47E610-2-1B, 2-45E753-3, and 2-47E844-1

Standard:

Locates and reviews prints for 2B Condensate Booster Pump lube oil cooler

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 2:Critical X Not Critical

Determines Isolation boundary

Standard:

2-SHV-002-0554 Condensate Booster Pump 2B Suction Valve Closed **and/or**
2-SHV-002-0559 Condensate Booster Pump 2B Discharge Valve Closed

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 3:Critical X Not Critical

Determines Isolation boundary

Standard:

2-SHV-024-0631B RCW to Condensate Booster Pump 2B Closed **and** 2-SHV-024-0632B
RCW from Condensate Booster Pump 2B Closed

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:

Critical X Not Critical

Determines Isolation boundary

Standard:

2B 4KV Unit BD Compartment 8 Racked Out, 2B Condensate Booster Pump Power Supply

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 5:

Critical X Not Critical

Determines Isolation boundary

Standard:

2B 480V TMOV BD Compartment 12A Off, Condensate Booster Pump 2B Auxiliary Oil Pump Power Supply

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 6:

Critical Not Critical X

The following equipment may be identified but are not necessary for personnel or equipment protection.

Standard:

2B Auxiliary Oil Pump Handswitch 2-HS-002-0140
2B Condensate Booster Pump Handswitch 2-HS-002-0062A
2B 4KV Unit BD Compartment 8 trip and close circuit fuses 2-FU2-002-0060A and 0060B
2-DRV-024-0674B RCW to CBP 2B Drain
2-SHV-002-0785 2B CBP H2 Injection SOV Closed

SAT__ UNSAT__ N/A __ COMMENTS: _____

END OF TASK

STOP TIME ____

INITIAL CONDITIONS: Unit 3 is In Mode 1. Timing of RWCU valves in accordance with 3-SR-3.6.1.3.5(RWCU) RWCU System PCIV Operability Test is complete.

INITIATING CUE: Evaluate 3-FCV-69-1 Test Data and 3-FCV-69-2 Test Data on Appendix A and B of the RWCU System PCIV Operability Test.

Complete required portions of Appendix A and B based on recorded results.

If required, complete LCO tracking log entries in accordance with OPDP-8 Operability Determination Process and Limiting Conditions for Operation Tracking.

Class Room

INITIAL CONDITIONS: Unit 3 is In Mode 1. Timing of RWCU valves in accordance with 3-SR-3.6.1.3.5(RWCU) RWCU System PCIV Operability Test is complete.

INITIATING CUE: Evaluate 3-FCV-69-1 Test Data and 3-FCV-69-2 Test Data on Appendix A and B of the RWCU System PCIV Operability Test.

Complete required portions of Appendix A and B based on recorded results.

If required, complete LCO tracking log entries in accordance with OPDP-8 Operability Determination Process and Limiting Conditions for Operation Tracking.

START TIME_____

Performance Step 1:Critical X Not Critical

Appendix A 3-FCV-69-1 Operational Readiness

1.0 3-FCV-69-1 TEST DATA

Stroke Time Data Table

Stroke Time Acceptance Criteria Satisfied Yes ☐ No ☐Standard:

Marks NO for stroke time acceptance criteria satisfied

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 2:Critical _ Not Critical X

5.2 Review of Data from Periodic Tests (continued)

- [2] **IF** the 1st Restroke OR 2nd Restroke Measured Stroke Time (Closing) for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table is in Low Alert or High Alert, **THEN PERFORM** Step 5.2[2.1] OR Step 5.2[2.2] as follows:
(Otherwise N/A)

Standard:

Marks step 5.2[2.1] and 5.2[2.2] as NA

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 3:Critical _ Not Critical X**5.2 Review of Data from Periodic Tests (continued)**

- [5] **IF ONE** of the following conditions is satisfied:
- The As Found Stroke time (Closing) recorded in Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria,
- OR**
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND BOTH** 1st and 2nd Restroke times (Closing) are in Stroke Time Code Criteria,
- OR**
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND ANY** 1st or 2nd Restroke time is in High Alert or Low Alert **AND** an Engineering Evaluation has been completed which concludes the stroke times represent acceptable valve operation, **THEN**

MARK the condition satisfied above, **AND**

MARK Acceptance Criteria Satisfied as “Yes” in Section 1.0 Stroke Time Data Table and the STS. (Otherwise N/A)

Standard:

Marks step 5.2[5] as NA

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:Critical X Not Critical**5.2 Review of Data from Periodic Tests (continued)**

[6] **IF** Step 5.2[5] above is marked N/A, **THEN PERFORM** the following:
(Otherwise N/A)

[6.1] **DECLARE** valve 3-FCV-69-1 INOPERABLE.

[6.2] **INITIATE** the appropriate LCO actions.

[6.3] **INITIATE** SR/PER to begin corrective actions.

[6.4] **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke
Time Data Table.

Standard:

Declares 3-FCV-69-1 INOPERABLE and Marks NO on bottom of Stroke Time Data Table,
performance step 1. 5.2 step 6.2 is covered in later performance steps and 6.3 is NOT critical.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 5:Critical X Not Critical

Appendix B
3-FCV-69-2 Operational Readiness

1.0 3-FCV-69-2 TEST DATA**Stroke Time Data Table**

Stroke Time Acceptance Criteria Satisfied Yes ☐ No ☐

Standard:

Marks NO for stroke time acceptance criteria satisfied

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 6:Critical X Not Critical**2.0 3-FCV-69-2 AS FOUND STROKE TIME (continued)**

- [8] **IF** the As Found Measured Stroke Time for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table is greater than the Limiting Value listed, **THEN** **PERFORM** the following: (Otherwise N/A)

[8.1] **DECLARE** valve 3-FCV-69-2 INOPERABLE.

[8.2] **INITIATE** the appropriate LCO actions.

[8.3] **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table and the STS.

Standard:

Declares 3-FCV-69-2 INOPERABLE and Marks NO on bottom of Stroke Time Data Table, performance step 5. 2.0 step 8.2 is covered in later performance steps.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 7:Critical X Not Critical

Evaluates OPDP-8 to determine required actions

Standard:

Determines that LCO Tracking Log entries are required

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 8:

Critical X Not Critical

Logs on to Action Tracking Program

Standard:

Goes to eSOMS NPG BFN, and then to eSOMS-BFN-Action-Tracking

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 9:

Critical _ Not Critical X

Determines LCO Tracking Number

Standard:

Records LCO Tracking Number on LCO Tracking Log

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 10:

Critical X Not Critical

Determines Tech Spec LCOs

Standard:

Records Tech Spec LCO 3.6.1.3 and TRM LCO 3.4.1

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 11:

Critical ☐ Not Critical ☒

Determines reason for entry

Standard:

Records reason for entry is failed surveillance test.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 12:

Critical ☒ Not Critical

Determines Component UNID

Standard:

Records component UNID of 3-FCV-69-1 and 3-FCV-69-2

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 13:Critical ☒ Not Critical

Determines LCO Action Requirements

Standard:

Records LCO Action Requirements: 3.6.1.3 Action B.1: Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.

3.6.1.3 Action A.1: Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

3.6.1.3 Action A.2: Verify the affected penetration flow path is isolated.

TSR 3.4.1.1 Monitor reactor coolant conductivity.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 14:Critical ☒ Not Critical

Determines LCO entry date and time

Standard:

Records LCO entry date and time

SAT__ UNSAT__ N/A __ COMMENTS:_____

CUE: Use Current Date and Time

Performance Step 15:

Critical ☒ Not Critical

Determines LCO expiration date and time

Standard:

Records LCO expiration date and time:

3.6.1.3 Required Action B.1, 1 hour

3.6.1.3 Required Action A.1, 4 hours except for main steam line

3.6.1.3 Required Action A.2, Once per 31 days for isolation devices outside primary containment

TSR 3.4.1 Frequency, 4 hours when the continuous conductivity monitor is inoperable and the reactor is not in MODE 4 or 5

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 16:

Critical _ Not Critical ☒

Records Entered By

Standard:

Records his name or initials

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 17:

Critical _ Not Critical ☒

Determines Comments

Standard:

Records any comments the SRO determines are necessary

SAT__ UNSAT__ N/A __ COMMENTS:_____

END OF TASK

STOP TIME ____



Browns Ferry Nuclear Plant

Unit 3

Surveillance Procedure

3-SR-3.6.1.3.5(RWCU)

RWCU System PCIV Operability Test

Revision 0001

Quality Related

Level of Use: Continuous Use

Level of Use or Other Information: Key Number
P3950RWC

Effective Date: 01-03-2013

Responsible Organization: OPS, Operations

Prepared By: C. D. Threadgill

Approved By: Jeffery D. Morrison

BFN Unit 3	RWCU System PCIV Operability Test	3-SR-3.6.1.3.5(RWCU) Rev. 0001 Page 3 of 40
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1.0 INTRODUCTION

1.1 Purpose

This procedure provides the detailed steps to assess operational readiness of valves listed in Section 1.2.1A as required by the Inservice Testing (IST) program.

1.2 Scope

1.2.1 Operability Tests to be Performed

- A. IST-related Power Operated valve tests in scope of this SR are shown in the table below:

UNID	Description	Exercise / Stroke Time	Fall Safe
3-FCV-69-1	RWCU INBD SUCT ISOLATION VALVE	Close	N/A
3-FCV-69-2	RWCU OUTBD SUCT ISOLATION VALVE	Close	N/A

- B. This surveillance procedure verifies the isolation time (closure time) of certain power operated, automatic Primary Containment Isolation Valve (PCIV) as required by Technical Specification (Tech Specs) Surveillance Requirement (SR) 3.6.1.3.5 for 3-FCV-69-1 and 3-FCV-69-2.
- C. This surveillance procedure fully satisfies testing requirements for 3-FCV-69-1 and 3-FCV-69-2 specified in the BFN Fire Protection Report, Volume 1, by verifying that the valves can be closed from the Control Room.
- D. This procedure may be used to for Post Maintenance / Modification Testing purposes.

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1.2.2 Surveillance Requirements Fulfilled

Technical Specification surveillance requirements fully or partially fulfilled are shown in the table below:

Operability Test	Technical Specification	Full / Partial
1.2.1A	5.5.6	Partial
1.2.1B	SR 3.6.1.3.5	Partial

1.2.3 Modes

Technical Specification applicable modes and performance modes are shown in the table below:

Technical Specification	Applicable Modes	Performance Modes
5.5.6	1, 2, 3	All
3.6.1.3	1, 2, 3 ^(a)	All

^(a) and when associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

1.3 Frequency and Conditions

Valve test frequencies and required conditions are shown in the table below:

Operability Test	Frequency	Required Conditions
1.2.1A	Quarterly (92 days)	N/A
1.2.1B	Quarterly (92 days)	N/A

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2.0 REFERENCES

2.1 Performance Requirements

- A. NPG-SPP-06.9.1, Conduct of Testing
- B. NPG-SPP-10.3, Verification Program
- C. 0-TI-383, Evaluation of Test Results for the ASME OM Code Inservice Testing Program
- D. BFN Unit 3 Technical Specifications
 - 1. Section 3.6.1.3, Primary Containment Isolation Valves (PCIVs)
 - 2. Section 5.5.6, Inservice Testing Program

2.2 Developmental References

2.2.1 Procedures and Plant Instructions

- A. 3-OI-69, Reactor Water Cleanup System
- B. 0-TI-360, Containment Leak Rate Programs
- C. 0-TI-362, Inservice Testing of Pumps and Valves
- D. 3-SI-3.2.1, Inservice Testing and Augmented Inservice Testing Valve Performance
- E. NPG-SPP-06.9.2, Surveillance Test Program

2.2.2 Plant Drawings

- A. 3-47E610-69-1, Mechanical Control Diagram Reactor Water Cleanup System
- B. 3-47E810-1, Flow Diagram Reactor Water Cleanup System

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2.2.3 Other

- A. Operator Notification LER, RPT 82-16, LER 259/8232
- B. BFN Fire Protection Report, Volume 1
- C. BFN Updated Final Safety Analysis Report
 - 1. Section 4.12, Inservice Inspection and Testing
 - 2. Section 5.2, Primary Containment System
 - 3. Table 5.2-2, Principle Primary Containment Penetrations and Associated Isolation Valves
 - 4. Section 6.6, Inspection and Testing

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3.0 PRECAUTIONS AND LIMITATIONS

3.1 General

- A. All valves are returned to their initial position upon completion of this test, unless otherwise specified by Operations.
- B. If maintenance other than what is provided in this Surveillance Procedure becomes necessary, a Service Request/Work Order should be generated.
- C. Should it become necessary to change test equipment during the performance of this Surveillance Procedure, the identification number, calibration due date for the new test equipment, and the step number in which it is to be first used shall be noted in the "Remark" section of the Surveillance Task Sheet (STS).
- D. Problems during performance of this procedure shall be addressed in accordance with NPG-SPP-06.9.1, Conduct of Testing.
- E. The measured stroke times as displayed on the digital stopwatch shall be recorded in this procedure (e.g., hundredths of second with no rounding).

3.2 Technical Specifications and LCOs

- A. The following LCO may be applicable due to the performance of this procedure.

LCO	Plant Mode(s)
3.6.1.3	1, 2, 3 ^(a)

^(a) and when associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

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Date TODAY

4.0 PREREQUISITES

NOTE

The Surveillance Task Sheet (STS) may be completed as information becomes available.

4.1 Preliminary Actions

~~(1)~~ **VERIFY** this copy of 3-SR-3.6.1.3.5(RWCU) is the most current revision.

OP

~~(2)~~ **OBTAIN** a STS for this procedure and Work Activity.
(Key Number P3950RWC)

OP

~~(3)~~ **VERIFY** the Primary Containment Isolation System is not generating an isolation signal.

OP

~~(4)~~ **INDICATE** the reason for test performance, **AND**

RECORD any pertinent information (WO requiring PMT, reason for test, required Appendices, etc.) in the "Remarks" section below:

- ☒ Periodic performance
- ☐ Post Maintenance / Modification Test performance
- ☐ Other Test Performance

Remarks:

OP

~~(5)~~ **IF** reason for this test is **PERIODIC** performance, **THEN**

MARK "Test Required" for ALL valves / appendices listed in Step 6.0[7]. (Otherwise N/A)

OP

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Date TODAY

4.1 Preliminary Actions (continued)

~~(16)~~ IF reason for this test is **POST MAINTENANCE / MODIFICATION / OTHER** performance, THEN

MARK "Test Required" for ONLY those valves / appendices required in Step 6.0[7]. (Otherwise N/A)

NA

~~(17)~~ **DISCARD** all appendices NOT marked as "Test Required" in Step 6.0[7].

OP

~~(18)~~ **VERIFY** the minimum number of qualified personnel listed below are available to perform this procedure: (This does not include IV's or Peer Checks)

UO: 1

OP

4.2 Special Tools, Measuring and Test Equipment, Parts and Supplies

~~NOTE~~

The digital stopwatch M&TE ID number is recorded in each Appendix as it is performed.

~~(11)~~ **OBTAIN** digital stopwatch(es).

OP

4.3 Approvals and Notifications

~~(11)~~ **OBTAIN** the STS Authorization Signature and Date/Time from the Unit Supervisor (US) to perform this surveillance.

OP

~~(12)~~ [NRC/C] **NOTIFY** Unit 3 Unit Operator this test is commencing.
[NRC Inspection Report 82-16, LER 259/8232]

OP

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5.0 ACCEPTANCE CRITERIA

- A. Specific quantitative or qualitative requirements that are intended to be verified by this test are noted in the action steps where the verifying action is performed and recorded.
- B. Acceptance Criteria is satisfied when:
 1. As Found stroke times are in Stroke Time Code Criteria,
OR
 2. An As Found stroke time in Low Alert or High Alert **AND** all 1st and 2nd Restroke times are in Stroke Time Code Criteria,
OR
 3. As Found stroke times are in High Alert or Low Alert **AND** 1st or 2nd Restroke time is in High Alert or Low Alert **AND** an Engineering Evaluation has been completed which concludes the stroke times represent acceptable operation.
- C. If a valve stroke time is greater than the Limiting Value the valve shall be declared inoperable. An SR/PER shall be initiated to begin corrective actions and the effects on system operability shall be evaluated in accordance with the applicable Technical Specifications.
- D. An As Found stroke time in High Alert or Low Alert **AND** ALL 1st and 2nd Restroke times in Stroke Time Code Criteria are considered acceptable. An SR/PER shall be initiated to ensure a follow-up Engineering Evaluation is performed to analyze the stroke time deviations.
- E. As Found stroke time in High Alert or Low Alert **AND** ANY 1st or 2nd Restroke time is in High Alert or Low Alert requires an SR/PER to be initiated and one of the following actions to be taken:
 1. Declare the valve inoperable,
OR
 2. Complete an Engineering Evaluation within the most limiting time frame of 96 hours or applicable LCO to verify the stroke times represent acceptable valve operation.
- F. Any abnormal or erratic action observed during valve testing is considered acceptable. An SR/PER shall be initiated to ensure a follow-up Engineering Evaluation is performed to determine the need for corrective action.

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5.0 ACCEPTANCE CRITERIA (continued)

- G. The reference value(s) for valve(s) tested to satisfy Post Maintenance/Post Modification purposes shall be reconfirmed or new reference value(s) shall be determined by the IST Program engineer.

Date TODAY

6.0 PERFORMANCE

~~(11)~~ **VERIFY** Precautions and Limitations in Section 3.0 have been reviewed. OP

~~(12)~~ **VERIFY** Prerequisites listed in Section 4.0 are satisfied. OP

~~(13)~~ **RECORD** the Start Date & Time on the STS. OP

~~(14)~~ **RECORD** the initial position of RWCU INBD SUCT ISOLATION VALVE, 3-FCV-69-1.

Initial Position: OPEN ☒ CLOSE ☐
(check one) OP

~~(15)~~ **RECORD** the initial position of RWCU OUTBD SUCT ISOLATION VALVE, 3-FCV-69-2.

Initial Position: OPEN ☒ CLOSE ☐
(check one) OP

~~(16)~~ **IF** RWCU system is in service, **THEN**

SHUT DOWN the RWCU system in accordance with 3-OI-69.
(Otherwise N/A) OP

~~NOTE~~

Appendices in the following step may be performed in any order provided the steps within each appendix are performed in the order specified.

~~(17)~~ **PERFORM** the Appendices marked "Test Required", **AND**

MARK "Test Complete" for each Appendix as it is completed.

Valve(s)	Appendix	Test Required	Test Complete
3-FCV-69-1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3-FCV-69-2	B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

OP

OP

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Date TODAY

7.0 POST-PERFORMANCE ACTIVITY

7.1 Test Completion

~~(1)~~ IF ANY valve in Step 6.0[7] is **NOT** marked "Test Complete",
THEN

MARK STS as "Partial Performance." (Otherwise N/A)

OP

~~(2)~~ IF ALL valves in Step 6.0[7] are marked as "Test Complete",
THEN

MARK STS as "Complete Performance." (Otherwise N/A)

OP

~~(3)~~ IF reason for test is marked as "Periodic performance" in
Step 4.1[4] **AND** ANY valve in Step 6.0[7] is **NOT** marked
"Test Complete", **THEN**

PERFORM the following actions: (Otherwise N/A)

[3.1] **ENSURE** Scheduling has issued a conditional package
to complete the untested components.

NA

[3.2] IF component was **NOT** tested due to a Hold Order,
THEN

COORDINATE with OPS tagging to add the conditional
test package to the applicable Hold Order section
release instructions. (Otherwise N/A)

NA

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7.1 Test Completion (continued)

- [4] IF ANY valve is marked as "Engineering Evaluation Required" in the table below, THEN

VERIFY all requested evaluations of stroke time deviations have been received from Engineering and attached to this procedure. (Otherwise N/A)

Valve UNID	Engineering Evaluation Required			Reference Value Reconfirm or Determine Required	SR/PER Number
	New Stroke Time Represents Acceptable Operation	Cause of Initial Stroke Time Deviation	Abnormal/ Erratic Action Need for Corrective Action		
3-FCV-69-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3-FCV-69-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- [5] **NOTIFY** the Unit 3 Unit Operator that this Surveillance Procedure is complete. _____
- [6] **NOTIFY** the Unit Supervisor that this Surveillance Procedure is complete. _____
- [7] **RECORD** the Completion Date & Time on the STS, AND
REVIEW and **COMPLETE** the STS through the Test Director/Lead Performer & Date fields. _____
- [8] **RECORD** the Completion Date & Time in Maximo. _____

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Date _____

7.2 IST Engineer Results Review

NOTES

- 1) Formal test package review and acceptance is completed by Operations in accordance with Section 7.1 and NPG-SPP-06.9.2. The completed test package is then made available to the IST Engineer for subsequent review. Steps in Section 7.2 document administrative duties for the IST Engineer to ensure test data collected by this test package are reviewed and trended.
- 2) Steps in Section 7.2 may be performed in any order.

[1] **REVIEW** Test Data, **AND**

ENTER Test Data into IST Database.

IST Engineer

Date

[2] **IF ANY** valve is marked as "Reference Value Reconfirm or Determine Required" in the previous table of Step 7.1[4] ,
THEN

RECORD the applicable Valve UNID in the table below, **AND**

MARK Reference Value Reconfirmed OR New Reference Values Determined with reference to the Reference Worksheet Number. (Otherwise N/A)

Valve UNID	Reference Value Reconfirmed	New Reference Values Determined	Reference Worksheet No
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	

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8.0 RECORDS

The Data Package is a QA Record, is handled in accordance with the approved Document Control and Records Management Program, and contains the following:

- A. Surveillance Task Sheet
- B. Sections 4.0, 5.0, 6.0, and 7.0.
- C. Completed Appendices
- D. Other sheets added during performance.

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3-FCV-69-1 Operational Readiness

Date TODAY

1.0 3-FCV-69-1 TEST DATA

NOTE	
The Stroke Time Data Table below will be completed as data becomes available during performance of Appendix A.	

Stroke Time Data Table

3-FCV-69-1, RWCU INBD SUCT ISOLATION VALVE									
Ref. Worksheet Number: BFN-IST-2012-1448 Date: 08-01-2012									
Ref. Value	Measured Stroke Time (seconds)			Low Alert	Stroke Time Code Criteria	High Alert	Limiting Value	Abnormal or Erratic action?	
24.10	Step	O → C (Closing Time)		<20.49	20.49 to 27.71	>27.71	>30.00	No	Yes
	2.0[5]	As Found	27.81	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3.0[3]	1st Restroke	27.85	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3.0[6]	2nd Restroke	31.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
N/A	Step	C → O (Opening Time)		N/A	N/A	N/A	N/A	No	Yes
	N/A	As Found	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	1st Restroke	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	2nd Restroke	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments:									
Stroke Time Acceptance Criteria Satisfied Yes <input type="checkbox"/> No <input type="checkbox"/>									

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3-FCV-69-1 Operational Readiness

Date TODAY

CAUTION

If the reactor is pressurized, the time that 3-FCV-69-1 and 3-FCV-69-2 are closed should be minimized to ensure RWCU piping remains charged.

NOTE

Sections 2.0 and 3.0 are performed on Panel 3-9-4 unless otherwise noted.

2.0 3-FCV-69-1 AS FOUND STROKE TIME

~~(1)~~ **RECORD** the stopwatch M&TE ID number:

M&TE: TEST-SW-1

OP

~~(2)~~ **VERIFY** procedure main body Steps 6.0[4], 6.0[5], and 6.0[6] have been completed.

OP

~~(3)~~ **VERIFY OPEN** 3-FCV-69-1, using RWCU INBD SUCT ISOLATION VALVE, 3-HS-69-1.

OP

NOTES

~~(1)~~ The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.

~~(2)~~ Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

~~(4)~~ **CLOSE** and **TIME** 3-FCV-69-1 using RWCU INBD SUCT ISOLATION VALVE, 3-HS-69-1.

OP

~~(5)~~ **RECORD** the As Found Measured Stroke Time (Closing) for 3-FCV-69-1 in Section 1.0 Stroke Time Data Table.

OP

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3-FCV-69-1 Operational Readiness

Date TODAY

2.0 3-FCV-69-1 AS FOUND STROKE TIME (continued)

~~[6]~~ **COMPARE** the As Found Measured Stroke Time (Closing) for 3-FCV-69-1 with criteria specified in Section 1.0 Stroke Time Data Table, **AND**

MARK the applicable box for each valve stroke.

OP

~~[7]~~ **MARK** the applicable box (No / Yes) for EACH As Found valve stroke in Section 1.0 Stroke Time Data Table for 3-FCV-69-1 to indicate any abnormal or erratic valve action, **AND**

DESCRIBE ANY observed abnormal or erratic condition(s) in Section 1.0 Stroke Time Data Table Comments section.

OP

~~[8]~~ **IF** the As Found Measured Stroke Time for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table is greater than the Limiting Value listed, **THEN**

PERFORM the following: (Otherwise N/A)

~~[8.1]~~ **DECLARE** valve 3-FCV-69-1 INOPERABLE.

NA

~~[8.2]~~ **INITIATE** the appropriate LCO actions.

NA

~~[8.3]~~ **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table and the STS.

NA

~~[9]~~ **IF** reason for test marked in step 4.1[4] of main body of procedure is "Post Maintenance/Post Modification Test", **THEN**

MARK remaining steps in Section 2.0 N/A. (Otherwise N/A)

NA

~~[10]~~ **IF** the As Found stroke time recorded in the Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria, **THEN**

PERFORM the following: (Otherwise N/A)

~~[10.1]~~ **MARK** substeps in Step 2.0[11] N/A.

NA

~~[10.2]~~ **MARK** Section 3.0 of this appendix N/A.

NA

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3-FCV-69-1 Operational Readiness

Date TODAY

2.0 3-FCV-69-1 AS FOUND STROKE TIME (continued)

~~NOTE~~

Section 3.0 of this appendix restrokes the valve two additional times.

~~[11]~~ IF 3-FCV-69-1 cannot be restroked due to mechanical failure or other reason(s), THEN

PERFORM the following actions: (Otherwise N/A)

[11.1] DECLARE valve 3-FCV-69-1 INOPERABLE.

NA

[11.2] INITIATE the appropriate LCO actions.

↓

[11.3] MARK Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table.

[11.4] MARK Section 3.0 of this appendix "N/A."

NA

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3-FCV-69-1 Operational Readiness

Date TODA-/

3.0 3-FCV-69-1 RESTROKE TIMES

~~(1)~~ **OPEN** 3-FCV-69-1 using RWCU INBD SUCTION ISOLATION VALVE, 3-HS-69-1. OP

~~NOTES~~

~~(1)~~ The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.

~~(2)~~ Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

~~(2)~~ **CLOSE** and **TIME** 3-FCV-69-1 using RWCU INBD SUCTION ISOLATION VALVE, 3-HS-69-1. OP

~~(3)~~ **RECORD** the 1st Restroke Measured Stroke Time (Closing) for 3-FCV-69-1 in Section 1.0 Stroke Time Data Table. OP

~~(4)~~ **OPEN** 3-FCV-69-1 using RWCU INBD SUCTION ISOLATION VALVE, 3-HS-69-1. OP

~~NOTES~~

~~(1)~~ The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.

~~(2)~~ Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

~~(5)~~ **CLOSE** and **TIME** 3-FCV-69-1 using RWCU INBD SUCTION ISOLATION VALVE, 3-HS-69-1. OP

~~(6)~~ **RECORD** the 2nd Restroke Measured Stroke Time (Closing) for 3-FCV-69-1 in Section 1.0 Stroke Time Data Table. OP

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3-FCV-69-1 Operational Readiness

Date TODAY

3.0 3-FCV-69-1 RESTROKE TIMES (continued)

~~(17)~~ **COMPARE** the 1st Restroke Measured Stroke Time AND the 2nd Restroke Measured Stroke Time for 3-FCV-69-1 with criteria specified in Section 1.0 Stroke Time Data Table, **AND**

MARK the applicable box for each valve stroke.

OP

~~(18)~~ **MARK** the applicable box (No / Yes) for EACH valve restroke in Section 1.0 Stroke Time Data Table for 3-FCV-69-1 to indicate any abnormal or erratic valve action, **AND**

DESCRIBE ANY observed abnormal or erratic condition(s) in the Section 1.0 Stroke Time Data Table Comments section.

OP

4.0 RESTORATION

~~(19)~~ **RETURN** 3-FCV-69-1, to the initial position recorded in procedure main body Step 6.0[4] using RWCU INBD SUCTION ISOLATION VALVE, 3-HS-69-1. (N/A if system will remain out of service)

OP

~~(20)~~ **IF** NO further RWCU testing is to be performed, **THEN**

RETURN the RWCU system to operation as required by plant conditions in accordance with 3-OI-69. (N/A if 3-FCV-69-2 testing will be performed.)

NA

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3-FCV-69-1 Operational Readiness

Date TODAY

5.0 DATA REVIEW

5.1 General Review

~~[11]~~ IF reason for test marked in step 4.1[4] of main body of procedure is "Periodic", THEN

MARK Section 5.3 N/A. (Otherwise N/A)

NA

~~[21]~~ IF reason for test marked in step 4.1[4] of main body of procedure is NOT "Periodic", THEN

MARK Section 5.2 N/A. (Otherwise N/A)

NA

~~[31]~~ IF "Yes" was marked for ANY observation for abnormal or erratic valve action, THEN

PERFORM the following: (Otherwise N/A)

[3.1] INITIATE SR/PER to ensure a follow-up Engineering Evaluation is performed to determine the need for corrective action

NA

[3.2] MARK table in Step 7.1[4] of main body of procedure for 3-FCV-69-1 to indicate an Engineering Evaluation to determine the need for corrective action is required.

NA

5.2 Review of Data from Periodic Tests

~~[11]~~ IF the As Found stroke time (Closing) for 3-FCV-69-1 recorded in the Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria, THEN

PERFORM the following: (Otherwise N/A)

[1.1] MARK Stroke Time Acceptance Criteria Satisfied as "Yes" in the Section 1.0 Stroke Time Data Table.

NA

[1.2] MARK remaining steps in Section 5.2 N/A.

NA

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3-FCV-69-1 Operational Readiness

Date TODAY

5.2 Review of Data from Periodic Tests (continued)

[2] IF the 1st Restroke OR 2nd Restroke Measured Stroke Time (Closing) for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table is in Low Alert or High Alert, **THEN**

PERFORM Step 5.2[2.1] OR Step 5.2[2.2] as follows:
(Otherwise N/A)

[2.1] DECLARE valve 3-FCV-69-1 INOPERABLE, **AND**

INITIATE the appropriate LCO actions, **AND**

INITIATE SR/PER to begin corrective actions. _____

[2.2] NOTIFY Duty Engineer that the ASME IST Program owner must perform an evaluation of test results within the most limiting timeframe of;

☐ _____ hrs per Tech Spec LCO _____

OR

☐ Within 96 hours

Evaluation Time Restriction	
Start: Date/Time	End: Date/Time

AND

INITIATE SR/PER to ensure an Engineering Evaluation is performed to verify stroke times represent acceptable operation, **AND**

MARK table in Step 7.1[4] of main body of procedure for 3-FCV-69-1 to indicate an Engineering Evaluation to verify new stroke times represent acceptable operation. _____

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3-FCV-69-1 Operational Readiness

Date TODAY

5.2 Review of Data from Periodic Tests (continued)

~~[3]~~ IF BOTH of the 1st Restroke and 2nd Restroke Measured Stroke Times (Closing) for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table are in the Stroke Time Code Criteria, THEN

PERFORM the following: (Otherwise N/A)

[3.1] INITIATE SR/PER to ensure a follow-up Engineering Evaluation is performed to analyze the deviation between as found and restroke stroke times. NA

[3.2] MARK table in Step 7.1[4] of main body of procedure for 3-FCV-69-1 to indicate an Engineering Evaluation of stroke time deviation is required. NA

~~NOTE~~

The remainder of the procedure may be performed while waiting on evaluation of valve stroke test results in the following step.

[4] IF the evaluation of test results is not completed within the timeframe of the Evaluation Time Restriction of Step 5.2[2.2] above OR the evaluation determines the valve stroke times are unacceptable, THEN

PERFORM the following: (Otherwise N/A)

[4.1] DECLARE valve-3-FCV-69-1 INOPERABLE. _____

[4.2] PERFORM appropriate LCO action. _____

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3-FCV-69-1 Operational Readiness

Date TODAY

5.2 Review of Data from Periodic Tests (continued)

[5] **IF ONE** of the following conditions is satisfied:

- The As Found Stroke time (Closing) recorded in Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria,
OR ☐
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND BOTH** 1st and 2nd Restroke times (Closing) are in Stroke Time Code Criteria,
OR ☐
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND ANY** 1st or 2nd Restroke time is in High Alert or Low Alert **AND** an Engineering Evaluation has been completed which concludes the stroke times represent acceptable valve operation, **THEN** ☐

MARK the condition satisfied above, **AND**

MARK Acceptance Criteria Satisfied as "Yes" in Section 1.0 Stroke Time Data Table and the STS. (Otherwise N/A) _____

[6] **IF** Step 5.2[5] above is marked N/A, **THEN**

PERFORM the following: (Otherwise N/A)

- [6.1] **DECLARE** valve 3-FCV-69-1 INOPERABLE. _____
- [6.2] **INITIATE** the appropriate LCO actions. _____
- [6.3] **INITIATE** SR/PER to begin corrective actions. _____
- [6.4] **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table. _____

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3-FCV-69-1 Operational Readiness

Date TODAY

5.3 Review of Data from PMT / Other Tests

- [1] **IF ALL** stroke times (Closing) for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table are in the Stroke Time Code Criteria, **THEN**

PERFORM the following actions: (Otherwise N/A)

- | | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| [1.1] | MARK Acceptance Criteria Satisfied as "Yes" in Section 1.0 Stroke Time Data Table and the STS. | <u>NA</u> |
| [1.2] | MARK table in Step 7.1[4] in the main body of this procedure for 3-FCV-69-1 to indicate reference value reconfirmation or determination is required. | <u>NA</u> |
| [1.3] | MARK remaining steps in Section 5.3 N/A. | <u>NA</u> |

- [2] **IF ANY** stroke time (Closing) for 3-FCV-69-1 recorded in Section 1.0 Stroke Time Data Table is in Low Alert, High Alert, or Limiting Value, **THEN**

PERFORM the following actions: (Otherwise N/A)

- | | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| [2.1] | NOTIFY engineering to perform an evaluation to determine acceptability of new stroke times. | <u>NA</u> |
| [2.2] | MARK table in Step 7.1[4] in the main body of this procedure for 3-FCV-69-1 to indicate reference value reconfirmation or determination is required. | <u>NA</u> |

NOTE

The remainder of the procedure may be performed while waiting on evaluation of valve stroke test results in the following step.

- | | | |
|-----|------------------------------------------------------------|-----------|
| [3] | ENSURE engineering evaluation of stroke times is complete. | <u>NA</u> |
|-----|------------------------------------------------------------|-----------|

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3-FCV-69-2 Operational Readiness

Date TODAY

1.0 3-FCV-69-2 TEST DATA

NOTE
The Stroke Time Data Table below will be completed as data becomes available during performance of Appendix B.

Stroke Time Data Table

3-FCV-69-2, RWCU OUTBD SUCT ISOLATION VALVE

Ref. Worksheet Number: BFN-IST-2012-1449 Date: 08-01-2012

Ref. Value	Measured Stroke Time (seconds)			Low Alert	Stroke Time Code Criteria	High Alert	Limiting Value	Abnormal or Erratic action?	
20.00	Step	O → C (Closing Time)		<17.00	17.00 to 23.00	>23.00	>30.00	No	Yes
	2.0[5]	As Found	30.08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3.0[3]	1st Restroke		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.0[6]	2nd Restroke		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N/A	Step	C → O (Opening Time)		N/A	N/A	N/A	N/A	No	Yes
	N/A	As Found	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	1st Restroke	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	2nd Restroke	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments:									
Stroke Time Acceptance Criteria Satisfied						Yes <input type="checkbox"/>	No <input type="checkbox"/>		

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3-FCV-69-2 Operational Readiness

Date TODAY

CAUTION

If the reactor is pressurized, the time that 3-FCV-69-1 and 3-FCV-69-2 are closed should be minimized to ensure RWCU piping remains charged.

NOTE

Sections 2.0 and 3.0 are performed on Panel 3-9-4 unless otherwise noted.

2.0 3-FCV-69-2 AS FOUND STROKE TIME

~~(11)~~ **RECORD** the stopwatch M&TE ID number:

M&TE: TEST-SW-1 OP

~~(12)~~ **VERIFY** procedure main body Steps 6.0[4], 6.0[5], and 6.0[6] have been completed. OP

~~(13)~~ **VERIFY OPEN** 3-FCV-69-2, using RWCU OUTBD SUCTION VALVE, 3-HS-69-2A. OP

NOTES

~~(14)~~ The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.

~~(15)~~ Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

~~(16)~~ **CLOSE** and **TIME** 3-FCV-69-2 using RWCU OUTBD SUCTION VALVE, 3-HS-69-2A. OP

~~(17)~~ **RECORD** the As Found Measured Stroke Time (Closing) for 3-FCV-69-2 in Section 1.0 Stroke Time Data Table. OP

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3-FCV-69-2 Operational Readiness

Date TODAY

2.0 3-FCV-69-2 AS FOUND STROKE TIME (continued)

~~[6]~~ **COMPARE** the As Found Measured Stroke Time (Closing) for 3-FCV-69-2 with criteria specified in Section 1.0 Stroke Time Data Table, **AND**

MARK the applicable box for each valve stroke.

OP

~~[7]~~ **MARK** the applicable box (No / Yes) for EACH As Found valve stroke in Section 1.0 Stroke Time Data Table for 3-FCV-69-2 to indicate any abnormal or erratic valve action, **AND**

DESCRIBE ANY observed abnormal or erratic condition(s) in Section 1.0 Stroke Time Data Table Comments section.

OP

[8] **IF** the As Found Measured Stroke Time for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table is greater than the Limiting Value listed, **THEN**

PERFORM the following: (Otherwise N/A)

[8.1] **DECLARE** valve 3-FCV-69-2 INOPERABLE.

[8.2] **INITIATE** the appropriate LCO actions.

[8.3] **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table and the STS.

~~[9]~~ **IF** reason for test marked in step 4.1[4] of main body of procedure is "Post Maintenance/Post Modification Test", **THEN**

MARK remaining steps in Section 2.0 N/A. (Otherwise N/A)

NA

~~[10]~~ **IF** the As Found stroke time recorded in the Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria, **THEN**

PERFORM the following: (Otherwise N/A)

~~[10.1]~~ **MARK** substeps in Step 2.0[11] N/A.

NA

~~[10.2]~~ **MARK** Section 3.0 of this appendix N/A.

NA

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3-FCV-69-2 Operational Readiness

Date TODAY

2.0 3-FCV-69-2 AS FOUND STROKE TIME (continued)

~~NOTE~~

Section 3.0 of this appendix restrokes the valve two additional times.

~~[11]~~ IF 3-FCV-69-2 cannot be restroked due to mechanical failure or other reason(s), THEN

PERFORM the following actions: (Otherwise N/A)

[11.1] DECLARE valve 3-FCV-69-2 INOPERABLE.

NA

[11.2] INITIATE the appropriate LCO actions.

NA

[11.3] MARK Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table.

NA

[11.4] MARK Section 3.0 of this appendix "N/A."

NA

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3-FCV-69-2 Operational Readiness

Date TODAY

3.0 3-FCV-69-2 RESTROKE TIMES

- [1] **OPEN** 3-FCV-69-2 using RWCU OUTBD SUCT ISOLATION VALVE, 3-HS-69-2A. _____

NOTES

- 1) The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.
- 2) Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

- [2] **CLOSE** and **TIME** 3-FCV-69-2 using RWCU OUTBD SUCT ISOLATION VALVE, 3-HS-69-2A. _____

- [3] **RECORD** the 1st Restroke Measured Stroke Time (Closing) for 3-FCV-69-2 in Section 1.0 Stroke Time Data Table. _____

- [4] **OPEN** 3-FCV-69-2 using RWCU OUTBD SUCT ISOLATION VALVE, 3-HS-69-2A. _____

NOTES

- 1) The next step starts a timed sequence. Stroke time measurement starts when the handswitch is placed to CLOSE, and stops when the Green light at the handswitch illuminates and the Red light extinguishes.
- 2) Observation of handswitch lights to detect abnormal or erratic action of the valve is required during valve stroke time testing.

- [5] **CLOSE** and **TIME** 3-FCV-69-2 using RWCU OUTBD SUCT ISOLATION VALVE, 3-HS-69-2A. _____

- [6] **RECORD** the 2nd Restroke Measured Stroke Time (Closing) for 3-FCV-69-2 in Section 1.0 Stroke Time Data Table. _____

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3-FCV-69-2 Operational Readiness

Date TODAY

3.0 3-FCV-69-2 RESTROKE TIMES (continued)

- [7] **COMPARE** the 1st Restroke Measured Stroke Time AND the 2nd Restroke Measured Stroke Time for 3-FCV-69-2 with criteria specified in Section 1.0 Stroke Time Data Table, **AND**

MARK the applicable box for each valve stroke. _____

- [8] **MARK** the applicable box (No / Yes) for EACH valve restroke in Section 1.0 Stroke Time Data Table for 3-FCV-69-2 to indicate any abnormal or erratic valve action, **AND**

DESCRIBE ANY observed abnormal or erratic condition(s) in the Section 1.0 Stroke Time Data Table Comments section. _____

4.0 RESTORATION

- [1] **RETURN** 3-FCV-69-2, to the initial position recorded in procedure main body Step 6.0[4] using RWCU OUTBD SUCTION ISOLATION VALVE, 3-HS-69-2A. (N/A if system will remain out of service) _____

- [2] **IF** NO further RWCU testing is to be performed, **THEN**

RETURN the RWCU system to operation as required by plant conditions in accordance with 3-OI-69. (N/A if 3-FCV-69-1 testing will be performed.) _____

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3-FCV-69-2 Operational Readiness

Date Today

5.0 DATA REVIEW

5.1 General Review

- ☒ **IF** reason for test marked in step 4.1[4] of main body of procedure is "Periodic", **THEN**

MARK Section 5.3 N/A. (Otherwise N/A) _____

- [2] **IF** reason for test marked in step 4.1[4] of main body of procedure is NOT "Periodic", **THEN**

MARK Section 5.2 N/A. (Otherwise N/A) _____

- [3] **IF** "Yes" was marked for ANY observation for abnormal or erratic valve action, **THEN**

PERFORM the following: (Otherwise N/A)

- [3.1] **INITIATE** SR/PER to ensure a follow-up Engineering Evaluation is performed to determine the need for corrective action _____

- [3.2] **MARK** table in Step 7.1[4] of main body of procedure for 3-FCV-69-2 to indicate an Engineering Evaluation to determine the need for corrective action is required. _____

5.2 Review of Data from Periodic Tests

- [1] **IF** the As Found stroke time (Closing) for 3-FCV-69-2 recorded in the Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria, **THEN**

PERFORM the following: (Otherwise N/A)

- [1.1] **MARK** Stroke Time Acceptance Criteria Satisfied as "Yes" in the Section 1.0 Stroke Time Data Table. _____

- [1.2] **MARK** remaining steps in Section 5.2 N/A. _____

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3-FCV-69-2 Operational Readiness

Date TODAY

5.2 Review of Data from Periodic Tests (continued)

- [2] **IF** the 1st Restroke OR 2nd Restroke Measured Stroke Time (Closing) for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table is in Low Alert or High Alert, **THEN**

PERFORM Step 5.2[2.1] OR Step 5.2[2.2] as follows:
(Otherwise N/A)

- [2.1] **DECLARE** valve 3-FCV-69-2 INOPERABLE, **AND**

INITIATE the appropriate LCO actions, **AND**

INITIATE SR/PER to begin corrective actions. _____

- [2.2] **NOTIFY** Duty Engineer that the ASME IST Program owner must perform an evaluation of test results within the most limiting timeframe of;

☐ _____ hrs per Tech Spec LCO _____

OR

☐ Within 96 hours

Evaluation Time Restriction	
Start: Date/Time	End: Date/Time

AND

INITIATE SR/PER to ensure an Engineering Evaluation is performed to verify stroke times represent acceptable operation, **AND**

MARK table in Step 7.1[4] of main body of procedure for 3-FCV-69-2 to indicate an Engineering Evaluation to verify new stroke times represent acceptable operation. _____

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3-FCV-69-2 Operational Readiness

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5.2 Review of Data from Periodic Tests (continued)

- [3] **IF BOTH** of the 1st Restroke and 2nd Restroke Measured Stroke Times (Closing) for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table are in the Stroke Time Code Criteria, **THEN**

PERFORM the following: (Otherwise N/A)

- [3.1] **INITIATE** SR/PER to ensure a follow-up Engineering Evaluation is performed to analyze the deviation between as found and restroke stroke times. _____
- [3.2] **MARK** table in Step 7.1[4] of main body of procedure for 3-FCV-69-2 to indicate an Engineering Evaluation of stroke time deviation is required. _____

NOTE

The remainder of the procedure may be performed while waiting on evaluation of valve stroke test results in the following step.

- [4] **IF** the evaluation of test results is not completed within the timeframe of the Evaluation Time Restriction of Step 5.2[2.2] above **OR** the evaluation determines the valve stroke times are unacceptable, **THEN**

PERFORM the following: (Otherwise N/A)

- [4.1] **DECLARE** valve-3-FCV-69-2 INOPERABLE. _____
- [4.2] **PERFORM** appropriate LCO action. _____

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3-FCV-69-2 Operational Readiness

Date TODAY

5.2 Review of Data from Periodic Tests (continued)

[5] **IF ONE** of the following conditions is satisfied:

- The As Found Stroke time (Closing) recorded in Section 1.0 Stroke Time Data Table is in Stroke Time Code Criteria,
OR ☐
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND BOTH** 1st and 2nd Restroke times (Closing) are in Stroke Time Code Criteria,
OR ☐
- The As Found stroke time (Closing) is in High Alert or Low Alert **AND ANY** 1st or 2nd Restroke time is in High Alert or Low Alert **AND** an Engineering Evaluation has been completed which concludes the stroke times represent acceptable valve operation, **THEN** ☐

MARK the condition satisfied above, **AND**

MARK Acceptance Criteria Satisfied as "Yes" in Section 1.0 Stroke Time Data Table and the STS. (Otherwise N/A) _____

[6] **IF** Step 5.2[5] above is marked N/A, **THEN**

PERFORM the following: (Otherwise N/A)

- [6.1] **DECLARE** valve 3-FCV-69-2 INOPERABLE. _____
- [6.2] **INITIATE** the appropriate LCO actions. _____
- [6.3] **INITIATE** SR/PER to begin corrective actions. _____
- [6.4] **MARK** Acceptance Criteria Satisfied as "No" in the Section 1.0 Stroke Time Data Table. _____

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3-FCV-69-2 Operational Readiness

Date TODAY

5.3 Review of Data from PMT / Other Tests

- [1] **IF** ALL stroke times (Closing) for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table are in the Stroke Time Code Criteria, **THEN**

PERFORM the following actions: (Otherwise N/A)

- [1.1] **MARK** Acceptance Criteria Satisfied as "Yes" in Section 1.0 Stroke Time Data Table and the STS. NA

- [1.2] **MARK** table in Step 7.1[4] in the main body of this procedure for 3-FCV-69-2 to indicate reference value reconfirmation or determination is required. NA

- [1.3] **MARK** remaining steps in Section 5.3 N/A. NA

- [2] **IF** ANY stroke time (Closing) for 3-FCV-69-2 recorded in Section 1.0 Stroke Time Data Table is in Low Alert, High Alert, or Limiting Value, **THEN**

PERFORM the following actions: (Otherwise N/A)

- [2.1] **NOTIFY** engineering to perform an evaluation to determine acceptability of new stroke times. NA

- [2.2] **MARK** table in Step 7.1[4] in the main body of this procedure for 3-FCV-69-2 to indicate reference value reconfirmation or determination is required. NA

NOTE

The remainder of the procedure may be performed while waiting on evaluation of valve stroke test results in the following step.

- [3] **ENSURE** engineering evaluation of stroke times is complete. NA

JPM A3

OPERATOR: _____

RO _____ SRO _____ DATE: _____

JPM NUMBER: Admin RO/SRO A3

TASK NUMBER: Radiation Control

TASK TITLE: Calculate Airborne Effluent Release Rate IAW 0-SI-4.8.b.1.a.1

K/A NUMBER: 2.3.11 K/A RATING: RO 3.8 SRO 4.3

PRA:

TASK STANDARD: Calculate Building Ventilation Release Fraction and determine acceptance criteria met. Calculate Stack Release Fraction and determine that acceptance criteria NOT met. Calculate Total Site Release Fraction and determine acceptance criteria met.

LOCATION OF PERFORMANCE: Classroom

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

VALIDATION TIME: 15 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

Rec'd
4/8/13

INITIAL CONDITIONS: You are an extra operator on Dayshift Friday. The Control Bay AUO has partially completed the appropriate Attachments of 0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate.

INITIATING CUE: The Shift Manager directs you to complete the remainder 0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate, starting at [10.2] and stopping at [12], calculate all three release rate fractions ONLY.

NOTE: The Control Bay AUO has gathered all required data; therefore, some subsequent steps after [10.2] may be completed.

Classroom

INITIAL CONDITIONS: You are an extra operator on Dayshift Friday. The Control Bay AUO has partially completed the appropriate Attachments of 0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate.

INITIATING CUE: The Shift Manager directs you to complete the remainder 0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate, starting at [10.2] and stopping at [12], calculate all three release rate fractions ONLY.

NOTE: The Control Bay AUO has gathered all required data; therefore, some subsequent steps after [10.2] may be completed.

START TIME _____

Performance Step 1:Critical ☒ Not Critical

[10.2] For each monitor, **USE** Attachments 3 and 5 and **DETERMINE** the release factor based on fan status. **RECORD** the release factors from attachment 5 in the appropriate columns on Attachment 4.

[10.3] **MULTIPLY** the release rate by the release factor and **RECORD** the answer under the column labeled "Actual Rate" on Attachment 4.

Standard:

Determines the release factor for each building based on fan status using attachments 3 and 5 and records in the release factor column on attachment 4.

Multiplies the Release Rate from the RM-90-250, RM-90-249, and the RM-90-251 by the Release Factor to determine the Actual Rate; candidate will perform this action for each Unit as well as the Radwaste Building (0-RM-90-252) and record the data on Attachment 4. Refer to Answer Sheet for correct values or see below.

Unit 1	Unit 2	Unit 3	Radwaste
<u>Reactor Building</u> (1-RM-90-250) $4000 \times 0.64 = 2560$	<u>Reactor Building</u> (2-RM-90-250) $3400 \times 0.73 = 2482$	<u>Reactor Building</u> (3-RM-90-250) $3100 \times 0.69 = 2139$	0-RM-90-252 $226 \times 0.62 = 140$
<u>Turbine Building</u> (1-RM-90-249) $500 \times 0.75 = 375$ (1-RM-90-251) $910 \times 0.80 = 728$	<u>Turbine Building</u> (2-RM-90-249) $840 \times 1.00 = 840$ (2-RM-90-251) $2200 \times 1.00 = 2200$	<u>Turbine Building</u> (3-RM-90-249) $1600 \times 0.40 = 640$ (3-RM-90-251) $1900 \times 0.75 = 1425$	

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 2:Critical X Not Critical

[10.4] 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 Attachment 4.

Standard:

Sums the Actual Rates from the RM-90-249, RM-90-250, and RM-90-251 monitors for each Unit and records the Total Release Rate for each Unit on Attachment 4. Refer to Answer Sheet for correct values or see below.

Unit 1	Unit 2	Unit 3
$2560 + 375 + 728 = 3663$	$2482 + 840 + 2200 = 5522$	$2139 + 640 + 1425 = 4204$

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 3:Critical X Not Critical

[10.5] **SUM** the three unit total release rates and the 0-RM-90-252 actual rate. **RECORD** the building ventilation release rate on Attachment 4.

Standard:

Sums each Units Total Release Rate and the Radwaste Building Actual Release Rate (0-RM-90-252) and records the Building Ventilation Release Rate on Attachment 4. Refer to Answer Sheet for correct value or see below.

<u>Unit 1</u>		<u>Unit 2</u>		<u>Unit 3</u>		<u>Radwaste</u>		<u>Total</u>
3663	+	5522	+	4204	+	140	=	13529

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:Critical ☒ Not Critical**NOTE**

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

EXAMPLES

A release fraction of 0.12345 should be recorded as 0.123.

A release fraction of 0.00012 should be recorded as 0.000.

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

Standard:

Divides the Total Building Ventilation Release Rate by 150,000 $\mu\text{Ci/sec}$ and determines the Building Ventilation Release Fraction; records on Attachment 2 and 4. Refer to Answer Sheet for correct value or see below.

$$13529 / 150,000 = \mathbf{0.090}$$

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 5:Critical ☒ Not Critical

- [10.7] **VERIFY** the acceptance criteria as given in Step 6.0B.1 has been met. The building ventilation release fraction must be less than or equal to 0.90. **IF** the acceptance criteria have failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC)

Standard:

Determines Building Ventilation Release Fraction is less than 0.90 and **MEETS** acceptance criteria.

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 6:Critical Not Critical ☒

- [11] **DETERMINE** the elevated (stack) noble gas release rate once per shift by completing the following steps:

- [11.1] **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:

- [11.1.1] **IF** both the 0-RR-90-147 and at least one of the radiation monitors are operable, **THEN OBTAIN** the necessary information from 0-RR-90-147 on Panel 9-2. **IF** applicable, **THEN RECORD** "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.

Standard:

Steps [11.1] and [11.1.1] have already been completed and the data has been recorded on Attachment 6. Steps [11.1.2] and [11.2.3] are not applicable and will not be performed

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 7:Critical Not Critical X**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 7.0[11.2] and 7.0[11.3] are **NOT** applicable.

[11.2] **DETERMINE** the stack flow rate and **RECORD** in the appropriate column of Attachment 6.

[11.2.1] **IF** 0-FI-90-271 on Panel 1-9-53 is operable, **THEN RECORD** the stack flow in standard cubic feet per minute (scfm).

Standard:

Steps [11.2] and [11.2.1] have already been completed and the data has been recorded on Attachment 6. Steps [11.2.2] and [11.2.3] are not applicable and will not be performed

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 8:Critical X Not Critical

[11.3] **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, **THEN**

CONTINUE with Step 7.0[11.4].

Total Stack Flow (scfm) x Gross Count Rate (cps) x 1.23 E-03 [(μCi/sec)/(cps-scfm)]

Standard:

Determines that the Highest Gross Count Rate is the 0-RM-90-147 (Red Pen) and records this reading on Attachment 6; calculates the Stack Release Rate by multiplying Total Stack Flow, the Highest Gross Count Rate, and 1.23 E-03 [(μCi/sec) together. Refer to Answer Sheet for correct value or see below.

$$22700 \times 4.55 \times 10^5 \times 1.23 \times 10^{-3} = 1.27 \times 10^7 \text{ (units)}$$

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 9:Critical X Not Critical

[11.4] **RECORD** in the appropriate column of Attachment 6 either the release rate calculated in Step 7.0[11.3] or as reported by the Chemical Laboratory for an inoperable monitor.

Standard:

Records the Stack Release Rate calculated in previous step on Attachment 6.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 10:Critical Not Critical X**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.

[11.5] Wide Range Gaseous Effluent Radiation Monitor (WRGERM), 0-RM-90-306, Panel 2-9-10.

[11.5.1] IF the monitor is inoperable, THEN

RECORD "INOP" in the appropriate column of Attachment 6 and CONTINUE with Step 7.0[11.6]. Otherwise, CONTINUE with Step 7.0[11.5.2].

[11.5.2] ENSURE 0-RM-90-306 is in the Sample Mode.

[11.5.3] 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).

Standard:

Step [11.5], [11.5.2], and [11.5.3] have already been completed and the data has been recorded on Attachment 6; steps [11.5.1] and [11.6] are not applicable and will not be performed

SAT__ UNSAT__ N/A __ COMMENTS:_____

Performance Step 11:Critical Not Critical X[11.7] **IF** all release streams to the stack are isolated, **THEN**

USE a release rate factor of 0.00. Otherwise, **USE** 1.00. **RECORD** the release rate factor in the appropriate column of Attachment 6.

Standard:

Step [11.7] has already been completed and a Release Rate Factor of 1.00 has already been recorded on Attachment 6.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 12:Critical X Not Critical

[11.8] **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.

Standard:

Records the Highest Stack Release Rate (Stack Release) on Attachment 6; calculates the Actual Release Rate by multiplying the Highest Stack Release Rate (Stack Release) by the Release Rate Factor (1.00) determined in previous step; records on Attachment 6. Refer to Answer Sheet for correct value or see below.

$$1.27 \times 10^7 \times 1.00 = 1.27 \times 10^7$$

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 13:Critical X Not Critical**NOTE**

For reporting purposes, the release fractions should only be recorded to three decimal places.

EXAMPLES

A release fraction of 0.12345 should be recorded only as 0.123.

A release fraction of 0.00012 should be recorded only as 0.000.

[11.9] **CALCULATE** the stack release fraction by dividing the actual release rate by 1.44 E+07 (or 14,400,000) $\mu\text{Ci/sec}$. **RECORD** this information on both Attachment 2 and Attachment 6.

Standard:

Calculates the Stack Release Fraction by dividing the Actual Release Rate determined in previous step by 14,400,000 $\mu\text{Ci/sec}$; records this data on Attachment 2 and 6. Refer to Answer Sheet for correct value or see below.

$$1.27 \times 10^7 / 1.44 \times 10^7 = .882$$

SAT__ UNSAT__ N/A__ COMMENTS: _____

Performance Step 14:Critical X Not Critical

[11.10] **VERIFY** the acceptance criteria as given in Step 6.0B.2 has been met. The stack release fraction must be less than or equal to 0.10. IF the acceptance criterion has failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC) 

Standard:

Determines that the Stack Release Fraction **DOES NOT MEET** the Acceptance Criteria

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 15:Critical X Not Critical

[12] **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 6.0B.3 has been met. **IF** the acceptance criterion has failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC)

Standard:

Calculates the Total Site Release Fraction by adding the Building Ventilation Release Rate Fraction and the Stack Release Rate Fraction; records this data on Attachment 2. Refer to Answer Sheet for correct value or see below. Determines that it **MEETS** Acceptance Criteria.

$$0.090 + .882 = .972$$

SAT__ UNSAT__ N/A __ COMMENTS: _____

STOP TIME _____

END OF TASK



Browns Ferry Nuclear Plant

Unit 0

Surveillance Instruction

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

Airborne Effluent Release Rate

Revision 0056

Quality Related

Level of Use: Reference Use

Level of Use or Other Information: Key Number P1470

Effective Date: 05-24-2012

Responsible Organization: CEM, Chemistry

Prepared By: J. Mike Marshall

Approved By: Johnnie S. Black

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Current Revision Description

Pages Affected 9, 11, 22, 42-46.

Type of Change: Revision

Tracking Number: 065

PER N/A DCN 70285

Added Annotations on pages 44 & 46. PCR 12000782

Changed recorder designation from FR-066-0111 to XR-66-103 in several places due to changes made by DCN 70285.

Also changed H2R-66-96 to XR-66-103.

Changed the wording in step 7.0[13.4], for clarification.

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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:

- Airborne effluent release rates in accordance with ODCM Surveillance Requirement 2.2.2.1.1.a.
- The instrumentation checks required by ODCM Table 2.1-2.
- 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.
- The WRGERMS instrumentation check required by TABLE 3.3.5-1 of the TRM.
- Attachment 11 is used to record data during EOI's and REP conditions.

1.2 Scope

- 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.
- 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.
- 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 ensure ODCM Control 1.2.2.1 limits are satisfied.

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1.2 Scope (continued)

- 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.

- 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

The normal performance band for this SI is one week. The procedure will typically start at 0700 Friday and end 0659 the following Friday.

Once per shift, the following checks will be made:

- Release rate information will be obtained for each effluent stream having continuous monitoring capabilities.
- The overall site release rate will be calculated from the release rate information.
- Offgas pretreatment and post-treatment monitors, offgas flow rate, and offgas hydrogen concentration will be recorded during main condenser and offgas treatment systems operations.
- The WRGERMS instrumentation operability will be demonstrated by an instrumentation check.

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

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2.0 REFERENCES

Browns Ferry Nuclear Plant Technical Requirements Manual (TRM).

Updated Final Safety Analysis Report (UFSAR)

- Section 7.12, Process Radiation Monitoring.
- Section 9.5, Gaseous Radwaste System (Modified).

Operating Instructions (OI)

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

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.

Technical Instructions (TI)

- TI-15, Radioactive Gaseous Effluent Engineering Calculations and Measurements.
- 0-TI-336, Continuous Air Monitor Flow Regulator Adjustment.

Offsite Dose Calculation Manual (ODCM).

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

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

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Date TODAY

2.0 REFERENCES (continued)

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.

Memorandum from M. Bajestani to J. W. Sabados, Subject: Steam Packing Exhauster flow (R40 911018 914).

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

Technical Requirements Manual

Memorandum from Rick Givens to Phil Chadwell, Subject: Stack Flow Requirements (R70 980730 843) [BFPER980545].

NPG-SPP-06.9.2 Surveillance Test Program

~~3.0~~

PRECAUTIONS AND LIMITATIONS

[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]

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~~

PREREQUISITES

~~(1)~~

VERIFY this copy of the procedure is the most current revision.

OP

~~(2)~~

OBTAIN a Surveillance Task Sheet (STS) for this procedure and Work Activity. (Key Number P1470)

OP

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5.0 SPECIAL TOOLS AND EQUIPMENT RECOMMENDED

None

6.0 ACCEPTANCE CRITERIA

- A. 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).
- B. 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.
 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 $1.50 \text{ E}+05 \text{ } \mu\text{Ci/sec}$.
 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 $1.44 \text{ E}+07 \text{ } \mu\text{Ci/sec}$.
 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.
 4. Compensatory sampling measures must be initiated whenever a radiation monitor is out of service and effluent releases are continuing via that release point.

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6.0 ACCEPTANCE CRITERIA (continued)

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

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 MODES 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-XR-66-103 (low or high range indicators)	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 7.0[9.5], 7.0[10.1.3], and/or 7.0[11.1.3].

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6.0 ACCEPTANCE CRITERIA (continued)

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 7.0[9.5], 7.0[10.1.3], and/or 7.0[11.1.3]. 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

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6.0 ACCEPTANCE CRITERIA (continued)

- D. 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 XR-66-103 Hydrogen Analyzer or as determined from off gas grab samples.
- E. Acceptance criteria determination steps will be designated by (AC).
- F. The off gas pretreatment radiation levels (1-, 2-, and 3-RM-090-0157) and the off gas flow rate (1-XR-066-103, 2-XR-66-103, and 3-XR-66-103) instrumentation readings are required for monitoring system performance and for failed fuel performance calculations. There is no Technical Specification surveillance requirements associated with these observations. The observation will be made shiftly during periods of main condenser/offgas treatment system operation.
- G. In the event that 1-, 2-, or 3-PA-090-0262 is inoperable, but 1-, 2, or 3 RM-090-0265 or 0266 is operable, the off gas post treatment flow must be recorded at least once every 4 hours and the flow must be at least 0.06 cfm. If both 1-, 2, or 3 RM-090-0265 and 0266 are inoperable a flow is not required. If the flow acceptance criteria is not met, declare 1-, 2, or 3 RM-090-0265 and 0266 inoperable and notify Chemistry to initiate 1-, 2, or 3-SI-4.8.B.1.a.3.

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Date TODAY

7.0 PROCEDURE STEPS

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.

(11) **OBTAIN** permission from the Unit 1 Unit Supervisor to perform this instruction.

GW
U1

(12) **OBTAIN** permission from the Unit 2 Unit Supervisor to perform this instruction.

MG
U2

(13) **OBTAIN** permission from the Unit 3 Unit Supervisor to perform this instruction.

OK
U3

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

DH

(15) On the Surveillance Task Sheet (STS)

RECORD the Start Date & Time.

OP

NOTE

SI step performance and acceptance criteria verification are to be noted on the appropriate SI attachments for Steps 7.0[6] through 7.0[15]

(16) **REVIEW** the Precautions and Limitations in Section 3.0. **INITIAL** on Attachment 2.

(17) **ENSURE** that all Prerequisites in Section 4.0 have been met. **INITIAL** on Attachment 2.

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7.0 PROCEDURE STEPS (continued)

~~(8)~~ **OBTAIN** the following information.

~~[8.1]~~ Once per shift, **RECORD** on Attachment 2 each unit's 8 hour average power level in megawatts thermal (MWT). IF shutdown, THEN

ENTER 0.

~~NOTE~~

Due to variations in required performance frequency and to minimize impact on personnel, Steps 7.0[9], 7.0[10], and 7.0[11] through 7.0[15] 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 7.0[11] can be completed.

~~(9)~~ Fan Status Determination

~~[9.1]~~ RM-90-249

~~[9.1.1]~~ 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.

~~[9.1.2]~~ Once per day (night shift): IF all fans serviced by this CAM are off and the monitor is out of service, **THEN**

VERIFY the exhausts' fan control switches are tagged out of service and **VERIFY** the fan dampers are closed.

~~[9.2]~~ RM-90-250

~~[9.2.1]~~ 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.

~~[9.3]~~ RM-90-251

~~[9.3.1]~~ 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.

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7.0 PROCEDURE STEPS (continued)

~~[9.3.2]~~ Once per day (Night shift): **IF** all fans serviced by this CAM are off and the monitor is out of service, **THEN**

ENSURE the exhausts' fan control switches are tagged out of service and **VERIFY** the fan dampers are closed.

~~[9.4]~~ 0-RM-90-252 (Unit 1 Only)

~~[9.4.1]~~ 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.

~~[9.5]~~ **IF** any of the indicated fans (stack dilution or CAM) are operating and the corresponding monitor is declared inoperable, **THEN**

CONTACT the Chemical Laboratory and **ENSURE** that compensatory sampling in accordance with 0-SI-4.8.B.1.a.2 is being conducted.

~~[9.6]~~ 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.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 15 of 56
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Date TODAY

7.0 PROCEDURE STEPS (continued)

~~(10)~~ **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 **OPERABLE**:

~~(10.1)~~ For each monitor listed on Attachment 4, **COMPLETE** one of the **FOLLOWING** four steps:

~~(10.1.1)~~ From the CONTINUOUS AIR MONITORING SYSTEM OPERATOR CONSOLE, 0-CONS-90-361, **PANEL 1-9-2**, **OBTAIN** the noble gas release rate by **USING** the touchscreen options on the console. **SELECT** the noble gas option on the screen (NGAS). **RECORD** the noble gas release rate ($\mu\text{Ci/sec}$) in the appropriate columns of Attachment 4 for each operable building ventilation radiation monitor. The radiation monitor should register a positive release rate; **OTHERWISE, DECLARE** the monitor inoperable. This recording is performed as an Instrument Check (**CHANNEL CHECK**).

[10.1.2] **IF** the operator console 0-CONS-90-361 is **NOT** available and the CAMs are operating, **THEN**

NA **OBTAIN** the release rate data from the local display on each CAM by **SELECTING** channel 1 with the thumb wheel or directly reading the Chemistry CAM display. The radiation monitor should register a positive release rate; **OTHERWISE, DECLARE** the monitor inoperable. This recording is performed as an Instrument Check (**CHANNEL CHECK**).

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 16 of 56
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Date TODAY

~~2.0~~ **PROCEDURE STEPS (continued)**

~~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.

NA [10.1.3] 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.

NA [10.1.4] **IF** the ventilation system for a CAM is totally isolated (i.e., no environmental releases occurring), **THEN**
RECORD "OOS" in all three columns on Attachment 4.

[10.2] For each monitor, **USE** Attachments 3 and 5 and **DETERMINE** the release factor based on fan status. **RECORD** the release factors from attachment 5 in the appropriate columns on Attachment 4.

[10.3] **MULTIPLY** the release rate by the release factor and **RECORD** the answer under the column labeled "Actual Rate" on Attachment 4.

[10.4] 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 Attachment 4.

[10.5] **SUM** the three unit total release rates and the 0-RM-90-252 actual rate. **RECORD** the building ventilation release rate on Attachment 4.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 17 of 56
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7.0 PROCEDURE STEPS (continued)

NOTE

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

EXAMPLES

A release fraction of 0.12345 should be recorded as 0.123.

A release fraction of 0.00012 should be recorded as 0.000.

- [10.6] **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.
- [10.7] **VERIFY** the acceptance criteria as given in Step 6.0B.1 has been met. The building ventilation release fraction must be less than or equal to 0.90. **IF** the acceptance criteria have failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC)

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 18 of 56
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Date TODAY

7.0 PROCEDURE STEPS (continued)

~~[11.1]~~ **DETERMINE** the elevated (stack) noble gas release rate once per shift by completing the following steps:

~~[11.1]~~ **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:

[11.1.1] **IF** both the 0-RR-90-147 and at least one of the radiation monitors are operable, **THEN**

NA **OBTAIN** the necessary information from 0-RR-90-147 on Panel 9-2. **IF** applicable, **THEN**

RECORD "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.

[11.1.2] **IF** 0-RR-90-147 is inoperable and at least one of the radiation monitors is operable, **THEN**

NA **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, **THEN**

RECORD "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.

[11.1.3] **IF** both monitors are inoperable, **THEN**

NA **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.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 19 of 56
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7.0 PROCEDURE STEPS (continued)

~~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 7.0[11.2] and 7.0[11.3] are **NOT** applicable.

~~[11.2]~~ **DETERMINE** the stack flow rate and **RECORD** in the appropriate column of Attachment 6.

~~[11.2.1]~~ IF 0-FI-90-271 on Panel 1-9-53 is operable, **THEN**

RECORD the stack flow in standard cubic feet per minute (scfm).

[11.2.2] 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, **THEN**

NA

MAKE a note in the remarks log that 0-FI-90-348 was used.

[11.2.3] IF 0-FI-90-271 on Panel 1-9-53 is inoperable and 0-FI-90-348 is **NOT** used, **THEN**

NA

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.

[11.3] **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, **THEN**

CONTINUE with Step 7.0[11.4].

Total Stack Flow (scfm) x Gross Count Rate (cps) x $1.23 \text{ E-}03$ [$(\mu\text{Ci/sec})/(\text{cps-scfm})$]

[11.4] **RECORD** in the appropriate column of Attachment 6 either the release rate calculated in Step 7.0[11.3] or as reported by the Chemical Laboratory for an inoperable monitor.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 20 of 56
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7.0 PROCEDURE STEPS (continued)

~~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.

~~[11.5]~~ Wide Range Gaseous Effluent Radiation Monitor (WRGERM),
0-RM-90-306, Panel 2-9-10.

[11.5.1] IF the monitor is inoperable, THEN

NA

RECORD "INOP" in the appropriate column of Attachment 6 and **CONTINUE** with Step 7.0[11.6]. Otherwise, **CONTINUE** with Step 7.0[11.5.2].

~~[11.5.2]~~ **ENSURE** 0-RM-90-306 is in the Sample Mode.

~~[11.5.3]~~ **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).

[11.6] IF the WRGERM monitor is inoperable for a period greater than one day, THEN

CONTACT the Chemistry Manager. IF the monitor remains inoperable for a period of seven days, THEN

INITIATE a Problem Evaluation Report within 24 hours in accordance with TRM Table 3.3.5-1 (Action E.2).

~~[11.7]~~ IF all release streams to the stack are isolated, THEN

USE a release rate factor of 0.00. Otherwise, **USE** 1.00. **RECORD** the release rate factor in the appropriate column of Attachment 6.

[11.8] **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.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 21 of 56
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7.0 PROCEDURE STEPS (continued)

NOTE

For reporting purposes, the release fractions should only be recorded to three decimal places.

EXAMPLES

A release fraction of 0.12345 should be recorded only as 0.123.

A release fraction of 0.00012 should be recorded only as 0.000.

[11.9] **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.

[11.10] **VERIFY** the acceptance criteria as given in Step 6.0B.2 has been met. The stack release fraction must be less than or equal to 0.10. **IF** the acceptance criterion has failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC)

[12] **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 6.0B.3 has been met. **IF** the acceptance criterion has failed, **THEN**

IMMEDIATELY CONTACT the Unit Supervisors. (AC)

NOTE

Verify 2-FCV-66-28 is unrestrained, open and locked.

NA

[13] Once per shift, **RECORD** the Unit 1, 2, and 3 offgas instrumentation readings on Attachment 8.

↓

[13.1] In the "FCV-66-28" column, **PLACE** an "X" in the appropriate box (open or closed).

[13.2] **IF** the unit's FCV-66-28 is **CLOSED**, **THEN**

NA

RECORD all other offgas readings as "N/A" (**NOT** applicable). **CONTINUE** with Step 7.0[13.8].

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8.0 ILLUSTRATIONS/ATTACHMENTS

- Attachment 1: Independent Review and Remarks Log
- Attachment 2: Site Effluent Release Rate Summary
- Attachment 3: Fan Status Report
- Attachment 4: Building Effluent Release Rate Log
- Attachment 5: Building Ventilation System Release Factors
- Attachment 6: Elevated Effluent Release Rate Log
- Attachment 7: Airborne Effluent for Total Stack Flow Rates
- Attachment 8: Offgas Instrumentation Log
- Attachment 9: Airborne Effluent Release Rate
- Attachment 10: Sample Flow Abnormal Log
- Attachment 11: EPIP Release Rate Log

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**Attachment 1
(Page 1 of 2)**

Independent Review and Remarks Log

Independent Review (STA or SRO) performed for each shift.

	DAY SHIFT		NIGHT SHIFT	
DAY	Initial	Time	Initial	Time
FRIDAY				
SATURDAY				
SUNDAY				
MONDAY				
TUESDAY				
WEDNESDAY				
THURSDAY				

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 28 of 56
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**Attachment 1
(Page 1 of 2)**

Independent Review and Remarks Log

Independent Review (STA or SRO) performed for each shift.

	DAY SHIFT		NIGHT SHIFT	
DAY	Initial	Time	Initial	Time
FRIDAY				
SATURDAY				
SUNDAY				
MONDAY				
TUESDAY				
WEDNESDAY				
THURSDAY				

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**Attachment 2
(Page 1 of 1)**

Site Effluent Release Rate Summary

Week From TODAY To _____

D A Y	S H I F T	SI STEP		Reactor Power (MWT)			Building Ventilation Release Rate Fraction 7.0[10.6]	Stack Release Rate Fraction 7.0[11.9]	Total Site Release Rate Fraction 7.0[12]	Acceptance Criteria	Initials	
		7.0[6]	7.0[7]	Unit 1 7.0[8.1]	Unit 2 7.0[8.1]	Unit 3 7.0[8.1]					AUO	Unit Supervisor
FRI	D	OP	OP	3455	3452	3454				≤ 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 BFPER 960634.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 31 of 56
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Attachment 3
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Week From TODAY To _____

<p>BFN Unit 0</p>	<p>Airborne Effluent Release Rate</p>	<p>0-SI-4.8.B.1.a.1 Rev. 0056 Page 32 of 56</p>
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**Attachment 3
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Week From TODAY To _____

[illegible]

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 34 of 56
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**Attachment 4
(Page 1 of 4)**

Building Effluent Release Rate Log

Week From TODAY To _____
Unit 1

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		1-RM-90-250			1-RM-90-249			1-RM-90-251			AUO	Unit Supervisor
		Release Rate (μCi/sec)	Release Factor	Actual Rate (μCi/sec)	Release Rate (μCi/sec)	Release Factor	Actual Rate (μCi/sec)	Release Rate (μCi/sec)	Release Factor	Actual Rate μCi/sec		
			See Note			See Note			See Note			
		7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]		
FRI	D	4000			500			910				
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

1 See Attachment 5 for Release Factor.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 35 of 56
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**Attachment 4
(Page 2 of 4)**

Week From TODAY To _____
Unit 2

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		2-RM-90-250			2-RM-90-249			2-RM-90-251			AUO	Unit Supervisor
		Release Rate (μCi/sec)	Release Factor	Actual Rate (μCi/sec)	Release Rate (μCi/sec)	Release Factor	Actual Rate (μCi/sec)	Release Rate (μCi/sec)	Release Factor	Actual Rate μCi/sec		
			See Note			See Note			See Note			
		7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]		
FRI	D	3400			840			2200				
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

1 See Attachment 5 for Release Factor.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 36 of 56
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**Attachment 4
(Page 3 of 4)**

Week From TODAY To _____
Unit 3

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		3-RM-90-250			3-RM-90-249			3-RM-90-251			AUO	Unit Supervisor
		Release Rate (μ Ci/sec)	Release Factor	Actual Rate (μ Ci/sec)	Release Rate (μ Ci/sec)	Release Factor	Actual Rate (μ Ci/sec)	Release Rate (μ Ci/sec)	Release Factor	Actual Rate μ Ci/sec		
			See Note			See Note			See Note			
		7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.1]	7.0[10.2]	7.0[10.3]		
FRI	D	3100			1600			1900				
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

1 See Attachment 5 for Release Factor.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 37 of 56
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**Attachment 4
(Page 4 of 4)**

Week From TODAY To _____
Unit 0

D A Y	S H I F T	Radwaste Building			Unit Total Release Rates			Building Ventilation Release Rate (μCi/sec)	Building Ventilation Release Fraction	Acceptance Criteria	Initials	
		0-RM-90-252			(μCi/sec)						AUO	Unit Supervisor
		Release Rate (μCi/sec)	Release Factor	Actual Rate (μCi/sec)	Unit 1	Unit 2	Unit 3					
			See Note									
		7.0[10.1]	7.0[10.2]	7.0[10.3]	7.0[10.4]	7.0[10.4]	7.0[10.4]	7.0[10.5]	7.0[10.6]			
FRI	D	226								≤ 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		

1 See Attachment 5 for Release Factor.

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 38 of 56
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**Attachment 5
(Page 1 of 2)**

Building Ventilation System Release Factors

NOTE

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.)

1-, 2-, and 3- RM-90-250					
Fan Status (Note)			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

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 39 of 56
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**Attachment 5
(Page 2 of 2)**

Turbine Floor CAM Release Factors

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

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 40 of 56
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**Attachment 6
(Page 1 of 2)**

Elevated Effluent Release Rate Log

Week From TODAY To _____

D A Y	S H I F T	0-RM-90-147	0-RM-90-148	HIGHEST GROSS COUNT RATE (CPS)	STACK FLOW RATE 0-FI-90-271 INOP<16,366 (NOTES 1 & 3) OR ATTACH 7 7.0[11.2]	CONVERSION FACTOR	STACK RELEASE RATE (NOTE 2) (μ CI/SEC) 7.0[11.3] & 7.0[11.4]
		Red Pen GROSS COUNT RATE (CPS) 7.0[11.1]	Green Pen GROSS COUNT RATE (CPS) 7.0[11.1]				
F	D	4.55 x 10 ⁵	9.75 x 10 ⁴		22700	1.23E-03	
R	N					1.23E-03	
S	D					1.23E-03	
A	N					1.23E-03	
S	D					1.23E-03	
U	N					1.23E-03	
M	D					1.23E-03	
O	N					1.23E-03	
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	

- 1 Minimum acceptable flowrate for 0-fi-90-271 operability is 16,366 SCFM (See note 3)
- 2 Data from manual sampling results or 0-90-147/148[(Stack flow) X (Highest gross count rate) X 1.23E-03].
- 3 The minimum stack flow rate was revised to 16,366 SCFM (BFPER980545).

BFN Unit 0	Airborne Effluent Release Rate	0-SI-4.8.B.1.a.1 Rev. 0056 Page 41 of 56
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**Attachment 6
(Page 2 of 2)**

Week From TODAY To _____

D A Y	S H I F T	DATA RECORDED IN STEP 7.0[11.4]	WRGERMS Noble Gas Release Rate 0-RM-90-306 ($\mu\text{Ci/sec}$) 7.0[11.5]	Highest Stack Release Rate ($\mu\text{Ci/sec}$) Note 1.	Release Rate Factor (0.00 or 1.00) 7.0[11.7]	Actual Release Rate ($\mu\text{Ci/sec}$) 7.0[11.8]	Stack Release Fraction Note 2 7.0[11.9]	Acceptance Criteria	Initials	
									AUO	Unit Supervisor
FRI	D		1.29×10^6		1.00			≤ 0.10		
	N							≤ 0.10		
SAT	D							≤ 0.10		
	N							≤ 0.10		
SUN	D							≤ 0.10		
	N							≤ 0.10		
MON	D							≤ 0.10		
	N							≤ 0.10		
TUE	D							≤ 0.10		
	N							≤ 0.10		
WED	D							≤ 0.10		
	N							≤ 0.10		
THU	D							≤ 0.10		
	N							≤ 0.10		

- 1 Use the higher of the Stack release rate or the WRGERMS release rate.
- 2 Divide actual Stack release rate ($\mu\text{Ci/sec}$) by $1.44\text{E}+07 \mu\text{Ci/sec}$.

JPM SRO A4

OPERATOR: _____

SRO _____ DATE: _____

JPM NUMBER: SRO A4

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

TITLE: Follow Up Notification for General Emergency and PAR Upgrade

K/A NUMBER: 2.4.44 K/A RATING: SRO 4.4

TASK STANDARD: Follow up Notification Appendix F and J are completed with EAL
Designator 2.3-G2, PAR is recommendation 2, from 283° - 326°

LOCATION OF PERFORMANCE: Simulator or Class Room

REFERENCES/PROCEDURES NEEDED: EPIP 1, EPIP 5

VALIDATION TIME: 30 minutes

PERFORMANCE TIME:

COMMENTS: _____

Additional comment sheets attached? YES ____ NO ____

RESULTS: SATISFACTORY ____ UNSATISFACTORY ____

SIGNATURE: _____ DATE: _____
EXAMINER

Heid
4/8/13

Class Room

INITIAL CONDITIONS: You are the SHIFT MANAGER. A General Emergency was declared 45 minutes ago 2.1-G for Unit 1, the Initial Notification form is attached. NRC notification is complete. On Site accountability is complete, Site Evacuation is complete.

Current conditions are:

Reactor Power	All Rods In
Reactor Level	-175 inches and currently stable
Reactor Pressure	50 psig, Emergency Depressurization has been completed
DW Pressure	14 psig and lowering rapidly, after no actions were successful in maintaining Suppression Chamber pressure less than 55 psig.
DW Radiation	2-RE-90-272A <u>22,000</u> R/HR and 273A <u>23,000</u> R/Hr

Projected Dose Assessments at 5 miles ^{is} indicate 500 mRem/hr TEDE and 2500 mRem/hr Thyroid CDE.

Measured Dose at Site Boundary ^{is} indicates 2000 mRem/hr TEDE.

Wind Speed	18 mph
Wind Direction	323°

INITIATING CUE: Evaluate current conditions in accordance with EPIP-1 Emergency Classification Procedure and EPIP-5 General Emergency, and complete any required actions.

Time Critical??

CECC Status?

due to written exam

START TIME _____

Performance Step 1:

Critical Not Critical X

Refers to EPIP 1 for additional General Emergency EAL designators.

Standard:

SHIFT MANAGER refers to EPIP 1 and determines that an additional EAL is 2.3-G2.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 2:

Critical X Not Critical

Refers to EPIP-5 GENERAL EMERGENCY appendix E

Standard:

SHIFT MANAGER determines that Appendix F requires completion of a Follow Up Notification.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 3:

Critical X Not Critical

Completes Appendix F of EPIP 5

Standard:

Shift Manager completes Appendix F of EPIP 5. The following are Critical portions of Appendix F: PAR is recommendation 2 with wind direction of 323° and wind speed of 18 mph.

SAT__ UNSAT__ N/A __ COMMENTS: _____

Performance Step 4:

Critical X Not Critical

Completes Appendix J of EPIP 5

Standard:

Shift Manager completes Appendix J of EPIP 5. The following are Critical portions of Appendix J: PAR Upgrade based on Increase in field team measured dose values is checked, PAR is recommendation 2 with wind direction of 323° and wind speed of 18 mph. Check under Recommendation 2 next to From 283° - 326°. Evacuate sectors A2, B2, F2, G2, B5, E5.

SAT__ UNSAT__ N/A __ COMMENTS: _____

STOP TIME _____

END OF TASK

INITIAL CONDITIONS: You are the SHIFT MANAGER. A General Emergency was declared 45 minutes ago 2.1-G for Unit 1, the Initial Notification form is attached. NRC notification is complete. On Site accountability is complete, Site Evacuation is complete.

Current conditions are:

Reactor Power	All Rods In
Reactor Level	-175 inches and currently stable
Reactor Pressure	50 psig, Emergency Depressurization has been completed
DW Pressure	14 psig and lowering rapidly, after no actions were successful in maintaining Suppression Chamber pressure less than 55 psig.
DW Radiation	2-RE-90-272A 22,000 R/HR and 273A 23,000 R/HR

Projected Dose Assessments at 5 miles indicate 500 mRem/hr TEDE and 2500 mRem/hr Thyroid CDE.

Measured Dose at Site Boundary indicates 2000 mRem/hr TEDE.

Wind Speed	18 mph
Wind Direction	323°

INITIATING CUE: Evaluate current conditions in accordance with EPIP-1 Emergency Classification Procedure and EPIP-5 General Emergency, and complete any required actions.

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APPENDIX A

Page 1 of 1

GENERAL EMERGENCY INITIAL NOTIFICATION FORM

1. ☒ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

2. GUY SMITH the SED at Browns Ferry has declared a **GENERAL EMERGENCY**.

3. EAL Designator: 2.1- G (USE ONLY ONE EAL DESIGNATOR)

4. Brief Description of the Event: Suppression Chamber pressure
Can NOT be maintained below 55psig.

5. Radiological Conditions: (Check one under both Airborne and Liquid column.)
Airborne Releases Offsite
☐ Minor releases within federally approved limits¹
☒ Releases above federally approved limits¹
☐ Release information not known
(¹Tech Specs/ODCM)
Liquid Releases Offsite
☒ Minor releases within federally approved limits¹
☐ Releases above federally approved limits¹
☐ Release information not known
(¹Tech Specs/ODCM)

6. Event Declared: Time: 45 minutes (Central Time) Date: TODAY

7. The Meteorological Conditions are: (Use 91 meter data from the Met Tower. If data is not available from the MET tower, contact the National Weather Service by dialing 9-1-256-890-8505 or 9-1-205-621-5650. The National Weather Service will provide wind direction and wind speed.)
 Wind Direction is FROM: 323 degrees (15 min average) Wind Speed: 18 m.p.h (15 min average)

STEP MUST BE COMPLETED BY THE SITE EMERGENCY DIRECTOR

8. Provide Protective Action Recommendation utilizing Appendix H: (Check either 1 or 2 or 3)

RECOMMENDATION 1	WIND FROM DEGREES (Mark wind direction from Step 7)	RECOMMENDATION 2
<input type="checkbox"/> Recommendation 1 • EVACUATE LISTED SECTORS (2 mile Radius & 10 miles downwind) • Shelter remainder of 10 mile EPZ. • Consider issuance of POTASSIUM IODIDE in accordance with the State Plan.		<input type="checkbox"/> Recommendation 2 • EVACUATE LISTED SECTORS (2 mile radius & 5 mile downwind) • SHELTER remainder of 10 mile EPZ. • Consider issuance of POTASSIUM IODIDE in accordance with the State Plan.
A2, B2, F2, G2, E5, E10, F5, F10, G5, G10	From 4° - 40°	A2, B2, F2, G2, E5, F5, G5
A2, B2, F2, G2, F5, F10, G5, G10, H10	From 41° - 73°	A2, B2, F2, G2, F5, G5
A2, B2, F2, G2, G5, G10, H10, I10	From 74° - 92°	A2, B2, F2, G2, G5
A2, B2, F2, G2, A5, G5, H10, I10, J10, K10	From 93° - 137°	A2, B2, F2, G2, A5, G5
A2, B2, F2, G2, A5, A10, I10, J10, K10	From 138° - 203°	A2, B2, F2, G2, A5
A2, B2, F2, G2, A5, A10, B5, B10	From 204° - 282°	A2, B2, F2, G2, A5, B5
A2, B2, F2, G2, B5, B10, C10, D10, E5, E10	From 283° - 326°	A2, B2, F2, G2, B5, E5
A2, B2, F2, G2, C10, D10, E5, E10, F5, F10	From 327° - 3°	A2, B2, F2, G2, E5, F5
<input checked="" type="checkbox"/> Recommendation 3 • SHELTER all sectors • CONSIDER issuance of POTASSIUM IODIDE in accordance with the State Plan.		

Completed by: Guy Smith Approved by: Mike Jones

* ANSWER KEY *

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APPENDIX F

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GENERAL EMERGENCY FOLLOW-UP INFORMATION FORM

1. ☒ THIS IS A DRILL ☐ THIS IS AN ACTUAL EVENT

2. NAME the SED at **Browns Ferry** has declared an **GENERAL EMERGENCY**

3. Reactor Status:

Unit 1:	<input checked="" type="checkbox"/> Shutdown	<input type="checkbox"/> At Power	<input type="checkbox"/> Refueling	<input type="checkbox"/> N/A
Unit 2:	<input type="checkbox"/> Shutdown	<input type="checkbox"/> At Power	<input type="checkbox"/> Refueling	<input type="checkbox"/> N/A
Unit 3:	<input type="checkbox"/> Shutdown	<input type="checkbox"/> At Power	<input type="checkbox"/> Refueling	<input type="checkbox"/> N/A

4. Additional EAL Designator(s) 2.3 - G2

5. Significant changes in plant conditions:

LOSS OF PRIMARY CONTAINMENT

6. Significant changes in Radiological Conditions:

DOSE AT SITE BOUNDARY 2000 mRem/HR

7. Off-site Protective Action Recommendations:
(UTILIZE APPENDIX J FOR MAKING AND COMMUNICATING PAR UPGRADES)

☐ Recommendation 1 ☒ Recommendation 2 ☐ Recommendation 3

8 Onsite Protective Actions: Assembly/Accountability ☐ No ☐ Initiated ☒ Completed
Site Evacuation ☐ No ☐ Initiated ☒ Completed

9. The Meteorological Conditions are Wind Speed: 18 m.p.h.
(Use 91 meter data on the Met Tower & 15 Minute Averages) Wind Direction is from: 323 degrees

10. Please repeat the information you have received to ensure accuracy.

11. Fax to applicable contact after reporting following-up information:
CECC (5-751-1682), ODS (5-751-8620) or State of Alabama (9-1-205-280-2495).

Completed by: _____, Date/Time _____
Central Time

*** ANSWER KEY ***

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APPENDIX J

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UPGRADE - PROTECTIVE ACTION RECOMMENDATION

1. ☒ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event
2. Browns Ferry has declared a **GENERAL EMERGENCY**
3. Browns Ferry is making a **PAR UPGRADE** based upon the following criteria:
- ☐ Increase in dose assessment projected values.
 - ☒ Increase in field team measured dose values.
 - ☐ Shift in 15 min average wind direction resulting in additional sectors being affected.
 - ☐ State provided information that offsite impediments no longer exist.
 - ☐ Hostile Action Event has been terminated.
 - ☐ Containment Rad Levels $\geq 20\%$
4. The Meteorological Conditions are: (Use 91 meter data from the Met Tower. If data is not available from the MET tower, contact the National Weather Service by dialing 9-1-256-890-8505 or 9-1-205-621-5650. The National Weather Service will provide wind direction and wind speed.)
- Wind Direction is FROM: 323 degrees Wind Speed: 18 m.p.h.
(15 min average) (15 min average)
5. Provide Protective Action Recommendation utilizing Appendix H: (Check either 1 or 2 or 3)

STEP MUST BE COMPLETED BY THE SITE EMERGENCY DIRECTOR

8. Provide Protective Action Recommendation utilizing Appendix H: (Check either 1 or 2 or 3)

<input type="checkbox"/> Recommendation 1 • EVACUATE LISTED SECTORS (2 mile Radius & 10 miles downwind) • Shelter remainder of 10 mile EPZ. • Consider issuance of POTASSIUM IODIDE in accordance with the State Plan.	RECOMMENDATION-1 ↓	WIND FROM DEGREES (Mark wind direction from Step 7)	RECOMMENDATION-2 ↓	<input checked="" type="checkbox"/> Recommendation 2 • EVACUATE LISTED SECTORS (2 mile radius & 5 mile downwind) • SHELTER remainder of 10 mile EPZ. • Consider issuance of POTASSIUM IODIDE in accordance with the State Plan.
A2, B2, F2, G2, E5, E10, F5, F10, G5, G10		From 4° - 40°		A2, B2, F2, G2, E5, F5, G5
A2, B2, F2, G2, F5, F10, G5, G10, H10		From 41° - 73°		A2, B2, F2, G2, F5, G5
A2, B2, F2, G2, G5, G10, H10, I10		From 74° - 92°		A2, B2, F2, G2, G5
A2, B2, F2, G2, A5, G5, H10, I10, J10, K10		From 93° - 137°		A2, B2, F2, G2, A5, G5
A2, B2, F2, G2, A5, A10, I10, J10, K10		From 138° - 203°		A2, B2, F2, G2, A5
A2, B2, F2, G2, A5, A10, B5, B10		From 204° - 282°		A2, B2, F2, G2, A5, B5
A2, B2, F2, G2, B5, B10, C10, D10, E5, E10		From 283° - 326°	<input checked="" type="checkbox"/>	A2, B2, F2, G2, B5, E5
A2, B2, F2, G2, C10, D10, E5, E10, F5, F10		From 327° - 3°		A2, B2, F2, G2, E5, F5

☐ Recommendation 3
• SHELTER all sectors
• CONSIDER issuance of POTASSIUM IODIDE in accordance with the State Plan.

Completed by: _____ Approved by: _____

9. Utilize Appendix C to communicate PAR Upgrade.