

Facility: Grand Gulf Nuclear Station		Date of Examination: 12/04/2017								
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: LOT 12-2017								
Administrative Topic (see Note)	Type Code*	Describe activity to be performed								
Conduct of Operations	R; D	AR1 - Determine Primary Containment Water Level (GJPM-OPS-2017IAR1) K/A 2.1.25: (3.9); 2.1.20: (4.6); 2.4.21: (4.0)								
Conduct of Operations	S; M	AR2 - Perform AC Lineup Surveillance (GJPM-OPS-2017IAR2) K/A 2.1.31: (4.6); 2.2.12: (3.7); 2.1.20: (4.6)								
Equipment Control	R; D	AR3 - Determine Tagging Requirements (GJPM-OPS-2017IAR3) K/A 2.2.41: (3.5); 2.2.13: (4.1)								
Radiation Control										
Emergency Plan	R; N	AR4 - Perform Emergency Notifications (GJPM-OPS-2017IAR4) K/A 2.4.43: (3.2); 2.4.39: (3.9)								
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).										
* Type Codes & Criteria: <table border="0" style="width: 100%;"> <tr> <td>(C)ontrol room, (S)imulator, or Class(R)oom</td> <td style="text-align: right;">(4)</td> </tr> <tr> <td>(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)</td> <td style="text-align: right;">(2)</td> </tr> <tr> <td>(N)ew or (M)odified from bank (≥ 1)</td> <td style="text-align: right;">(2)</td> </tr> <tr> <td>(P)revious 2 exams (≤ 1; randomly selected)</td> <td style="text-align: right;">(0)</td> </tr> </table>			(C)ontrol room, (S)imulator, or Class(R)oom	(4)	(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)	(2)	(N)ew or (M)odified from bank (≥ 1)	(2)	(P)revious 2 exams (≤ 1 ; randomly selected)	(0)
(C)ontrol room, (S)imulator, or Class(R)oom	(4)									
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)	(2)									
(N)ew or (M)odified from bank (≥ 1)	(2)									
(P)revious 2 exams (≤ 1 ; randomly selected)	(0)									

Facility: Grand Gulf Nuclear Station		Date of Examination: 12/04/2017
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: LOT 12-2017
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R; M	AS1 - Perform EOOS Risk Assessment (GJPM-OPS-2017IAS1) K/A 2.1.39: (4.3)
Conduct of Operations	R; N	AS2 - Review Completed Surveillance (GJPM-OPS-2017IAS2) K/A 2.1.2: (4.4); 2.1.7: (4.7); 2.2.12: (4.1); 2.2.22: (4.7)
Equipment Control	R; D; P	AS3 - Determine Impact on Plant Operations for Failed Relay (GJPM-OPS-2017IAS3) K/A 2.2.41: (3.9); 2.2.22: (4.7); 2.2.36: (4.2)
Radiation Control	R; M	AS4 - Authorize Emergency Exposure (GJPM-OPS-2017IAS4) K/A 2.3.4: (3.7)
Emergency Plan	R; N	AS5 - Perform Emergency Classification (GJPM-OPS-2017IAS5) K/A 2.4.41: (4.6)
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (5) (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (1) (N)ew or (M)odified from bank (≥ 1) (4) (P)revious 2 exams (≤ 1; randomly selected) (1)		



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

2017I AR1
GGNS
2017I NRC Operating Test
Job Performance Measure

JPM Number: GJPM-OPS-2017IAR1

JPM Title: Determine Primary
Containment Water Level

Facility Number: GJPM-OPS-AUDIT 2015AR2
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Michael Rasch	11/06/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/06/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/06/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/06/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Determine Primary Containment Water Level

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 Min
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Setting: Classroom
Type: RO/SRO
Task: CRO-EP-EMERGENCY-29
K&A: Generic 2.4.21: 4.0/4.6
Safety Function: Generic - Conduct of Operations
PRA Applicability: No
10CFR 55.45(a) (4); (12)
Performance: Perform
Reference(s): 05-S-01-EP-1 Rev. 36, Attachment 29, Primary Containment Water Level Determination
Handout(s): SPDS Display
1H13-P601-21B Section
05-S-01-EP-1, Attachment 29, Primary Containment Water Level Determination
Manipulations: N/A
Critical Steps: 4

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A LOCA has occurred
- Suppression Pool water level indication is off-scale high
- RCIC is shutdown
- RCIC Suction is aligned to the Suppression Pool

Initiating Cue(s):

- Control Room Supervisor directs you to determine primary containment water level using EP Attachment 29
- Use the given images for current plant indications



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Determine Primary Containment Water Level

Notes to Evaluator:

- None

Task Overview: (Detailed description of task)

Using EP Attachment 29 and the attached images to obtain RCIC Suction Pressure and Containment Pressure, determine Primary Containment Water Level from the Delta Pressure to Ctmt Level Conversion Table, EP Attachment 29 Table 1.

This task would be performed post event when Suppression Pool Level Instruments and Containment Water Level Instruments are not working to determine Primary Containment Water Level.

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Note: Steps are not sequence critical. Applicant will have to obtain information and complete calculations.

Step 1: 05-S-01-EP-1, Att. 29, Step 2.1 - 2.3	
<input type="checkbox"/>	Determines from turnover information that steps 2.1 through 2.3 are complete.
<u>Standard:</u>	Determined from turnover information that steps 2.1 through 2.3 were able to be completed.
<u>Cue:</u>	None
<u>Notes:</u>	None
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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Step 2: 05-S-01-EP-1, Att. 29, Step 2.4

☐* **Obtain RCIC PMP SUCT PRESS (E51-R604 on 1H13-P601).**

Standard: Using the given photo of 1H13-P601-21B, applicant located the correct indicator (E51-R604) and determined it was indicating 15 psig. Applicant also recorded 15 psig on Attachment 29 step 2.4.

Cue: None

Notes: None

SAT / UNSAT

Step 3: 05-S-01-EP-1, Att. 29, Step 2.5

☐* **Obtain Containment pressure (psig) from SPDS or Post Accident recorders on 1H13-P870.**

Standard: Applicant determined Containment Pressure indicated on the SPDS display from image 2 was 2.2 psig and recorded it on EP Attachment 29 step 2.5.

Cue: None

Notes: None

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Step 4: 05-S-01-EP-1, Att. 29, Step 2.6

☐* ***Subtract Containment pressure from RCIC suction pressure (Delta Pressure).***

Standard: Applicant determined Delta Pressure to be 12.8 psid by subtracting Containment Pressure recorded in step 2.5 from RCIC Pump Suction Pressure recorded in step 2.4 and records it in step 2.6

Cue: None

Notes: 15 psig - 2.2 psig = 12.8 psid

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Step 5: 05-S-01-EP-1, Att. 29, Step 2.7

☐* ***Determine Containment level, using pressure obtained in Step 2.6 and Table 1.***

Standard: Applicant determined Primary Containment water level using EP Attachment 29 Table 1 by moving down the Delta Pressure whole number column to 12 and then to the right to the 0.8, Tenths of Pound Delta Pressure column, which lists Containment Level as 35.5 feet.

Cue: None

Notes: None

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Task Standard(s):

Determined RCIC Pump Suction Pressure was 15 psig

Determined Containment Pressure was 2.2 psig

Determined differential pressure between Containment and RCIC Pump Suction Pressure was 12.8 psid

Primary Containment water level using containment pressure, RCIC suction pressure and 05-S-01-EP-1 Attachment 29 determined to be **35.5 Feet.**

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR1

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant

Initial Condition(s):

- A LOCA has occurred
- Suppression Pool water level indication is off-scale high
- RCIC is shutdown
- RCIC Suction is aligned to the Suppression Pool

Initiating Cue(s):

- Control Room Supervisor directs you to determine primary containment water level using EP Attachment 29
- Use the given images for current plant indications

Primary Containment Water Level _____ Feet

EP-2	RPV NR LEVEL -15.0 IN	RPV PRESSURE +8.2 PSIG	DRYWELL PRESSURE +5.49 PSIG	SCRAM STATUS SCRAM	EP-2A ATWS +0 RODS	REACTOR POWER +0.0 %	HCTL	HDOL
EP-3	SUPP POOL TEMP +112 F	DRYWELL TEMP +224 F	CTMT TEMP +99 F	DRYWELL PRESSURE +5.49 PSIG	SUPP POOL LEVEL +25.50 FT	HYDROGEN CONC NOT HIGH	RPVST	
EP-4	FHA DIFF PRESSURE NOT HIGH	AREA TEMP NOT HIGH	HVAC EXH RAD LEVEL NOT HIHI	AREA RAD LEVEL NOT HIGH	AREA WATER LEVEL NOT HIHI	EFFLUENT RAD DATA AVAILABLE	CSIPL	
							PSP	

RPV PRESS

+8.2 PSIG

DRYWELL

+224 F

CONTAINMENT

+99 F

RPV LEVEL

-15.0 IN

+5.49 PSIG

+2.20 PSIG

+60.0 IN

+0.0 %H2

+0.0 %H2

FZ LEVEL

-17.4 IN

+3.3 R/HR

+1.0 R/HR

RX PWR

+0.0 %

+0.0 %H2

+0.0 %H2

+0 RODS

+0.0 MLB/HR

+0.0 MLB/HR

WITHDRAWN

+112 F

+25.50 FT

FW A

RHR A

+0 GPM

FW B

RHR B

+0 GPM

HPCS

RHR C

+0 GPM

LPCS

RCIC

+0 GPM

REFRESH SPDS

RESTART SPDS





Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

2017I AR2

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IAR2

JPM Title: Perform AC Lineup
Surveillance

Facility Number: GJPM-RO-ADM-1A
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/06/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/06/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/06/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/06/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Perform AC Lineup Surveillance

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
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Setting:	Simulator
Type:	RO/ SRO
Task:	CRO-R20/27-NORMAL-8
K&A:	Generic 2.1.31 (4.6/4.3); 2.2.12 (3.7/4.1); 2.1.20 (4.6/4.6)
Safety Function:	Generic - Conduct of Operations
PRA Applicability:	No
10 CFR 55.45(a)	(12); (13)
Performance:	Perform
Reference(s):	06-OP-1R20-W-0001 Rev. 109, Plant AC and DC Electrical Power Distribution Weekly Lineup
Handout(s):	06-OP-1R20-W-0001 marked with Radiation Protection Review Calculator
# Manipulations:	N/A
# Critical Steps:	1

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- Setup Simulator in **IC - 1**
- **Place** Division 3 Diesel Generator in Maintenance remote function **p81059**

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is operating at rated conditions
- Division 3 Diesel Generator has been declared Inoperable
- LCO has been initiated for Tech Spec 3.8.1 Action B
- Reason for declaring Division 3 Diesel Generator is not a common cause failure
- All offsite feeders to GGNS are energized
- 500KV Transmission lines are operating at **502.5KV**

Initiating Cue(s):

- Control Room Supervisor directs you to perform 06-OP-1R20-W-0001 Attachment II for current conditions
- Contact the evaluator for readings not provided in the control room



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Perform AC Lineup Surveillance

Notes to Evaluator:

JPM should be performed in the Simulator which replicates plant conditions.

Task Overview: (Detailed description of task)

This task is performed any time a diesel generator is declared inoperable.

Surveillance 06-OP-1R20-W-0001 Plant AC and DC Electrical Power Distribution Weekly Lineup is performed to verify electrical distribution for Tech Specs 3.8.1; 3.8.2; 3.8.7 and 3.8.8.

Attachment I is the normal full surveillance.

Attachment II is performed to meet Surveillance Requirement SR3.8.1.1.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Sequence of Attachment II is NOT Critical.

Step 1: 06-OP-1R20-W-0001 Attachment II
Data Sheet I

☐* ***Perform 06-OP-1R20-W-0001 Attachment II Data Sheet I.***

Standard: Attachment II Data Sheet I completed

Cue: When contacted as Jackson Dispatcher, cue applicant Entergy Mississippi Grid voltage is 502.5 KV. (given in Initial Conditions)

When contacted as Jackson Dispatcher, the grid offsite feeders from Baxter Wilson, Franklin and 115 KV transmission lines are independently energized. (given in Initial Conditions)

Notes: Applicant may want to use Dispatcher Phone. Just have the applicant ask the questions about indications.

SEE EVALUATOR COPY of Attachment II for highlighted Critical readings.

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Task Standard(s):

Applicable portions of Plant AC Electrical Power Distribution Weekly Lineup Surveillance 06-OP-1R20-W-0001 Attachment II are completed and any discrepancies noted.

(See Evaluator Copy Highlighted sections for critical items)

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR2

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant

Initial Condition(s):

- Plant is operating at rated conditions
- Division 3 Diesel Generator has been declared Inoperable
- LCO has been initiated for Tech Spec 3.8.1 Action B
- Reason for declaring Division 3 Diesel Generator is not a common cause failure
- All offsite feeders to GGNS are energized
- 500KV Transmission lines are operating at **502.5KV**

Initiating Cue(s):

- Control Room Supervisor directs you to perform 06-OP-1R20-W-0001 Attachment II for current conditions
- Contact the evaluator for readings not provided in the control room

GRAND GULF NUCLEAR STATION

SURVEILLANCE PROCEDURE

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**EVALUATOR ANSWER
KEY**

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DATA SHEET I
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

(Step 5.2.2)

Div 1, 2 & 3 Offsite Feeders

	OFFSITE FEEDER	ENERGIZED YES/NO	VOLTAGE INDICATOR (LOCATION)	RECORDED VOLTAGE (ACCEPTANCE CRITERIA)	FREQUENCY INDICATOR (LOCATION)	RECORDED FREQUENCY (ACCEPTANCE CRITERIA)	INITIALS
\$	BAXTER WILSON	* YES	JACKSON DISPATCHER	<u>502.5</u> kV	500 kV FREQ. SR27-SR-R600 (H13-P807) or Pine Bluff Dispatcher	60.0 Hz	<i>Applicant Initials</i>
\$	FRANKLIN	* YES		(496-525kV)***		(58.5-61.8Hz)	<i>Applicant Initials</i>
\$	115kV LINE PORT GIBSON	* YES	** 152-1511 152-1611 152-1704	<u>4.25</u> x 27.64 = <u>117.5</u> kV (120.75-112.13) kV	(4.05 - 4.35) RANGE		<i>Applicant Initials</i>

* To determine status of offsite feeders, **CONTACT** load dispatcher. Ensure that the feeders are independently energized from the grid, such that the loss of one feeder would **NOT** result in the loss of another.

** To determine voltage of the Port Gibson 115kV line, record ESF 12 incoming voltage at Bus 15AA, 16AB **OR** 17AC placing the Sync switch for the designated breaker to ON. **MULTIPLY** this reading by 27.64 for equivalent feeder voltage. **RETURN** Sync switch to OFF after taking reading.

*** Allowable Value of minimum voltage is >491 kV for operability of Offsite Feeders. This value is based on analysis of the Class 1E ESF buses **AND** includes an allowance for instrument uncertainty associated with the voltage measurement in the switchyard. Extended operation beyond the normal continuous operating limits **Should** be evaluated **AND** caution **Should** be taken when starting large loads under these conditions.

**ACCEPTABLE
RANGE IN RED**

GRAND GULF NUCLEAR STATION

SURVEILLANCE PROCEDURE

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EVALUATOR ANSWER KEY

DATA SHEET I (Continued)
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

BREAKER	REQUIRED POSITION	ACTUAL POSITION	INITIALS	COMMENTS	INSTRUMENT (LOCATION)	RECORDED VOLTAGE ACCEPTANCE CRITERIA
Service Transformer 11 - Bus 11R to ESF 15AA, 16AB & 17AC						
\$ 552-1105	Closed	CLOSED	<i>Applicant Initials</i>		34.5kV Bus 11R Volts	A-B = 35.1 (±0.5) (1) B-C = 35.1 (±0.5) (1)
\$ 552-1104	Closed	CLOSED	<i>Applicant Initials</i>		1R25-EI-R603 (H13-P807-1B)	C-A = 35.1 (±0.5) (1) (31.05-37.95kV)
\$ 152-1901	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1514 Inc Voltage	* 4250 (±100) (3952-4576)
\$ 152-1902	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1601 Inc Voltage	* 4150 (±100) (3952-4576)
					Bkr 152-1706 Inc Voltage	* 4200 (±100) (3952-4576)

* **Note:** For these breakers **VERIFY** voltage is available to the ESF Bus by placing the Sync switch on 1 H13-P864 **OR** 1H13-P601 for the designated breaker to ON **AND RECORDING** incoming voltage. **RETURN** Sync switch to OFF after taking reading.

- (1) Voltage indication from 1R25-EI-R603 is **NOT** required to meet Tech Spec acceptance criteria. Voltage indication is met by acceptable incoming voltage for breakers 152-1514, 152-1601, **AND** 152-1706. **SELECT** phase of bus to be monitored by use of the voltage select switch. **INSURE** voltage select switch is **NOT** left in OFF.

**ACCEPTABLE
RANGE IN
RED**

GRAND GULF NUCLEAR STATION

SURVEILLANCE PROCEDURE

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DATA SHEET I (Continued)
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

(Step 5.2.2)

BREAKER	REQUIRED POSITION	ACTUAL POSITION	INITIALS	COMMENTS	INSTRUMENT (LOCATION)	RECORDED VOLTAGE ACCEPTANCE CRITERIA
Service Transformer 21 - Bus 21R to ESF 15AA, 16AB & 17AC						
\$ 552-2105	Closed	CLOSED	<i>Applicant Initials</i>		34.5kV Bus 21R Volt	A-B = 36.0 (±0.5)(1) B-C = 36.0 (±0.5)(1) C-A = 36.0 (±0.5)(1)
\$ 552-2104	Closed	CLOSED	<i>Applicant Initials</i>		2R25-FI-R603 (H13-P807-4B)	(31.05-37.95kV)
\$ 152-2901	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1501 Inc Voltage	* 4250 (±100) (3952-4576)
					Bkr 152-1614 Inc Voltage	* 4100 (±100) (3952-4576)
\$ 152-2902	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1705 Inc Voltage	* 4200 (±100) (3952-4576)
115 kV Line to ESF 15AA, 16AB & 17AC						
\$ J3885	Closed	CLOSED	<i>Applicant Initials</i>		N/A	N/A
\$ 152-1903	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1511 Inc Voltage	* 4250 (±100) (3952-4576)
					Bkr 152-1611 Inc Voltage	* 4100 (±100) (3952-4576)
					Bkr 152-1704 Inc Voltage	* 4200 (±100) (3952-4576)
\$ 152-1904	Closed	CLOSED	<i>Applicant Initials</i>			

* **Note:** For these breakers **VERIFY** voltage is available to the ESF Bus by placing the Sync switch on 1H13-P864 **OR** 1H13-P601 for the designated breaker to ON **AND RECORDING** incoming voltage. **RETURN** Sync switch to OFF after taking reading

- (1) Voltage indication from 2R25-EI-R603 for Bus 21R is **not** required to meet Tech Spec acceptance criteria. Voltage indication is met by acceptable incoming voltage for breakers 152-1501, 152-1614, **AND** 152-1705. **SELECT** phase of bus to be monitored by use of the voltage select switch. **INSURE** voltage select switch is **NOT** left in OFF.

ACCEPTANCE CRITERIA	REFERENCE TECHNICAL SPECIFICATION REQUIRED ACTION(S) IF ACCEPTANCE CRITERIA NOT MET FOR:
SR 3.8.1.1 - Mode 1, 2, 3 - two of the above circuits between the offsite transmission network AND the onsite Class 1E distribution system are Operable; correct breaker lineup AND power available.	LCO 3.8.1 - Condition A, C, D

**ACCEPTABLE RANGE
IN RED**

06-OP-1R20-W-0001 Revision 109

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Model WO# 50289936

XRef _____

SURVEILLANCE PROCEDURE DATA PACKAGE COVER SHEET
SAFETY RELATED

Title: Plant AC and DC Electrical Power Distribution Weekly LineupTechnical Specifications: SR 3.8.1.1**1.0 IMPACT STATEMENT**

1.1 Performance of this procedure has no impact on plant operation.

2.0 PROCEDURE

2.1 Plant Mode is (circle one): 1 2 3

2.2 Test Start Time _____ / _____ / _____
Performer _____ / Date _____ Time _____

2.3 Radiation Protection Review _____ RWP # _____

3.0 TEST RESULTS3.1 Test Completion: (**CHECK** one in each category.)

Entire procedure completed	<input type="checkbox"/>	Partial procedure completed	<input type="checkbox"/>
Tech Spec Acceptance Criteria Acceptable	<input type="checkbox"/>	Unacceptable	<input type="checkbox"/>
All other steps/data Acceptable	<input type="checkbox"/>	Unacceptable	<input type="checkbox"/>

3.2 Inop Electrical Equipment (include LCO #) _____

3.3 Comments: _____

3.4 Test performed by _____ Date/Time _____ / _____

4.0 DEFICIENCIES

CR Issued # _____ LCO Entered # _____ WR Issued # _____

5.0 APPROVALTech Spec Operability Requirements Acceptable ☐ Unacceptable ☐

Shift Supervision _____ Date _____

CONCURRENCE

Operations Management _____ Date _____

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DATA SHEET I
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

(Step 5.2.2)

Div 1, 2 & 3 Offsite Feeders

	OFFSITE FEEDER	ENERGIZED YES/NO	VOLTAGE INDICATOR (LOCATION)	RECORDED VOLTAGE (ACCEPTANCE CRITERIA)	FREQUENCY INDICATOR (LOCATION)	RECORDED FREQUENCY (ACCEPTANCE CRITERIA)	INITIALS
\$	BAXTER WILSON	* YES	JACKSON DISPATCHER	<u>502.5</u> kV	500 kV FREQ. SR27-SR-R600 (H13-P807) or Pine Bluff Dispatcher	<u>60.0</u> Hz	<i>Applicant Initials</i>
\$	FRANKLIN	* YES		(496-525kV)***		(58.5-61.8Hz)	<i>Applicant Initials</i>
\$	115kV LINE PORT GIBSON	* YES	** 152-1511 152-1611 152-1704	<u>4.25</u> x 27.64 = <u>117.5</u> kV (120.75- 112.13) kV	<u>(4.05 - 4.35)</u> RANGE		<i>Applicant Initials</i>

* To determine status of offsite feeders, **CONTACT** load dispatcher. Ensure that the feeders are independently energized from the grid, such that the loss of one feeder would **NOT** result in the loss of another.

** To determine voltage of the Port Gibson 115kV line, record ESF 12 incoming voltage at Bus 15AA, 16AB **OR** 17AC placing the Sync switch for the designated breaker to ON. **MULTIPLY** this reading by 27.64 for equivalent feeder voltage. **RETURN** Sync switch to OFF after taking reading.

*** Allowable Value of minimum voltage is ≥ 491 kV for operability of Offsite Feeders. This value is based on analysis of the Class 1E ESF buses **AND** includes an allowance for instrument uncertainty associated with the voltage measurement in the switchyard. Extended operation beyond the normal continuous operating limits Should be evaluated **AND** caution Should be taken when starting large loads under these conditions.

**ACCEPTABLE
RANGE IN RED**

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Attachment II	Page 3 of 4

Page _____

XRef _____

EVALUATOR ANSWER KEY

DATA SHEET I (Continued)
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

BREAKER	REQUIRED POSITION	ACTUAL POSITION	INITIALS	COMMENTS	INSTRUMENT (LOCATION)	RECORDED VOLTAGE ACCEPTANCE CRITERIA
Service Transformer 11 - Bus 11R to ESF 15AA, 16AB & 17AC						
\$ 552-1105	Closed	CLOSED	<i>Applicant Initials</i>		34.5kV Bus 11R Volts	A-B = 35.1 (±0.5) (1) B-C = 35.1 (±0.5) (1)
\$ 552-1104	Closed	CLOSED	<i>Applicant Initials</i>		1R25-EI-R603 (H13-P807-1B)	C-A = 35.1 (±0.5) (1) (31.05-37.95kV)
\$ 152-1901	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1514 Inc Voltage	* 4250 (±100) (3952-4576)
					Bkr 152-1601 Inc Voltage	* 4150 (±100) (3952-4576)
\$ 152-1902	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1706 Inc Voltage	* 4200 (±100) (3952-4576)

* **Note:** For these breakers **VERIFY** voltage is available to the ESF Bus by placing the Sync switch on 1 H13-P864 **OR** 1H13-P601 for the designated breaker to ON **AND RECORDING** incoming voltage. **RETURN** Sync switch to OFF after taking reading.

- (1) Voltage indication from 1R25-EI-R603 is **NOT** required to meet Tech Spec acceptance criteria. Voltage indication is met by acceptable incoming voltage for breakers 152-1514, 152-1601, **AND** 152-1706. **SELECT** phase of bus to be monitored by use of the voltage select switch. **INSURE** voltage select switch is **NOT** left in OFF.

**ACCEPTABLE
RANGE IN
RED**

06-OP-1R20-W-0001	Revision 109
Attachment II	Page 4 of 4

**EVALUATOR ANSWER
KEY**

Page _____
XRef _____

DATA SHEET I (Continued)
PLANT AC AND DC ELECTRICAL POWER DISTRIBUTION
WEEKLY LINEUP
SAFETY RELATED

(Step 5.2.2)

BREAKER	REQUIRED POSITION	ACTUAL POSITION	INITIALS	COMMENTS	INSTRUMENT (LOCATION)	RECORDED VOLTAGE ACCEPTANCE CRITERIA
Service Transformer 21 - Bus 21R to ESF 15AA, 16AB & 17AC						
\$ 552-2105	Closed	CLOSED	<i>Applicant Initials</i>		34.5kV Bus 21R Volt	A-B = 36.0 (±0.5)(1) B-C = 36.0 (±0.5)(1) C-A = 36.0 (±0.5)(1)
\$ 552-2104	Closed	CLOSED	<i>Applicant Initials</i>		2R25-EI-R603 (H13-P807-4B)	(31.05-37.95kV)
\$ 152-2901	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1501 Inc Voltage	* 4250 (±100) (3952-4576)
					Bkr 152-1614 Inc Voltage	* 4100 (±100) (3952-4576)
\$ 152-2902	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1705 Inc Voltage	* 4200 (±100) (3952-4576)
115 kV Line to ESF 15AA, 16AB & 17AC						
\$ J3885	Closed	CLOSED	<i>Applicant Initials</i>		N/A	N/A
\$ 152-1903	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1511 Inc Voltage	* 4250 (±100) (3952-4576)
					Bkr 152-1611 Inc Voltage	* 4100 (±100) (3952-4576)
\$ 152-1904	Closed	CLOSED	<i>Applicant Initials</i>		Bkr 152-1704 Inc Voltage	* 4200 (±100) (3952-4576)

* **Note:** For these breakers **VERIFY** voltage is available to the ESF Bus by placing the Sync switch on 1H13-P864 **OR** 1H13-P601 for the designated breaker to ON **AND RECORDING** incoming voltage. **RETURN** Sync switch to OFF after taking reading.

- (1) Voltage indication from 2R25-EI-R603 for Bus 21R is **not** required to meet Tech Spec acceptance criteria. Voltage indication is met by acceptable incoming voltage for breakers 152-1501, 152-1614, **AND** 152-1705. **SELECT** phase of bus to be monitored by use of the voltage select switch. **INSURE** voltage select switch is **NOT** left in OFF.

ACCEPTANCE CRITERIA	REFERENCE TECHNICAL SPECIFICATION REQUIRED ACTION(S) IF ACCEPTANCE CRITERIA NOT MET FOR:
SR 3.8.1.1 - Mode 1, 2, 3 - two of the above circuits between the offsite transmission network AND the onsite Class 1E distribution system are Operable; correct breaker lineup AND power available.	LCO 3.8.1 - Condition A, C, D

**ACCEPTABLE RANGE
IN RED**



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

2017I AR3

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IAR3

JPM Title: Determine Tagging Requirements

Facility Number: GJPM-OPS-AAD04
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 30 min

Prepared By:	Michael Rasch Exam Developer	11/06/2017 Date
Ops Review:	Robert Brinkman 1 st Validation by Ops Rep or Ops Validation Crew	11/06/2017 Date
Validated By:	Benny White \ Chase Miller 2 nd Validation by Ops Validation Crew	11/06/2017 Date
Approved By:	Ricky Liddell Project Lead or Exam Team Lead	11/06/2017 Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Determine Tagging Requirements

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 30 Min
--	---	-------------------------

Setting: Classroom
Type: RO/SRO
Task: CRO-ADMIN-ADMIN-5
K&A: Generic 2.2.13 (4.1/4.3); 2.2.41 (3.5/3.9)
Safety Function: Generic - Equipment Control Generic
PRA Applicability: No
10CFR 55.45(a) (12)
Performance: Perform
Reference(s): 04-1-01-E21-1 SU, Rev 41
EN-OP-102, Rev 19
EN-OP-102-01, Rev 11
Drawing Index 01-S-06-49 Att. 1, Rev. 9
E1182-007, Rev. 4
M0187, Rev. 34 & M1096, Rev. 22
Handout(s): 04-1-01-E21-1 SU
EN-OP-102
EN-OP-102-01 Att. 9.3
Drawing Index 01-S-06-49 Att. 1
GGNS Electrical Drawings (E1182-007)
GGNS Piping & Instrumentation Drawings (M0187 & M1096)
Manipulations: N/A
Critical Steps: 2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is in Mode 4
- Low Pressure Core Spray (LPCS) Jockey Pump is to be replaced

Initiating Cue(s):

- Control Room Supervisor directs you to prepare a Tagout Tags Sheet using EN-OP-102-01 Attachment 9.3 (provided) to de-energize and mechanically isolate all water sources to the LPCS Jockey Pump
- For the purpose of this task:
 - Do not include vent and drain path tags (They will be No Tagged.)
 - Do not use the main suction and discharge piping for the LPCS pump (e.g. do not use components on 14 inch piping or greater)
 - Only consider the isolation of the jockey pump when selecting components to tag (e.g. do not rack out the LPCS pump breaker)
 - Double isolations are not required
 - Restoration configuration is not required
 - Next sequential tag serial number is "1"

Complete the shaded sections of Applicant Copy of EN-OP-102-01 Attachment 9.3



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Determine Tagging Requirements

Notes to Evaluator:

- This is an Administrative JPM and can be performed in a classroom.

Task Overview: (Detailed description of task)

This task is to use facility electrical and mechanical drawings to determine the protective tagging boundaries for a task.

Reactor Operators perform the duties of tagout preparers to determine and review boundaries.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Sequence is NOT Critical.

Low Pressure Core Spray System (E21) System Operating Instructions 04-1-01-E21-1 SU
References identify the Electrical Drawings as E-1182 and P&ID as M-1087.

Step 1: E-1182 Electrical Drawings for E21
System

☐ Locate the drawing for LPCS Jockey Pump. (E-1182-007).

Standard: Using drawing E-1182-00 Index, applicant identified electrical drawing for LPCS Jockey Pump E-1182-007.

Cue: When asked provide drawing to applicant

Notes: E-1182-00 is Index print for the set of drawings.
E-1182-007 is electrical drawing for LPCS Jockey Pump

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Step 2: M-1087 Mechanical Drawings
(P&ID) for E21 System

☐ Locate mechanical drawing for LPCS Jockey Pump P&ID M-1087.

Standard: Applicant identified mechanical drawing for LPCS Jockey Pump P&ID M-1087.

Cue: When asked provide drawing to applicant

Notes: M-1087 is mechanical drawing for LPCS Jockey Pump

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Step 3: EN-OP-102 5.3(2)(f)/Att. 9.2

☐* ***The applicant must determine minimum Tagout boundaries to include:***

- ☐* ***E21-F032 (LPCS Jockey Pump Suction)***
- ☐* ***E21-F034 (LPCS Jockey Pump Disch Stop Check)***
- ☐* ***E21-F035 (LPCS Jockey Pump Minimum Flow)***
- ☐* ***E21-FX020 (Supp Pool Level Transmitters Fill)***
- ☐* ***52-151108 (LPCS JKY PMP circuit breaker)***
- ☐* ***E21-HS M611 (LPCS JKY PMP handswitch)***

Standard: **Appropriate boundaries determined.**

- ☐* ***E21-F032 (LPCS Jockey Pump Suction)***
- ☐* ***E21-F034 (LPCS Jockey Pump Disch Stop Check)***
- ☐* ***E21-F035 (LPCS Jockey Pump Minimum Flow)***
- ☐* ***E21-FX020 (Supp Pool Level Transmitters Fill)***
- ☐* ***52-151108 (LPCS JKY PMP circuit breaker)***
- ☐* ***E21-HS M611 (LPCS JKY PMP handswitch)***

Cue: **None**

Notes: See Attached Evaluator Answer Key for details.

Component Noun Name descriptions are not required to be exact.

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Step 4: EN-OP-102 5.3[4]

☐* **Complete the Tagout Tags Sheet EN-OP-102-01 Attachment 9.3.**

Standard: See Evaluator Answer Key of EN-OP-102-01 Attachment 9.3.

Cue: None

Notes: EN-OP-102, Attachment 9.2, section 8.0 contains the Tagging Sequence guidance.

JPM is complete when applicant completes the Tagout Tags Sheet EN-OP-102-01, Attachment 9.3.

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Task Standard(s):

All required isolations are identified and correctly documented on the Tagout Tags Sheet in accordance with EN-OP-102. **(SEE Evaluator Answer Key)**

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Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR3

Follow-Up Questions & Answers:

Comments:

	NUCLEAR MANAGEMENT MANUAL	NON-QUALITY RELATED	EN-OP-102-01	REV. 11
		INFORMATIONAL USE	PAGE 10 OF 12	
<div style="border: 2px solid red; padding: 10px; text-align: center; color: red; font-weight: bold; font-size: 1.2em;"> EVALUATOR ANSWER KEY </div>		Protective and Caution Tagging Forms & Checklist		

ATTACHMENT 9.3

TAGOUT TAGS SHEET

Clearance: MANUALTagout : XXX

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/ Removal Tag Notes
1	<u>Danger</u> *	* <u>E21-HS-M611</u> LPCS JKY PMP Handswitch 1H13-P601	<u>*1</u>	* <u>NEUT after</u> <u>STOP</u>							
2	<u>Danger</u> *	* <u>52-151108</u> LPCS JKY PMP Circuit breaker E21-C002 15B11	<u>*2</u>	* <u>OPEN</u>							
3	<u>Danger</u> *	* <u>E21-F034</u> LPCS Jockey Pump Disch Stop Check Area 9 Elevation 93'	<u>*3</u>	* <u>CLOSED</u>							
4	<u>Danger</u> *	* <u>E21-F032</u> LPCS Jockey Pump Suction Area 9 Elevation 93'	<u>*4</u>	* <u>CLOSED</u>							
5	<u>Danger</u> *	* <u>E21-F035</u> LPCS Jockey Pump Minimum Flow Area 9 Elevation 93'	<u>*5</u>	* <u>CLOSED</u>							
6	<u>Danger</u> *	* <u>E21-FX020</u> Supp Pool Level Transmitters Fill Area 9 Elevation 93'	<u>*5</u>	* <u>CLOSED</u>							

Give this page to the applicant**Initial Condition(s):**

- Plant is in Mode 4
- Low Pressure Core Spray (LPCS) Jockey Pump is to be replaced

Initiating Cue(s):

- Control Room Supervisor directs you to prepare a Tagout Tags Sheet using EN-OP-102-01 Attachment 9.3 (provided) to de-energize and mechanically isolate all water sources to the LPCS Jockey Pump
- For the purpose of this task:
 - Do not include vent and drain path tags (They will be No Tagged.)
 - Do not use the main suction and discharge piping for the LPCS pump (e.g. do not use components on 14 inch piping or greater)
 - Only consider the isolation of the jockey pump when selecting components to tag (e.g. do not rack out the LPCS pump breaker)
 - Double isolations are not required
 - Restoration configuration is not required
 - Next sequential tag serial number is "1"

Complete the shaded sections of Applicant Copy of EN-OP-102-01 Attachment 9.3

TAGOUT TAGS SHEET

MANUAL

Tagout :

XXX

[illegible]



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

2017I AR4

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017AR4

JPM Title: Perform Emergency Notifications

Facility Number: N/A
(If Bank or Modified from Bank)

JPM Attributes:

<input checked="checked" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/06/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/06/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/06/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/06/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Perform Emergency Notifications

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min
--	---	-------------------------

Setting: Classroom
Type: NLO\RO\SRO
Task: AON-EP-EMERGENCY-1
K&A: Generic 2.4.43: 3.2/3.8
Safety Function: Generic - Emergency Plan
PRA Applicability: No
10 CFR 55.45(a) (11); (12)
Performance: Perform
Reference(s): 10-S-01-6 Rev. 55, Notification of Offsite Agencies and Plant On-Call Emergency Personnel
Emergency Notification Form, EPP 06-01, Rev. 26
Handout(s): Completed Emergency Notification Form, EPP 06-01
10-S-01-6 Notification of Offsite Agencies and Plant On-Call Emergency Personnel
Manipulations: N/A
Critical Steps: 2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- Operational Hotline (OHL) telephone used for drills in the simulator or a telephone in a secure location NOT connected
- Alternate location may be used as conditions dictate

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant was at rated power
- Toxic gases were sensed in the Main Control Room
- Main Control Room was evacuated
- Control has not been established at the Remote Shutdown Panels
- A Site Area Emergency has been declared
- INFORM is INOP

Initiating Cue(s):

- You are the Communicator
- Notify State and Local offsite agencies in accordance with 10-S-01-6. Use the telephone designated by the evaluator



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Perform Emergency Notifications

Notes to Evaluator:

- **Begin the JPM by providing the following initial cue:**

Task Overview: (Detailed description of task)

This task is to make the required notifications to state and local agencies using the Operational Hotline (OHL).

This task will be simulated using a disconnected telephone.

Licensed and Non-Licensed Operators are designated to perform the duties of Control Room Communicator.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)
Note: The sequence of the following steps is critical, unless otherwise noted.

Step 1: 10-S-01-6 step 6.3.1o - s; Notification
form steps D - G

- ☐ Initiates ring down of state and local agencies by lifting the receiver of the OHL and allows 30 seconds for the agencies to answer.

Standard: In accordance with 10-S-01-6 steps 6.3.1o through s, applicant lifted the receiver of the OHL and waited 30 seconds for agencies to come on line. (An occasional "Grand Gulf Standby" may be used during this period to let them know that the hotline was in operation). Applicant checked off agencies on the Emergency Notification Form as each responds and may record the time of notification.

Cue: **After the applicant has lifted the receiver of the OHL, respond as the various state and local agencies waiting approximately 5 seconds between each individual agency:**

- "Governor's Office of Homeland Security/Emergency Preparedness"
- "Claiborne County Sheriff's Office"
- "Tensas Parish Sheriff's Office"

DO NOT respond for Mississippi Emergency Management Agency (MEMA) OR Mississippi Highway Patrol

If the applicant inquires regarding MEMA or Mississippi Highway Patrol, say nothing.

Notes: None

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Step 2: 10-S-01-6 step 6.3.1t; Notification form
step H

☐ Performs roll call of state and local agencies using the OHL.

Standard: Applicant announced "THIS IS GRAND GULF NUCLEAR STATION. THIS IS AN EMERGENCY NOTIFICATION. STANDBY FOR AN INITIAL ROLL-CALL PLEASE ACKNOWLEDGE AS YOUR NAME IS CALLED" by depressing the pushbutton on receiver to talk and releasing button to listen to agency responses. Performed Initial roll call in accordance with 10-S-01-6 step 6.3.1t as follows:

- (1) Reads agency names for all agencies not already checked off during initial ring down.
- (2) Check off the responding agencies.
- (3) Record the time of notification on the notification form, if not already done.

Cue: Respond as each agency as the applicant reads the name **but DO NOT** respond as MEMA or Mississippi Highway Patrol.

Notes: None

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Date of Examination: 12/04/2017
 Operating Test Number: GGNS 12-2017
 Facility: Grand Gulf Nuclear Station
 JPM Number: GJPM-OPS-2017IAR4

Step 3: 10-S-01-6 step 6.3.1.t(4) NOTE;
 Notification Form step J

- ☐ Identifies MEMA and Mississippi Highway Patrol did not respond and initiates an attempt to contact them immediately.

Standard: Because MEMA and Mississippi Highway Patrol did not answer, since they are the agencies listed on line 1 of the Emergency Notification Form, the applicant should have another communicator attempt to contact them immediately in accordance with 10-S-01-6 step 6.3.1t(4).

Cue: **Tell the applicant another communicator will contact MEMA or Mississippi Highway Patrol via commercial telephone.**

Notes: Applicant may identify this after the Notification has been read during Final Roll Call. This is acceptable.

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Step 4: 10-S-01-6 step 6.3.1u; Notification form
 step I

- ☐* ***Reads required items from the Emergency Notification Form to state and local agencies.***

Standard: Applicant read items 1 through 13 from the Emergency Notification Form. Applicant should have read the items slowly and deliberately because the agencies must copy the message word for word.

Critical items that must be read correctly are items 1 through 9.

Cue: **None**

Notes: None

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

Step 6: 10-S-01-6 step 6.3.1.v; Notification form
step K

☐ Inquires whether there are any questions.

Standard: Applicant announces, "THIS IS GRAND GULF NUCLEAR STATION, ARE THERE ANY QUESTIONS?"

Cue: Answer as offsite agencies, "There are no questions."

Notes:

SAT / UNSAT

Step 7: 10-S-01-6 step 6.3.1.w; Notification form
step L

☐* ***Performs final roll call of state and local agencies using the OHL.***

Standard: Applicant performs final roll call in accordance with 10-S-01-6 step 6.3.1w as follows:

- (1) Reads all agency names
- (2) Checks off the responding agencies.
- (3) **Notes absence of MEMA and Mississippi Highway Patrol.**

Cue: Respond as each agency as the applicant reads the name **but DO NOT** respond as MEMA or Mississippi Highway Patrol.

Notes: When the applicant has completed the final roll call, **EVALUATOR TERMINATE THE JPM.**

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAR4

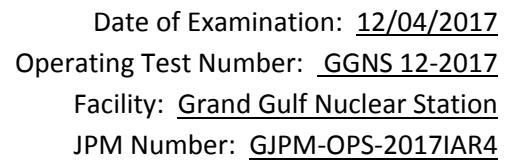
Task Standard(s):

Notification of the Offsite Agencies has been performed per 10-S-01-6.

Absence of the Mississippi Emergency Management (MEMA) and /or Mississippi Highway Patrol noted from final roll call.

SAT / UNSAT

Remember to record stop time



This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

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Give this page to the applicant

Initial Condition(s):

- Plant was at rated power
- Toxic gases were sensed in the Main Control Room
- Main Control Room was evacuated
- Control has not been established at the Remote Shutdown Panels
- A Site Area Emergency has been declared
- INFORM is INOP

Initiating Cue(s):

- You are the Communicator
- Notify State and Local offsite agencies in accordance with 10-S-01-6. Use the telephone designated by the evaluator

DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL

DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL

- ### 3. EMERGENCY CLASSIFICATION:

- 4 CURRENT EMERGENCY CLASSIFICATION ☒ DECLARATION TIME: NOW DATE: today
☐ TERMINATION TIME: DATE:

- A. ☒ No Protective Actions Recommended At This Time (Go to item 6).

- EVACUATE ALL sectors to 2 miles. EVACUATE sectors to 5 miles.

- MONITOR & PREPARE the remainder of the 10 mile EPZ with the exception of areas previously recommended for evacuation.

- C. ☐ Consider use of Potassium Iodide in accordance with State Plans.
AND
EVACUATE ALL sectors to 2 miles. EVACUATE sectors _____ to 10 miles.

- AND
MONITOR & PREPARE the remainder of the 10 mile EPZ with the exception of areas previously recommended for evacuation.

- D. ☐ Consider use of Potassium Iodide in accordance with State Plans and Shelter :

6.a EAL# HS3

6.b INCIDENT DESCRIPTION / UPDATE / COMMENTS

Control Room evacuation and plant control cannot be established.

7. REACTOR SHUTDOWN? ☐ NO ☒ YES TIME: NOW DATE: today

8. METEOROLOGICAL DATA: ☒ NOT AVAILABLE AT THIS TIME (Go to item 9)

NOTE: If not available is marked Met Data should be provided as soon as possible on a follow-up Notification Form.

- A. WIND DIRECTION FROM _____ Degrees at _____ MPH

- B. SECTORS AFFECTED (A-R) C. STABILITY CLASS (A-G)

- D. PRECIPITATION: ☐ None ☐ Rain ☐ Sleet ☐ Snow ☐ Hail ☐ Other _____

9 REFERENCE INFORMATION:

- A. ☒ NO RELEASE (Go to item 13)

- B. ☐ A RELEASE is occurring BELOW federally approved operating limits. (Go to item 9E)

- C. ☐ A RELEASE is occurring ABOVE federally approved operating limits. (Go to item 9E)

- D. ☐ A RELEASE OCCURRED BUT STOPPED (Go to item 9E)

- E. Release started at _____ (time) Release stopped at _____ (time) Release Duration _____ hrs (Actual or Expected)

10. TYPE OF RELEASE:

- A. ☐ Radioactive Gases B. ☐ Radioactive Airborne Particulates C. ☐ Radioactive Liquids (Go to item 13)

11. RELEASE RATE: A. NOBLE GASES Ci/s B. IODINES Ci/s

12. ESTIMATE OF PROJECTED OFF-SITE DOSE:

- A. Projections for _____ hours based on: ☐ Field Data ☐ Plant Data

- B. TEDE – WB DOSE COMMITMENT(mRem)**

- Site Boundary _____ 5 miles _____
2 miles _____ 10 miles

- ### C. CDE – THYROID DOSE COMMITMENT (mRem)

- Site Boundary _____ 5 miles _____
2 miles _____ 10 miles

13. MESSAGE APPROVED BY: C. Buckman EMERGENCY DIRECTOR

Return to communicator instructions line J

EPP 06-01 REV. 26 (11/14)

DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL

DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL

DO NOT FAX THIS SHEET!!

BEFORE DIALING:

- APPLICANT
COPY**

DIALING INSTRUCTIONS:

- INITIAL ROLL-CALL: (All agencies are not required to be on-line before reading notification.)

- ☐ MS Emergency Management Agency (MEMA) (9-601-933-6362)
 ☐ MS Highway Patrol (MHP) (9-601-987-1530)
- ☐ Governor's Office of Homeland Security/EP (9-1-225-925-6536)
 ☐ LA Dept. of Environmental Quality (LDEQ) (9-1-225-765-0160)
- ☐ Claiborne County Sheriff's Office (CCSC) (9-601-437-5161)
 ☐ Claiborne County Civil Defense (CCCD) (9-601-437-4684)
- ☐ Tensas Parish Sheriff's Office (TPSO) (9-1-318-766-3376)

MESSAGE:

- I. Read items 1 – 9 and 13 from the Notification Form. Read slowly and deliberately. READ LINE NUMBERS AND LETTERS. Inform them items 10-12 will be sent via fax

MESSAGE VERIFICATION AND FINAL ROLL-CALL:

- K. THIS IS GRAND GULF NUCLEAR STATION, ARE THERE ANY QUESTIONS?** Re-read any information requested. If requested information is not on the form, record the request and inform the Emergency Director/Offsite Emergency Coordinator.

- L. THIS IS GRAND GULF WITH THE FINAL ROLL-CALL. PLEASE ACKNOWLEDGE RECEIPT OF MESSAGE WHEN YOUR STATION IS CALLED

- ☐ MS Emergency Management Agency (MEMA) (9-601-933-6362)
 ☐ MS Highway Patrol (MHP) (9-601-987-1530)
- ☐ Governor's Office of Homeland Security/EP (9-1-225-925-6536)
 ☐ LA Dept. of Environmental Quality (LDEQ) (9-1-225-765-0160)
- ☐ Claiborne County Sheriff's Office (CCSC) (9-601-437-5161)
 ☐ Claiborne County Civil Defense (CCCD) (9-501-437-4684)
- ☐ Tensas Parish Sheriff's Office (TPSO) (9-1-318-766-3376)

COMPLETING THE NOTIFICATION:

- M. ☐ THIS NOTIFICATION IS COMPLETE, THIS IS THE FINAL MESSAGE.
- ☐ THE NEXT MESSAGE IS EXPECTED TO BE ISSUED: ☐ 60 MINUTES FROM START OF THIS NOTIFICATION
☐ WHEN THE EVENT IS TERMINATED
- THIS IS A DRILL. THIS IS A DRILL. THIS IS GRAND GULF OUT.

- N. FAX the Emergency Notification form (First page only, not this page) to the other Emergency Response Facilities and Offsite Agencies.

NRC NOTIFICATION: (Notify within 1 hour of initial classification)

- ☐ Nuclear Regulatory Commission (Use ENS Phone)

Name of person Contacted: _____ Time: _____

- P. ☐ NRC Resident Inspector (Office: 601-437-2387, Pager: 601-930-7900 or 1-877-400-9673) (Initial Notification Only.)

EPP 06-01
REV. 26 (11/14)

Caution
Revisions to this EPP form should be assessed for their impact against the notification form accuracy requirements of NEI 99-02 and receive a 50 54Q screening

DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL DRILL



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

2017I AS1
GGNS
2017 NRC Operating Test
Job Performance Measure

JPM Number: GJPM-OPS-2017IAS1

JPM Title: Perform EOOS Risk Assessment

Facility Number: GJPM-OPS-AUDIT 2017AS1
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Michael Rasch	11/07/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/07/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Billy Newman \ Gabriel Hargrove	11/07/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/07/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Perform EOOS Risk Assessment

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min
--	---	-------------------------

Setting: Classroom / Simulator
Type: SRO Only
Task: SRO-ADMIN-ADMIN-54
K&A: Generic 2.1.39 (3.6/4.3); 2.1.25 (3.9/4.2); 2.1.19 (3.9/3.8); 2.2.17 (2.6/3.8)
Safety Function: Generic - Conduct of Operations
Performance: Perform
Reference(s): GGNS EOOS Risk Monitor Users' Guide Model 3b
01-S-18-6 rev 18, Risk Assessment of Maintenance Activities
Handout(s): GGNS EOOS Risk Monitor Users' Guide Model 3b
01-S-18-6 rev 18, Risk Assessment of Maintenance Activities
Manipulations: N/A
Critical Steps: 3

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- Will use Simulator Shift Manager/Control Room Supervisor desktop computer for JPM OR separate computer with EOOS Program installed to run stand alone
- Verify EOOS Program to be used has been cleared out of OOSVC equipment and re-calculated
- Verify component alignment in EOOS is set to normal alignment for power operations

Safety Concerns:

- **DO NOT** utilize actual Plant EOOS Program



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is at 70% power
- Maintenance activities are in progress replacing 1E22-C001 (High Pressure Core Spray Pump)
- Building Operator reports breaker 152-1503 (1P41-C001A, Standby Service Water Pump A) has a trip flag on 151 phase A; 151G and the 186M device on the circuit breaker is tripped
- There is no apparent damage and no indication of fire
- No other equipment is affected
- EOOS computer program is available
- All other equipment and structures are operable
- It is a clear sunny day

Initiating Cue(s):

As Control Room Supervisor:

- Determine the EOOS Risk COLOR and VALUE using the EOOS computer model
- GGNS EOOS Risk Monitor Users' Guide is available

EOOS Color _____

EOOS Value _____



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Perform EOOS Risk Assessment

Notes to Evaluator:

Simulator desktop computer at the Control Room Supervisor/Shift Manager desk has the EOOS Program. (Stand alone Laptop also has the EOOS Program loaded.)

Task Overview: (Detailed description of task)

This task is performed by shift management on a daily basis when equipment and systems are taken out of service and weather changes to determine plant risk factors.

Applicant uses the EOOS Risk Assessment model computer program to take the required components out of service and run the calculation for EOOS Risk Factor.

1E22-C001 High Pressure Core Spray (HPCS) Pump and circuit breaker for 1P41-C001A Standby Service Water (SSW A) Pump A out of service, the risk color is ORANGE (6.6).

Applicant may elect to take High Pressure Core Spray System and Standby Service Water A System out of service for calculation.

For these components, the pump, circuit breaker or system or combination thereof may be selected for the calculation and the results will be the same.



Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: HPCS and SSW A are not sequence critical.

Step 1: GGNS EOOS Risk Monitor Users'
Guide sections 6.1.2 & 6.1.3

☐ Login onto a computer with the EOOS Computer Program.

Standard: Applicant logs onto the computer with the EOOS Computer Program.

Cue: **If asked, cue applicant to use the Operator portion of the program.**

Notes: Log in ID is op. The Password is "whatif".

Login ID and Password are on a placard on the computer.

SAT / UNSAT

Step 2: GGNS EOOS Risk Monitor Users'
Guide section 6.1.4

☐ Click the "Take a component out/Return to service" icon.

Standard: Applicant Click the "Take a component out/Return to service" icon.

Cue: **None**

Notes: Icon is a red pump symbol in upper left section of program.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Step 3: GGNS EOOS Risk Monitor Users'
Guide section 6.1.4

- ☐ * *Select the components to be taken out of service 1E22-C001 High Pressure Core Spray Pump and click right arrow to add to Out of service list.*

Standard: Applicant selects 1E22-C001 and places in Out of service column.

Cue: None

Notes: Applicant may select HPCS System, circuit breaker 152-1702 or pump 1E22-C001, any of these are acceptable.

SAT / UNSAT

Step 4: GGNS EOOS Risk Monitor Users'
Guide section 6.1.4

- ☐ * *Select the components to be taken out of service 1P41-C001A Standby Service Water Pump A and click right arrow to add to Out of service list.*

Standard: Applicant selects 1P41-C001A and places in Out of service column.

Cue: None

Notes: Applicant may select the SSW A System, circuit breaker 152-1503 or pump 1P41-C001A, any of these are acceptable.

152-1503 supplies Standby Service Water Pump A

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Out of Service List:

Group 1 - HPCS System, HPCS Pump, breaker 152-1702 or 1E22-C001

Group 2 - SSW A System, SSW A Pump, breaker 152-1503 or 1P41-C001A

Step 5: GGNS EOOS Risk Monitor Users'
Guide section 6.1.5

☐ Click OK for the Out of Service List on the "Change Active Item List" screen.

Standard: Applicant selects OK on the "Change Active Item List".

Cue: None

Notes: None

SAT / UNSAT

Step 6: GGNS EOOS Risk Monitor Users'
Guide section 6.1.6

☐ Click "Review/Change System Alignment" button and verifies configuration.

Standard: Applicant clicks "Review/Change System Alignment" button and verifies configuration.

Cue: None

Notes: Icon looks like two valves in parallel.

May not be performed

SAT / UNSAT



Section 6.1.7 of guide is not required since there is no environmental impact.

Step 7: GGNS EOOS Risk Monitor Users'
Guide section 6.1.8

☐ Click the "Recalculate Plant Risk Measure" icon.

Standard: Applicant clicks the "Calculate Plant Risk Measure" icon.

Cue: None

Notes: Icon looks like a calculator.

EOOS computer model will perform the calculation of Risk.

SAT / UNSAT

Step 8: EOOS Computer Model

☐* *Determines the Plant Safety Index risk color is 6.6 ORANGE using the EOOS Computer program.*

Standard: Applicant determines the combination of 1E22-C001 and 1P41-C001A out of service, the risk color is 6.6 ORANGE.

Cue: None

Notes: When calculator icon selected the computer will complete the calculation and display the results.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Task Standard(s):

HPCS Pump, system or circuit breaker removed from service
SSW A Pump, system train or circuit breaker removed from service

EOOS Risk was determined using EOOS model to be **6.6 ORANGE** with both 1E22-C001, High Pressure Core Spray Pump out of service **AND** 1P41-C001A Standby Service Water Pump A out of service.

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS1

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant

Initial Condition(s):

- Plant is at 70% power
- Maintenance activities are in progress replacing 1E22-C001 (High Pressure Core Spray Pump)
- Building Operator reports breaker 152-1503 (1P41-C001A, Standby Service Water Pump A) has a trip flag on 151 phase A; 151G and the 186M device on the circuit breaker is tripped
- There is no apparent damage and no indication of fire
- No other equipment is affected
- EOOS computer program is available
- All other equipment and structures are operable
- It is a clear sunny day

Initiating Cue(s):

As Control Room Supervisor:

- Determine the EOOS Risk COLOR and VALUE using the EOOS computer model
- GGNS EOOS Risk Monitor Users' Guide is available

EOOS Color _____

EOOS Value _____



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

2017I AS2

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IAS2

JPM Title: Review Completed Surveillance

Facility Number: N/A
(If Bank or Modified from Bank)

JPM Attributes:

<input checked="checked" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/07/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/07/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Billy Newman \ Gabriel Hargrove	11/07/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/07/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Review Completed Surveillance

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min
--	---	-------------------------

Setting: Classroom
Type: SRO Only
Task: SRO-M&S-ADMIN-14
K&A: Generic 2.1.2 (4.4); 2.1.7 (4.7); 2.2.12 (4.1); 2.2.22 (4.7)
Safety Function: Generic - Conduct of Operations
PRA Applicability: No
10CFR 55.45(a) (1); (12); (13)
Performance: Perform
Reference(s): 06-OP-1B33-V-0005 Rev. 104, Idle Recirculation Loop Startup Surveillance
01-S-06-12 Rev. 112, Surveillance Program Procedure
Handout(s): Completed Applicant copy 06-OP-1B33-V-0005, Attachment II and IV
Calculator
Manipulations: N/A
Critical Steps: 1

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is at 40% power
- Maintenance activities have been completed on Reactor Recirculation Pump A Hydraulic Power Unit and the system is prepared to restart Reactor Recirculation Pump A
- BOP operator has completed 06-OP-1B33-V-0005 Attachment II, Idle Recirculation Loop Startup Surveillance, Idle Recirculation Loop Startup, One Recirc Loop in Operation
- Reactor Recirculation Pump B is operating in Fast Speed

Initiating Cue(s):

- Review the completed surveillance for approval
- Determine if Reactor Recirculation Pump A meets criteria for restart
- Current time is **1048**



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Review Completed Surveillance

Notes to Evaluator:

Applicant will have completed 06-OP-1B33-V-0005 Attachment II Data Sheets I and II for Reactor Recirculation Loop A startup.

Task Overview: (Detailed description of task)

This task is performed to meet surveillance requirements for idle Reactor Recirculation Pump startup at various power levels.

Senior Reactor Operators (Operations Shift Management) authorize and review completed surveillances to allow startup of idle Reactor Recirculation pumps.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Note: The sequence of the following is NOT critical.

Step 1: 06-OP-1B33-V-0005 Attachment II
and 01-S-06-12 section 5.8

☐* ***Review completed surveillance 06-OP-1B33-V-0005 Attachment II Data Sheets I and II.***

Standard: Applicant reviews data on surveillance Data Sheets and determines the following:

- ☐ RPV Coolant temperature calculation from Steam Table is incorrect
Value on surveillance is 538 degrees F should be 540 degrees F
- ☐ Operating Loop flow is above the flow rate value listed.
Value should be < 22300 gpm vice 24300 gpm
- ☐ Elapsed time has exceeded the time from the last readings by greater than 15 minutes
Time of data 1030 current time 1048 > 15 minutes

Cue: None

Notes: The incorrect calculation of the RPV Coolant Temperature will alter the true number for the calculation of RPV Coolant Temperature to Bottom Head Temperature.

Applicant must identify two of the three discrepancies for satisfactory completion of the JPM.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Calculation for RPV Coolant Temperature

948.1 psig +14.7 = 962.8 psia Actual Saturation Temperature 540 degrees F

Table Temperatures - 931.17 psia 536 degrees F
962.79 psia 540 degrees F

For 948.1 psia versus correct pressure 962.8 psia

$$\frac{948.1 - 962.79}{962.79 - 931.17} = \frac{X - 536}{540 - 536}$$

$$\frac{16.93}{31.62} = \frac{X - 536}{4}$$

$$67.72 = 31.62(X - 540)$$

$$31.62X = 17016.04$$

$$X = \frac{17016.04}{31.62}$$

Calculated RPV Coolant Temperature for 948.1 psia

X = 538.14 (538 degrees F)

Value placed in Surveillance for 5.3.5b would be the value for an uncorrected pressure of 948.1 psig.



Task Standard(s):

Determined two of three discrepancies:

- RPV Coolant temperature calculation from Steam Table is incorrect
Value on surveillance is 538 degrees F should be 540 degrees F
- Operating Loop flow is above the flow rate value listed.
Value should be < 22300 gpm vice 24300 gpm
- Elapsed time has exceeded the time from the last readings by greater than 15 minutes
Time of data 1030 current time 1048 > 15 minutes

Determined based on review of completed 06-OP-1B33-V-0005 Attachment II that the surveillance is UNSAT and must be completed again to support startup of Reactor Recirculation Loop A.

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS2

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant

Initial Condition(s):

- Plant is at 40% power
- Maintenance activities have been completed on Reactor Recirculation Pump A Hydraulic Power Unit and the system is prepared to restart Reactor Recirculation Pump A
- BOP operator has completed 06-OP-1B33-V-0005 Attachment II, Idle Recirculation Loop Startup Surveillance, Idle Recirculation Loop Startup, One Recirc Loop in Operation
- Reactor Recirculation Pump B is operating in Fast Speed

Initiating Cue(s):

- Review the completed surveillance for approval
- Determine if Reactor Recirculation Pump A meets criteria for restart
- Current time is **1048**

Circle YES or NO

If NO, list why?

GRAND GULF NUCLEAR STATION

APPLICANT COPY

SURVEILLANCE PROCEDURE

06-OP-1B33-V-0005	Revision: 104
Attachment II	Page 2 of 5

DATA SHEET I
IDLE RECIRCULATION LOOP STARTUP
IDLE LOOP STARTUP WITH ONE RECIRC LOOP IN OPERATION
SAFETY RELATED

<u>Step</u>	<u>Instructions</u>	<u>Performer</u>	<u>Verifier</u>
4.0	Prerequisites satisfied.	<u>MD</u>	
5.3.1	PERFORM the following for startup of an idle recirculation loop with ONE recirc loop in operation.		
5.3.2 <i>N/A</i>	Delete	<u>N/A</u>	
5.3.3	RECORD idle loop to be restarted: (A) B (circle one)	<u>MD</u>	

NOTE

To meet time requirements of Tech Specs SR 3.4.11.3 **AND** SR 3.4.11.4, idle loop startup **Must** occur **WITHIN** 15 minutes of determination that differential temperatures are **WITHIN** PTLR limits. As a result, all other preparations specified in B33 SOI (Reference 6.1) **Should** be underway before continuing this section.

- ~~5.3.4~~ **PERFORM** the following steps every 15 minutes until the idle loop is started.
- ~~5.3.5~~ **RECORD** the following parameters on Data Sheet II.
- ~~a.~~ Reactor Vessel Steam Dome Pressure from 1C34-PI-R605, 1H13-P680.
 - ~~b.~~ RPV Coolant Temperature (Reactor Vessel Steam Dome) from computer point 1B21NA006. **IF** computer point is unavailable, **THEN** use Attachment IV to **CALCULATE** saturation temperature corresponding to steam dome pressure recorded in Step 5.3.5.a.
 - ~~c.~~ Bottom Head Drain Line Coolant Temperature from computer point B33NA002, alternate 1B21-TR-R643 Point 4. 1H13-P614. **RECORD** N/A **IF** steam dome pressure < 25 psig.

Computer point UN AVAILABLE

GRAND GULF NUCLEAR STATION

APPLICANT COPY

SURVEILLANCE PROCEDURE

06-OP-1B33-V-0005	Revision: 104
Attachment II	Page 4 of 5

DATA SHEET I
IDLE RECIRCULATION LOOP STARTUP
IDLE LOOP STARTUP WITH ONE RECIRC LOOP IN OPERATION
SAFETY RELATED

<u>Step</u>	<u>Instructions</u>	<u>Performer</u>	<u>Verifier</u>
5.3.9	VERIFY that the temperature interlock annunciator for the recirc loop to be started is clear AND INITIAL on Data Sheet II.		
Loop A:	"RECIRC PUMP A TEMP INTLK ACTUATED" 1H13-P680-3A (D-7)		
Loop B:	"RECIRC PUMP B TEMP INTLK ACTUATED" 1H13-P680-3A (E-11)		
5.3.10	PROCEED with startup of the idle loop per Reference 6.1 AND VERIFY that the idle loop is started WITHIN 15 minutes of the last time recorded in Data Sheet II.		
	Record time of recirc loop start: _____		

GRAND GULF NUCLEAR STATION

SURVEILLANCE PROCEDURE

06-OP-1B33-V-0005	Revision: 104
Attachment II	Page 5 of 5

APPLICANT
COPY

DATA SHEET II
IDLE RECIRCULATION LOOP STARTUP
IDLE LOOP STARTUP WITH ONE RECIRC LOOP IN OPERATION
SAFETY RELATED

TABLE 1
TEMPERATURE VERIFICATION

Date Time	(1) 5.3.5a Steam Dome Pressure C34-R605	(2) <i>Per Steam Table</i> 5.3.5b RPV Coolant Temp B21NA006	(3) 5.3.5c Bottom Drain Temp B33NA002	5.3.5d Recirc Loop Temp B33NA033-36		(6) 5.3.5e Oper Recirc Loop Flow C51-R614	(7) 5.3.6 RPV Coolant Bottom Head Temp (2) - (3)	(8) 5.3.7 Oper Loop - Idle Loop (4) - (5)	5.3.8a RPV Coolant - Bottom Drain (7) \leq 100 °F (Initial)	5.3.8b Oper Loop - Idle Loop (8) \leq 50 °F (Initial)	5.3.8c Operating Loop Flow (6) \leq 22,300 gpm (Initial)	5.3.9 Annunc Clear (Y/N)
				B	A							
1030	948.1 psig	538°F	508.5°F	511.6°F	479.6°F	24300 gpm	29.5°F	32°F	MD	MD	MD	Y

GRAND GULF NUCLEAR STATION

SURVEILLANCE PROCEDURE

EVALUATOR ANSWER KEY

06-OP-1B33-V-0005 Revision: 104

Attachment II Page 4 of 5

DATA SHEET I IDLE RECIRCULATION LOOP STARTUP IDLE LOOP STARTUP WITH ONE RECIRC LOOP IN OPERATION SAFETY RELATED

Step	Instructions	Performer	Verifier
5.3.9	<p>VERIFY that the temperature interlock annunciator for the recirc loop to be started is clear AND INITIAL on Data Sheet II.</p> <p>Loop A: "RECIRC PUMP A TEMP INTLK ACTUATED" 1H13-P680-3A (D-7)</p> <p>Loop B: "RECIRC PUMP B TEMP INTLK ACTUATED" 1H13-P680-3A (E-11)</p>		
5.3.10	<p>PROCEED with startup of the idle loop per Reference 6.1 AND VERIFY that the idle loop is started WITHIN 15 minutes of the last time recorded in Data Sheet II.</p> <p>Record time of recirc loop start: _____</p>		

Current Time given in JPM is 1048 time of data is 1030 should be < 15 minutes.

RVP Coolant Temp should be 540°F vice 538°F. 540°F is for 948psig; 538°F is for 948psia.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

2017I AS3

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IAS3

JPM Title: Determine Impact on Plant
Operations for Failed Relay

Facility Number: GJPM-SRO-2017AS33
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/07/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/07/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Billy Newman \ Gabe Hargrove	11/07/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/07/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Determine Impact on Plant Operations for Failed Relay

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	---	-------------------------

Setting: Classroom
Type: SRO Only
Task: SRO-NO-NORMAL-015
K&A: Generic 2.2.41 (3.9); 2.2.22 (4.7); 2.2.36 (4.2)
Safety Function: Generic - Equipment Control
PRA Applicability: No
10CFR 55.45(a) (12)
Performance: Perform
Reference(s): 04-1-01-E12-1 SU, Rev. 147
17-S-06-5, Rev. 11, Tech Spec Loop Logic
GGNS Technical Specifications 3.3.6.3 & 3.6.1.7
E1181-063; 067 additionally 026; 037; 041; 043
Handout(s): 04-1-01-E12-1 SU
17-S-06-5, Tech Spec Loop Logic
GGNS Electrical Drawings
GGNS Technical Specifications
Manipulations: N/A
Critical Steps: 2

ADMINISTRATIVE JPM

Previous 2 NRC Exams May 2017 SRO Upgrade randomly selected

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is operating at rated conditions
- Electrical Maintenance has reported relay 1E12-K93A has a burned up coil (failed)
- No replacement relay is available for 48 hours

Initiating Cue(s):

- As Control Room Supervisor
 - Determine the primary impact of the failure on plant operations
 - Identify any associated Technical Specification/TRM impact



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Determine Impact on Plant Operations for Failed Relay

Notes to Evaluator:

This is an Administrative JPM and can be performed in a classroom.

Task Overview: (Detailed description of task)

This task is to use facility electrical drawings to determine the effects a failed relay will have on the plant and its associated systems.

This is a required skill for an SRO. SROs use this skill in troubleshooting plant problems, determining proper plant operation, and assessing how a problem affects facility compliance with Tech Specs.

This is an activity performed on a routine basis by SROs during Agastat relay replacement.



Date of Examination: 12/04/2017
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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is not critical unless otherwise noted.

Applicant may elect to use the Technical Specification Instrumentation Loop Logic 17-S-06-5.

Residual Heat Removal System (E12) System Operating Instructions 04-1-01-E12-1 SU

References identify the Electrical Drawings as E-1181.

Step 1: E-1181 Electrical Drawings for E12 System

☐ Locate the Relay Tabulation Print. (E-1181-063).

Standard: Relay Tabulation Print located.

Cue: None

Notes: E-1181-00 is the Index print for the set of drawings.

E-1181 - 063 (GE sheet 2) coordinates F-4

Applicant may reference other drawings than those listed that is acceptable.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Step 2: E-1181 Electrical Drawings for E12
System

☐ Identify which print E12-K93A is located on E-1181-063 (GE sheet 3)

Standard: E12-K93A relay located on drawing table.

Cue: None

Notes:

Relay tabulation lists relays associated with the system and identifies the print the relay and associated contacts are located on.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Step 3: E-1181 Electrical Drawings for E12
System

☐ Identify other affected components associated with E12-K93A.

Standard: E12-K95A and E12-K30A relays are associated with E12-K93A and are located on E-1181 -067 (GE sheet 6).

Cue: None

Notes:

E12-K95A is the timer relay associated with E12-F048A RHR A Heat Exchanger Bypass Valve which keeps E12-F048A open for a time delay following a LOCA signal.
Relay E12-K95A (4 minutes) eliminates the 10.85 minute time delay for closing E12-F048A.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Step 4: E-1181 Electrical Drawings for E12
System

☐* **Identify the following affects of E12-K93A remaining de-energized (E-1181-067, GE sheet 6)**

E12-K93A is the 10.85 minute timer for Containment Spray Automatic Initiation. E12-K93A energizes to initiate Containment Spray. The relay being failed will prevent automatic initiation of RHR A in Containment Spray mode.

Standard: E12-K93A failed will prevent RHR A Containment Spray from Automatically initiating after 10.85 minutes.

Cue: None

Notes:

May be performed by looking at 17-S-06-5, Att. II, page 41 of 81

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Step 5: GGNS Technical Specifications and Bases and 17-S-06-5 Att. I page 17 of 22 and Att. II page 41 of 81.

☐* **Identify the associated Technical Specifications for the loss of E12-K93A.**

Standard: Technical specifications associated with E12-K93A failed is:

3.3.6.3 RHR Containment Spray System Instrumentation Actions A & C

Cue: None

Notes:

Critical information is the identification of the associated Technical Specifications.

Tech Spec 3.3.6.3 action A with one or more required channels inoperable enter condition specified in the table

Action C with only one trip system inoperable allows per action C2 to restore to operable within 24 hours.

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Task Standard(s):

- E12-K93A is the 10.85 minute time delay relay
- * *E12-K93A remaining de-energized (failed) will cause Automatic initiation of RHR 'A' Containment Spray to NOT function*
- * *RHR Containment Spray 'A' Instrumentation is Inoperable per Tech Spec 3.3.6.3 actions A and C*

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS3

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant**Initial Condition(s):**

- Plant is operating at rated conditions
- Electrical Maintenance has reported relay 1E12-K93A has a burned up coil (failed)
- No replacement relay is available for 48 hours

Initiating Cue(s):

- As Control Room Supervisor
 - Determine the primary impact of the failure on plant operations
 - Identify any associated Technical Specification/TRM impact

Primary Impact: _____

Tech Spec/TRM(s): _____



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

2017I AS4
GGNS
2017 NRC Operating Test
Job Performance Measure

JPM Number: GJPM-OPS-2017IAS4 JPM Title: Authorize Emergency Exposure
Facility Number: GJPM-OPS-AUDIT2017AS4
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch Exam Developer	11/07/2017 Date
Ops Review:	Robert Brinkman 1 st Validation by Ops Rep or Ops Validation Crew	11/07/2017 Date
Validated By:	Billy Newman \ Gabriel Hargrove 2 nd Validation by Ops Validation Crew	11/07/2017 Date
Approved By:	Ricky Liddell Project Lead or Exam Team Lead	11/07/2017 Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Authorize Emergency Exposure

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	---	-------------------------

Setting: Classroom
Type: SRO Only
Task: SRO-A&E-EMERGENCY-022
K&A: Generic 2.3.4 (3.7)
Safety Function: Generic - Radiation Control
PRA Applicability: No
10CFR 55.45(a) (10); (11)
Performance: Perform
Reference(s): 10-S-01-17, Rev 19, Emergency Personnel Exposure Control
EN-RP-201, Rev 5, Dosimetry Administration
Handout(s): 10-S-01-17
EN-RP-201
Calculator
Manipulations: N/A
Critical Steps: 4

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Site Area Emergency has been declared
- General area dose rate on elevation 161 ft. Containment is 6,000 mR/hr
- Containment entry is required to manually open Suppression Pool Makeup Valves to protect the fuel
- Task expected to take approximately 45 minutes to complete
- Two qualified operators are available and required
 - Operator #1 current year-to-date exposure TEDE of 400 mrem
 - Operator #2 current year-to-date exposure TEDE of 530 mrem

Initiating Cue(s):

- Shift Manager directs you to:
 - Determine the current exposure limit
 - Determine expected exposure for both Operator #1 and Operator #2
 - Determine approval requirements for this task

NOTE: Consider only TEDE with respect to exposure and limits



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Authorize Emergency Exposure

Notes to Evaluator:

- This is an Administrative JPM and can be performed in a classroom.

Task Overview: (Detailed description of task)

Applicant will evaluate a condition involving abnormally high radiological conditions and determine actions required to administratively control the dose received by determining who authorizes dose extensions in various situations.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Critical steps are underlined, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is not critical unless otherwise noted.

Step 1: 10-S-01-17 section 6.1

☐* ***Determine the exposure limit is 5 to 10 rem TEDE per 10-S-01-17.***

Standard: Determines per 10-S-01-17 steps 6.1.2, 6.1.3 and Table 1 that 10CFR20 whole body limit of 5 to 10 rem TEDE is in effect due to Site Area Emergency Classification.

Cue: None

Notes: 10-S-01-17, Emergency Personnel Exposure Control
Section 6.1.2 Administrative Limits are suspended upon entry into an Alert or Higher.
Section 6.1.3 Extends Emergency Response personnel exposure limits to the 10 CFR 20 limits.

TABLE 1 Dose Limits for Emergency Workers for Protecting Valuable Property (FUEL)

Limit is 5 rem up to 10 rem with authorization by the Emergency Director (ED) or Emergency Plant Manger (EPM)

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Step 2: Calculation for Operator #1

☐* **Determine expected final exposure following the task for Operator #1.**

$$\frac{6000 \text{ mrem}}{\text{hr}} \quad \frac{1 \text{ hr}}{60 \text{ min.}} \quad \frac{45 \text{ min}}{60} = 4,500 \text{ mrem} + 400 \text{ mrem} = 4900 \text{ mrem}$$

Standard: Determines exposure is less than 5000 mrem.

Cue: None

Notes: NO Extension required.

SAT / UNSAT

Step 3: Calculation for Operator #2

☐* **Determine expected final exposure following the task for Operator #2.**

$$\frac{6000 \text{ mrem}}{\text{hr}} \quad \frac{1 \text{ hr}}{60 \text{ min.}} \quad \frac{45 \text{ min}}{60} = 4,500 \text{ mrem} + 530 \text{ mrem} = 5030 \text{ mrem}$$

Standard: Determines exposure is above 5000 mrem but less than 10 rem.

Cue: None

Notes: Extension required

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Step 4: 10-S-01-17 section 6.1

- ☐* ***Determine Operator #2 is required to have extension of limit by the Emergency Director or Emergency Plant Manager.***

Standard: Determines per 10-S-01-17 steps 6.1.2 and 6.1.3 that administrative exposure limits are automatically suspended and Emergency Response personnel are automatically extended to 10CFR20 limits for the current emergency classification.

Since Operator #2 will exceed the 10CFR20 limit of 5 rem TEDE, additional approval is required as per Table 1 and determines approval of either Emergency Director or Emergency Plant Manager.

Cue: None

Notes: None

SAT / UNSAT



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Task Standard(s):

- Determined the following:
 - **Administrative Dose Limit is suspended due to EAL classification**
 - **Limit is 10 CFR 20 Limit of 5 rem (5000 mrem) TEDE**
 - **Operator #1 estimated to receive 4900 mrem and will NOT exceed the limit that requires approval from the Emergency Director OR Emergency Plant Manager**
 - **Operator #2 estimated to receive 5030 mrem and will exceed the limit and requires approval from the Emergency Director OR Emergency Plant Manager**

SAT / UNSAT

Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS4

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant**Initial Condition(s):**

- Site Area Emergency has been declared
- General area dose rate on elevation 161 ft. Containment is 6,000 mR/hr
- Containment entry is required to manually open Suppression Pool Makeup Valves to protect the fuel
- Task expected to take approximately 45 minutes to complete
- Two qualified operators are available and required
 - Operator #1 current year-to-date exposure TEDE of 400 mrem
 - Operator #2 current year-to-date exposure TEDE of 530 mrem

Initiating Cue(s):

- Shift Manager directs you to:
 - Determine the current exposure limit
 - Determine expected exposure for both Operator #1 and Operator #2
 - Determine approval requirements for this task

NOTE: Consider only TEDE with respect to exposure and limits

Exposure Limit _____

	EXPECTED EXPOSURE	APPROVAL REQUIRED
OPERATOR 1		
OPERATOR 2		



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

2017I AS5

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IAS5

JPM Title: Perform Emergency Classification

Facility Number: N/A
(If Bank or Modified from Bank)

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input checked="" type="checkbox"/> Time Critical 15 min	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Michael Rasch	11/07/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/07/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Billy Newman \ Gabriel Hargrove	11/07/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/07/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

Perform Emergency Classification

<input checked="" type="checkbox"/> Time Critical 15 min	<input type="checkbox"/> Alternate Path	Validation Time: 10 min
---	---	-------------------------

Setting: Classroom
Type: SRO Only
Task: SRO-A&E-EMERGENCY-15
K&A: Generic 2.4.41 (4.6)
Safety Function: Generic - Emergency Procedures/Plan
PRA Applicability: No
10CFR 55.45(a): (11); (12)
Performance: Perform
Reference(s): 10-S-01-1 Revision 126, Activation of the Emergency Plan
05-1-02-II-12, Rev. 12, Toxic Spill Response
05-1-02-II-1, Rev. 49, Shutdown from Remote Shutdown Panel
Handout(s): EAL flow charts from 10-S-01-1
10-S-01-1 (available)
05-1-02-II-12
05-1-02-II-1
Manipulations: N/A
Critical Steps: 1

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant was operating at rated power
- At 1055, workers spilled a toxic substance which caused the Main Control Room atmosphere to become hazardous
- At 1056, Shift Manager decided to shutdown the Reactor and evacuate the Main Control Room
- Control Room personnel obtained SCBAs and evacuated the Main Control Room
- Personnel are attempting to establish control of the plant at the Remote Shutdown Panels

Initiating Cue(s):

- At **1106**, Remote Shutdown Panel operator informs you that control will not be established for at least 10 minutes
- Classify the event
- **JPM is TIME CRITICAL**



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

Perform Emergency Classification

Notes to Evaluator:

- None

Task Overview: (Detailed description of task)

If a transient occurs or events in progress a Senior Reactor Operator must classify events as an Emergency Director in accordance with the Emergency Preparedness Plan.

10-S-01-1 requires classification based on conditions of EAL HS3 Site Area Emergency.

Emergency classification declaration must be completed within 15 minutes of recognition of an emergency.

This task is Time Critical based on 10CFR 50 Appendix E part IV. C.2 requirements.



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is not critical unless otherwise noted.

Step 1: 10-S-01-1

☐ * ***Classify the event as a SITE AREA EMERGENCY per HS3 Main Control Room Evacuation.***

Standard: Per EAL HS3, a SITE AREA EMERGENCY is declared.

Cue: None

Notes: Toxic spill affecting the Main Control Room is in EAL Toxic or Flammable Gas.

When the Main Control Room is evacuated EAL Main Control Room Evacuation is also applicable.

Based on ONEP 05-1-02-II-12; step 3.4 requires evacuation of the Main Control Room to refer to ONEP 05-1-02-II-1 which has personnel man the Remote Shutdown Panel.

Time to evacuate 1056

Report Time from RSP 1106

Delta 10 minutes

Time to establish control 10 minutes from 1106. TOTAL will be 20 minutes

If control has NOT been established at the Remote Shutdown Panels within 15 minutes, the EAL classification goes to the higher classification of HS3.

SITE AREA EMERGENCY should be declared per HS3.

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IAS5

Task Standard(s):

*Within 15 minutes of cue given, classifies the event as an **SITE AREA EMERGENCY** per **EAL HS3:***

- Control Room evacuation has been initiated.
AND
- Control of the plant cannot be established in accordance with 05-1-02-II-1,
Shutdown from the Remote Shutdown Panel within 15 minutes.

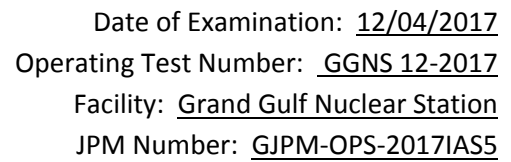
SAT / UNSAT

TIME CRITICAL: 15 MINUTE TIME LIMIT

Remember to record stop time

TIME START: _____

TIME STOP: _____



This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

Give this page to the applicant

Initial Condition(s):

- Plant was operating at rated power
- At 1055, workers spilled a toxic substance which caused the Main Control Room atmosphere to become hazardous
- At 1056, Shift Manager decided to shutdown the Reactor and evacuate the Main Control Room
- Control Room personnel obtained SCBAs and evacuated the Main Control Room
- Personnel are attempting to establish control of the plant at the Remote Shutdown Panels

Initiating Cue(s):

- At **1106**, Remote Shutdown Panel operator informs you that control will not be established for at least 10 minutes
- Classify the event
- **JPM is TIME CRITICAL**

Emergency Action Level (EAL): _____

Classification: _____

Facility: Grand Gulf Nuclear Station		Date of Examination: 12/04/2017
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: LOT 12-2017

Control Room Systems* (8 for RO) ; (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1 - Manually Startup RCIC (GJPM-OPS-2017IS1) 217000 A4.04 (3.6)	A-N-S-L	2
S2 - Retest MSIV Slow Closure (GJPM-OPS-2017IS2) 239001 A2.11 (4.1)	P-A-D-S	3
S3 - Startup Shutdown Cooling (GJPM-OPS-2017IS3) 205000 A4.01 (3.7)	A-D-L-S	4
S4 - Start, Parallel and Load EDG (GJPM-OPS-2017IS4) 264000 A4.04 (3.7)	A-D-S	6
S5 - Startup H2 Recombiner (GJPM-OPS-2017IS5) 223001 A4.13 (3.4)	EN-D-S	5
S6 - Secure Standby Gas Treatment (GJPM-OPS-2017IS6) 261000 A4.02 (3.1)	EN-N-S	9
C1 - Bypass Control Rod in RACS (GJPM-OPS-2017ICR1) 201005 A2.04 (3.2)	D-C-L	7
S7 - Shift RR Pump B to Fast Speed (GJPM-OPS-2017IS7) 202001 A4.01 (3.7) (RO ONLY)	A-D-S	1
In-Plant Systems* (3 for RO) ; (3 for SRO-I); (3 or 2 for SRO-U)		
P1 - Align SP Cooling from RSP (GJPM-OPS-2017IP1) 219000 A4.01 (3.8)	A-E-D-L	5
P2 - Install N2 Bottles on ADS Air Supply (GJPM-OPS-2017IP2) 218000 A2.03 (3.4)	P-E-D-R-L	3
PB2 - Return Fire Water Pumps to Stby (GJPM-OPS-2017IPB2) 286000 4.05 (3.3)	D	8
<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A) lternate path	A	4-6 / 4-6 / 2-3 (6)
(C) ontrol room	C	----- (1)
(D) irect from bank	D	≤ 9 / ≤ 8 / ≤ 4 (9)
(E) mergency or abnormal in-plant	E	≥ 1 / ≥ 1 / ≥ 1 (2)
(EN) gineered safety feature	EN	≥ 1 / ≥ 1 / ≥ 1 (control room sys) (2)
(L) ow-Power / Shutdown	L	≥ 1 / ≥ 1 / ≥ 1 (5)
(N) ew or (M) odified from bank including 1(A)	N-M	≥ 2 / ≥ 2 / ≥ 1 (2)
(P) revious 2 exams	P	≤ 3 / ≤ 3 / ≤ 2 (randomly selected) (2)
(R) CA	R	≥ 1 / ≥ 1 / ≥ 1 (1)
(S) imulator	S	(7)

Facility: GRAND GULF NUCLEAR STATION		Date of Examination: 12/04/2017
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: LOT 12-2017

Control Room Systems [®] (8 for RO); (7 for SRO-I) ; (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1 - Manually Startup RCIC (GJPM-OPS-2017IS1) 217000 A4.04 (3.6)	A-N-S-L	2
S2 - Retest MSIV Slow Closure (GJPM-OPS-2017IS2) 239001 A2.11 (4.3)	P-A-D-S	3
S3 - Startup Shutdown Cooling (GJPM-OPS-2017IS3) 205000 A4.01 (3.7)	A-D-L-S	4
S4 - Start, Parallel and Load EDG (GJPM-OPS-2017IS4) 264000 A4.04 (3.7)	A-D-S	6
S5 - Startup H2 Recombiner (GJPM-OPS-2017IS5) 223001 A4.13 (3.4)	EN-D-S	5
S6 - Secure Standby Gas Treatment (GJPM-OPS-2017IS6) 261000 A4.02 (3.1)	EN-N-S	9
CR1 - Bypass Control Rod in RACS (GJPM-OPS-2017ICR1) 201005 A2.04 (3.2)	D-C-L	7

In-Plant Systems* (3 for RO); (3 for SRO-I) ; (3 or 2 for SRO-U)		
P1 - Align SP Cooling from RSP (GJPM-OPS-2017IP1) 219000 A4.01 (3.7)	A-E-D-L	5
P2 - Install N2 Bottles on ADS Air Supply (GJPM-OPS-2017IP2) 218000 A2.03 (3.6)	E-D-R-L	3
PB2 - Return Fire Water Pumps to Stby (GJPM-OPS-2017IPB2) 286000 4.05 (3.3)	D	8

* All RO and **SRO-I** control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U		
(A)lternate path	A	4-6 / 4-6 / 2-3	(5)
(C)ontrol room	C	-----	(1)
(D)irect from bank	D	≤ 9 / ≤ 8 / ≤ 4	(8)
(E)mergency or abnormal in-plant	E	≥ 1 / ≥ 1 / ≥ 1	(2)
(EN)gineered safety feature	EN	≥ 1 / ≥ 1 / ≥ 1 (control room sys)	(2)
(L)ow-Power / Shutdown	L	≥ 1 / ≥ 1 / ≥ 1	(5)
(N)ew or (M)odified from bank including 1(A)	N-M	≥ 2 / ≥ 2 / ≥ 1	(2)
(P)revious 2 exams	P	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	(1)
(R)CA	R	≥ 1 / ≥ 1 / ≥ 1	(1)
(S)imulator	S		(6)



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JPM Number: GJPM-OPS-2017ICR1

2017I CR1

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017ICR1

JPM Title: Bypass a Control Rod in RACS

Facility Number: GJPM-OPS-C11216

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Michael Rasch	11/08/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/08/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/08/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/08/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017ICR1

Bypass a Control Rod in RACS

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 Min
--	---	-------------------------

Setting: Control Room
Type: RO/SRO
Task: CRO-C11(2)-OFFNORM-014
K&A: 201005 A2.03 (3.2/3.2); A2.04 (3.2/3.2); A2.06 (3.2/3.2);
A2.07 (3.2/3.2)
Safety Function: 7 - Instrumentation
1 - Reactivity Control
PRA Applicability: No
10CFR 55.45(a) (1); (6)
Performance: Simulate
Reference(s): 04-1-01-C11-2, Rev. 42, Rod Control and Information System
Handout(s): 04-1-01-C11-2Precautions & Limitations; Section 5.1; Figure 1b
Manipulations: 3
Critical Steps: 3
Low Power: **YES**
Emergency/Abnormal: No
RCA entry: No
Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

- **Permission to open Control Room Back Panel Cabinets from the Control Room Supervisor or Shift Manager**

Safety Concerns:

- **Do NOT allow candidate to manipulate Control Room controls**
- **Only point and discuss**
- **Do NOT open access cover to the switches**



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017ICR1

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Reactor startup is in progress
- Rod Pattern Controller is in effect
- Control Rod 20-09 has caused a control rod block due to the rod position out of pattern
- Reactor Engineering has been consulted and concurs with bypassing the control rod
- Requirements of Engineering Procedure 17-S-02-400 have been met
- No other control rods are currently bypassed

Initiating Cue(s):

- CRS directs you to position bypass control rod **20-09** in both Rod Action Control Cabinets, starting with RACS 1
- Control Room Supervisor (CRS) gives you the key to the RACS cabinets (simulated)
- Another operator will complete Attachment V of 04-1-01-C11-2 in parallel with your performing the rod bypass



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JPM Number: GJPM-OPS-2017ICR1

Bypass a Control Rod in RACS

Notes to Evaluator:

- All Control Room operations will be on panels P651 and P652 in the Main Control Room Back Panels
- Rod Action Control System (RACS)

Task Overview: (Detailed description of task)

This task is to bypass control rod positions in RACS 1 and 2 to allow Control Rod Movement to place the control rod in a specific position regardless of the Rod Pattern Controller.

Bypassing a control rod in RACS is done when a control rod is out of position with regard to the Rod Pattern Controller to allow the rod to be put in pattern allowing Control Rod Blocks to be cleared.

This task is performed during plant startups as required to support control rod movement when on the Rod Pattern Controller.

EVALUATOR NOTE:

After RACS 1 is completed have applicant locate RACS 2, then TERMINATE the JPM.



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JPM Number: GJPM-OPS-2017ICR1

Critical tasks are shaded, bolded, italicized, and denoted by an (*)

**NOTE: The sequence of the following steps is critical unless otherwise noted.
Sequence within a division is critical.**

(RACS 1)

Step 1: 04-1-01-C11-2, Step 5.1.2 & Figure 1b

☐* ***Determine the binary address of control rod 20-09.***

Standard: Using Figure 1b of 04-1-01-C11-2 determined the binary address of control rod 20-09 is 00110 - 00011.

Cue: None

Notes: Applicant may also use chart in panel RACS 1 P651 (RACS 2 P652).

The binary address of each rod Can be found in the Analyzer Page window on 1H13-P653 OR Figure 1b.

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Evaluator Note: Applicant can use the end column of switches on the right side and identify switches through the glass.

Step 2: 04-1-01-C11-2, Step 5.1.2 a (1)

☐* ***PUT the binary address in the following format, looking from top to bottom:***

$X_4 X_3 X_2 X_1 X_0 Y_4 Y_3 Y_2 Y_1 Y_0$

Standard: On a Bypass Card selects binary code (X) 00110 (Y) 00011 placed address switches (from top to bottom, don't count Bypass Switch) 3, 4, 9, and 10 to the right. Switches 1, 2, 5, 6, 7 and 8 should be to the left.

Cue: Switches are in the positions you indicated.

Notes: Applicant will indicate need to unlock and open cover to access switches
DO NOT OPEN THE COVER
Have applicant indicate switches using last row through glass.

See attached drawing

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Step 3: 04-1-01-C11-2, Step 5.1.2 a (2)

☐* ***PLACE BYPASS switch to BYPASS position AND CHECK that BYPASS LED illuminates.***

Standard: Placed the bypass card bypass switch to the right BYPASS (ON) and observes the red LED illuminates on the top of the card.

Cue: Bypass switch is in position you indicated and red LED on

Notes: Bypass switch is the top switch. The rod is now bypassed in RACS 1 when this step is complete.

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JPM Number: GJPM-OPS-2017ICR1

(RACS 2)

EVALUATOR NOTE:

After RACS 1 is completed have applicant locate RACS 2, then TERMINATE the JPM.

***When the control rod has been bypassed in RACS 1 and RACS 2 is located, EVALUATOR will terminate the JPM.**

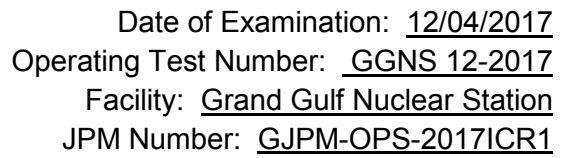
Task Standard(s):

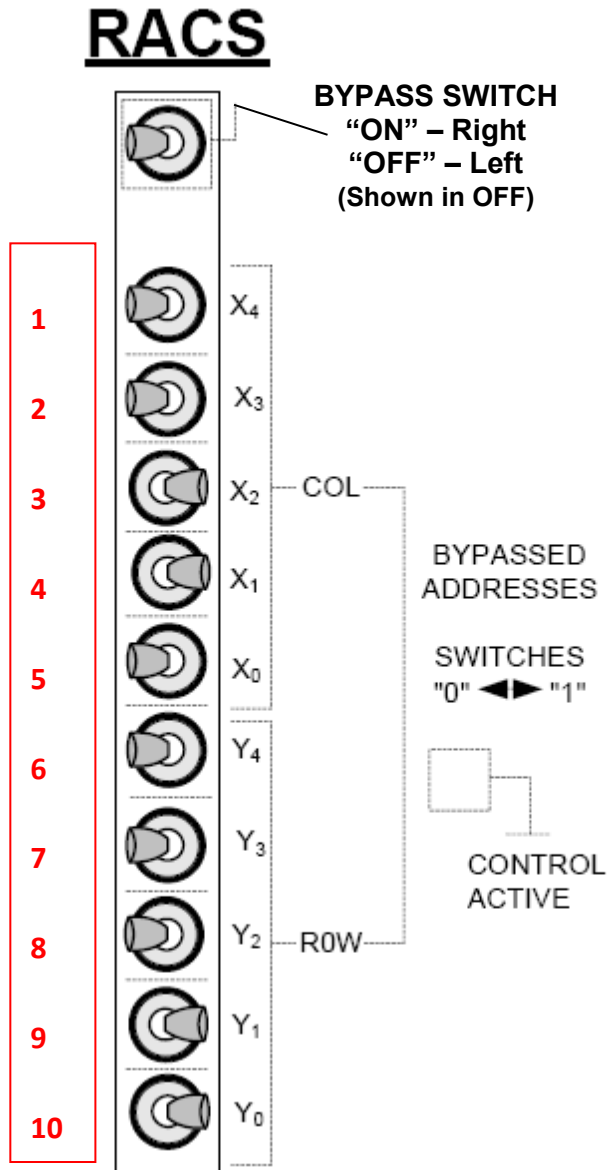
Control Rod 20-09 has been bypassed in RACS 1 and locate RACS 2 using the appropriate binary code

- Binary address code 00110 00011 determined
- Binary address switches on 1H13-P651 RACS 1 in proper position
- Position Bypass switch in BYPASS
- Locate 1H13-P652 RACS 2

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Remember to record stop time

[illegible][illegible]



EVALUATOR KEY

Do NOT give this page to Applicant!

**Binary Address
 Depicted for Rod 20-09**

00110 00011

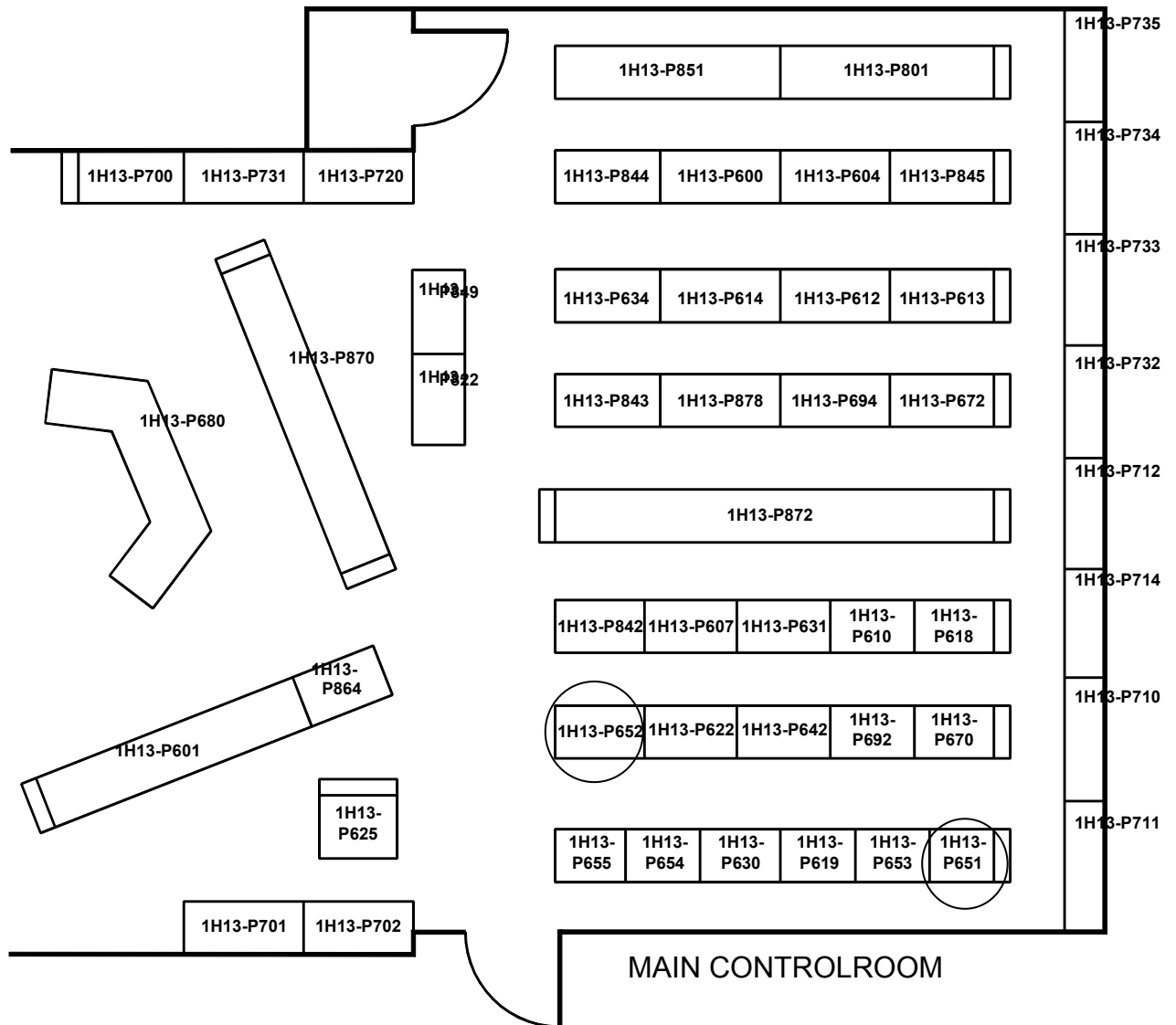


FIGURE 1

Give this page to the applicant

Initial Condition(s):

- Reactor startup is in progress
- Rod Pattern Controller is in effect
- Control Rod 20-09 has caused a control rod block due to the rod position out of pattern
- Reactor Engineering has been consulted and concurs with bypassing the control rod
- Requirements of Engineering Procedure 17-S-02-400 have been met
- No other control rods are currently bypassed

Initiating Cue(s):

- CRS directs you to position bypass control rod **20-09** in both Rod Action Control Cabinets, starting with RACS 1
- Control Room Supervisor (CRS) gives you the key to the RACS cabinets (simulated)
- Another operator will complete Attachment V of 04-1-01-C11-2 in parallel with your performing the rod bypass



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JPM Number: GJPM-OPS-2017IS1

2017I S1

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS1

JPM Title: Manually Startup RCIC

Facility Number: GJPM-OPS-E5103& E5105

(If Bank or Modified from Bank)

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Michael Rasch	11/08/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/08/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/08/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/08/2017
	Project Lead or Exam Team Lead	Date



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS1

Manually Startup RCIC

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 Min
--	--	-------------------------

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>Task:</u>	GGNS-CRO-E51-EMERGENCY-3
<u>K&A:</u>	217000 A4.03 (3.4/3.3); A4.04 (3.6/3.6)
<u>Safety Function:</u>	2 – Reactor Water Inventory Control 4 – Heat Removal from Reactor Core
<u>PRA Applicability:</u>	System Importance to Core Damage Frequency rank 17
<u>10CFR 55.45(a)</u>	(3); (4); (7)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	04-1-01-E51-1, Reactor Core Isolation Cooling System, Rev. 136 EN-OP-200, Plant Transient Response Rules, Rev. 3 04-1-01-E51-1, Attachment VI, Hard Card
<u>Handout(s):</u>	
<u># Manipulations:</u>	8
<u># Critical Steps:</u>	6
<u>Low Power:</u>	YES
<u>Emergency/Abnormal:</u>	YES
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

- Reset Simulator to any full power IC
- Run Schedule File **12-2017NRC JPM 2017IS1**
- Insert Malfunction **e22052 HPCS Pump Trip**
- Insert Malfunction **fw070a FW Line A Rupture Outside Containment @ 100%**
- Insert Malfunction **e51043 RCIC Auto Start Failure**
- Insert Malfunction **di_1e51m625d P601/21B RCIC MAN INIT Depress - NORM**
- Insert Malfunction **E51187c**, "Failure of valve E51-F045"
- Based on **E51F095 open - AO_1E51R605 ramp to 1500 rpm over 30 seconds**
- Remove override on **1E51R605 1500 rpm to 0 rpm over 10 seconds when either:**
 - **iodie51m612c(1)=1 RCIC Trip Pushbutton depressed OR**
 - **zdi4(769)=(1) E51F095 H/S to CLOSE OR**
 - **zdi4(385)=(1) RCIC Trip Throttle valve H/S to CLOSE**

Safety Concerns: None



Entergy

Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS1

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Loss of Coolant Accident is in progress
- RCIC is in STANDBY mode
- High Pressure Core Spray is unavailable
- RCIC auto start has failed
- Condensate and Feedwater are unavailable for injection

Initiating Cue(s):

Control Room Supervisor directs you to start RCIC and inject to the RPV at maximum rate



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JPM Number: GJPM-OPS-2017IS1

Manually Startup RCIC

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P601 in the Main Control Room.

Task Overview: (Detailed description of task)

With a LOCA in progress, RCIC should automatically start when RPV level drops to - 41.6".

If RCIC fails to start or as directed to be started by the Control Room Supervisor, then the operator should use 04-1-01-E51-1 Att. VI Hard Card.

Hard Card has two options to start RCIC:

- 1) Preferred method is Manual Initiation Pushbutton
- 2) Controlled Start which is manual realignment of system valves

The faults in this task are:

- 1) Manual initiation will fail to start RCIC
- 2) Failure of the RCIC Steam Supply valve E51-F045 to open
 - RCIC turbine will operate below minimal speed with this valve closed
 - Initial speed is generated by open steam bypass valve E51-F095
 - Turbine speed developed by bypass steam is not enough to develop any significant system flow or pressure



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JPM Number: GJPM-OPS-2017IS1

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 04-1-01-E51-1, Att. VI, **RCIC Manual Start**, For quick start section, Step 1

☐ **IF** desired, **ARM AND DEPRESS** RCIC MAN INIT pushbutton.

Standard: RCIC MAN INIT pushbutton armed and depressed then released.

Cue: **If applicant reports failure of RCIC Manual Initiation to start RCIC, acknowledge report.**

Notes: Pushbutton is on 1H13-P601 section 21B.

RCIC will not start upon this action. Applicant should recognize failure of RCIC to start from RCIC MAN INIT pushbutton)

Applicant will transition to the "For controlled start" section of RCIC Manual Start, Attachment VI.

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Alternate Path 1 begins with the next step, designated by "AP 1".



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AP 1 Step 2: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 1

☐* **SHIFT RCIC Flo controller to manual AND REDUCE output to minimum.**
(SHIFT RCIC Flo controller to manual)

Standard: Controller E51-R600, RCIC FLO CONT, placed in manual

Cue: None

Notes: Controller on 1H13-P601 section 21B

Mode control switch to the left until it snaps into the MAN position.

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AP 1 Step 3: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 1

☐* **SHIFT RCIC Flo controller to manual AND REDUCE output to minimum**
(REDUCE RCIC FLO CONT output to minimum)

Standard: Controller E51-R600's output was set to minimum (0%)

Cue: None

Notes: Controller on 1H13-P601 section 21B

Horizontal output meter indicating 0%.

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS1

**AP 1 Step 4: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 2**

☐* **OPEN E51-F046**

**Standard: E51-F046, RCIC WTR TO TURB LUBE OIL CLR, was opened
(Indication - red light on, green light off)**

Cue: None

Notes: 1H13-P601 section 21C

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**AP 1 Step 5: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 3**

☐ **START** Gland Seal Compressor.

Standard: RCIC Turbine Gland Seal Compressor was started **USING RCIC GL
SEAL COMPR handswitch
(Indication - red light on, green light off)**

Cue: None

Notes: 1H13-P601 section 21C

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS1

AP 1 Step 6: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 4

☐* **OPEN E51- F095.**

Standard: E51-F095, RCIC STM SPLY BYPASS VLV, was opened
(Indication - red light on, green light off)

Cue: None

Notes: 1H13-P601 section 21C

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS1

**AP 1 Step 7: 04-1-01-E51-1, Att. VI, RCIC Manual Start,
For controlled start, Step 5**

☐* ***After 6 seconds, OPEN E51-F045.***

**Standard: Approximately six seconds after E51-F095 was opened, E51-F045, RCIC STM SPLY TO RCIC TURB, was attempted to open
(Indication - red light OFF, green light OFF)**

Cue: If notified by applicant that E51-F045 failed to open and/or RCIC is not operating above 2000 rpm, acknowledge the report.

Notes: 1H13-P601 section 21C

Annunciator 1H13-P601 21A-H5, RCIC OOSVC and Status Light RCIC D1 MOV OVERLD/PWRLOSS will be received

Applicant should recognize a failure of E51-F045 to open (loss of power to MOV with both red and green lights OFF) and RCIC turbine speed does NOT get above 2000 rpm since only the RCIC Steam Supply Bypass valve is open.

IAW P&L 3.2, the turbine cannot be operated at speeds less than 2000 rpm. Therefore, the applicant must complete one of the following three steps to satisfactorily complete this JPM.

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Alternate Path 2 begins with the next step designated by "AP 2".



Option 1

AP 2 Step 8: 04-1-01-E51-1, Att. VI RCIC Manual Start, For controlled start, Reverse Step 4; EN-OP-200 step 4.0[1](c)(1)b

☐* **Close E51-F095 (steam supply to the RCIC turbine)**

Standard: E51-F095, RCIC STM SPLY BYPASS VLV was CLOSED by backing out of procedure used to open E51-F095

(Indication red light is off and green light is on)

Cue: None

Notes: 1H13-P601 section 21C

This action backs out of this section of the procedure by closing the previously opened RCIC Steam Supply Bypass valve.

This step is allowed by EN-OP-200, Plant Transient Response Rules, Section 4.0 [1](c)(1)b: "When faced with unexpected or uncertain conditions, licensed operators should place the plant in a safe condition and should not hesitate to reduce power or initiate an immediate reactor shutdown."

When the RCIC Steam Supply Bypass valve is closed, this JPM is complete.

EVALUATOR TERMINATE JPM.

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OR



Option 2

AP 2 Step 9: 04-1-01-E51-1, Att. VI, RCIC Shutdown, IF
desired to shutdown RCIC AND maintain RCIC available,
Step 1

☐* **CLOSE** Turbine Trip **AND** Throttle Valve

Standard: Placed RCIC TURB TRIP / THROT VLV handswitch to CLOSE

(Indication - green light ON, red light OFF for the RCIC TURB
TRIP/THROT SUPV (stem) and RCIC TURB TRIP/THROT VLV,
E51-C002 position indications)

Cue: None

Notes: 1H13-P601 section 21C

The action uses the RCIC Shutdown section of the procedure to secure steam to the RCIC turbine and thereby complying with P&L 3.2 to not operate the RCIC turbine at speeds less than 2000 rpm.

When the RCIC Turbine Trip and Throttle Valve is closed, this JPM is complete.

EVALUATOR TERMINATE JPM.

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AND/OR



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Option 3

AP 2 Step 10: EN-OP-200, Section 4.0[1](c)(1)b

☐* **Trip the RCIC turbine.**

Standard: RCIC TURB TRIP pushbutton DEPRESSED

(Indication - green light ON and red light OFF for RCIC TURB TRIP/THROT SUPV E51-C002 (stem) position indication)

Cue: None

Notes: 1H13-P601 section 21C

This action uses the guidance in EN-OP-200, Plant Transient Response Rules, to take action to secure steam to the RCIC turbine in order to comply with P&L 3.2.

This step is allowed by EN-OP-200, Section 4.0 [1](c)(1)b: "When faced with unexpected or uncertain conditions, licensed operators should place the plant in a safe condition and should not hesitate to reduce power or initiate an immediate reactor shutdown."

When the RCIC turbine is tripped, this JPM is complete.

EVALUATOR TERMINATE JPM.

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JPM Number: GJPM-OPS-2017IS1

Task Standard(s):

Completed the following steps:

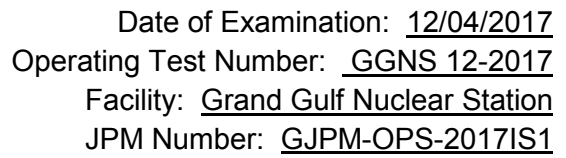
- Shifted RCIC FLO CONT to Manual
- Lowered RCIC FLO CONT output to 0%
- Opened E51-F046
- Opened E51-F095
- Opened E51-F045

When RCIC Steam Supply E51-F045 could not be opened and RCIC turbine speed could not be raised to greater than 2000 rpm, completed at least of the following options:

- Option 1 – E51-F095, RCIC STM SPLY BYPASS VLV, closed
- Option 2 – RCIC Turbine Trip and Throttle Valve (E51-C002) closed
- Option 3 – RCIC TURB TRIP pushbutton depressed

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Remember to record stop time



This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

Give this page to the applicant

Initial Condition(s):

- LOCA in progress
- RCIC in STANDBY mode
- HPCS is unavailable
- RCIC auto start has failed
- Condensate and Feedwater are not available for injection

Initiating Cue(s):

CRS directs you to start RCIC and inject to the RPV at maximum rate



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS2

2017I S2

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2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS2

JPM Title: Retest MSIV Slow Closure

Facility Number: GJPM-OPS-2015S3

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 Min

Prepared By:	Michael Rasch Exam Developer	11/08/2017 Date
Ops Review:	Robert Brinkman 1 st Validation by Ops Rep or Ops Validation Crew	11/08/2017 Date
Validated By:	Benny White \ Chase Miller 2 nd Validation by Ops Validation Crew	11/08/2017 Date
Approved By:	Ricky Liddell Project Lead or Exam Team Lead	11/08/2017 Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS2

Retest MSIV Slow Closure

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 Min
--	--	-------------------------

Setting: Simulator
Type: RO/SRO
Task: CRO-B21-SU/SD-001
K&A: 239001: A2.11 (4.1/4.3); A3.01 (4.2/4.1); A4.01 (4.2/4.0)
Safety Function: 3 - Reactor Pressure Control
PRA Applicability: Accident Type Contribution to Core Damage
Frequency - Break Outside Containment
10CFR 55.45(a) (3); (4); (8)
Performance: Perform
Reference(s): 04-1-01-B21-1, Rev. 52, Nuclear Boiler System
05-1-02-III-5, Rev. 49, Automatic Isolations
EN-OP-120, Rev. 1, Operator Fundamentals Program
Handout(s): 04-1-01-B21-1 Step 5.4
Manipulations: 11
Critical Steps: 10
Low Power: No
Emergency/Abnormal: **YES**
RCA entry: No
Engineered Safety Function: No

Previous 2 NRC Exams (2015 randomly selected)

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC-28
- Schedule File **12-2017 NRC JPM 2017IS2**
- Create event 1 **iodib21m603a(1)==1**
- Insert malfunction **ms066d** to **50.00** - Steam Leak in Aux Bldg Tunnel: MSL D
- Insert remote function **ATT09** to **DONE** - Defeating all MSIV and MSL Drain Isolation Interlocks
- Icon on 1H13-P680 right side PDS Operator Guide - **EP4EP4EP4**

Safety Concerns:

- None



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS2

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is approximately 58% power during initial startup after refueling outage
- MSIV, B21-F028A, was reworked during the outage

Initiating Cue(s):

- Control Room Supervisor directs you to perform a slow closing of MSIV B21-F028A, using 04-1-01-B21-1, Nuclear Boiler System SOI, section 5.4
- After MSIV B21-F028A reaches full closed, place handswitch for B21-F028A to the CLOSE position for data collection



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Retest MSIV Slow Closure

Notes to Evaluator:

- All controls and indications for this task are on panel P601

Task Overview: (Detailed description of task)

This task is to perform a slow closure on MSIV B21-F028A.

Following the closure of the MSIV, recognize High - High temperature in Main Steam Tunnel without Group 1 MSIV isolation. Applicant should manually close all remaining MSIVs (7) using handswitches on P601 panel to isolate the steam leak.

At initial power level Main Steam Line Drains should be closed with the exception of B21-F019, INBD MSL DR OTBD DR VLV which has another valve in the line already closed B21-F016, INBD MSL DR INBD DR VLV.



Critical steps are shaded, bolded, italicized, and denoted by an (*).

NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 04-1-01-B21-1, Step 5.4.2 a

☐* ***PLACE associated MSIV handswitch on 1H13-P601 to TEST***

Standard: Placed handswitch for B21-F028A on 1H13-P601 to the TEST position.

Cue: None

Notes: 1H13-P601 section 19C

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Step 2: 04-1-01-B21-1, Step 5.4.2 a

☐* ***DEPRESS MSIV TEST pushbutton. Holding pushbutton slow closes valve fully.***

Standard: Depressed and held the MSIV TEST pushbutton until B21-F028A indicates full closed, indicated by green light on and red light off.

Cue: None

Notes: 1H13-P601 section 19C

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Step 3: 04-1-01-B21-1, Step 5.4.2 b

☐* ***IF desired, WHEN MSIV is fully CLOSED, PLACE MSIV handswitch from TEST to CLOSE, THEN RELEASE pushbutton.***

Standard: After B21-F028A reaches the full closed position, placed B21-F028A handswitch to the CLOSE position, then releases MSIV TEST P/B.

Cue: None

Notes: When handswitch is placed in the CLOSE position, a steam line break will occur inside the Auxiliary Building Steam Tunnel.

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SIMULATOR OPERATOR - ENSURE EVENT 1 ACTUATES.



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TIME of Steam Tunnel High Temperature alarms: _____

Alternate Path begins with the next step, designated by "AP".

AP Step 4: EN-OP-120, Att. 9.2

☐ Recognize a valid Group 1 MSIV isolation signal.

Standard: Recognized a Group 1 MSIV isolation signal by observing the following four alarms:

- P601-18A(19A)-A3 and A4, MSL PIPE TNL CH-A (B,C,D) TEMP HI/INOP

Cue: If asked, indication on 1H13-P632 TJRS-R608 Point 1 indicates 260°F

Notes: Applicant may look at PDS Operator Guide EP4 EP4 EP4 and notice point for Steam Tunnel Temperature in alarm

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AP Step 5: EN-OP-120, Att. 9.2

☐ Recognize Group 1 MSIV isolation did not occur.

Standard: Recognized all remaining (7) MSIVs are open

- B21-F028B, MSL B CTMT OTBD ISOL
- B21-F028C, MSL C CTMT OTBD ISOL
- B21-F028D, MSL D CTMT OTBD ISOL
- B21-F022A, MSL A DRWL INBD ISOL
- B21-F022B, MSL B DRWL INBD ISOL
- B21-F022C, MSL C DRWL INBD ISOL
- B21-F022D, MSL D DRWL INBD ISOL

Indication of MSIVs open is red lights on, green lights off

Cue: If applicant reports a failure of a Group 1 isolation; respond as the CRS, "I understand failure of Group 1 isolation;"

Also if asked the ATC will place the Mode Switch to shutdown.

Notes:

Applicant may report EP-4 entry condition. If reported EP-4 entry, acknowledge the report.

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AP Step 6: EN-OP-120, Att. 9.2 & 05-1-02-III-5,
Step 3.3

☐* **Place all remaining MSIV handswitches (7) to the CLOSE position.**

Standard: Placed the following remaining MSIV handswitches (7) to the
CLOSE position:

_____ B21-F028B, MSL B CTMT OTBD ISOL
_____ B21-F028C, MSL C CTMT OTBD ISOL
_____ B21-F028D, MSL D CTMT OTBD ISOL
_____ B21-F022A, MSL A DRWL INBD ISOL
_____ B21-F022B, MSL B DRWL INBD ISOL
_____ B21-F022C, MSL C DRWL INBD ISOL
_____ B21-F022D, MSL D DRWL INBD ISOL

Indication of MSIVs closed is green light on, red light
off

Cue: **None**

Notes:

**EVALUATOR TERMINATE JPM after all MSIVs (8) MSIVs
handswitches are in the closed position.**

Only 7 valves are required to be manually closed due to one was
closed per the SOI retest.

**IF applicant has not begun isolation of MSIVs within 10 minutes of isolation
signal this constitutes a failure of JPM.**

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AP Step 7: EN-OP-120, Att. 9.2 & 05-1-02-III-5,
Step 3.3

- ☐ Place the following MSL Drain handswitches to the CLOSE position.

B21-F019, INBD MSL DR OTBD DR VLV

B21-F067A, OTBD MSL A DR VLV (should be closed based on initial power)

B21-F067B, OTBD MSL B DR VLV (should be closed based on initial power)

B21-F067C, OTBD MSL C DR VLV (should be closed based on initial power)

B21-F067D, OTBD MSL D DR VLV (should be closed based on initial power)

B21-F016, INBD MSL DR INBD DR VLV (should be closed based on initial power)

Standard: Placed the following MSL Drain valve handswitches to the CLOSE position:

_____ B21-F019, INBD MSL DR OTBD DR VLV
Indication of MSL Drain Valves closed is green light on,
red light off

Cue: **None**

Notes:

These valves should already be closed due to initial power level. B21-F019 has another valve (B21-F016) in the line closed therefore would NOT be critical.

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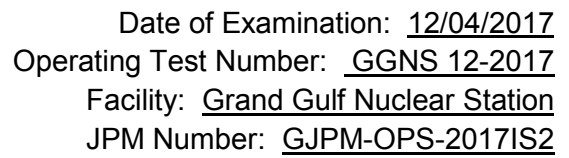


Task Standard(s):

- Placed handswitch for B21-F028A on 1H13-P601 to the TEST position
- Depressed and held the MSIV TEST pushbutton until B21-F028A indicates full closed
- Placed B21-F028A handswitch to the CLOSE position, then released MSIV TEST P/B
- Recognized High - High temperature in Main Steam Tunnel without Group 1 MSIV isolation.
- Manually closed the following MSIVs:
 - B21-F028B, MSL B CTMT OTBD ISOL
 - B21-F028C, MSL C CTMT OTBD ISOL
 - B21-F028D, MSL D CTMT OTBD ISOL
 - B21-F022A, MSL A DRWL INBD ISOL
 - B21-F022B, MSL B DRWL INBD ISOL
 - B21-F022C, MSL C DRWL INBD ISOL
 - B21-F022D, MSL D DRWL INBD ISOL
- B21-F028A, MSL A CTMT OTBD ISOL should already be closed

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Remember to record stop time

[illegible][illegible]

Give this page to the applicant

Initial Condition(s):

- Plant is approximately 58% power during initial startup after refueling outage
- MSIV, B21-F028A, was reworked during the outage

Initiating Cue(s):

- Control Room Supervisor directs you to perform a slow closing of MSIV B21-F028A, using 04-1-01-B21-1, Nuclear Boiler System SOI, section 5.4
- After MSIV B21-F028A reaches full closed, place handswitch for B21-F028A to the CLOSE position for data collection



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2017I S3

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS3

JPM Title: Startup RHR Shutdown Cooling

Facility Number: GJPM-OPS-E12081

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 20 min

Prepared By:	Michael Rasch	11/08/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/08/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/08/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/08/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS3

Startup RHR Shutdown Cooling

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 20 Min
--	--	-------------------------

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>Task:</u>	GGNS-CRO-E12-SU/SD-8
<u>K&A:</u>	205000 A2.10 (2.9/2.9); A3.01 (3.2/3.1); A4.02 (3.6/3.5); A4.01 (3.7/3.7); A4.03 (3.6/3.5); A4.06 (3.8/3.7)A4.09 (3.1/3.1) Generic 2.1.30 (4.4/4.0); 2.1.31 (4.6/4.3)
<u>Safety Function:</u>	4 – Heat Removal from Reactor Core
<u>PRA Applicability:</u>	System Importance to Core Damage Frequency rank 3
<u>10CFR 55.45(a)</u>	(3); (4); (5); (7)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	04-1-01-E12-2, Rev. 123, Shutdown Cooling and Alternate Decay Heat Removal Operation 04-1-02-1H13-P601 20A-E6 Rev. 102 Alarm Response Instructions 1H13-P601 EN-OP-115, Rev. 20, Conduct of Operations 02-S-01-27, Rev. 73, Operations Philosophy EN-OP-120, Rev. 1, Operator Fundamentals Program 04-1-01-E12-2 Precautions & Limitations; section 4.1 marked up to section 4.1.2 c (6)
<u>Handout(s):</u>	
<u># Manipulations:</u>	11
<u># Critical Steps:</u>	8
<u>Low Power:</u>	YES
<u>Emergency/Abnormal:</u>	YES
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No



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JPM Number: GJPM-OPS-2017IS3

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC-14
- Run Schedule File **JPM * E12081 RHR A SDC STARTUP**

OR

- Initialize the simulator to Reactor in Mode 4 < 200 degrees F
- Insert Component Override on **E12-F064A handswitch to OPEN**
di_1e12m621aP601/20C RHR A MIN FLO TO SUPP on TRIGGER 1
- Secure the RHR Shutdown Cooling 'A' lineup. Leave the RHR 'A' Room Cooler and Standby Service Water 'A' in operation through RHR Heat Exchanger
- Valve Lineup
 - E12-F008, F009, F006A, F064A, F024A, F053A and B21-F065A **Closed**
 - E12-F003A, F048A, F047A **Open**
- Markup SOI 04-1-01-E12-2 to Step 4.1.2c (6)
- Place Danger tag on 1E12-F037A and 1E12-F037B handswitches
- Place Caution tag on 1B21-F065A handswitch
- Pull up on H13-P680 right side PDS Heatup/Cooldown graph

Safety Concerns:

None



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS3

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is in Mode 4
- Reactor Coolant temperature is 125 ° F
- Radiation Protection and Chemistry personnel have been notified of the startup of RHR 'A' Shutdown Cooling
- Standby Service Water 'A' is in operation with flow through RHR Heat Exchanger
- RWCU F/Ds are in HOLD
- RHR 'A' Room Cooler is in operation
- RHR 'A' is not required to be flushed or warmed
- RHR 'A' was secured for engineering testing 30 minutes ago
- Fill and Vent on RHR 'A' has been verified
- Control Room Supervisor has N/A'd step 4.1.2c(12) because plant is in Mode 4
- ADHR is not in operation
- RHR 'A' Jockey Pump is secured
- E12-F082A, RHR A JCKY PMP SUCT ISOL VLV is closed

Initiating Cue(s):

- Control Room Supervisor directs you to place RHR A in Shutdown Cooling through E12-F053A, starting at Step 4.1.2c (6) of SOI 04-1-01-E12-2
- Establish RHR flow with E12-F003A and E12-F048A full open



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Startup RHR Shutdown Cooling

Notes to Evaluator:

- All controls will be from panel P601 in the Main Control Room
- Notification of RP and Chemistry was given in the Initial Conditions
- Operation of SSW 'A' and the RHR 'A' Room Cooler was given in the Initial Conditions
- Plant is in Mode 4 so notification of the Refuel Floor is not necessary

Task Overview: (Detailed description of task)

This task is to startup Residual Heat Removal (RHR) A in Shutdown Cooling Mode.

During the evolution, the E12-F064A, RHR A MIN FLO TO SUPP POOL will fail open upon pump start simulating a failure of the time delay relays.

This requires the recognition of the failure and actions to stop draining the Reactor Vessel contents to the Suppression Pool.



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Critical steps are underlined, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Applicant may place MOV TEST switches to TEST just before operating MOVs. This is acceptable

Step 1: 04-1-01-E12-2, Step 3.8.18

☐ PLACE RHR A MOV TEST handswitch to TEST

Standard: RHR A MOV TEST handswitch in TEST.

Annunciator 1H13-P601 20A-H6 RHR A SYS OOSVC will alarm and associated Status Light RHR A MOV IN TEST STATUS will illuminate

Cue: None

Notes: 1H13-P601 section 20B

Steps 1, 2 and 3 are NOT sequence critical.

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Step 2: 04-1-01-E12-2, Step 3.8.18

☐ PLACE Division 1 NSSSS MOV TEST handswitch to TEST

Standard: Division 1 NSSSS MOV TEST handswitch in TEST.

Annunciator 1H13-P601 19A-H3, RX DIV1 ISOL-SYS-OOSVC alarms

Cue: None

Notes: 1H13-P601 section 19B is NSSSS OTBD MOV TEST (Division 1)

Steps 1, 2 and 3 are NOT sequence critical.

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Step 3: 04-1-01-E12-2, Step 3.8.18

☐ PLACE Division 2 NSSSS MOV TEST handswitch to TEST

Standard: Division 2 NSSSS MOV TEST handswitch in TEST.

Annunciator 1H13-P601 19A-H3, RX DIV1 ISOL-SYS-OOSVC alarms

Cue: None

Notes: 1H13-P601 section 18B is NSSSS INBD MOV TEST (Division 2)

Steps 1, 2 and 3 are NOT sequence critical.

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Applicant reviews NOTE.

NOTE

To obtain good core circulation, it is recommended that **AT LEAST ONE** Recirculation pump be in operation. **IF** Recirculation Pumps are **NOT** in operation, reactor level is to be maintained above 82 inches.

Step 4: 04-1-01-E12-2, Step 4.1.2c (6)

☐ **ENSURE CLOSED** E12-F064A, RHR A MIN FLO TO SUPP POOL.

Standard: Checked closed E12-F064A, RHR A MIN FLO TO SUPP POOL by observing valve position indication red light off, green light on.

Cue: **None**

Notes: 1H13-P601 section 20C

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Step 5: 04-1-01-E12-2, Step 4.1.2c (7)

☐ **ENSURE** RHR JOCKEY PUMP A is shutdown.

Standard: Checked RHR Jockey Pump A is shutdown by either dispatching an operator or going to the upper control room to secure the pump.

Cue: **Once applicant recognizes that the control switch for this pump is located in the upper control room, CUE applicant that RHR A Jockey pump is secured.**

Notes: RHR A Jockey Pump is not in the simulator.
Applicant may recognize information given in cue

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Step 6: 04-1-01-E12-2, Step 4.1.2c (8)

☐ **ENSURE CLOSED** E12-F082A, RHR A JCKY PMP SUCT ISOL VLV.

Standard: Checked closed E12-F082A, RHR A JCKY PMP SUCT ISOL VLV by either dispatching an operator or going to the upper control room and observing valve position indication.

Cue: **Once applicant recognizes that the control switch for this valve is located in the upper control room, CUE applicant that E12-F082A, RHR A JCKY PMP SUCT ISOL VLV is closed.**

Notes: Handswitch for the E12-F082A is not in the simulator.
Applicant may recognize information given in cue

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Step 7: 04-1-01-E12-2, Step 4.1.2c (9)

- ☐ **ENSURE CLOSED** E12-F428A, PRESSURE LOCK ISOL FOR F024A(Concurrent Verification Required)

Standard: Dispatched an operator to check closed E12-F428A and to obtain a concurrent verification.

Cue: **E12-F428A, PRESSURE LOCK ISOL FOR F024A is closed and the concurrent verification is completed.**

Notes: E12-F428A is a manual valve not in simulator.

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Step 8: 04-1-01-E12-2, Step 4.1.2c (10)

- ☐ **ENSURE CLOSED** E12-F438A, PRESSURE LOCK ISOL FOR F064A. (Concurrent Verification Required).

Standard: Dispatched an operator to check closed E12-F438A and to obtain a concurrent verification.

Cue: **E12-F438A, PRESSURE LOCK ISOL FOR F064A is closed and the concurrent verification is completed.**

Notes: E12-F438A is a manual valve not in simulator.

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Step 9: 04-1-01-E12-2, Step 4.1.2c (11)

☐ **ENSURE CLOSED** E12-F004A, RHR A SUCT FM SUPP POOL.

Standard: Checked closed E12-F004A by observing valve position indication red light off, green light on.

Cue: **None**

Notes: 1H13-P601 section 20C

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Step 10: 04-1-01-E12-2, Step 4.1.2c (12)

☐ **IF** Plant is in mode 5,
THEN ENSURE the 135 psig pressure jumpers are installed per 03-1-01-5 to prevent inadvertent isolations. (This step May be N/A'd by an on-shift SRO.)

Standard: N/A

Cue: **None**

Notes: Per Initial Conditions, SRO N/A'd step. Plant is in Mode 4.

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Step 11: 04-1-01-E12-2, Step 4.1.2c (13)(a)

☐ **ENSURE OPEN E12-F010 SHUTDN CLG MAN SUCT VLV**

Standard: Observed E12-F010, SHUTDN CLG MAN SUCT VLV is OPEN by observing valve position indication red light on, green light off.

Cue: **Concurrent verification will be requested. ACKNOWLEDGE REQUEST as indicated.**

Notes: 1H13-P601 section 17C

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Step 12: 04-1-01-E12-2, Step 4.1.2c (13)(b)

☐* **ENSURE OPEN E12-F008 RHR SHUTDN CLG OTBD SUCT VLV**

Standard: **OPENED E12-F008, RHR SHUTDN CLG OTBD SUCT VLV by taking handswitch to OPEN as indicated by red light on, green light off.**

Cue: **None**

Notes: 1H13-P601 section 20C

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS3

Step 13: 04-1-01-E12-2, Step 4.1.2c (13)(c)

☐* **ENSURE OPEN E12-F009 RHR SHUTDN CLG INBD SUCT VLV**

- Ensure breaker 52-163137 is in CLOSE position
- *Ensure OPEN E12-F009, RHR SHUTDN CLG INBD SUCT VLV*

Standard: OPENED E12-F009, RHR SHUTDN CLG INBD SUCT VLV by taking handswitch to OPEN as indicated by red light on, green light off.

Cue: Concurrent verification will be requested. **ACKNOWLEDGE REQUEST** as indicated.

If NLO dispatched to 52-163137, report 52-163137 is closed.

Notes: 1H13-P601 section 17C

E12-F009 circuit breaker 52-163137 is closed by the valve having indication on 1H13-P601. This portion is NOT Critical.

Opening E12-F009 IS CRITICAL. Applicant may indicate the circuit breaker is closed based on the indication is illuminated.

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Step 14: 04-1-01-E12-2, Step 4.1.2c (13)(d)

☐* **ENSURE OPEN E12-F006A RHR PMP A SUCT FM SHUTDN CLG**

Standard: OPENED E12-F006A, RHR PMP A SUCT FM SHUTDN CLG by taking handswitch to OPEN as indicated by red light on green light off.

Cue: None

Notes:

1H13-P601 section 20C

Long stroke time valve

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Step 15: 04-1-01-E12-2, Step 4.1.2c (13)(e)

☐ **ENSURE OPEN E12-F047A RHR HX A INL VLV**

Standard: Observed E12-F047A RHR HX A INL VLV is OPEN by observing valve position indication red light on, green light off.

Cue: None

Notes:

1H13-P601 section 20C

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Step 16: 04-1-01-E12-2, Step 4.1.2c (13)(f)

☐ **ENSURE OPEN** E12-F048A RHR HX A BYP VLV

Standard: Observed E12-F048A, RHR HX A BYP VLV is OPEN by observing valve position indication on meter E12-R612A HX A BYP VLV F048A POS at 100%.

Cue: **None**

Notes:

1H13-P601 section 20B
Valve is a throttle valve.

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Step 17: 04-1-01-E12-2, Step 4.1.2c (14)

☐* **CLOSE E12-F003A RHR HX A OUTL VLV**

Standard: **CLOSED** E12-F003A, RHR HX A OUTL VLV by taking handswitch to **CLOSE** and hold until position as indicated by E12-R611A, HX A OUTL VLV F003A POS reading 0%.

Cue: **None**

Notes:

1H13-P601 section 20B
Valve is a throttle valve.

Long stroke time valve

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Step 18: 04-1-01-E12-2, Step 4.1.2c (15)

- ☐ **ENSURE CLOSED** B21-F065A, FW INL SHUTOFF VLV.

HANG a CAUTION tag on OPEN/CLOSE pushbuttons for B21-F065A, FW INL SHUTOFF VLV that states:

“OPENING B21-F065A, FW INL SHUTOFF VLV can cause injection of water into the Reactor Vessel.

PRIOR to opening B21-F065A, FW INL SHUTOFF VLV, ENSURE the status of Shutdown Cooling AND Condensate/Feedwater systems will NOT cause an unintentional introduction of water into Reactor.”

Standard: Verified B21-F065A closed on 1H13-P680 by observing its green light on, red light off.

Cue: **None**

Notes: Applicant may verify Caution tag is in place. 1H13-P680 section 2C

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Applicant reviews NOTE.

NOTE

Step 4.1.2c (18) establishes RHR A SDC flow. Three return path options are available:

1. Option 1 - RHR SDC return to Feedwater loops E12-F053A
2. Option 2 - RHR SDC return to Upper Ctmt Pool via E12-F037A
(**IF** using Option 2,
THEN ENSURE all prerequisites for this SDC flowpath are met **BEFORE** establishing flow.)
3. Option 3 - RHR SDC return to LPCI Line via E12-F042A
(**IF** using Option 3,
THEN REFER to EPI 04-1-03-E12-1 to allow data collection **BEFORE** establishing flow.)

E12F04



Step 19: 04-1-01-E12-2, Step 4.1.2c (16) & (17)

- ☐ **IF** using Option 2,
THEN PERFORM following:

(a) **ENSURE OPEN** E12-F027A.

(b) **CLOSE** G41-F041A.

- IF** Option 3 is desired,
THEN PERFORM following:

(a) **ENSURE OPEN** E12-F027A.

(b) **REFER** to EPI 04-1-03-E12-1 before establishing flow.

Standard: **N/A** - Refers to Initiating Cue and determines return flow is through E12-F053A and continues.

Cue: **None**

Notes:
Initiating CUE is to use E12-F053A.

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Applicant reviews CAUTION.

CAUTION

IF greater than 1154 gpm is **NOT** established **WITHIN** 8 seconds of pump start, **THEN** F064A, RHR A MIN FLO TO SUPP POOL automatically opens, establishing flow path from Reactor to Suppression Pool.



Step 20: 04-1-01-E12-2, Step 4.1.2c (18)

☐ **ENSURE** RWCU F/Ds are in HOLD per 04-1-01-G33-1 SOI.

Standard: Refers to Initial Conditions and determines that RWCU F/Ds are in HOLD.

Cue: **None**

Notes: Initial Conditions state RWCU F/Ds in HOLD.

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Step 21: 04-1-01-E12-2, Step 4.1.2c (19)

☐* **START RHR PMP A.**

Standard: **STARTED RHR PMP A by taking handswitch to START as indicated by pump red light on, green light off.**

Cue: **None**

Notes:
1H13-P601 section 20C

Annunciator 1H13-P601 18A-E2 ADS A LPCS/RHR A PERM

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Simulator Operator NOTE:

When RHR pump is started, verify or activate TRIGGER 1.



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NOTE: STEP 22 should be performed within 8 seconds of Pump Start to establish flow to prevent E12F064A Minimum flow from opening.

Step 22: 04-1-01-E12-2, Step 4.1.2c (19)(a)

☐* ***IMMEDIATELY FULLY OPEN E12-F053A, RHR A SHUTDN CLNG RTN TO FW.***

Standard: IMMEDIATELY FULLY OPENED E12-F053A, RHR A SHUTDN CLNG RTN TO FW by observing valve position indication red light on, green light off.

Cue: None

Notes:

1H13-P601 section 20C
Flow will be indicated on E12-R603A, RHR PMP A DISCH FLO on 1H13-P601 section 20B.

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Alternate Path begins with the next step designated by "AP".

AP Step 23: 04-1-01-E12-2, Step 4.1.2c;
ARI 04-1-02-1H13-P601 20A-E6 step 3.2

☐ Recognizes E12-F064A RHR A Minimum Flow Valve auto opens.

Standard: Recognized E12-F064A is open as indicated by red light on, green light off and acknowledged and responded to 1H13-P601-20A-E6 (RHR VLVS F006A & F064A OPEN) alarm

Cue: If applicant reports E1-F064A opened but should not have, acknowledge report.

Notes: May attempt to close E12-F064A. Should perform actions of the ARI.

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AP Step 24: 04-1-02-1H13-P601-20A-E6 steps 3.1 & 3.2

- ☐* **3.1** If desired increase shutdown cooling flow to greater than 1154 gpm as indicated on RHR PUMP A FLOW indicator R603A. Check MOV-F064 closes.
- 3.2** *If unable to increase pump flow, trip RHR Pump A and then close MOV-F064.*

Standard: Tripped RHR Pump A as indicated by red light off and green light on and attempted to close E12-F064A. Recognized that E12-F064A failed to close. If E12-F064A not taken to close but the RHR A pump is secured **CRITICAL STEP is MET.**

Cue: If Applicant reports the trip of RHR Pump A and the E12-F064A failure to close when taken to close, then acknowledge the report.

Notes: Applicant may make the decision not to attempt to increase flow in an attempt to close the E12-F064A valve and immediately trip RHR Pump A. This is acceptable.

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AP Step 25: EN-OP-115 step 4.0[2](b)
and 02-S-01-27 step 6.7.15.1

☐ * **CLOSES any or all of the following valves:**

- a) **E12-F006A**
- b) **E12-F008**
- c) **E12-F009**

Standard: Closed any or all of the following valves:

E12-F006A, RHR PMP A SUCT FM SHUTDN CLG

E12-F008, RHR SHUTDN CLG OTBD SUCT VLV

E12-F009, RHR SHUTDN CLG INBD SUCT VLV

by turning their handswitches to CLOSE and observing their red lights are off and their green lights are on.

Cue: None

Notes: Closing any one or all three valves will still satisfy the task.

EVALUATOR TERMINATE JPM after RHR A pump is secured and any one of the above valves have been closed.

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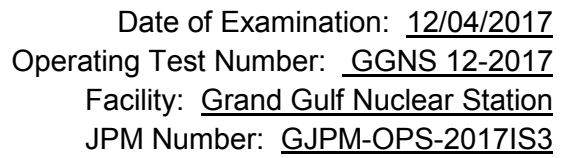
Task Standard(s):

- Opened E12-F008, RHRSHUTDN CLG OTBD SUCT VLV
- Opened E12-F009, RHR SHUTDN CLG INBD SUCT VLV
- Opened E12-F006A, RHR PMP A SUCT FM SHUTDN CLG
- Closed E12-F003A, RHR HX A OUTL VLV
- Started RHR Pump A
- Opened E12-F053A, RHR A SHUTDN CLG RTN TO FW
- RHR A pump is secured
- **Either** E12-F006A, or F008, or F009 is closed

If NO action is taken prior to RPV level reaching the automatic isolation signal for Shutdown Cooling (+11.4 inches Narrow Range), this constitutes a failure of the JPM.

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Remember to record stop time



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Give this page to the applicant**Initial Condition(s):**

- Plant is in Mode 4
- Reactor Coolant temperature is 125 ° F
- Radiation Protection and Chemistry personnel have been notified of the startup of RHR 'A' Shutdown Cooling
- Standby Service Water 'A' is in operation with flow through RHR Heat Exchanger
- RWCU F/Ds are in HOLD
- RHR 'A' Room Cooler is in operation
- RHR 'A' is not required to be flushed or warmed
- RHR 'A' was secured for engineering testing 30 minutes ago
- Fill and Vent on RHR 'A' has been verified
- Control Room Supervisor has N/A'd step 4.1.2c(12) because plant is in Mode 4
- ADHR is not in operation
- RHR 'A' Jockey Pump is secured
- E12-F082A, RHR A JCKY PMP SUCT ISOL VLV is closed

Initiating Cue(s):

- Control Room Supervisor directs you to place RHR A in Shutdown Cooling through E12-F053A, starting at Step 4.1.2c (6) of SOI 04-1-01-E12-2
- Establish RHR flow with E12-F003A and E12-F048A full open



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2017I S4

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS4

JPM Title: Start, Parallel and Load EDG

Facility Number: GJPM-OPS-P75021

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 25 min

Prepared By:	Michael Rasch	11/09/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/09/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/09/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/09/2017
	Project Lead or Exam Team Lead	Date



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JPM Number: GJPM-OPS-2017IS4

Start, Parallel and Load EDG

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 25 Min
--	--	-------------------------

Setting: Simulator
Type: RO/SRO
Task: CRO-P75-002
K&A: 264000 A4.04 (3.7/3.7)
Generic 2.1.30 (4.4/4.0)
262001 A4.01 (3.4/3.7)
Safety Function: 6 - Electrical
PRA Applicability: System Importance to Core Damage Frequency rank 11
10CFR 55.45(a) (3); (4); (8)
Performance: Perform
Reference(s): 04-1-01-P75-1, Rev 106, Standby Diesel Generator System
Handout(s) 04-1-01-P75-1 Precautions & Limitations and marked up
to step 4.2.2b
Manipulations: 9 or 8
Critical Steps: 8
Low Power: No
Emergency/Abnormal: No
RCA entry: No
Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

- Reset Simulator to ANY IC
- Run Schedule file GJPM-OPS-P75021

OR

- Any Power IC
- No ECCS Initiations present
- Start up Standby Service Water 'B' and place it through the RHR Heat Exchangers, open P41-F018B
- Place SSW B MOV test switch to **TEST**
- Place Malfunction **p41148b** SSW Pump B trip on **TRIGGER 1**
- **Markup** SOI section complete to step 4.2.2b

Safety Concerns:

- None



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Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Division 2 Diesel Generator is in Standby per the SOI
- Two Operators are standing by at the Diesel Generator and communications established with one at the PUSH TO STOP pushbutton
- I&C has completed ALL testing required to run the Diesel Generator and verified the crank case manometer
- Diesel Generator will only run for 30 minutes
- Diesel Generator has already been manually barred over and air rolled
- Chemistry has sampled the Jacket Water System and it is ready for operation
- There are NO open work orders on the diesel
- Governor Oil level has been verified satisfactory
- Standby Service Water 'B' is operating in the Chemical Addition Lineup with P41-F018B, SSW INL TO DG 12 WTR CLR open
- The last Diesel Generator run for DG12 was 2 weeks ago
- SSW B MOV Test switch is in TEST
- Another operator will take care of Diesel Generator Start Log

Initiating Cue(s):

CRS directs you to start Div 2 Diesel Generator using 04-1-01-P75-1, Standby Diesel Generator System (Rev 106), beginning at Step 4.2.2.b.

- Operate in parallel with Offsite and load to ≈ 3 MWe and ≈ 1.5 MVARs
- All local operations have been performed



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Start, Parallel and Load EDG

Notes to Evaluator:

- All controls will be from panel P864 in the Main Control Room

Task Overview: (Detailed description of task)

This task is to start the Division 2 Standby Diesel Generator (DG12), parallel the generator to 16AB bus and load the generator with real and reactive load per the SOI.

With the Diesel connected to the bus loaded, Standby Service Water will be lost requiring the applicant to secure the Diesel Generator in accordance with Precaution and Limitation 3.55, CAUTION prior to Step 4.2.2.c and Step 4.2.2 c (6).



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Critical steps are shaded, bolded, italicized, and denoted by an (*)
NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 04-1-01-P75-1, Step 4.2.2 b (1)

- ☐ On Local Pump Control panel **START** Auxiliary Lube Oil pump C007B by **PLACING** its Control switch HS-M031B to CLOSE **AND THEN BACK** to AUTO. After Turbo Oil Press Left Front R014B gage **AND** Turbo Oil Press Right Front R015B gage increase to ≥ 20 psig for Div 2, **STOP** Auxiliary Lube Oil pump by **PLACING** Control switch HS-M031B to TRIP **AND THEN BACK** to AUTO.

Standard: Applicant instructed local operator to start Auxiliary Lube Oil Pump and return control to AUTO. Then, after Turbo Oil Press Left and Right is > 20 psig, instructed local operator to stop Auxiliary Lube Oil Pump.

Cue: **Left and Right Turbo Oil Pressures are 25 psig and the Auxiliary Lube Oil Pump is stopped and in AUTO.**

Notes: None

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Step 2: 04-1-01-P75-1, Step 4.2.2 b (2)

☐* ***IMMEDIATELY START Standby Diesel Generator 12 by PRESSING DIV 2 DSL ENG RMT MAN START pushbutton on 1H13-P864***

Standard: Div 2 Diesel Generator Manual Start pushbutton depressed and released.

Indications - red light above Start pushbutton ON, green light OFF, READY TO LOAD status light (1H13-P864 section 2B) ON

Cue: If asked, DG Trouble Alarm is due to low starting air pressure and the motor driven air compressor is operating.

Notes: Manual Start pushbutton is located under cap on 1H13-P864 section 1C

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Simulator operator may use RF-p75064 to reset local alarm.



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CAUTION

IF SSW Cooling Water flow is lost, **THEN** Standby Diesel Generator 11 [12] MUST be secured **AND** then placed into Maintenance Mode.

Examiner Note: Applicant should review CAUTION prior to Step 4.2.2.c

Examiner Note: Applicant may observe steps 4.2.2.c (1) - (4) on 1H13-P870-7C **OR** local panel but these were provided in Initial Conditions bullet (• Standby Service Water 'B' is operating in the Chemical Addition Lineup with P41-F018B, SSW INL TO DG 12 WTR CLR open).

Examiner Cue: If asked about any of Steps 4.2.2.c (1) - (4), inform applicant that SSW B is operating per the Initial Conditions.

Step 3: 04-1-01-P75-1, Step 4.2.2 c (5)

☐ Standby Diesel Generator 12 Jacket Water Cooler Inlet Valve 1P41-F018B Opens.

Standard: Checked P41-F018B open
(Indication - red light ON, green light OFF)

Cue: **None**

Notes: Indication is on 1H13-P870 section 7C

P41-F018B is already open as given in Initial Conditions.

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Step 4: 04-1-01-P75-1, Step 4.2.2 c (6)

- ☐ **IF** SSW Cooling Water flow is lost, **THEN SECURE** Standby Diesel Generator 12 **AND PLACE** it into Maintenance mode.

Standard: Applicant acknowledged step.

Cue: **None**

Notes: This is one of the directions provided to secure the diesel generator if SSW cooling water flow is lost.

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Step 5: 04-1-01-P75-1, Step 4.2.2 c (7)

- ☐ DG Room O/A Fan 1X77-C001B Starts, 1H13-P864.
- (a) Running in slow speed **IF** inlet temperature is $\leq 70^{\circ}\text{F}$.
 - (b) Running in fast speed **IF** inlet temperature is $> 70^{\circ}\text{F}$.
 - (c) Damper 1X77-F001B Opens.
 - (d) **IF** fan failed to start, **THEN START** per step 5.5.
 - (e) **IF** fan **CANNOT** be started, **THEN OPEN** doors **AND USE** temporary fans as needed to prolong diesel operation for critical loads

Standard: Observed DG room fan was running as indicated by either Lo or Hi speed red light ON and DG room damper open as indicated by red light ON, green light OFF. Determined steps (d) and (e) were N/A.

Cue: None

Notes: Light is on 1H13-P864 section 2C.

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Step 6: 04-1-01-P75-1, Step 4.2.2 c (8)

- ☐ DG 12 READY TO LOAD status light on 1H13-P864-2B illuminated for Division 2 DG.

Standard: Checked DG 12 READY TO LOAD status light was ON.

Cue: None

Notes: Light is on 1H13-P864 section 2B.

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NOTE

Oil addition with engine running should be made to bring level back to the black line on sight glass.

IF oil addition is required with engine loaded, oscillations in generator load May occur.

Examiner Note: Applicant should review NOTE prior to Step 4.2.2.c (9)

Step 7: 04-1-01-P75-1, Step 4.2.2 c (9)

☐ **CHECK** that governor oil level is stable **AND VISIBLE** in sight glass.

Standard: Contacted local operator to verify governor oil level was stable and visible in sight-glass **OR** verified step was completed per Initial Conditions.

Cue: **If asked, inform applicant that Governor oil level has been verified satisfactory per Initial Conditions.**

Notes: None

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Step 8: 04-1-01-P75-1, Step 4.2.2 c (10)

☐ **IF** DC Fuel Oil Booster pump has started, **THEN STOP** DC Fuel Oil Booster pump by **TAKING** its handswitch HS-M004B to OFF **AND BACK** to AUTO.

Standard: Contacted local operator to verify Fuel Oil Booster Pump status.

Cue: **Fuel Oil Booster pump is not running.**

Notes: None

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NOTE

IF Aux Lube Oil pump is running, it May be shutdown at this time **IF** conditions of Precaution 3.29 are met.

REFER to Precaution 3.30.

Examiner Note: Applicant should review NOTE prior to Step 4.2.2.c (11)

Step 9: 04-1-01-P75-1, Step 4.2.2 c (11)

- ☐ **IF** Aux Lube Oil pump is running, **THEN** shutdown Aux Lube Oil pump by taking its handswitch HS-M031B to TRIP **AND BACK** to AUTO

Standard: Contacted local operator to verify Aux Lube Oil Pump status.

Cue: **Aux Lube Oil pump is not running.**

Notes: None

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Step 10: 04-1-01-P75-1, Step 4.2.2 c (12)

- ☐ **IF** Aux Jacket Water Pump C004B is still running, **VERIFY** Jacket water pressure is >35 psi at R050B **AND** >15 psi at R020B with the engine at 450 rpm, **THEN STOP** AUX JACKET WATER PUMP C004B by **PLACING** its handswitch HS-M032B to TRIP **AND THEN BACK** to AUTO.

Standard: Contacted local operator to verify Aux Jacket Water Pump status.

Cue: **Aux Jacket Water pump is not running.**

Notes: None

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Step 11: 04-1-01-P75-1, Step 4.2.2 d

- ☐ **SELECT** phase of bus voltage to be **MONITORED** with VM 4.16 kV BUS 16AB VOLTMETER handswitch.

Standard: Observed voltmeter was selected to monitor bus 16AB voltage by handswitch selected to A-B, B-C, or C-A.

Cue: **None**

Notes: Handswitch is on 1H13-P864 section 2C

Applicant does not have to change the selected phases monitored.

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Step 12: 04-1-01-P75-1, Step 4.2.2 e

- ☐* ***PLACE Standby Diesel Generator 12 Output Breaker Synchronizing switch SYN CONT FDR BKR 152-1608 handswitch to ON.***

Standard: Turned Sync Switch for Breaker 152-1608 to ON position.

Cue: **None**

Notes: Synchroscope on 1H13-P864 section 2B; Sync Switch on section 2C

When Synchroscope is turned on, sync scope lights will be going ON and OFF.

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Step 13: 04-1-01-P75-1, Step 4.2.2 f & f(1)

☐* ***PLACE DG 12 PRL CONT handswitch momentarily to PRL (spring return to OFF) to defeat parallel interlock AND PLACES governor in the "DROOP" mode.***

Standard: Momentarily placed DG 12 PRL CONT handswitch to PRL
Indication - amber light above Div1 LSS PNL TEST MODE SEL
Switch ON

Cue: None

Notes: 1H13-P864 section 2C

This places the Droop Circuit in service for the Diesel Generator.

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Step 14: 04-1-01-P75-1, Step 4.2.2 g

☐* **ADJUST Standby Diesel Generator 12 INCOMING VOLTS DIV 2 about 50 volts Above RUNNING VOLTS DIV 2 with DG 12 VR AUTO SET PT CONT handswitch.**

Standard: Adjusted DG output voltage (INCOMING) to indicate ≈ 50 volts above bus 16AB (RUNNING) using DG12 VR AUTO SET PT CONT handswitch. (± 100 volts)

Cue: None

Notes: Voltage Regulator handswitch on 1H13-P864 section 2C
 INCOMING and RUNNING Voltages on 1H13-P864 section 2B

If initial voltage is within range, then no adjustment is necessary. This step would then NOT be critical.

Multiple adjustments to voltage are acceptable.

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Step 15: 04-1-01-P75-1, Step 4.2.2 h

- ☐* ***ADJUST Standby Diesel Generator 12 speed to bring frequency within range of bus frequency by USING DG 12 GOV MAN CONT so that synchroscope indicator is ROTATING Slowly in the FAST direction (clockwise).***

Standard: Adjusted DG speed to get Synchroscope turning slowly in FAST (clockwise) direction using DG 12 GOV MAN CONT.

Cue: None

Notes: Governor handswitch on 1H13-P864 section 2C
 Synchroscope on 1H13-P864 section 2B

If initial frequency is within range, then no adjustment is necessary. This step would then NOT be critical.

Multiple adjustments to frequency are acceptable.

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NOTE

Diesel Generator Output Voltage Should be maintained by Automatic Voltage Regulator, **BUT** a **CHECK** Should be kept on Diesel Generator Output voltage **AND** frequency.

Examiner Note: Applicant should review NOTE prior to Step 4.2.2.i



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Step 16: 04-1-01-P75-1, Step 4.2.2 i

- ☐ There May be a need to adjust Diesel Generator speed to obtain proper rotation of synchroscope indicator. Once indicator is rotating in the correct direction (clockwise) **ALLOW** it to make a few revolutions to **ENSURE** frequency stability.

Standard: Applicant acknowledged step.

Cue: None

Notes: None

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CAUTION

WHEN synchronizing, do NOT close Diesel Generator output breaker with sync scope standing still IF there is power available from another source.

Examiner Note: Applicant should review CAUTION prior to Step 4.2.2.j



Step 17: 04-1-01-P75-1, Step 4.2.2 j

- ☐* **WHEN Standby Diesel Generator 12 speed is such that the synchroscope indicator is moving SLOWLY in the FAST direction (clockwise) AND is approximately five minutes before the 12 o'clock position,**
- THEN CLOSE Diesel Generator Output breaker with BUS 16AB FDR FM DG 12 handswitch.**
- 1. IMMEDIATELY after closing Diesel Generator Output breaker, OBSERVE BREAKER CLOSING lights to ENSURE breaker is Closed.**
 - 2. IF NOT Closed, THEN RETURN BREAKER handswitch to TRIP position.**

Standard: Closed DG 12 output breaker 152-1608 as indicated by red light ON, green light OFF.

Cue: None

Notes: 152-1608 circuit breaker handswitch on 1H13-P864 section 2C
Synchroscope on 1H13-P864 section 2B

Synchroscope should stop and synchroscope lights are off. If circuit breaker does not close on first attempt, **ONE additional attempt is allowed** (per Ops Dept).

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Step 18: 04-1-01-P75-1, Step 4.2.2 k

- ☐ **WHEN** loading Diesel Generator to rated load, **THEN MONITOR** all exhaust temps.
1. **IF** any temp exceeds 960 deg F, **THEN PERFORM** the following:
a) Contact Engineering; b) Consider securing Diesel Generator

Standard: Applicant acknowledged step.

Cue: If asked, report all temperatures are < 960 °F.

Notes: None

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SIMULATOR OPERATOR MONITOR DG LOAD AND REACTIVE LOAD.

Step 19: 04-1-01-P75-1, Step 4.2.2 l

- ☐* **Standby Diesel Generator 12 load May be raised by going to RAISE on GOV MAN CONT DG 12.**

Standard: Real load on DG12 raised to ≈ 2-3 MWe using GOV MAN CONT as indicated on meter 1P75-R602B.

Cue: If asked, the local indicators for MWe and MVAR are reading same as Control Room indications.

Notes: DG12 load is indicated on 1P75-R602B, 1H13-P864 section 2B

Applicant may make one or more adjustments to real load.

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Simulator Operator: When real load is raised to >2 MWe AND reactive load is raised > 1MVAR, SSW pump B will trip or Simulator Operator will TRIGGER EVENT 1.

Step 20: 04-1-01-P75-1, Step 4.2.2 m

☐* **Diesel Generator 12 VARS loading May be adjusted with AUTO VOLT SET PT CONT DG12.**

(1) For better electric governor control response, ADJUST VARS per Table below

Standard: Reactive load on DG12 raised to ≈ 1.5 MVAR using AUTO VOLT SET PT CONT as indicated on meter 1P75-R603B.

Cue: None

Notes: DG12 VARS is indicated on 1P75-R603B, 1H13-P864 section 2B.

Applicant may make one or more adjustments to reactive load as real load is increased.

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Evaluator Note:

When DG12 real load is ~ 2.0 MWe AND reactive load is ~ 1.0 MVAR, Standby Service Water (SSW) Pump B will trip. This will begin the Alternate Path.



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Step 21: 04-1-01-P75-1, Step 4.2.2 n

- ☐ **PLACE** SYNCHROSCOPE handswitch to OFF position as soon as Standby Diesel Generator 12 minimum load has stabilized.

Standard: SYNCHROSCOPE handswitch for breaker 152-1608 placed to OFF position.

Cue: **None**

Notes:

Dependent upon when applicant recognizes the trip of SSW B, this step may not be performed.

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Alternate path begins with the next step, designated by "AP".



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AP Step 22: 04-1-01-P75-1, Step 4.2.2.c (6)

☐ Recognizes SSW pump 'B' trip.

Standard: Recognized SSW pump 'B' tripped.

Cue: **None**

Notes: Indications on 1H13-P870 section 7A, 7B and 7C

- SSW PMP B TRIP alarm (P870 7A-A1)
- SSW B flow and pressure dropping to zero on 1P41-R606B
- SSW PMP B handswitch green light ON and red light OFF

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JPM Number: GJPM-OPS-2017IS4

AP Step 23: 04-1-01-P75-1, Step 4.2.2 c (6)

☐* ***Trip Division 2 Diesel Generator using the DIV 2 DSL ENG RMT STOP pushbutton on 1H13-P864 panel.***

Standard: DG12 tripped using remote STOP pushbutton on 1H13-P864 as indicated by red light above DIV 2 DSL ENG RMT MAN START pushbutton OFF and READY TO LOAD status light OFF.

Cue: After DG12 is shutdown, inform applicant another operator will place the Diesel in Maintenance Mode.

Notes: Stop pushbutton is on 1H13-P864 section 2C

Applicant may elect to remove load from the DG prior to securing. If the applicant selects this path, load will be removed and the output breaker opened prior to depressing the STOP pushbutton.

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EVALUATOR TERMINATE JPM.



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Task Standard:

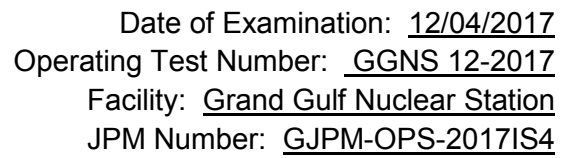
- Started Diesel Generator 12
- Placed Sync Switch for Circuit Breaker 152-1608 to ON
- Placed DG12 Parallel Control to PRL
- Adjusted Incoming voltage to ≈ 50 volts above Running Voltage (± 100 volts)
- Adjusted DG12 speed to obtain frequency of DG12 slightly higher than 16AB bus
- Closed DG12 output Circuit Breaker 152-1608
- Raised DG12 real load by raising on DG12 GOV MAN CONT
- Raised DG12 reactive load by raising on DG12 AUTO VOLT SET PT CONT

When SSW B pump is tripped:

- Diesel Generator 12 was shutdown using STOP pushbutton within 5 minutes of SSW B pump trip

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Remember to record stop time

[illegible][illegible]

Give this page to the applicant**Initial Condition(s):**

- Division 2 Diesel Generator is in Standby per the SOI
- Two Operators are standing by at the Diesel Generator and communications established with one at the PUSH TO STOP pushbutton
- I&C has completed ALL testing required to run the Diesel Generator and verified the crank case manometer
- Diesel Generator will only run for 30 minutes
- Diesel Generator has already been manually barred over and air rolled
- Chemistry has sampled the Jacket Water System and it is ready for operation
- There are NO open work orders on the diesel
- Governor Oil level has been verified satisfactory
- Standby Service Water 'B' is operating in the Chemical Addition Lineup with P41-F018B, SSW INL TO DG 12 WTR CLR open
- The last Diesel Generator run for DG12 was 2 weeks ago
- SSW B MOV Test switch is in TEST
- Another operator will take care of Diesel Generator Start Log

Initiating Cue(s):

CRS directs you to start Div 2 Diesel Generator using 04-1-01-P75-1, Standby Diesel Generator System (Rev 106), beginning at Step 4.2.2.b.

- Operate in parallel with Offsite and load to ≈ 3 MWe and ≈ 1.5 MVARs
- All local operations have been performed



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JPM Number: GJPM-OPS-2017IS5

2017I S5

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS5

JPM Title: Startup H2 Recombiner

Facility Number: GJPM-OPS-E6102

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/09/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/09/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/09/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/09/2017
	Project Lead or Exam Team Lead	Date



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Operating Test Number: LOT 2017I
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Startup H2 Recombiner

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	---	-------------------------

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>Task:</u>	GGNS-CRO-E61-EMERGENCY-4
<u>K&A:</u>	223001 A4.13 (3.4/3.4) 500000 EA1.03 (3.4/3.2) Generic 2.1.25 (3.9/4.2); 2.1.20 (4.6/4.6)
<u>Safety Function:</u>	5 – Containment Integrity
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a)</u>	(3); (4); (8)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	04-1-01-E61-1, Rev. 41, Combustible Gas Control System
<u>Handout(s):</u>	04-1-01-E61-1
<u># Manipulations:</u>	5
<u># Critical Steps:</u>	7 (1 calculation; 1 graph determination)
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	YES

Simulator Setup/Required Plant Conditions:

- Reset Simulator to any IC

Safety Concerns:

- None.



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JPM Number: GJPM-OPS-2017IS5

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Combustible Gas Control System in standby
- Electrical is performing a test on Hydrogen Recombiner A

Initiating Cue(s):

Control Room Supervisor directs you to start the A Hydrogen Recombiner per SOI 04-1-01-E61-1 section 5.4.2.a (1) - (10)

Test directs you to assume the following conditions:

Containment pressure is 2.0 psig

Pre-LOCA Containment temperature is 80 degrees F



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JPM Number: GJPM-OPS-2017IS5

Startup H2 Recombiner

Notes to Evaluator:

- All control manipulations will be at panel 1H13-P870 in the Main Control Room.

Task Overview: (Detailed description of task)

This task ensures the applicant can start a hydrogen recombinder for post-LOCA hydrogen removal. The ability to determine the correct power setting based upon containment parameters is also determined.



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Critical steps are shaded, bolded, italicized, and denoted by an (*)
NOTE: Sequence of critical steps is critical unless otherwise noted.

Step 1: 04-1-01-E61-1, Step 5.4.2.a (1)

- ☐ **ENSURE** the H₂ RECOMB A PWR ADJ potentiometer is rotated fully counterclockwise to the zero power level.

Standard: Checked the 'A' H₂ RECOMB PWR ADJ potentiometer is turned fully counter-clockwise with its numerical display counter "000".

Cue: None

Notes: 1H13-P870 section 4C

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Step 2: 04-1-01-E61-1, Step 5.4.2.a (2)

- ☐* ***START H₂ RECOMB A by PLACING the appropriate handswitch on START.***

Standard: Started H₂ RECOMB A
Indicated by red light on, green light off.

Cue: None

Notes: 1H13-P870 section 4C

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JPM Number: GJPM-OPS-2017IS5

Step 3: 04-1-01-E61-1, Step 5.4.2.a (3)

- ☐ **DETERMINE** containment pressure by using 1M71-R601A CTMT/DRWL DP RCDR on 1H13-P870-3B.

Standard: Applicant identifies recorder to be utilized. Value is given in Initial Conditions as **2.0 psig**.

Cue: If asked, value is **2.0 psig**.

Notes: Recorder is on 1H13-P870 Section 3B.

SAT / UNSAT

Step 4: 04-1-01-E61-1, Step 5.4.2.a (4)

- ☐ **DETERMINE** the pre-LOCA CTMT temperature by using 1M71-R602A CTMT/DRWL TEMP on 1H13-P870-3B.

Standard: Applicant identifies recorder to be utilized. Value is given in Initial Conditions as **80 degrees F**.

Cue: If asked, value is **80 degrees F**.

Notes: Recorder is on 1H13-P870 Section 3B.

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Applicant reviews NOTE.

NOTE

IF sufficient time has passed since LOCA condition ensued, the pre-LOCA containment temperature May be determined from Daily Ops Logs.

Step 5: 04-1-01-E61-1, Step 5.4.2.a (5)

☐* **DETERMINE** pressure factor from Recombiner Power Correction Factor vs. Ctmt Pressure Curve (Figure 1).

Standard: Determined Power Correction Factor using Figure 1 to be 1.12 to 1.16.

Cue: None

Notes: Applicant must add 14.7 psi to 2.0 psig to get 16.7 psia to allow plotting on the graph.
Applicant must interpolate Pre-LOCA CTMT Temperature of 80°F to a point approximately halfway between the 50°F line and the 120°F line on Figure 1. See Attached.

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Step 6: 04-1-01-E61-1, Step 5.4.2.a (6)

☐* **To DETERMINE the required recombiner power setting, MULTIPLY the pressure factor by a ref, power of 43 KW.**

$$1.12 \times 43 = 48.16 \text{ KW}$$

$$1.16 \times 43 = 49.88 \text{ KW}$$

Standard: Multiplies the derived pressure factor by reference power of 43 KW to arrive at recombiner power setting between 48.1 KW and 49.9 KW.

Cue: None

Notes: None

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Applicant reviews CAUTION.

CAUTION

DO NOT exceed a maximum recombiner temperature of 1450°F, **OR** maximum power output of 75 kW.



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Note: H2 RECOMB A PWR ADJ potentiometer is on 1H13-P870 section 4C.

Step 7: 04-1-01-E61-1, Step 5.4.2.a (7)

- ☐* **TURN the H₂ RECOMB A PWR ADJ potentiometer clockwise until 5 kW is obtained on the H2 RECOMB A PWR meter.**

Standard: H₂RECOMB A PWR ADJ potentiometer adjusted to obtain 5 KW on the H2 RECOMB A PWR meter.

Cue: Once 5KW has been obtained, cue the applicant 10 minutes has elapsed.

Notes: Power indication is on 1H13-P870 section 4B, E61-R604A H2 RECOMB A PWR.

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Step 8: 04-1-01-E61-1, Step 5.4.2.a (8)

- ☐* **HOLD for 10 minutes, THEN ADVANCE to 10 KW.**

Standard: H₂RECOMB A PWR ADJ potentiometer adjusted to obtain 10 KW on the H2 RECOMB A PWR meter.

Cue: Once 10 KW has been obtained, cue the applicant 10 minutes has elapsed.

Notes: Power indication is on 1H13-P870 section 4B, E61-R604A H2 RECOMB A PWR.

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JPM Number: GJPM-OPS-2017IS5

Step 9: 04-1-01-E61-1, Step 5.4.2.a (9)

☐* ***HOLD for 10 minutes, THEN ADVANCE to 20 KW.***

Standard: H₂ RECOMB A PWR ADJ potentiometer adjusted to obtain 20 KW on the H2 RECOMB A PWR meter.

Cue: Once 20 KW has been obtained, cue the applicant 5 minutes has elapsed.

Notes: Power indication is on 1H13-P870 section 4B, E61-R604A H2 RECOMB A PWR.

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Step 10: 04-1-01-E61-1, Step 5.4.2.a (10)

☐* ***HOLD for 5 minutes, THEN advance to power setting determined in Step 5.4.2a(6).***

Standard: H₂RECOMB A PWR ADJ potentiometer adjusted to obtain 48.1 to 49.9 KW is obtained on the H2 RECOMB A PWR meter.

Cue: None

Notes: Power indication is on 1H13-P870 section 4B, E61-R604A H2 RECOMB A PWR.

When Power is adjusted in band of 48 to 50 KW, EVALUATOR MAY TERMINATE the JPM.

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS5

Task Standard(s):

- Started Hydrogen (H2) Recombiner A
- Using Containment pressure and Pre-LOCA Containment Temperature, determined Pressure Factor from Containment Recombiner Power Correction Factor versus Containment Pressure Figure 1 of 04-1-01-E61-1 (1.12 - 1.16)
- Determined final H2 Recombiner power setting (48.16KW - 49.88KW)
- Raised H2 Recombiner power adjustment to:
 - 5 KW
 - 10 KW
 - 20 KW
- H2 Recombiner A raised to final power setting between 48 KW and 50 KW

SAT / UNSAT

Remember to record stop time



Operating Test Number: GGNS 12-2017

Facility: Grand Gulf Nuclear Station

JPM Number: GJPM-OPS-2017IS5

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Give this page to the applicant

Initial Condition(s):

- Combustible Gas Control System in standby
- Electrical is performing a test on Hydrogen Recombiner A

Initiating Cue(s):

Control Room Supervisor directs you to start the A Hydrogen Recombiner per SOI 04-1-01-E61-1 section 5.4.2.a (1) - (10)

Test directs you to assume the following conditions:

Containment pressure is 2.0 psig

Pre-LOCA Containment temperature is 80 degrees F



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

2017I S6

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS6

JPM Title: Secure Standby Gas Treatment

Facility Number: N/A
(If Bank or Modified from Bank)

JPM Attributes:

<input checked="checked" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch Exam Developer	11/08/2017 Date
Ops Review:	Robert Brinkman 1 st Validation by Ops Rep or Ops Validation Crew	11/08/2017 Date
Validated By:	Benny White \ Chase Miller 2 nd Validation by Ops Validation Crew	11/08/2017 Date
Approved By:	Ricky Liddell Project Lead or Exam Team Lead	11/08/2017 Date



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

Secure Standby Gas Treatment

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	---	-------------------------

Setting: Simulator
Type: RO/SRO
Task: CRO-T48-OFFNORM-4
K&A: 261000 A4.03 (3.0/3.0); A4.02 (3.1/3.1)
Generic 2.1.30 (4.4/4.0); 2.1.31 (4.6/4.3)
Safety Function: 9 – Radioactivity Release
PRA Applicability: No
10CFR55.45(a) (2); (3); (5); (8)
Performance: Perform
Reference(s): 04-1-01-T48-1, Rev. 36, Standby Gas Treatment
Handout(s): 04-1-01-T48-1, Precautions & Limitations and Section 5.3
Manipulations: 11
Critical Steps: 9
Low Power: No
Emergency/Abnormal: No
RCA entry: No
Engineered Safety Function: **YES**

Simulator Setup/Required Plant Conditions:

- Reset Simulator to any IC
- Place the handswitches for Fuel Handling Area and Fuel Pool Sweep Supply and Exhaust Fans to STOP on 1H13-P842
- Manually initiate Standby Gas Treatment (SBGT) Trains A and B
- Allow SBGT trains to stabilize

Safety Concerns:

- None



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JPM Number: GJPM-OPS-2017IS6

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Both Standby Gas Trains are operating following a High-High Fuel Handling Area Radiation signal
- High-High Fuel Handling Area Radiation signal has been cleared and the cause of the High-High Radiation signal secured
- No jumpers have been installed on any control circuits
- Hand switches for Fuel Pool Sweep and Fuel Handling Area Supply and Exhaust fans have been placed to STOP on 1H13-P842
- Attachment VI was not installed and 1T42-B002 and 1T42-B005 Fan Coil Units were not restarted during this evolution

Initiating Cue(s):

- Control Room Supervisor directs you to place Standby Gas Treatment Train A in STANDBY per 04-1-01-T48-1 section 5.3
- Another operator will maintain the Accumulative Log Book
- Another operator will secure Standby Gas Treatment Train B and restart Fuel Pool Sweep and Fuel Handling Area Supply and Exhaust fans



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JPM Number: GJPM-OPS-2017IS6

Place SBGT Train in Standby with an Auto Start Signal Present

Notes to Evaluator:

- All controls will be from panel P870 in the Main Control Room.

Task Overview: (Detailed description of task)

Standby Gas Treatment System (SBGT) will automatically start on a LOCA signal or High-High Radiation signals in Fuel Handling Exhaust or Fuel Pool Sweep Exhaust ventilation.

When initiating conditions are restored, SBGT is restored to a standby configuration.

Restoring SBGT to standby will reduce differential pressure in the Auxiliary Building thus reducing hazards to personnel entering and exiting the building.

This JPM will evaluate the applicant's ability to place Standby Gas Treatment (SBGT) System in Standby following an Automatic Initiation signal.



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JPM Number: GJPM-OPS-2017IS6

Critical steps are underlined, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 04-1-01-T48-1, Step 5.3.2a(1 - 3)

☐ **IF** Attachment VI was installed to restart 1T42B002 **AND** 1T42B005 fan coil units, **THEN** **PERFORM** the following to restore control circuits to normal:

- (1) **PLACE** handswitch for 1T42B005 (HS-M001) to STOP. (Area 10/185)
- (2) **PLACE** handswitch for 1T42B002 (HS-M002) to STOP. (1H22P178)
- (3) **PERFORM** Attachment VI restoration.

Standard: Step may be N/A'd based on Initial Conditions.

Cue: None

Notes: None

SAT / UNSAT



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JPM Number: GJPM-OPS-2017IS6

Step 2: 04-1-01-T48-1, Steps 5.3.2b

☐ **PLACE** SGTS DIV 1 MOV TEST switch in TEST.

- (1) **VERIFY** annunciator "SGTS DIV 1 MOVS IN TEST MODE" is Alarmed.
- (2) **VERIFY** SGTS D1 MOV IN TEST STATUS light is on.

Standard: SGTS DIV 1 MOV TEST switch is in TEST.

SGTS DIV 1 MOVS IN TEST MODE annunciator and SGTS D1 MOV IN TEST STATUS status light are received.

Cue: **None**

Notes: 1H13-P870 section 2A-G3 for annunciator
1H13-P870 section 2B for switch and status light

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

Step 3: 04-1-01-T48-1, Step 5.3.2c

☐ **PLACE** the following handswitches to STOP on 1H13P842:

1T42C002A FHA EXH FAN A

1T42C004A POOL SWP EXH FAN A

1T42C002B FHA EXH FAN B

1T42C004B POOL SWP EXH FAN B

1T42C001A FHA SPLY FAN A

1T42C003A FP SWP SPLY FAN A

1T42C001B FHA SPLY FAN B

1T42C003B FP SWP SPLY FAN B

Standard: Step may be marked as complete based on Initial Conditions.

Cue: None

Notes: None

SAT / UNSAT



Step 4: 04-1-01-T48-1, Step 5.3.2d (1 - 3)

☐ **IF** one SGTS train is in standby, **THEN PERFORM** the following:

- (1) **PLACE** SGTS DIV 1 MODE SEL keylocked handswitch for Standby filter train to AUTO position.
- (2) **VERIFY** SGTS DIV 1 MODE SEL handswitch white light is lit.
- (3) **VERIFY** SGTS DIV 1 IN STBY MODE annunciator clears.

Standard: Step may be N/A'd based on both subsystems are operating.

Cue: None

Notes: None

SAT / UNSAT

Step 5 04-1-01-T48-1, Step 5.3.2e

☐* **TURN SGTS DIV 1 MAN INIT RESET key-locked handswitch to RESET position AND back to NORM, to reset automatic OR manual initiation signal.**

Standard: SGTS DIV 1 MAN INIT RESET key-locked handswitch placed to RESET position **AND** back to NORM.

Cue: None

Notes: 1H13-P870 section 2B

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

Step 6: 04-1-01-T48-1, Step 5.3.2 f

☐ **VERIFY** annunciator "SGTS DIV 1 OPER" clears.

Standard: Observed "SGTS DIV 1 OPER" annunciator is clear.

Cue: **None**

Notes: 1H13-P870 section 2A

SAT / UNSAT

Step 7: 04-1-01-T48-1 step 5.3.2g

☐* **PLACE handswitch for SGTS FLTR TR A EXH FAN to STOP.**

Standard: **SGTS FLTR TR A EXH FAN handswitch placed to STOP**

Indicted by green light on, red light off.

Cue: **None**

Notes: 1H13-P870 section 2C

Annunciator 1H13-P870 2A-E2 ENCL BLDG NEG PRESS HI is an expected alarm

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Step 8: 04-1-01-T48-1 step 5.3.2h

☐* **PLACE handswitch for ENCL BLDG RECIRC FAN A to STOP.**

Standard: ENCL BLDG RECIRC FAN A handswitch placed to STOP

Indicted by green light on, red light off.

Cue: None

Notes: 1H13-P870 section 2C

SAT / UNSAT

Step 9: 04-1-01-T48-1 step 5.3.2i

☐ **OBSERVE** filter train chart recorders de-energize **AND** Enclosure Building pressure chart recorders transfer to slow speed.

Standard: Observed filter train chart recorders de-energize **AND** Enclosure Building pressure chart recorders transferred to slow speed.

Cue: None

Notes: 1H13-P870 section 2B

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JPM Number: GJPM-OPS-2017IS6

Step 10: 04-1-01-T48-1 step 5.3.2j

☐ **VERIFY** that all SGTS A dampers on 1H13-P870-2C, are CLOSED

Standard: Verified that all SGTS A dampers on 1H13-P870-2C are CLOSED
Indicted by green light on, red light off for each damper.

Cue: None

Notes: 1H13-P870 section 2C

SAT / UNSAT

Step 11: 04-1-01-T48-1 step 5.3.2k

☐ **VERIFY** "FLTR TR A EXH FAN INL VANE" on 1H13-P870-2C is OPEN

Standard: Verified "FLTR TR A EXH FAN INL VANE" on 1H13-P870-2C is OPEN
Indicted by red light on, green light off.

Cue: None

Notes: 1H13-P870 section 2C

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Step 12: 04-1-01-T48-1 step 5.3.2l

- ☐ **RECORD** stop time(s) in the Accumulative Log Book.

Standard: Another operator will maintain Accumulative Log Book based on Initiating Cue.

Cue: **None**

Notes: None

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Step 13: 04-1-01-T48-1, Steps 5.3.2m

- ☐ **PLACE** SGTS DIV 1 MOV TEST switch in NORM.
- (1) **VERIFY** annunciator "SGTS DIV 1 MOV IN TEST MODE" is clear.
- (2) **VERIFY** SGTS D1 MOV IN TEST STATUS light is off.

Standard: SGTS DIV 1 MOV TEST switch is in NORM

SGTS DIV 1 MOV IN TEST MODE annunciator and SGTS D1 MOV IN TEST STATUS status light have cleared.

Cue: **None**

Notes: 1H13-P870 section 2A-G3 for annunciator
1H13-P870 section 2B for switch and status light

SAT / UNSAT



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JPM Number: GJPM-OPS-2017IS6

Step 14: 04-1-01-T48-1 step 5.3.2n

☐ * ***IF SBT A was secured, THEN OPEN the following dampers:***

☐ ***1T42F011***

☐ ***1T42F019***

☐ ***1T42F004***

☐ ***1M41F008***

☐ ***1M41F036***

☐ ***1T41F007***

Standard: Opened above listed dampers

Indicated by red light on, green light off.

Cue: None

Notes: 1H13-P870 section 2C

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EVALUATOR NOTE: SBT A Train has been shutdown inform
applicant the JPM is TERMINATED.



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

Task Standard(s):

- SGTS DIV 1 initiation signal reset
- T48-D001A, SGTS FLTR TR A EXH FAN secured
- T48-C001A, ENCL BLDG RECIRC FAN A secured
- 1T42F011, FH AREA O/A INTK AUX BLDG INBD ISOL - opened
- 1T42F019, FP SWEEP O/A INTK AUX BLDG INBD ISOL - opened
- 1T42F004, FH AREA VENT EXH AUX BLDG INBD ISOL - opened
- 1M41F008, CTMT CLG O/A INTK AUX BLDG INBD ISOL - opened
- 1M41F036, CTMT CLG VENT EXH AUX BLDG INBD ISOL - opened
- 1T41F007, AUX BLDG O/A INTK AUX BLDG INBD ISOL - opened
- Standby Gas Treatment train A has been placed in Standby

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Remember to record stop time



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS6

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant**Initial Condition(s):**

- Both Standby Gas Trains are operating following a High-High Fuel Handling Area Radiation signal
- High-High Fuel Handling Area Radiation signal has been cleared and the cause of the High-High Radiation signal secured
- No jumpers have been installed on any control circuits
- Hand switches for Fuel Pool Sweep and Fuel Handling Area Supply and Exhaust fans have been placed to STOP on 1H13-P842
- Attachment VI was not installed and 1T42-B002 and 1T42-B005 Fan Coil Units were not restarted during this evolution

Initiating Cue(s):

- Control Room Supervisor directs you to place Standby Gas Treatment Train A in STANDBY per 04-1-01-T48-1 section 5.3
- Another operator will maintain the Accumulative Log Book
- Another operator will secure Standby Gas Treatment Train B and restart Fuel Pool Sweep and Fuel Handling Area Supply and Exhaust fans



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

2017I S7

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IS7

JPM Title: Shift Reactor Recirc Pump B to Fast
Speed

Facility Number: GJPM-OPS-B3306

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 25 min

Prepared By:	Michael Rasch Exam Developer	11/09/2017 Date
Ops Review:	Robert Brinkman 1 st Validation by Ops Rep or Ops Validation Crew	11/09/2017 Date
Validated By:	Benny White \ Chase Miller 2 nd Validation by Ops Validation Crew	11/09/2017 Date
Approved By:	Ricky Liddell Project Lead or Exam Team Lead	11/09/2017 Date



Date of Examination: 12/04/2017
Operating Test Number: LOT 2017I
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Shift Reactor Recirc Pump B to Fast Speed

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 25 Min
--	--	-------------------------

Setting: Simulator
Type: RO/SRO
Task: GGNS-CRO-B33(1)-NORMAL-1.3
K&A: 202001 A4.01 (3.7/3.7)
Safety Function: 1 – Reactivity Control
4 – Heat Removal from Reactor Core
PRA Applicability: No
10CFR 55.45(a) (3); (4); (7)
Performance: Perform
04-1-01-B33-1, Rev. 163, Reactor Recirculation System
04-1-02-1H13-P680-3A-D9 Rev. 181, Alarm Response
Instructions 1H13-P680
04-1-01-R21-12, Rev. 40, BOP Bus 12HE
05-1-02-III-3 Rev. 115, Reduction in Recirculation
System Flow Rate
Handout(s): 04-1-01-B33-1
04-1-01-R21-12
Manipulations: 7
Critical Steps: 4
Low Power: No
Emergency/Abnormal: No
RCA entry: No
Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

- Reset Simulator to 27% power IC
- Verify plant power between 30% and 32% power
- Verify load line < 75%
- Verify feedwater flow > 4.0 mlbm/hr
- Verify Reactor Recirc Pump 'B' operating in SLOW speed with FCV 97% open
- Verify Reactor Recirc Pump 'A' operating in FAST speed with FCV at min position
- Pull Sheet completed through step 143
- Verify that all prerequisites contained in section 4.2.1 of 04-1-01-B33-1 are satisfied. (Provide applicant with marked up copy of SOI)
- Verify Malfunction **rr196b** (Incomplete Sequence B) in Summary

Safety Concerns: None



Date of Examination: 12/04/2017
Operating Test Number: LOT 2017I
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is in power ascension, at approximately 32% rated thermal power
- Reactor Recirc Pump A is in FAST speed
- Breakers CB-3B and CB-4B are racked in and closed
- Requirements for entry into Controlled Entry Region of Power to Flow Map have been met
- Reactor Recirc Pump B pump and motor temperatures are normal on recorder 1B33-TR-R601
- Chemistry and Radiation Protection personnel have been notified of the Reactor Recirc Pump up shift and crud burst

Initiating Cue(s):

Control Room Supervisor directs you to shift Reactor Recirc Pump B to FAST speed in accordance with 04-1-01-B33-1 Section 4.2.2.



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Shift Reactor Recirc Pump B to Fast Speed

Notes to Evaluator:

All controls and indication for this task are on panel 1H13-P680. Several parameter verifications must be made prior to transferring a Recirc pump to fast speed. The standard for doing so offers only one source for this instrumentation.

There may be more than one source, so the standard usually states "or equivalent" to let the evaluator know that there may another legitimate way to verify the parameter.

Unless otherwise indicated, all controls and indications for this task are on panel 1H13-P680-3A - 3D.

If asked about monitoring for THI, inform the applicant that another operator will monitor for THI.

This task begins at 04-1-01-B33-1 Step 4.2.2.

Task Overview: (Detailed description of task)

This task shifts the second Reactor Recirculation Pump to fast speed in preparation for power ascension.

First recirc pump is already in fast speed.

Fault in this task is that RRP fast speed breaker CB-5B fails to close, resulting in an Incomplete Start Sequence and a system shutdown.

Applicant will enter the Reduction in Recirculation System Flow ONEP and close the discharge valve for the B Recirc Pump completing the JPM.

Core must be closely monitored for Thermal Hydraulic Instability (THI). For this task, it will be assumed that another operator will monitor for THI.



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Critical steps are shaded, bolded, italicized, and denoted by an (*).

Applicant will review NOTE and CAUTIONS.

04-1-01-B33-1 step 4.2.2 NOTE and CAUTIONS

NOTE

PRIOR to upshift, the respective Recirc Loop FCV should be at the MIN ED Position Interlock as indicated on PDS computer. This will assist in opening of FCV **AFTER** shifting to fast speed **AND** minimize pressure surges on Recirc seal. **IF** using computer point to help **DETERMINE** MIN ED valve position, FCV should be approximately 20 percent. At this FCV position, it is normal for Jet Pump flows **AND** Loop flow in affected Loop to indicate near zero due to flow resistance.

Closing FCV to MIN ED position **WHEN** on LFMG may be done in FAST DETENT **UNTIL** FCV is approximately 20 PERCENT OPEN.

Attachment X, OPERATION OF RECIRCULATION SYSTEM FLOW CONTROL VALVES hard card is available for referencing/use **WHEN** adjusting Recirculation Loop flow rates/Total Core flow rate.

CAUTION

The closure of the Recirculation FCV places the Reactor closer to a region of potential instability. Greater monitoring of the APRMs, LPRMs, SRM Period Meters, **AND** OPRM Computer trends is warranted. **ALSO MINIMIZE** throttling the FCVs **DURING** Recirc fast speed **AND** LFMG operation to discourage pump shaft cracking propagation.

CAUTION

WHEN closing Recirculation FCV, Feedwater flow must be maintained above 3.0 Mlbm/hr to prevent an automatic transfer to slow speed. WITH one Recirculation Pump in fast speed, Jet Pump flow may stall in the slow-speed Loop as the Flow Control Valve is closed to MIN ED position. **IF** Jet Pump stall flow occurs, as indicated by no flow in the loop jet pumps, **THEN** the slow speed loop should be shifted to fast speed **OR** the fast speed loop shifted to slow speed **WITHIN** one hour.

04-1-01-B33-1 step 4.2.2.1

Shift Reactor Recirc Pump B to fast speed as follows:



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Step 1: 04-1-01-B33-1, Step 4.2.2.1(a)(1)

☐* **ADJUST Recirc Loop B FCV to MIN ED position as follows:**

USING Recirc Loop B FLO CONT on 1H13-P680, THEN CLOSE Recirc Loop B FCV UNTIL MIN ED (approximately 20 percent) is just indicated on B33 Process Diagram OR Computer Point B33N027B.

Standard: Adjusted Recirc Loop B FCV to approximately 20% as indicated on B33 Process Diagram (MIN ED) OR Computer point B33N027B.

Cue: None

Notes: May use FAST Detent.
1H13-P680 section 3D

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Step 2: 04-1-01-B33-1, Step 4.2.2.1(a)(2)

☐ **ALLOW** Computer Point B33K658B.C88 AT LEAST 5 seconds for Computer Point updates.

Standard: Allowed at least 5 seconds for computer point B33K658B.C88 to update.

Cue: None

Notes: None

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Step 3: 04-1-01-B33-1, Step 4.2.2.1(a)(3)

- ☐ **IF** sufficient PDS computer points are **NOT** available, a FCV position of approximately ~20% **USING** FEEDS indication may be used to set FCV.

Standard: Determined that sufficient computer points are available and continues.

Cue: **None**

Notes: Applicant may N/A step.

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Step 4: 04-1-01-B33-1, Step 4.2.2.1(b)(1)

- ☐ **CHECK** Seal Purge flow AND Seal Cavity pressure NORMAL.
Seal Purge flow 1.5 to 2.5 gpm (Local C11-FI-R020B)

Standard: Contacted local operator to verify that seal purge flow on Reactor Recirc Pump B is 1.5 to 2.5 gpm.

Cue: **As local operator, report that seal purge flow on Reactor Recirc pump B is 2.0 gpm.**

Notes: None

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JPM Number: GJPM-OPS-2017IS7

Step 5: 04-1-01-B33-1, Step 4.2.2.1(b)(2)

☐ **CHECK #1** Seal Cavity pressure slightly higher than reactor pressure.

Standard: Checked seal cavity #1 (B33-R603B on P680) pressure is slightly higher than reactor pressure.

Cue: **None**

Notes: 1H13-P680 section 3B

Reactor pressure may be obtained from multiple locations any one is acceptable.

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Step 6: 04-1-01-B33-1, Step 4.2.2.1(b)(3)

☐ **CHECK #2** Seal Cavity pressure indicates approximately half the value of #1 seal cavity pressure.

Standard: Checked seal cavity # 2 pressure is approximately half the value of the # 1 seal cavity pressure by observing indicators B33-R603B (Seal 1 pressure) and B33-R602B (Seal 2 pressure) on P680.

Cue: **None**

Notes: 1H13-P680 section 3B

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JPM Number: GJPM-OPS-2017IS7

Step 7: 04-1-01-B33-1, Step 4.2.2.1(c)

- ☐ **CHECK** pump AND motor temperature normal on Recirc Pump Recorder 1B33-TR-R601 on 1H13-P614.

Standard: Checked pump and motor temperatures normal as indicated on recorder 1B33-R601 (significantly below the posted alarm setpoint and trend is steady).

Cue: **None**

Notes: Given in Initial Conditions as normal temperatures.
Applicant may decide to look at recorder on V - Panel. This is acceptable.

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Step 8: 04-1-01-B33-1, Step 4.2.2.1(d)

- ☐ **OBSERVE** annunciators associated with Loop B HPU, Seal flow, AND Pump temperatures EXTINGUISHED on 1H13-P680-3A.

Standard: Checked all alarms associated with Recirc Loop 'B' HPU, seal flow and pump temperatures on P680-3A are clear.

Cue: **None**

Notes: 1H13-P680 section 3A

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JPM Number: GJPM-OPS-2017IS7

Step 9: 04-1-01-B33-1, Step 4.2.2.1(e)

- ☐ **DEPRESS** RECIRC PMP B CAV INTLK RESET Pushbutton on 1H13-P680 **AND**
OBSERVE respective status light DEENERGIZES.

Standard: Depressed RECIRC PMP B CAV INTLK RESET pushbutton and
verified that the white lamp above the switch is de-energized.

Cue: **None**

Notes: 1H13-P680 section 3C

SAT / UNSAT

Step 10: 04-1-01-B33-1, Step 4.2.2.1(f)

- ☐ **DEPRESS** RX WTR LVL LO INTLK B **RESET** pushbutton on 1H13-P680 **AND**
OBSERVE respective status light DEENERGIZES.

Standard: Depressed the RX WTR LVL LO INTLK B RESET pushbutton and
verifies that the white lamp above the switch is de-energized.

Cue: **None**

Notes: 1H13-P680 section 3C

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Applicant will review CAUTION.

CAUTION

The following step is required to minimize 6.9 KV bus voltage drop.

Step 4.2.2.1(g) - RAISE respective BOP Transformer Tap setting to 7.2 kV on Bus 12HE for Pump to be shifted. **REFER** to 04-1-01-R21-12.

Applicant will review Prerequisites and NOTE and determine they are met.

Step 11: 04-1-01-R21-12, Step 5.3.2a

☐ **DETERMINE** on 1H13-P807-2C section which transformer is supplying BUS 12HE by **OBSERVING** the RED CLOSED light for bus feeder breakers 252-1201 **AND** 252-1208.

Standard: Determined 12HE bus is being supplied by BOP Transformer 11B via 252-1201.

Indication on 252-1201 is red light on, green light off

Cue: **None**

Notes: SH13-P807 section 2C

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Step 12: 04-1-01-R21-12, Step 5.3.2a(1) & (1)(a)

☐* ***IF RED CLOSED light is ON for 252-1201 Bus 12HE is ENERGIZED from XFMR 11B, THEN PLACE AND HOLD HS BOP XFMR 11B X-WDG TO BUS 12HE LTC, to the RAISE position***
OBSERVE R22-R603 6.9 KV Bus 12HE voltage rises to approximately 7.2 KV.

Standard: On panel SH13-P807, raised the tap setting on transformer 11B by turning BOP XFMR 11B X-WDG TO BUS 12HE LTC clockwise to the "RAISE" position until approximately 7.2 KV is indicated on meter R22-R603.

Cue: None

Notes: SH13-P807 section 1C
Indicator R22-R603 is on SH13-P807 section 2B

Applicant must achieve at least 7.2 KV bus voltage on 12HE.

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Step 13: 04-1-01-R21-12, Step 5.3.2a(1)(b) & (c)

- ☐ **PLACE** HS BOP XFMR 11B X-WDG TO BUS 12HE LTC, to the AUTO position.

ENSURE R22-R603 6.9 KV BUS 12HE voltage stabilizes at approximately 7.2 KV.

Standard: Placed HS BOP XFMR 11B X-WDG TO BUS 12HE LTC, to the AUTO position. Observed Bus 12HE voltage stable at ≈ 7.2 KV.

Cue: **None**

Notes: SH13-P807 section 1C
Indicator R22-R603 is on SH13-P807 section 2B

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Step 14: 04-1-01-B33-1, Step 4.2.2.1(h)

- ☐ **CHEM / R P** NOTIFY Chemistry **AND** Radiation Protection of the possibility of a crud burst **AS A RESULT OF** the Recirculation pump speed transfer. **[O-24]**

Standard: Chemistry and Radiation Protection notified that a Recirc Pump is to be started which may cause a crud burst.

Cue: **RP and Chemistry are notified.**

Notes: Given in Initial Conditions

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Applicant will review NOTE.

NOTE

Annunciator RX LVL 40"/32" HI/LO, 1H13-P680-3A-A3 may occur **DURING** upshift of Reactor Recirc Pump.

Step 15: 04-1-01-B33-1, Step 4.2.2.1(i)

- ☐* **DEPRESS START Pushbutton TRANS TO LFMG/START Handswitch on 1H13-P680 for Recirc Pump B AND CHECK the following.**

Standard: Depressed and released the START pushbutton on the TRANS TO LFMG/START handswitch for RRP 'B' on P680.

Cue: None

Notes: 1H13-P680 section 3C

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Step 16: 04-1-01-B33-1, Step 4.2.2.1(i)(1)

- ☐ CB-2B LFMG B GEN BRKR FDR 252-1205A, OPENS.

Standard: Checked breaker CB-2B LFMG B GEN BRKR FDR 252-1205A opened by observing red light is off, green light is on.

Cue: None

Notes: 1H13-P680 section 3C

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JPM Number: GJPM-OPS-2017IS7

Step 17: 04-1-01-B33-1, Step 4.2.2.1(i)(2)

☐ CB-1B, LFMG B MTR FDR 152-1411 OPENS.

Standard: Checked breaker CB-1B LFMG B MTR FDR 152-1411 opened by observing red light is off, green light is on.

Cue: **None**

Notes: 1H13-P680 section 3C

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Step 18: 04-1-01-B33-1, Step 4.2.2.1(i)(3)

☐ Recirc Pump B coasts down to less than 360 rpm.

Standard: Verified that B Recirc Pump coasts down to less than 360 rpm by observing the B Recirc Pump speed indication on 1H13-P680 on meter B33-R651B.

Cue: **None**

Notes: 1H13-P680 section 3B

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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Step 19: 04-1-01-B33-1, Step 4.2.2.1(j)

- ☐ **WHEN** pump speed lowers below 360 rpm, **CHECK** that CB-5B, RECIRC PUMP B FDR, 252-1205 CLOSED.

Standard: Observed that breaker CB-5B **DID NOT** close, as indicated by red light off, green light on.

Cue: None

Notes: 1H13-P680 section 3C

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Recirc Pump B has tripped to OFF.



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Alternate Path begins with the next step designated by "AP".

Enters Alarm Response Instruction 04-1-02-1H13-P680

AP Step 20: ARI 04-1-02-1H13-P680-3A-D9

☐ Recognizes Start Sequence Failure on Reactor Recirc Pump B.

Standard: Observed the following:

- 1) CB-5B failed to close as indicated by red status light off, green status light on.
- 2) Annunciator "RECIRC PMP B AUTO XFER INC/CONT PWR LOSS (P680-3A-D9) actuated.
- 3) Breaker CB-2B is open as indicated by red status light off, green status light on.
- 4) Breaker CB-1B is open as indicated by red status light off, green status light on.

Cue: When applicant reports trip of Recirc Pump B, direct applicant to perform actions of the appropriate procedure

Notes: Alarm Response Instruction Immediate actions will direct entry into ONEP 05-1-02-III-3, Reduction in Recirculation System Flow Rate.

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Enters 05-1-02-III-3, Reduction in Recirculation System Flowrate ONEP

AP Step 21: 05-1-02-III-3 Step 2.1

- ☐ IF ANY of the following conditions of 2.1.1 **OR** 2.1.2 exist, **THEN IMMEDIATELY PLACE** the reactor mode switch in the SHUTDOWN position.

2.1.1 **When** operating in the OPRM Armed Region of Figure 1 or Figure 2, thermal hydraulic instability is detected by:

- a. At least 2 of the following 4 alarms:

Annunciators "APRM CH 1(2)(3)(4) UPSC TRIP/OPRM TRIP/INOP"

AND

The corresponding two computer points in alarm: C51NC065 (NC066, NC067, NC068), "APRM 1 (2)(3)(4) OPRM TRIP"

OR

- b. Thermal Hydraulic Instability symptoms being observed on neutron instrumentation.

2.1.2 No recirculation loops are in operation with the Reactor Mode switch in RUN position.

Standard: Verified that none of the conditions, listed in the Immediate Operator Actions, exist and placing the mode switch to SHUTDOWN is **NOT** required. Continued to subsequent actions.

Cue: None

Notes: Continue to Subsequent Actions

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JPM Number: GJPM-OPS-2017IS7

AP Step 22: 05-1-02-III-3, Step 3.1

- ☐ **MONITOR** APRMs, LPRMs, SRM period meters, **AND** OPRM Computer Trends.
3.1.1 **IF** operating in any region of reduced core flow of Figure 1 **OR** Figure 2, **THEN** the following annunciator alarm is indicative of possible onset of thermal hydraulic instability:

“APRM UPSC/OPRM ALM” (located 1H13-P680-5A-B10)

- 3.1.2 **IF** operating in any region of reduced core flow of Figure 1 or Figure 2 **AND** thermal hydraulic instability is observed, **THEN IMMEDIATELY SCRAM** the Reactor.

Standard: Monitored nuclear instrumentation and IF THI is observed then immediately scrams the reactor. **(THI will not occur.)**

Cue: **As CRS, inform applicant that another operator will have the responsibilities as THI watch, continue with immediate and subsequent actions.**

Notes: Thermal Hydraulic Instability (THI) will not occur.

SAT / UNSAT



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Applicant will review CAUTION.

CAUTION

Operation in the MELLLA+ region is prohibited in single Recirc pump loop operation.

Step 3.5 is appropriate step.

AP Step 23: 05-1-02-III-3, Step 3.5

☐* **IF one Recirculation pump has stopped, THEN PERFORM the following:
*CLOSE RECIRC PMP B DISCH VLV B33-F067B in the affected loop.***

Standard: **B33-F067B RECIRC PMP B DISCH VLV is closed
Indicated by red light off, green light on.**

Cue: **JPM has been completed**

Notes: None

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**EVALUATOR CUE APPLICANT JPM IS TERMINATED WHEN B33-F067B IS
CLOSED.**



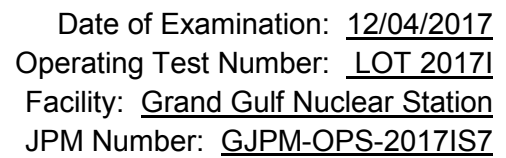
Date of Examination: 12/04/2017
Operating Test Number: LOT 2017I
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IS7

Task Standard(s):

- Closed Recirc Loop B FCV to MIN ED position
- Raised Bus 12HE voltage to 7.2 KV using BOP Transformer 11B tap changer
- Depressed TRANS TO LFMG/START pushbutton for Reactor Recirc Pump B
- When Recirc Pump B is tripped closed B33-F067B, RECIRC PMP B DISCH VLV

SAT / UNSAT

Remember to record stop time

[illegible][illegible]

Give this page to the applicant

Initial Condition(s):

- Plant is in power ascension, at approximately 32% rated thermal power
- Reactor Recirc Pump A is in FAST speed
- Breakers CB-3B and CB-4B are racked in and closed
- Requirements for entry into Controlled Entry Region of Power to Flow Map have been met
- Reactor Recirc Pump B pump and motor temperatures are normal on recorder 1B33-TR-R601
- Chemistry and Radiation Protection personnel have been notified of the Reactor Recirc Pump up shift and crud burst

Initiating Cue(s):

Control Room Supervisor has directed you to shift Reactor Recirc Pump B to FAST speed in accordance with 04-1-01-B33-1 Section 4.2.2.



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

2017I P1

GGNS

2017 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2017IP1 JPM Title: Align SP Cooling from RSP
Facility Number: GJPM-OPS-C6101 rev 6
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/08/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/08/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/08/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/08/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Align SP Cooling from RSP

<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	--	-------------------------

Setting: Plant
Type: RO/SRO
Task: CRO-C61-OFFNORM-1
CRO-C61-OFFNORM-1.9
CRO-E12-NORMAL-19
CRO-P41-NORMAL-1
K&A: 219000 A4.01 (3.8/3.7); A4.02 (3.7/3.5); A4.05 (3.4/3.4)
295016 AK2.01 (4.4/4.5); AK3.03 (3.5/3.7)
295013 AA1.01 (3.9/3.9)
Safety Function: 5 – Containment Integrity
PSA Applicability: Operator Action Importance to Core Damage Frequency
rank 9
10CFR 55.45(a) (2);(8); (12)
Performance: Simulate
Reference(s): 05-1-02-II-1, rev. 49, Shutdown from Remote Shutdown
Panels
Attachment IX, RHR A Suppression Pool Cooling
Attachment X, RHR B Suppression Pool Cooling
Handout(s): 05-1-02-II-1 Attachment IX &
not given initially Attachment X
Manipulations: 20
Critical Steps: 16
Low Power: **YES**
Emergency/Abnormal: **YES**
RCA entry: No
Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

- Remote Shutdown Panel is accessible

Safety Concerns:

- Wear appropriate personal protective equipment
- DO NOT bump OR operate controls on the Remote Shutdown Panels



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Control Room evacuated due to noxious fumes
- Reactor is shutdown
- RPV water level is within band of +50" to -30" on wide range level
- RPV pressure is within band of 800 to 1060 psig using SRVs
- Division 1 & 2 RHR Transfer switches have been placed in EMERG position per step 3.2.6 of the Shutdown from the Remote Shutdown Panel ONEP
- Standby Service Water A & B are **NOT** running and are in Standby lineup per the P41 SOI
- Other actions in section 3.2 of the Shutdown from the Remote Shutdown Panel ONEP will be performed by other operators
- No ECCS initiation signals are present

Initiating Cue(s):

- Control Room Supervisor directs to place RHR A in Suppression Pool Cooling per Attachment IX of the Shutdown from the Remote Shutdown Panel ONEP



Align SP Cooling from RSP

Notes to Evaluator:

- Do not allow applicant to operate any plant equipment
- Remote Shutdown Panels are located on the 111' elevation of the Control Building
- Division 1 Remote Shutdown Panel is H22-P150
- Division 2 Remote Shutdown Panel is H22-P151
- This JPM will have a failure of RHR A to properly operate in Suppression Pool Cooling requiring the use of RHR B

Task Overview: (Detailed description of task)

This task is to startup RHR A in Suppression Pool Cooling from the Remote Shutdown Panel per the ONEP.

RHR A Test Return Valve E12-F024A will fail to operate.

Failure of E12-F024A will require the operator to utilize the RHR B for Suppression Pool Cooling.

Suppression Pool Cooling is required to support operation of RCIC.

This task includes starting up SSW A and B.

Operation of the plant from the Remote Shutdown Panels is only allowed after the plant is shutdown.



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Facility: Grand Gulf Nuclear Station
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Align SP Cooling from RSP

ONLY GIVE THE APPLICANT ATTACHMENT IX FOR RHR A.

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 05-1-02-II-1 Att. IX, Step a (1)	
<input type="checkbox"/>	CHECK OPEN/OPEN 1P41-F068A SSW OUTL FM RHR HX A VLV [SSD] (HS-M008A)
<u>Standard:</u>	Checked open P41-F068A, SSW OUTL FM RHR HX A VLV. Indication red light on, green light off
<u>Cue:</u>	Red light on, green light off.
<u>Notes:</u>	1H22-P150
SAT / UNSAT	



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Step 2: 05-1-02-II-1 Att. IX, Step a (2)

☐* **START 1P41-C001A, SSW PMP A [SSD] (HS-M001A)**

Standard: Started SSW Pump A.
Indication red light on, green light off

Cue: Red light on, green light off.

Notes: 1H22-P150

SAT / UNSAT

Step 3: 05-1-02-II-1 Att. IX, Step a (3)

☐* **OPEN 1P41-F001A SSW PMP A DISCH VLV [SSD] (HS-M002A)**

Standard: Opened P41-F001A, SSW PMP A DISCH VLV.
Indication red light on, green light off

Cue: Red light on, green light off.

Notes: 1H22-P150

SAT / UNSAT



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Step 4: 05-1-02-II-1 Att. IX, Step a (4)

☐* **OPEN 1P41-F014A SSW INL TO RHR HX A VLV [SSD] (HS-M007A)**

Standard: Opened P41-F014A SSW INL TO RHR HX A VLV.
 Indication red light on, green light off

Cue: Red light on, green light off.

Notes: 1H22-P150

SAT / UNSAT

Step 5: 05-1-02-II-1 Att. IX, Step a (5)

☐* **OPEN 1P41-F005A SSW Loop A RTN TO CLG TWR A [SSD] (HS-M010A)**

Standard: Opened P41-F005A, SSW Loop A RTN TO CLG TWR A.
 Handswitch is held in OPEN position until indication red light
 on, green light off

Cue: Red light on, green light off.

Notes: This is a JOG handswitch.
 1H22-P150

SAT / UNSAT



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Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Step 6: 05-1-02-II-1 Att. IX, Step a (6)

☐* **VERIFY CLOSED/CLOSE 1P41-F006A SSW PMP A RECIRC VLV (HS-M004A)**

Standard: Closed P41-F006A, SSW PMP A RECIRC VLV.
Indication green light on, red light off

Cue: Green light on, red light off.

If asked, SSW A flow indicates 11000gpm

Notes: 1H22-P150

SAT / UNSAT

Step 7: 05-1-02-II-1 Att. IX, Step a (7)

☐ **START 1P41-C003A, SSW CLG TWR FAN A [SSD] (HS-M011A)**

Standard: Started SSW Cooling Tower Fan A.
Indication red light on, green light off

Cue: Red light on, green light off

Notes: if not performed, Cooling Tower Fans will auto start when RHR A pump started.

1H22-P150

SAT / UNSAT



Step 8: 05-1-02-II-1 Att. IX, Step a (8)

☐ **START** 1P41-C003B, SSW CLG TWR FAN B [SSD] (HS-M012A)

Standard: Started SSW Cooling Tower Fan B.
 Indication red light on, green light off

Cue: **Red light on, green light off.**

Notes: if not performed, Cooling Tower Fans will auto start when RHR A pump started.
 1H22-P150

SAT / UNSAT

Step 9: 05-1-02-II-1 Att. IX, Step b

☐ **OPEN OR CHECK OPEN** the following valves:

- (1) 1E12-F004A RHR PMP A SUCT FM SUPP POOL [SSD]. (HS-M202A)
- (2) 1E12-F047A RHR HX A INL VLV [SSD]. (HS-M206A)
- (3) 1E12-F003A RHR HX A OUTL VLV [SSD]. (HS-M207A)

Standard: Observed the above listed valves are open.
 Indication red light on, green light off

Cue: **All of the valves indicate Red light on, green light off.**

Notes: These valves are already in their normal lineup.
 1H22-P150

SAT / UNSAT



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JPM Number: GJPM-OPS-2017IP1

Step 10: 05-1-02-II-1 Att. IX, Step c

☐* **CLOSE 1E12-F048A RHR HX A BYP VLV [SSD] (HS-M208A)**

Standard: Closed E12-F048A, RHR HX A BYP VLV.
Handswitch is held in CLOSE position until held Indication
green light on, red light off

Cue: Green light on, red light off.

Notes: This is a JOG handswitch.
1H22-P150

SAT / UNSAT

Step 11: 05-1-02-II-1 Att. IX, Step d

☐* **START 1E12-C002A, RHR PMP A [SSD] (HS-M200A)**

Standard: Started RHR Pump A.
Indication red light on, green light off

Cue: Red light on, green light off.

Notes: 1H22-P150

SAT / UNSAT



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JPM Number: GJPM-OPS-2017IP1

Step 12: 05-1-02-II-1 Att. IX, Step e

☐* **OPEN 1E12-F024A RHR A TEST RTN TO SUPP POOL [SSD] (HS-M222A)**

Standard: Attempted to open E12-F024A, RHR A TEST RTN TO SUPP POOL.

Cue: After applicant attempts to open F024A, RHR A Test Return to Suppression Pool, inform them that both red AND green lights are OFF.

Additional possible cues:

- If applicant informs MCR that RHR A cannot be placed in SP Cooling, inform them "CRS directs you to establish SP Cooling"
- If asked to investigate circuit breaker for valve F024A (Circuit Breaker 52-153122), reply as Aux Bldg NLO that circuit breaker is in Trip Free position and requires electrical investigation
- If asked about position of F024A, report it is fully closed
- If asked about RHR A flow, inform them flow indicates 0 gpm
- If applicant attempts to secure RHR A, inform that another operator will secure RHR A

Notes:

SAT / UNSAT

BEGIN ALTERNATE PATH - Alternate Path begins with next step, and is designated by "AP"

Cue: When applicant determines that RHR B is required, provide them Attachment X, RHR B Suppression Pool Cooling



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

AP Step 13: 05-1-02-II-1 Att. X, Step a (1)	
<input type="checkbox"/>	CHECK OPEN/OPEN 1P41-F068B SSW OUTL FM RHR HX B VLV [SSD] (HS-M008B)
<u>Standard:</u>	Checked open P41-F068B, SSW OUTL FM RHR HX B VLV Indication red light on, green light off.
<u>Cue:</u>	Red light on, green light off.
<u>Notes:</u>	1H22-P151
SAT / UNSAT	



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

AP Step 14: 05-1-02-II-1 Att. X, Step a (2)	
<input type="checkbox"/> * START 1P41-C001B, SSW PMP B (HS-M001B)	
<u>Standard:</u>	Started SSW Pump B. Indication red light on, green light off
<u>Cue:</u>	Red light on, green light off.
<u>Notes:</u>	1H22-P151
SAT / UNSAT	

AP Step 15: 05-1-02-II-1 Att. X, Step a (3)	
<input type="checkbox"/> * OPEN 1P41-F001B SSW PMP B DISCH VLV (HS-M002B)	
<u>Standard:</u>	Opened P41-F001B, SSW PMP B DISCH VLV. Indication red light on, green light off
<u>Cue:</u>	Red light on, green light off.
<u>Notes:</u>	1H22-P151
SAT / UNSAT	



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

AP Step 16: 05-1-02-II-1 Att. X, Step a (4)

☐* **OPEN 1P41-F014B SSW INL TO RHR HX B VLV (HS-M007B)**

Standard: Opened P41-F014B, SSW INL TO RHR HX B VLV.
 Indication red light on, green light off

Cue: Red light on, green light off.

Notes: 1H22-P151

SAT / UNSAT

AP Step 17: 05-1-02-II-1 Att. X, Step a (5)

☐* **OPEN 1P41-F005B SSW Loop B RTN TO CLG TWR B (HS-M010B)**

Standard: Opened P41-F005B, SSW Loop B RTN TO CLG TWR B.
 Handswitch is held in OPEN position until indication red light on,
 green light off

Cue: Red light on, green light off.

Notes: This is a JOG handswitch.

1H22-P151

SAT / UNSAT



AP Step 18: 05-1-02-II-1 Att. X, Step a (6)	
<input type="checkbox"/> * VERIFY CLOSED/CLOSE 1P41-F006B SSW PMP B RECIRC VLV (HS-M004B)	
Standard: Closed P41-F006B, SSW PMP B RECIRC VLV. Indication green light on, red light off	
Cue: Green light on, red light off. If asked, SSW B flow indicates 11000gpm	
Notes: 1H22-P151	
SAT / UNSAT	

AP Step 19: 05-1-02-II-1 Att. X, Step a (7)	
<input type="checkbox"/> START 1P41-C003C, SSW CLG TWR FAN C (HS-M011B)	
Standard: Started SSW Cooling Tower Fan C. Indication red light on, green light off	
Cue: Red light on, green light off	
Notes: If not performed, Cooling Tower Fans will auto start when RHR B pump started. 1H22-P151	
SAT / UNSAT	



AP Step 20: 05-1-02-II-1 Att. X, Step a (8)	
<input type="checkbox"/>	START 1P41-C003D, SSW CLG TWR FAN D (HS-M012B)
<u>Standard:</u>	Started SSW Cooling Tower Fan D. Indication red light on, green light off
<u>Cue:</u>	Red light on, green light off.
<u>Notes:</u>	If not performed, Cooling Tower Fans will auto start when RHR B pump started. 1H22-P151
SAT / UNSAT	

AP Step 21: 05-1-02-II-1 Att. X, Step b	
<input type="checkbox"/>	OPEN <u>OR</u> CHECK OPEN the following valves: (1) 1E12-F004B RHR PMP B SUCT FM SUPP POOL. (HS-M202B) (2) 1E12-F047B RHR HX B INL VLV. (HS-M206B) (3) 1E12-F003B RHR HX B OUTL VLV. (HS-M207B)
<u>Standard:</u>	Observed the above listed valves are open. Indication red light on, green light off
<u>Cue:</u>	All of the valves indicate Red light on, green light off.
<u>Notes:</u>	These valves are already in their normal lineup 1H22-P151
SAT / UNSAT	



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Facility: Grand Gulf Nuclear Station
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AP Step 22: 05-1-02-II-1 Att. X, Step c

☐* **CLOSE 1E12-F048B RHR HX B BYP VLV (HS-M208B)**

Standard: Closed E12-F048B, RHR HX B BYP VLV.
Handswitch is held in CLOSE position until held Indication green light on, red light off

Cue: Red light off, green light on.

Notes: This is a JOG handswitch.

1H22-P151

SAT / UNSAT

AP Step 23: 05-1-02-II-1 Att. X, Step d

☐* **START 1E12-C002B, RHR PMP B (HS-M200B)**

Standard: Started RHR Pump B.
Indication red light on, green light off

Cue: Red light on, green light off.

Notes:

1H22-P151

SAT / UNSAT



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AP Step 24: 05-1-02-II-1 Att. X, Step e

☐* **OPEN 1E12-F024B, RHR B TEST RTN TO SUPP POOL (HS-M222B)**

Standard: Opened E12-F024B, RHR B TEST RTN TO SUPP POOL.
 Indication red light on, green light off

Cue: Red light on, Green light off.

 SRO in charge desires to maintain this RHR suppression pool
 cooling loop with maximum flow through the heat exchanger.

If asked, RHR B flow indicates 8000gpm

Notes: Applicant should leave E12-F048B closed and E12-F003B full open.
 Therefore steps f and g will not be performed.
 Applicant should report RHR B is in Suppression Pool Cooling with Maximum flow.

1H22-P151

SAT / UNSAT

EVALUATOR TERMINATE THE JPM.



Date of Examination: 12/04/2017
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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Task Standard(s):

Suppression Pool Cooling A

- **STARTED** 1P41-C001A, SSW PMP A
- **OPENED** 1P41-F001A SSW PMP A DISCH VLV
- **OPENED** 1P41-F014A SSW INL TO RHR HX A VLV
- **OPENED** 1P41-F005A SSW Loop A RTN TO CLG TWR A
- **CLOSED** 1P41-F006A SSW PMP A RECIRC VLV
- **CLOSED** 1E12-F048A RHR HX A BYP VLV
- **STARTED** 1E12-C002A, RHR PMP A
- **Attempted to OPEN** 1E12-F024A RHR A TEST RTN TO SUPP POOL

Suppression Pool Cooling B

- **STARTED** 1P41-C001B, SSW PMP B
- **OPENED** 1P41-F001B SSW PMP B DISCH VLV
- **OPENED** 1P41-F014B SSW INL TO RHR HX B VLV
- **OPENED** 1P41-F005B SSW Loop B RTN TO CLG TWR B
- **CLOSED** 1P41-F006B SSW PMP B RECIRC VLV
- **CLOSED** 1E12-F048B RHR HX B BYP VLV
- **STARTED** 1E12-C002B, RHR PMP B
- **OPENED** 1E12-F024B RHR B TEST RTN TO SUPP POOL

SAT / UNSAT

Remember to record stop time



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP1

Follow-Up Questions & Answers:

Comments:

Give this page to the applicant**Initial Condition(s):**

- Control Room evacuated due to noxious fumes
- Reactor is shutdown
- RPV water level is within band of +50" to -30" on wide range level
- RPV pressure is within band of 800 to 1060 psig using SRVs
- Division 1 & 2 RHR Transfer switches have been placed in EMERG position per step 3.2.6 of the Shutdown from the Remote Shutdown Panel ONEP
- Standby Service Water A & B are **NOT** running and are in Standby lineup per the P41 SOI
- Other actions in section 3.2 of the Shutdown from the Remote Shutdown Panel ONEP will be performed by other operators
- No ECCS initiation signals are present

Initiating Cue(s):

- Control Room Supervisor directs to place RHR A in Suppression Pool Cooling per Attachment IX of the Shutdown from the Remote Shutdown Panel ONEP



Date of Examination: 12/04/2017
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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP2

2017I P2
GGNS
2017 NRC Operating Test
Job Performance Measure

JPM Number: GJPM-OPS-2017IP2 JPM Title: Install N2 Bottles on ADS Air
Supply
Facility Number: GJPM-OPS-EOP07
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 20 min

Prepared By:	Michael Rasch	11/07/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/07/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Benny White \ Chase Miller	11/07/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/07/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP2

Install N2 Bottles on ADS Air Supply

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 20 Min
--	---	-------------------------

Setting: Plant (Inside RCA)
Type: NLO/RO/SRO
Task: GGNS-AON-EP-EMERGENCY-2
K&A: 218000 A2.03 (3.4/3.6)
295019 AA1.01 (3.5/3.3)
Safety Function: 3 – Reactor Pressure Control
PSA Applicability: Operator Action Importance to Core Damage Frequency Rank 4
10CFR 55.45(a) (7); (12)
Performance: Simulate
Reference(s): 05-S-01-EP-1/Att. 7 Rev. 36, Emergency/Severe Accident
Procedure Support Documents; Att. 7 Defeating Containment
and Drywell Instrument Air Isolation Interlocks
Handout(s): 05-S-01-EP-1/Att. 7 marked up with step 2.4.1 complete
Manipulations: 6
Critical Steps: 5
Low Power: YES
Emergency/Abnormal: YES
RCA entry: YES
Engineered Safety Function: No

Previous 2 NRC exams December 2014 for RO Applicants (not in Previous 2 NRC Exams for SRO Applicants)

Plant Industry Experience 2003 Reactor Scram due to loss of grid

Simulator Setup/Required Plant Conditions:

- Area 9, elevation 139' and area 9, elevation 166' are accessible

Safety Concerns:

- Wear appropriate personal protective equipment
- NO CLIMBING. Point up or down while you explain what you are going to do
- Beware of radiological areas
- Area 9 elevation 139' is a high noise area - hearing protection required



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Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP2

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Emergency Procedures have been entered
- Following valves are open
 - P53-F001, INST AIR SPLY HDR TO CTMT
 - P53-F007, INST AIR SPLY HDR TO DRWL
 - P53-F026A, INST AIR SPLY HDR TO AUX BLDG
 - P53-F026B, INST AIR SPLY HDR TO AUX BLDG
- Four nitrogen bottles are installed at the connection downstream of P53-FA01, with the regulators attached
- B21-R702A and B, ADS A and B AIR RCVR PRESS indicate < 125 psig

Initiating Cue(s):

- Control Room Supervisor directs you to perform steps 2.4.1 and 2.4.2 of 05-S-01-EP-1, Attachment 7 Defeating Containment and Drywell Instrument Air Isolation Interlocks



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JPM Number: GJPM-OPS-2017IP2

Install N2 Bottles on ADS Air Supply

Notes to Evaluator:

- Valve P53-FA01 is located in Area 9, El. 139'. Valves P53-FA02 and P53-F043 are located in Area 9, El. 166'.
- DO NOT linger in Radiation Areas.
- Stand outside High Radiation Areas to just point out valves inside the boundary.
- Areas around Plant Chillers are High Noise Areas.

Task Overview: (Detailed description of task)

This task provides a back-up source of Safety/relief valve operating air when the normal air source is either isolated or otherwise unavailable.

This is a PRA Operator Action.

Supplying Nitrogen to ADS valve actuators was used following a loss of grid and reactor scram in 2003 to allow use of ADS valves for RPV pressure Control.



Critical steps are underlined, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Step 1: 05-S-01-EP-1 Att. 7, Step 2.4.1 a

☐ **CLOSE OR CHECK CLOSED** P53F003 (1H13-P870-3C).

Standard: Control Room contacted to verify 1P53-F003, INST AIR SPLY TO ADS RCVRS closed.

Cue: Report as Control Room that **1P53-F003** is closed.

Notes: Valve is located in High Radiation Area but is visible from outside the boundary.

SAT / UNSAT

Step 2: 05-S-01-EP-1 Att. 7, Step 2.4.1 b

☐ **CLOSE OR CHECK CLOSED** 1P53FA02 (Area 9, El.166).

Standard: Checked closed valve 1P53-FA02, ADS Test Connection Isolation by turning the valve's hand wheel in the clockwise direction.

Cue: For valve **1P53-FA02**, resistance is felt in the clockwise direction.

Notes: Area 9, 166 ft. elevation

Valve is located in High Radiation Area but is visible from outside the boundary.

SAT / UNSAT



**EVALUATOR NOTE: Upon arriving in area 9, 139' elevation,
CUE Applicant four gas bottles are installed in area 9 with the Manifold installed**

Step 3: 05-S-01-EP-1 Att. 7, Step 2.4.1 c

☐ **CLOSE OR CHECK CLOSED** the ADS Nitrogen bottles Manifold Isolation Valves (Area 9/139')

- V1
- V2
- V3
- V4

Standard: Checked closed manifold isolation valves V1, V2, V3 and V4 by turning the valve's handle in the clockwise direction.

Cue: For ALL FOUR VALVES, resistance is felt in the clockwise direction.

Notes: Manifold is at the toolbox in area 9, 139 ft. elevation

Equipment is located in High Noise Area.

SAT / UNSAT

2.4.2 **WHEN** ADS air receiver pressures has dropped to < 125 psig (as indicated on B21-R702A/B on 1H13-P601), **THEN ESTABLISH** makeup to ADS receivers by **PERFORMING** the following:

EVALUATOR NOTE: IF ASKED CUE applicant ADS Receiver pressures are at 120 psig.



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Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP2

Step 4: 05-S-01-EP-1 Att. 7, Step 2.4.2 a

☐* ***OPEN (1) gas cylinder valve AND ADJUST gas cylinder regulator for that Nitrogen bottle to approximately 125 psig output pressure.***

Standard: Rotated gas cylinder outlet valve in the counter-clockwise direction until resistance is felt.
Adjusted gas cylinder regulator by rotating the regulator pressure adjustment valve in the clockwise direction until pressure is approximately 125 psig.

Cue: Resistance is felt in the counter-clockwise direction on gas cylinder valve.
Use pen or finger to indicate Gas cylinder regulator is indicating 126 psig.

Notes: Area 9, 139' elevation

SAT / UNSAT



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Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IP2

Step 5: 05-S-01-EP-1 Att. 7, Step 2.4.2 b

☐* ***OPEN (1) ADS Nitrogen bottle Manifold Isolation Valve for the in-service Nitrogen bottle. Only OPEN (1) Manifold valve. (Area 9/139')***

- **V1**
- **V2**
- **V3**
- **V4**

Standard: Opened manifold isolation valve V1, V2, V3 or V4 by turning the valve's handle in the counter-clockwise direction.

Cue: For manifold isolation valve V1, V2, V3 or V4, resistance is felt in the counter-clockwise direction.

Notes: Area 9, 139' elevation

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Step 6: 05-S-01-EP-1 Att. 7, Step 2.4.2 c

☐* ***OPEN P53-FA01. (Area 9/139')***

Standard: Opened valve 1P53-FA01, ADS Makeup Isolation by turning the valve's hand wheel in the counter-clockwise direction.

Cue: For valve 1P53-FA01, resistance is felt in the counter-clockwise direction.

Notes: Area 9, 139 ft. elevation

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Step 7: 05-S-01-EP-1 Att. 7, Step 2.4.2 d

☐ **UNLOCK AND OPEN** P53-FX004 to valve in the local pressure gauge.

Standard: Removed the tie-wrap from valve 1P53-FX004, Isolation for PI-R028 and opened the valve by turning its hand wheel in the counter-clockwise direction.

Cue: **For valve 1P53-FX004, tie wrap is removed and resistance is felt in the counter-clockwise direction.**

Notes: Area 9, 166 ft. elevation near 1P53-F003

Valve is located in High Radiation Area but is visible from outside the boundary.

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Applicant reviews CAUTION.

CAUTION

Allowing ADS Receiver pressure to exceed 165 psig May cause relief valves on ADS receivers to lift.



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Step 8: 05-S-01-EP-1 Att. 7, Step 2.4.2 e

☐* **UNLOCK AND Slowly OPEN 1P53F043 (Area 9, El. 166), OBSERVING pressure on P53-R028.**

Standard: Removed the tie-wrap from valve 1P53-F043, ADS Makeup Isolation and opened the valve by turning its hand wheel in the counter-clockwise direction, while monitoring pressure on 1P53-PI-R028.

Cue:

- For valve 1P53-F043, resistance is felt in the counter-clockwise direction.
- Pressure on 1P53-PI-R028 is 126 psig.

Notes: Area 9, 166' elevation

Valve is located in High Radiation Area but is visible from outside the boundary.

Observation of pressure is not critical.

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EVALUATOR TERMINATE JPM



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JPM Number: GJPM-OPS-2017IP2

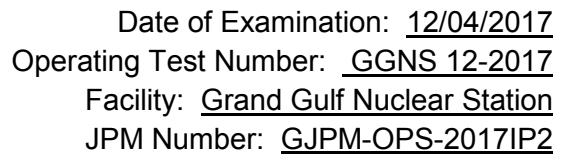
Task Standard(s):

- **OPENED (1)** gas cylinder valve
- **ADJUSTED** gas cylinder regulator for that Nitrogen bottle to approximately 125 psig output pressure
- **OPENED (1)** ADS Nitrogen bottle Manifold Isolation Valve for the **in-service** Nitrogen bottle
- **OPENED** P53-FA01, ADS Makeup Isolation
- **OPENED** 1P53F043, ADS Makeup Isolation

Nitrogen is being supplied to ADS valve actuators per 05-S-01-EP-1 Attachment 7, Defeating Containment and Drywell Instrument Air Isolation Interlocks.

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Remember to record stop time



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Give this page to the applicant

Initial Condition(s):

- Emergency Procedures have been entered
- Following valves are open
 - P53-F001, INST AIR SPLY HDR TO CTMT
 - P53-F007, INST AIR SPLY HDR TO DRWL
 - P53-F026A, INST AIR SPLY HDR TO AUX BLDG
 - P53-F026B, INST AIR SPLY HDR TO AUX BLDG
- Four nitrogen bottles are installed at the connection downstream of P53-FA01, with the regulators attached
- B21-R702A and B, ADS A and B AIR RCVR PRESS indicate < 125 psig

Initiating Cue(s):

- Control Room Supervisor directs you to perform steps 2.4.1 and 2.4.2 of 05-S-01-EP-1, Attachment 7 Defeating Containment and Drywell Instrument Air Isolation Interlocks



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JPM Number: GJPM-OPS-2017IPB2

2017I PB2
GGNS
2017 NRC Operating Test
Job Performance Measure

JPM Number: GJPM-OPS-2017IPB2 JPM Title: Return Fire Water Pumps to Stby
Facility Number: GJPM-OPS-P6404 rev 2
(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Michael Rasch	11/28/2017
	Exam Developer	Date
Ops Review:	Robert Brinkman	11/28/2017
	1 st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Robert Chamblee	11/28/2017
	2 nd Validation by Ops Validation Crew	Date
Approved By:	Ricky Liddell	11/28/2017
	Project Lead or Exam Team Lead	Date



Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Return Fire Water Pumps to Stby

<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 Min
--	---	-------------------------

Setting: Plant
Type: NLO\RO\SRO
Task: NOB-P64-NORMAL-3
K&A: 286000 A4.05 (3.3/3.3)
Generic 2.1.30 (4.4/4.0)
Safety Function: 8 – Plant Service Systems
PRA Applicability: No
10CFR 55.45(a) (4); (5); (12)
Performance: Simulate
Reference(s): 04-S-01-P64-1 Rev. 64, Fire Protection Water System
Handout(s): 04-S-01-P64-1 Precautions & Limitations and section 4.4
Manipulations: 6
Critical Steps: 6
Low Power: No
Emergency/Abnormal: No
RCA entry: No
Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

- Fire Water Pump House is accessible

Safety Concerns:

- Wear appropriate personal protective equipment.
- No climbing. Point up or down while you explain what you are going to do.



Entergy

Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Fire was reported at ESF Transformer 12 and Fire Deluge was initiated
- Motor Driven Fire Pump was manually started in the Control Room
- Diesel Driven Fire Pump A automatically started
- Fire is out and deluge has been isolated
- Fire pumps have been running for 35 minutes

Initiating Cue(s):

- Control Room Supervisor directs you to place running Fire Water Pumps in Standby per section 4.4 of SOI 04-S-01-P64-1



Return Fire Water Pumps to Stby

Notes to Evaluator:

- All operations will be in Fire Water Pump House
- Do not allow student to operate any plant equipment.

Task Overview: (Detailed description of task)

- This task places Motor Driven Fire Pump and Diesel Driven Fire Pump A back in standby condition after an automatic start.

Tasks: Critical tasks are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

SEQUENCE of which PUMP is secured is NOT critical.

Step 1: 04-S-01-P64-1, Step 4.4.2 a

☐ **CHECK** that Jockey Fire Pump Control switch is in AUTO on SH22-P133.

Standard: Checked Jockey Pump Control switch in AUTO Position

Cue: If asked, in AUTO

Notes: Located in East Room of Fire Water Pump House
SH22-P133

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Date of Examination: 12/04/2017
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JPM Number: GJPM-OPS-2017IPB2

Diesel Driven Fire Pump 'A'

Step 2: 04-S-01-P64-1, Step 4.4.2 b & b(1)

☐* ***IF Diesel Driven Fire Pump A was started automatically OR manually with the START pushbutton on SH13-P862, THEN to reset the Logic PERFORM the following:***

TURN Control switch on SH22-P135 to OFF

Standard: Placed Pump 'A' control switch to OFF on SH22-P135

Cue: Control Switch in OFF

Notes: Located in East Room of Fire Water Pump House
SH22-P135

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Step 3: 04-S-01-P64-1, Step 4.4.2 b (2)

☐* ***DEPRESS STOP pushbutton on SH22-P135.***

Standard: Depressed and released STOP pushbutton

Cue: Pushbutton depressed and released, Diesel engine is coasting down

Notes: SH22-P135 label beside switch reads ENGINE STOP

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Step 4: 04-S-01-P64-1, Step 4.4.2 b (3)

☐* **DEPRESS Diesel Driven Fire Pump A RESET pushbutton on SH22-P135.**

Standard: Depressed and released Diesel Driven Fire Pump A RESET pushbutton

Cue: Pushbutton depressed and released

Notes: SH22-P135

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Step 5: 04-S-01-P64-1, Step 4.4.2 b (4)

☐* **DEPRESS CONTROL RM START AND RESET PUSHBUTTON on SH22-P135.**

Standard: Depressed and released CONTROL RM START AND RESET PUSHBUTTON.

Cue: Pushbutton depressed and released

Notes: SH22-P135

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Step 6: 04-S-01-P64-1, Step 4.4.2 b (5)

☐* **PLACE Control switch on SH22-P135 back to AUTO.**

Standard: Placed Control switch in AUTO

Cue: Control Switch in AUTO

 If asked cue, AUTO ON light illuminated

Notes: SH22-P135

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Step 7: 04-S-01-P64-1, Step 4.4.2 c

☐ **IF Diesel Driven Fire Pump A was started in MANUAL 1 OR MANUAL 2, Control switch on SH22-P135 Must be ROTATED to OFF AND THEN BACK to AUTO.**

Standard: N/A

Cue: None

Notes: Initial conditions state that Diesel Driven Fire Pump A was started automatically hence this step is N/A

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Applicant reviewed NOTE

NOTE

IF pump was started automatically by a low header pressure signal, it Will shutdown automatically seven minutes AFTER it has started IF the low header pressure signal Clears.

Motor Driven Fire Pump

Step 8: 04-S-01-P64-1, Step 4.4.2 d

☐* *IF motor driven fire pump was started manually, STOP it by DEPRESSING STOP pushbutton on SH22-P134.*

Standard: Depressed and released STOP pushbutton

Cue: Pushbutton depressed and released, motor driven fire pump has stopped

Notes: Located in Center Room of Fire Water Pump House
SH22-P136 pushbutton SP64M002

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Step 9: 04-S-01-P64-1, Step 4.4.2 e

☐ **CHECK** that jockey pump operates, as required, to maintain header pressure \geq 135 psig.

Standard: Checked jockey pump operating, as required, to maintain header pressure \geq 135 psig

Cue: Header pressure is 140 psig

Notes: SP64-PI-R003A local pressure instrument (Diesel Driven Fire Pump A Room)
SP64-PI-R0018 local pressure instrument (Motor Driven Fire Pump Room)
Either pressure instrument is acceptable

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Date of Examination: 12/04/2017
Operating Test Number: GGNS 12-2017
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2017IPB2

Task Standard(s):

For Diesel Driven Fire Pump A on SH22-P135

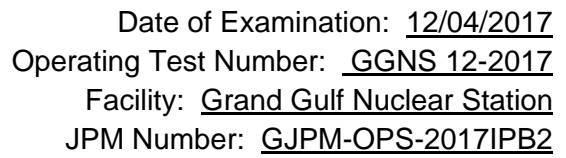
- Placed control switch to OFF
- Depressed and released STOP pushbutton
- Depressed and released Diesel Driven Fire Pump A RESET pushbutton
- Depressed and released CONTROL RM START **AND** RESET pushbutton
- Placed Control switch in AUTO

For Motor Driven Fire Pump on SH22-P134

- Depressed and released STOP pushbutton

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Remember to record stop time

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Initial Condition(s):

- Fire was reported at ESF Transformer 12 and Fire Deluge was initiated
- Motor Driven Fire Pump was manually started in the Control Room
- Diesel Driven Fire Pump A automatically started
- Fire is out and deluge has been isolated
- Fire pumps have been running for 35 minutes

Initiating Cue(s):

- Control Room Supervisor directs you to place running Fire Water Pumps in Standby per section 4.4 of SOI 04-S-01-P64-1

Facility: Grand Gulf Nuclear Station Scenario No.: 2 Op-Test No.: GGNS 12-2017

Examiners: _____ Operators: _____

Event No.	Malf. No.	Event Type †	Event Description
1	N/A	N (BOP,CRS)	Transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12
2	(r) fw211	C (ATC,CRS) TS (CRS)	Reactor Narrow Range Level C instrument oscillations
3	r21134h n41141c	TS (CRS) C (BOP,CRS) A (BOP,CRS)	ESF Transformer 12 Lockout with HPCS Diesel Generator auto start failures
4	z022021_24_53	C(ATC,CRS) A(CREW)	Control Rod 24-53FN drifting in
5	z022022_24_53	R (ATC) C(BOP,CRS) A(CREW) TS (CRS)	Control Rod 24-53FN stuck at position 32.
6	z021021_32_37	M(CREW)	Control Rod 32-27HJ drifting in. Reactor scram due to two controls drifting in
7	c11164	M(CREW)	Hydraulic Block ATWS > 5% RTP with SLC failure (EP-2, 2A) * (CT-1) When control rods fail to scram, crew inserts all control rods to position 02 or beyond before exiting EP-2A * (CT-2) Inhibit ADS prior to automatic ADS valves opening during ATWS * (CT-3) During failure to scram conditions with power > 5% RTP, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range prior to exiting EP-2A
8	fw123a(b)	C(BOP,CRS)	Reactor Feedwater Pump trip. * (CT-4) Restores injection using Condensate/Feedwater to restore/maintain RPV level above -191" CFZ before exiting EP-2A
9	c41263	C(ATC,CRS)	ESF Bus 15AA power loss

† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

* **Critical Task** (As defined in NUREG 1021 Appendix D)

CREW notation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

Reason for Revision: Editorial changes to enhance Technical Specification actions.

Objectives: To evaluate the applicant's ability to operate the facility in response to the following evolutions:

1. Transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12.
2. Respond to Narrow Range C level transmitter oscillations.
3. Respond to an ESF Transformer 12 Lockout with failure of HPCS Diesel Generator to automatically start.
4. Respond to a control rod drifting in.
5. Respond to a stuck control rod.
6. Respond to a second control rod drifting in, resulting in a manual reactor scram.
7. Respond to a Hydraulic Block ATWS with power > 5% RTP.
8. Respond to a Reactor Feed Pump trip.
9. Respond to an ESF Bus 15AA power loss.

Initial Conditions: Plant is operating at 100% power.

Inoperable Equipment: None

Planned activities for this shift are:

- Transfer Bus 17AC from ESF Transformer 21 to ESF Transformer 12 in preparation for red-tagging breaker 152-1705, 17AC FDR FM ESF 21, for preventative maintenance

Scenario Notes:

This scenario is a NEW Scenario.

Validation Time: 80 minutes

Quantitative Attributes Table

Attribute	E3-304-1 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> Reactor Feed Pump trip (E8) ESF Bus 15AA power loss (E9)
Abnormal Events	2-4	3	<ul style="list-style-type: none"> ESF Transformer 12 lockout with a failure of HPCS Diesel Generator to automatically start (Loss of AC Power ONEP) (E3) Control Rod 24-53FN drifting in (Control Rod/Drive Malfunctions ONEP) (E4) Control Rod 24-53FN stuck at position 32 (Control Rod/Drive Malfunctions ONEP) (E5)
Major Transients	1-2	2	<ul style="list-style-type: none"> Control Rod 32-37HJ drifting in – Reactor Scram (E6) Hydraulic block ATWS with power > 5% RTP- SLC failure (E7)
EOP entries requiring substantive action	1-2	2	<ul style="list-style-type: none"> EP-2 EP-3
EOP contingencies requiring substantive action	0-2	1	<ul style="list-style-type: none"> EP-2A
EOP based Critical Tasks	2-3	4	<ul style="list-style-type: none"> (CT-1) When control rods fail to scram, crew inserts all control rods to position 02 or beyond before exiting EP-2A (CT-2) Inhibit ADS prior to automatic ADS valve opening during ATWS (CT-3) During failure to scram conditions with power > 5% RTP, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range prior to exiting EP-2A (CT-4) Restores injection using Condensate/Feedwater to restore/maintain RPV level above -191" CFZ before exiting EP-2A
Normal Events	N/A	1	<ul style="list-style-type: none"> Transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12 (E1)
Reactivity Manipulations	N/A	1	<ul style="list-style-type: none"> Lower core flow to 70 mlbm/hr using Reactor Recirc Flow Control Valves (E5)
Instrument / Component failures	N/A	6	<ul style="list-style-type: none"> Narrow Range C level transmitter oscillations (E2) ESF Transformer 12 lockout with a failure of HPCS Diesel Generator to automatically start (E3) Control Rod 24-53FN drifting in (E4) Control Rod 24-53FN stuck (E5) Reactor Feed Water Pump A(B) trip (E8) ESF Bus 15AA power loss (E9)
Total Malfunctions	N/A	8	<ul style="list-style-type: none"> Narrow Range C level transmitter oscillations (E2) ESF Transformer 12 lockout with a failure of HPCS Diesel Generator to automatically start (E3) Control Rod 24-53FN drifting in (E4) Control Rod 24-53FN stuck (E5) Control Rod 32-37HJ drifting in - Reactor Scram(E6) Hydraulic block ATWS with power > 5% RTP–SLC Failure (E7) Reactor Feed Water Pump A(B) trip (E8) ESF Bus 15AA power loss (E9)

Top 10 systems and operator actions important to risk that are tested:

RPS (Event 6)

ESF Power (Event 3)

Condensate (Event 8)

Failure to align alternate power to 4.16 KV or 6.9 KV buses (Event 3)

SCENARIO ACTIVITIES:

The plant is operating at 100% power.

Event 1 - Transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12

After crew assumes the shift, BOP will transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12 per System Operating Instruction 04-1-01-R21-17, ESF BUS 17AC, Section 4.2.

Event 2 – Narrow Range C Level instrument oscillations (Triggered by Lead Examiner)

When ESF Bus 17AC has been transferred to ESF Transformer 12, Narrow Range C Level transmitter will begin oscillating. Crew will respond using ARI 04-1-02-1H13-P680-4A2-A2, RX WTR LVL SIG FAIL HI/LO, and manually select Narrow Range Level A or B. CRS will enter LCO TRM 6.3.7.

Event 3 - ESF Transformer 12 Lockout with HPCS Diesel Generator auto start failure (Triggered by Lead Examiner)

After Narrow Range Level A or B channel is selected and Tech Specs addressed, ESF Transformer 12 will lockout due to sudden pressure, causing a loss of power to ESF Bus 17AC. HPCS Diesel Generator will fail to auto start. BOP will recognize the failure of HPCS Diesel Generator to auto start and restore ESF Bus 17AC power from ESF Transformer 21 per 05-1-02-I-4, Loss of AC Power ONEP. CRS will enter TS 3.8.1.B for HPCS Diesel Generator inoperable.

Event 4 - Control Rod 24-53 drifting in (Triggered by Lead Examiner)

After ESF Bus 17AC power has been restored and Tech Specs addressed, Control Rod 24-53FN will begin drifting in. ATC will select Control Rod 24-53FN and apply a continuous insert signal per 05-1-02-IV-1, Control Rod/Drive Malfunctions ONEP.

Event 5 - Control Rod 24-53 stuck at position 32 (automatically triggered)

When Control Rod 24-53FN reaches position 32, it will become stuck. ATC will recognize and report Control Rod 24-53FN has stopped inserting. CRS will direct ATC to lower core flow to 70 mlbm/hr IAW Control Rod/Drive Malfunctions ONEP. ATC will lower core flow to 70 mlbm/hr using Recirc Flow Control Valves in fast detent. CRS will enter and direct actions from Reduction in Recirculation System Flow Rate ONEP, 05-1-02-III-3. After actions of Reduction in Recirculation System Flow Rate ONEP have been completed, CRS will direct actions IAW Control Rod/Drive Malfunctions ONEP for BOP to raise CRD drive water pressure in 25 psid increments and for ATC to attempt to insert Control Rod 24-53FN after each drive water pressure adjustment. When CRD Drive water pressure is raised to greater than 325 psid, **Event 6** will automatically be triggered.

NOTE: Due to the amount of time required to complete the actions associated with the stuck control rod, a follow up question should be asked concerning the stuck rod and Technical Specification requirements (TS 3.1.3, Condition A).

Event 6 - Control Rod 32-27 drifting in (automatically triggered)

When CRD Drive Water pressure is raised above 325 psid, Control Rod 32-37HJ will begin to drift in. ATC will insert a manual scram per Control Rod/Drive Malfunctions ONEP. CRS will enter Reactor Scram ONEP, 05-1-02-I-1, and Turbine Generator Trip ONEP, 05-1-02-I-2.

NOTE: Event 6 can be triggered before CRD Drive Water pressure is raised to greater than 325 psid at the direction of the Lead Examiner.

Event 7 - Hydraulic Block ATWS > 5% RTP (No trigger required)

When reactor is scrammed, an ATWS occurs due to a hydraulic block of both scram discharge volumes. ATC will verify Reactor Recirc Pumps transfer to LFMGs, initiate ARI/RPT, inhibit ADS to prevent automatic operation (**CT-2**) and initiate and override HPCS IAW Reactor Scram ONEP, 05-1-02-I-1, immediate operator actions. CRS will enter EP-2A via EP-2. Reactor power will be above 5% RTP. ATC will initiate SLC which will fail to inject and initiate and override low pressure ECCS IAW Reactor Scram ONEP, 05-1-02-I-1, immediate operator actions. Terminate and Prevent of Feedwater is required because reactor power is above 5% RTP. RPV level is intentionally lowered below -70 inches wide range in order to lower core inlet subcooling and lower reactor power (**CT-3**). Crew will install the necessary attachments to bypass RPS and RC&IS interlocks and insert controls rods via manual scrams and RC&IS (**CT-1**). Suppression Pool Cooling will be maximized using RHR A and RHR B. Bypass valves will control reactor pressure during this event. Feedwater is available for RPV level control.

Event 8 - Reactor Feedwater Pump trip (Triggered by the Lead Examiner after reactor water level is stabilized below -70 inches wide range)

When reactor level lowers below -70 inches wide range, the in-service Reactor Feed Pump will trip. BOP will restore Feedwater injection to the RPV by starting the standby Reactor Feed Pump (**CT-4**) IAW 04-1-01-E12-1, Attachment 6, per 02-S-01-43, Transient Mitigation Strategy. An alternate success path would be CRS directing ATC to lower reactor pressure to 450 to 600 psig to allow RPV injection with Condensate Booster Pumps (**CT-4**) IAW 02-S-01-43, Transient Mitigation Strategy.

Event 9 – ESF Bus 15AA power loss (Triggered by Lead Examiner before controls rods are inserted)

After the running Reactor Feed Pump has tripped and RPV level has been stabilized, breaker 152-1514, ESF BUS 15AA FDR FM XFMR 11, will trip. Division 1 Diesel Generator will automatically restore power to ESF Bus 15AA. The ATC will recognize the loss of override function for LPCS and RHR A and override the associated pumps and injection valves IAW EP-2A and 02-S-01-43, Transient Mitigation Strategy. CRS will direct the ATC to restore Instrument Air to Containment IAW 05-1-02-I-4, Loss of AC Power ONEP. ATC will restore Instrument Air to Containment by opening P53-F001.

NOTE: While crew is responding to Event 9, report Attachments needed for scramming and driving control rods (18, 19, and 20) are complete to allow crew to prioritize actions.

After crew has begun inserting control rods, at direction of the Lead Examiner, the control rods are allowed to be fully inserted with the next scram. CRS transitions from EP-2A to EP-2 and RPV level restoration is directed.

NOTE: Examiner watching ATC should assist the Lead Examiner in determining when to allow all control rods to be inserted.

The exercise ends when controls rods are inserted, EP-2A has been exited and RPV water level band has been changed to between +11.4 inches and +53.5 inches narrow range.

Critical Task	(CT-1) When control rods fail to scram, crew inserts all control rods to position 02 or beyond before exiting EP-2A	(CT-2) Inhibit ADS prior to automatic ADS valve opening during ATWS
EVENT	7	7
Safety Significance	<p>Failure to effect shutdown of the reactor when a RPS setpoint has been exceeded would unnecessarily extend the level of degradation of the safety of the plant. This could further degrade into damage to the principle fission product barriers if left unmitigated. The crew is authorized by Conduct of Operations to take mitigating actions when automatic safety systems fail to perform their intended function. Action to shut down the reactor is required when RPS and control rod drive systems fail IAW EP-2A.</p>	<p>Steps in EP-2A may intentionally lower RPV water level below the ADS setpoint to reduce reactor power. Permitting automatic ADS initiation may be undesirable for the following reasons:</p> <ul style="list-style-type: none"> ADS actuation can impose a severe thermal transient on the RPV and may complicate efforts to control RPV water level If only RCIC is available for injection, ADS actuation may directly lead to loss of adequate core cooling and subsequent core damage The conditions assumed in the design of the ADS actuation logic may not exist when the specified actions are being carried out The operating crew can draw on much more information than available to ADS logic and can better judge, based on instructions contained in procedure, when and how to depressurize the RPV Subsequent steps provide explicit and detailed instructions for RPV water level control and identify the specific conditions when RPV blowdown is required Rapid, uncontrolled injection of relatively cold, unborated water could occur as RPV pressure decreases. If reactor is not shutdown or if shutdown margin is small, this could add sufficient positive reactivity to cause power excursion large enough to damage the core <p>Automatic initiation of ADS is therefore inhibited upon entry of EP-2A.</p>
Cueing	<p>Manual scram is initiated and numerous control rods indicate beyond position 02.</p> <p>Reactor power indicating > 5% RTP on APRMs on panel P680.</p> <p>APRM downscale lights on panel P680 extinguished.</p>	ADS Timer initiated alarm on P601
Performance Indicator	<p>Operator selects control rod gangs by depressing the respective pushbuttons on panel P680 and inserts the rods by depressing the IN-TIMER SKIP pushbutton.</p> <p>Operator resets reactor scram signal with key-locked switches on panel P680 and inserts manual reactor scram using scram pushbuttons on panel P680.</p>	Manipulation of ADS A and ADS B MANUAL INHIBIT switches on panel P601 vertical section.
Performance Feedback	<p>Operator selecting and inserting control rods indicated by rod position decreasing to 00 for selected rods on panel P680.</p> <p>Control rod movement on subsequent reactor scrams.</p> <p>Reactor power lowering.</p>	<p>Inhibit switches click into INHIBIT position on panel P601 vertical section.</p> <p>White indicating light on ADS A and ADS B MANUAL INHIBIT switches illuminate.</p> <p>Receipt of ADS/SRV A and ADS/SRV B OOSVC alarms on panel P601/18A-H2 and P601/19A-H2.</p>
Justification for the chosen performance limit	<p>There is no time limit for effecting complete reactor shutdown via control rod insertion. For the timeframe of this scenario, containment limits are not challenged and power oscillations are not experienced. However, if the failure to scram EP were to be exited, other procedures would not provide the guidance necessary to achieve reactor shutdown. Before exiting EP-2A ensures guidance to effect reactor shutdown is not removed.</p>	<p>The 105 second ADS timer allows sufficient time for the crew to recognize and override automatic operation of the system. As long as ADS is inhibited before ADS valves open, reactor pressure will not be reduced to the shutoff heads of high volume, cold water systems.</p>

BWR Owners Group Appendix	App. B, step RC/Q6, RC/Q-7	App. B, step RC/Q-6
Licensed Bases Documents	02-S-01-40, EP Technical Bases, Attachment V, Step Q-1 UFSAR Chapter 15.8	02-S-01-40, EP Technical Bases, Attachment V, Step 1 UFSAR Chapter 15.8

*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

Critical Task	(CT-3) During failure to scram conditions with power > 5%, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range prior to exiting EP-2A	(CT-4) Restores injection using Condensate/Feedwater to restore/maintain RPV level above -191" CFZ before exiting EP-2A
EVENT	7	8
Safety Significance	<p>Regarding lowering level below -70" wide range, to prevent or mitigate the consequences of any large irregular neutron flux oscillations induced by neutronic/thermal-hydraulic instabilities. RPV water level is lowered sufficiently below the elevation of the feedwater sparger nozzles. This places the feedwater spargers in the steam space providing effective heating of the relatively cold feedwater and eliminating the potential for high core inlet subcooling. For conditions that are susceptible to oscillations, the initiation and growth of oscillations is principally dependent upon the subcooling at the core inlet; the greater the subcooling, the more likely oscillations will commence and increase in magnitude.</p> <p>24" below the lowest nozzle in the feedwater sparger has been selected as the upper bound of the RPV water level control band. This water level is sufficiently low that steam heating of the injected water will be at least 65% to 75% effective (i.e., the temperature of the injected water will be increased to 65% to 75% of its equilibrium value in the steam environment). This water level is sufficiently high that most plants without the capability to readily defeat the low RPV water level MSIV isolation should be able to control RPV water level with feedwater pumps to preclude the isolation.</p>	<p>If RPV water level cannot be restored and maintained above the Minimum Steam Cooling RPV Water Level (-191" CFZ), emergency RPV depressurization is performed to maximize injection flow. Emergency depressurization is undesirable under ATWS conditions since the core response is difficult to predict and the risk of power excursions is increased.</p>
Cueing	Manual scram is initiated and numerous control rods indicate beyond position 02 and reactor power is > 5% on panel P680 indications and SPDS and RPV level is > -70" wide range on SPDS and PDS.	Reactor Feed Pump trip annunciators and Feedwater flow and RPV level lowering on indicators on panel P680 and PDS and SPDS.
Performance Indicator	<p>Operator initiates HPCS using HPCS manual initiation switch, then secures HPCS pump and overrides the HPCS injection valve closed.</p> <p>Operator initiates Div 1 and Div 2 ECCS with their respective manual initiation switches and overrides the associated injection valves closed and secures LPCS and RHR C pumps. RHR A and B pumps may be left running for Suppression Pool Cooling.</p> <p>Operator manipulates Master Level Controller or Startup Level Controller in MANUAL and lowers output to 0%.</p> <p>Operator ensures N21-F009A and B and N21-F040 closed.</p>	<p>Operator manipulates switches on panel P680 panel to start the standby Reactor Feed Pump</p> <p>Alternately, operator lowers RPV pressure using Bypass Valves or SRVs to allow injection with Condensate Booster Pumps.</p>
Performance Feedback	<p>Feedwater flow indication on panel P680 and SPDS indicate zero.</p> <p>Valves N21-F009A and B and N21-F040 green lights illuminated.</p> <p>Master Level Controller output indicates 0% on panel P680.</p> <p>High Pressure Core Spray, Low Pressure Core Spray and RHR C pump and injection valve override annunciators illuminated on panel P601. RHR A and RHR B injection valve override annunciators illuminated on panel P601.</p>	Feedwater flow and RPV level rising on panel P680 and PDS and SPDS.

Justification for the chosen performance limit	<p>Applicability for this CT is during EP-2A conditions where it is necessary to lower level to control power with no high energy input into the primary containment. There is no time limit for this lowering level, but it establishes margin to conditions where fuel damaging power oscillations may theoretically occur. Before exiting EP-2A was chosen because other procedures would not provide the guidance necessary to establish margin for power oscillation mitigation. Before exiting EP-2A ensures guidance to effect this control is not removed.</p> <p>NOTE – This critical task must be evaluated carefully based on the level changes. If power is reduced significantly below 5%, reactor water level may continue to rise above -70" with only CRD and SLC while driving control rods. This would not result in an UNSAT on this critical task.</p>	<p>The Minimum Steam Cooling RPV Water Level (-191" CFZ) is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. Maintaining RPV water level above the Minimum Steam Cooling RPV Water Level thus ensures that the core remains adequately cooled.</p>
BWR Owners Group Appendix	App. B, Contingency #5 Step C5-4	App. B, Contingency #5 Step C5-4
Licensed Bases Documents	02-S-01-40, EP Technical Bases, Attachment V, Step L-7 UFSAR Chapter 15.8	02-S-01-40, EP Technical Bases, Attachment V, Step L-9 UFSAR Chapter 15.8

*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

Simulator Setup:

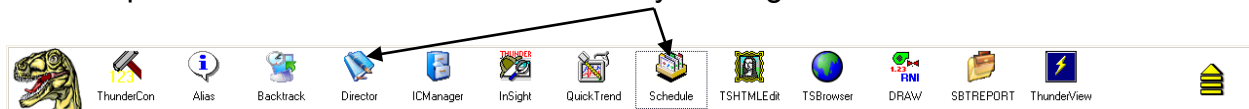
A. Initialization

1. Log off all simulator PDS and SPDS computers (PDS and SPDS must come up after the simulator load for proper operation).
2. Startup the simulator using Simulator Instructor's Job Aid section 7.3.

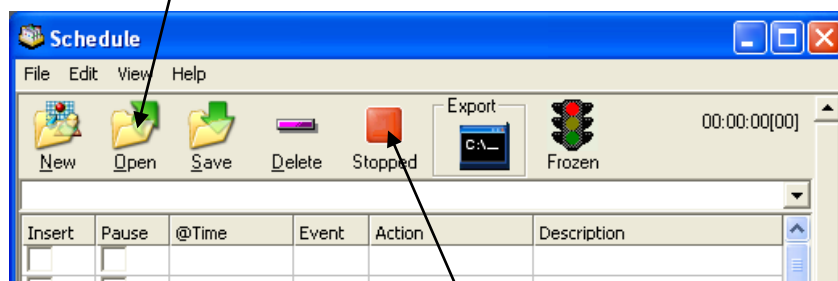
Note:

Prior to running the Schedule File, ensure no Event Files are Open. If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.

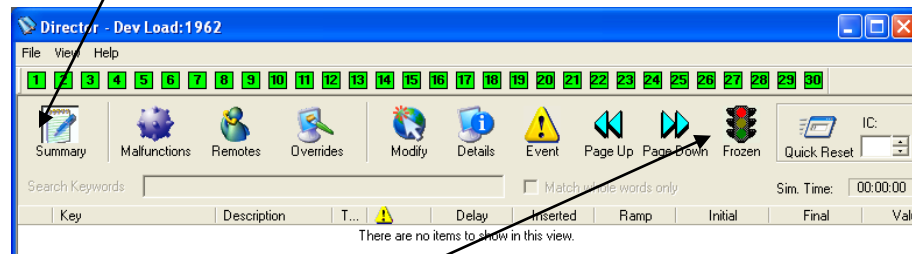


4. Set the Simulator to **IC-101** and perform switch check (Using Quick Reset in Director).
5. Click on "**Open**" in the Schedule window and Open Schedule File "**12-2017 NRC Exam Scenario 2.sch**" (in the Schedule Directory)



6. In Schedule window, click on the "**Stopped**" red block. The red block will change to a green arrow and indicate the scenario is active ("**Running**").

7. Click the Summary tab in the Director window. Verify the schedule files are loaded and opened per Section B below. (Note: Any actions in the schedule file without a specific time will not load into the director until triggered.)



8. Take the simulator out of freeze.
9. Log on to all simulator PDS and SPDS computers.
10. Verify or perform the following:
 - IC-101
 - Ensure all procedures are marked as indicated for turnover conditions
 - Advance all chart recorders and ensure all pens are inking properly
 - Clear any graphs and trends off PDS and SPDS
11. Run through any alarms and ensure alarms are on. (**Note: On T-Rex, to verify alarms are ON, the indicator will indicate “Alarms On”**).
12. Place the simulator in Freeze.

File loaded verification:

Schedule - 12-2017 NRC Scenario 2.sch

File Edit View Help

New Open Save Delete Stopped Export Frozen 00:00:00[00]

Insert	Pause	@Time	Event	Action	Description
				^ 12-2017 NRC Scenario 2	
				^ Event 1 - NORMAL - Transfer 17 Bus to ESF 12	
				^ Event 2 - Narrow Range C Oscillations (C-ATC)	
		00:00:00		Insert remote fw209 to -4.08	C34-LT-N004B TRANSMITTER OFFSET
		00:00:00		Insert remote fw210 to -1.08	C34-LT-N004C TRANSMITTER OFFSET
			2	Schedule Oscillation.sch	
				^ Event 3 - COMPONENT - ESF 12 Lockout with failure of Div 3 DG	
		00:00:00		Insert malfunction r21134h on event 3	ESF Transformer 12 Lockout
		00:00:00		Insert malfunction n41141c on event 3	Emergency Diesel Generator C Trip
				^ Event 4 - COMPONENT - Control Rod 24-53 Drift	ABNORMAL (CRD Malfunctions)
		00:00:00		Insert malfunction z021021_24_53 on event 4	Control Rod 24-53 Drift In
				^ Event 5 - RX - COMPONENT - Control Rod 24-53 Stuck	TS 3.1.3
		00:00:00		Create event 28 xcr4c91sa167 == 32	
		00:00:00		Insert malfunction z022022_24_53 on event 28	Control Rod 24-53 Stuck
				^ Event 6 - Component - Control Rod 32-37 Drift	
		00:00:00		Insert malfunction z021021_32_37 on event 25	Control Rod 32-37 Drift In
		00:00:00		Create event 25 xcr4c11n008 >= 325	CRD Drive Water DP >= 325 psig
				Event 7 - MAJOR - ATWS > 5%	
		00:00:00		Insert malfunction c11164 to 25	CRD HYDRAULIC BLOCK
				^ Event 8 - COMPONENT - Running RFPT trip	
		00:00:00		Insert malfunction fw123a on event 8	Feedwater Pump Turbine A Overspeed Trip
		00:00:00		Insert malfunction fw123b on event 9	Feedwater Pump Turbine B Overspeed Trip

Ready NUM

Schedule - 12-2017 NRC Scenario 2.sch

File Edit View Help

New Open Save Delete Stopped Export Frozen

00:00:00[00]

Insert	Pause	@Time	Event	Action	Description
				^ EP Attachments	
		00:00:00		Insert remote ATT01 to INSTALL on event 11	Defeating RCIC High Supp. Pool Water Level Suction Transfer
		00:00:00		Insert remote ATT03 to INSTALL on event 12	Defeating all RCIC Isolation and Non-Mechanical Trip Interlocks
		00:00:00		Insert remote ATT08 to INSTALL on event 13	Defeating MSIV and MSL Drain RPV Level 1 Isolation Interlocks
		00:00:00		Insert remote ATT12 to INSTALL on event 14	Defeating RHR SDC Injection Valve Isolation
		00:00:00		Insert remote ATT18 to INSTALL on event 15	Defeating ARI/RPT Logic Trips
		00:00:00		Insert remote ATT19 to INSTALL on event 16	Defeating RPS Logic Trips
		00:00:00		Insert remote ATT20 to INSTALL on event 17	Defeating RC&IS Control Rod Drive Blocks
				^ Allow all rods to insert	
			10	delete malfunction c11164	CRD HYDRAULIC BLOCK
			10	Delete malfunction z022022_24_53 on event 24	Control Rod 24-53 Stuck
				^ SLC INOP	
		00:00:00		Insert malfunction c41263 to 15.00000	SLC Piping Rupture (VAR)
				^ Event 9 - Bus 15AA trip	
		00:00:00		Insert override DI_1R21M606A to TRIP on event 20	P864/01C BUS 15AA FDR FM ESF XFMR 11:152-1514

Ready

NUM

Director - Dev Load:1962

File View Help

Summary Malfunctions Remotes Overrides Modify Details Event Page Up Page Down Running Quick Reset IC: 100

Search Keywords Match whole words only Sim. Time: 00:01:19

Key	Description	T...	Delay	Inserted	Ramp	Initial	Final	Value
p870_6a_e_2	CNDSR VAC BRKR LVL LO		00:00:00	00:00:00	00:00:00	FAIL OFF	FAIL OFF	
r21134h	ESF Transformer 12 Lockout	3	00:00:00		00:00:00	Active	InActive	
n41141c	Emergency Diesel Generator C Trip	3	00:00:00		00:00:00	Active	InActive	
z021021_24_53	Control Rod 24-53 Drift In	4	00:00:00		00:00:00	Active	InActive	
z022022_24_53	Control Rod 24-53 Stuck	28	00:00:00		00:00:00	Active	InActive	
z021021_32_37	Control Rod 32-37 Drift In	25	00:00:00		00:00:00	Active	InActive	
c11164	CRD HYDRAULIC BLOCK		00:00:00	00:00:08	00:00:00	25	25	
fw123a	Feedwater Pump Turbine A Overspeed Trip	8	00:00:00		00:00:00	Active	InActive	
fw123b	Feedwater Pump Turbine B Overspeed Trip	9	00:00:00		00:00:00	Active	InActive	
c41263	SLC Piping Rupture (VAR)		00:00:00	00:00:08	00:00:00	15	15	
fw209	C34-LT-N0048 TRANSMITTER OFFSET		00:00:00	00:00:08	00:00:00	-4.08	-4.08	
fw210	C34-LT-N004C TRANSMITTER OFFSET		00:00:00	00:00:08	00:00:00	-1.08	-1.08	
ATT01	Defeating RCIC High Supp. Pool Water Level Suction Transfer	11	00:00:00		00:00:00	INSTALL	00:00:00	
ATT03	Defeating all RCIC Isolation and Non-Mechanical Trip Interlocks	12	00:00:00		00:00:00	INSTALL	00:00:00	
ATT08	Defeating MSIV and MSL Drain RPV Level 1 Isolation Interlocks	13	00:00:00		00:00:00	INSTALL	00:00:00	
ATT12	Defeating RHR SDC Injection Valve Isolation	14	00:00:00		00:00:00	INSTALL	00:00:00	
ATT18	Defeating ARI/RPT Logic Trips	15	00:00:00		00:00:00	INSTALL	00:00:00	
ATT19	Defeating RPS Logic Trips	16	00:00:00		00:00:00	INSTALL	00:00:00	
ATT20	Defeating RC&IS Control Rod Drive Blocks	17	00:00:00		00:00:00	INSTALL	00:00:00	
DI_1R21M606A	P864/01C BUS 15AA FDR FM ESF XFMR 11:152-1514	20	00:00:00		00:00:00	TRIP	NORM	

Ready

NUM

Procedures that may be used in this scenario:

Procedure No.	Rev	Procedure Title
04-1-01-C11-1	154	Control Rod Drive Hydraulic System
04-1-01-C41-1	123	Standby Liquid Control System
04-1-01-E12-1	147	Residual Heat Removal System
04-1-01-N21-1	74	Feedwater System
04-1-01-N32-2	33	Turbine Generator Control
04-1-01-R21-17	10	ESF Bus 17AC
04-1-02-1H13-P601	161	Alarm Response Instruction Panel No.: 1H13-P601
04-1-02-1H13-P680	233	Alarm Response Instruction Panel No.: 1H13-P680
04-1-02-1H13-P864	31	Alarm Response Instruction Panel No.: 1H13-P864
04-1-02-1H13-P870	154	Alarm Response Instruction Panel No.: 1H13-P870
04-S-02-SH13-P807	32	Alarm Response Instruction Panel No.: SH13-P807
05-1-02-I-1	130	Reactor Scram
05-1-02-I-2	37	Turbine and Generator Trips
05-1-02-I-4	51	Loss of AC Power
05-1-02-III-3	115	Reduction In Recirculation System Flow Rate
05-1-02-III-5	49	Automatic Isolations
05-1-02-IV-1	117	Control Rod / Drive Malfunctions
05-S-01-EP-1	36	Emergency / Severe Accident Procedure Support Documents
05-S-01-EP-2	45	RPV Control
Tech Spec 3.1.3		
Tech Spec 3.8.1		
Tech Spec TR6.3.7		

Expected Alarms:

P601-16A-E1, 4.16 KV BUS 17AC INCM FDR 152-1705
P680-2A-C9, DFCS TROUBLE
P680-4A2-A2, RX WTR LVL SIG FAIL HI/LO
P680-3A-A3, RX LVL 40"/32" HI/LO
P807-4A-B3, ESF XFMR 12 LOCKOUT TRIP
P807-4A-F4, ESF XFMR 12 TROUBLE
P807-1A-B1, SWYD XFMR T3 INCM FDR 152-1905 TRIP
P807-1A-B2, ESF DIST BUSES INCM FDR 152-1903 TRIP
P807-1A-B3, ESF DIST BUSES INCM FDR 152-1904 TRIP
P601-16A-A1, HPCS GEN TRIP/LOCKOUT
P601-16A-A2, HPCS DSL ENG TRIP
P601-16A-D3, HPCS DSL ENG TROUBLE
P601-16A-C1, 4.16KV BUS 17AC INCM FDR 152-1704 TRIP
P601-16A-F2, HPCS SYS UNDERVOLT
P601-16A-G1, 480V MCC 17B01 UNDERVOLT
P601-16A-H1, HPCS SYS NOT READY FOR AUTO START
P601-16A-E4, HPCS JKY PMP DISCH PRESS LO
P870-9A-3B, SSW DIV 3 OOSVC
P870-9A-F1, DG 13 TRIP UNIT TROUBLE
P870-9A-F2, SSW LOOP C LEAK HI
P870-9A-G1, DG 13 FUEL OIL XFER PMP CONT PWR FAIL
P680-4A2-E4 CONT ROD DRIFT

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>2</u>	Event No: <u>1</u>
Event Description: <u>Transfer Bus 17AC from ESF Transformer 21 to ESF Transformer 12.</u>			
TIME	Position	Applicant's Actions or Behavior	
	BOP	<p>Transfers ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12 IAW SOI 04-1-01-R21-17, ESF Bus 17AC, Section 4.2:</p> <p>4.2.2.a Ensure XFMR ESF 12 energized up to Bus Feeder 152-1704 as follows:</p> <ul style="list-style-type: none"> (1) Check closed J3885, 115kV FDR to XFMR ESF 12. (2) Check closed 152-1904, FDR FRM XFMR ESF 12. (3) Check ENERGIZED status light is ON. <p>4.2.2.b Turn ON the Sync switch for 152-1704, Bus 17AC FDR FRM XFMR ESF 12.</p> <p>4.2.2.c Check that the sync scope comes up to 12 o'clock $\pm 10^\circ$.</p> <p>4.2.2.d If sources are in phase, then attempt to close 152-1704, Bus 17AC FDR FRM XFMR ESF 12</p> <p>If 152-1704 closes and the original feed breaker trips, then the bus is energized and transfer is complete</p> <ul style="list-style-type: none"> • Annunciator P601-16A-E1, 4.16 KV BUS 17AC INCM FDR 152-1705 will alarm when breaker 152-1704 closes and breaker 152-1705 opens <p>4.2.2.d(1) Reset annunciator received for feeder tripping by taking the original tripped breaker handswitch to the TRIP position and releasing</p> <p>4.2.2.d(2) Place Sync Switch to OFF</p> <p>Report to CRS that Bus 17AC has been transferred to ESF Transformer 12</p>	
		END OF EVENT	
	Notes		
		Lead Examiner: Cue to proceed to the next event.	

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 2Event Description: **Narrow Range C Level instrument oscillations****At the direction of the lead Evaluator, trigger Event 2 to cause Narrow Range C Level transmitter oscillations.**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Responds to and reports Narrow Range Level C oscillations:</p> <ul style="list-style-type: none"> • P680-2A-C9, DFCS TROUBLE • P680-4A2-A2, RX WTR LVL SIG FAIL HI/LO • P680-3A-A3, RX LVL 40"/32" HI/LO <p>Monitors and reports Narrow Range C Level indication and RPV level readings and trends</p>
	BOP	<p>Determines required actions by performing immediate actions of ARI 04-1-01-1H13-P680-4A2-A2:</p> <p>3.3 If feedwater control system is in AUTO LEVEL SELECT and is not maintaining desired reactor water level, manually select desired level signal by depressing the LEVEL A, LEVEL B, or LEVEL C narrow range transmitter on Feedwater Control insert on 1H13-P680-C2</p>
	CRS	Directs ATC to select Narrow Range A or B level signals on Feedwater Control system
	ATC	<p>Selects Narrow Range Level A or B level signal by depressing LEVEL A or LEVEL B pushbutton on Feedwater Control insert on 1H13-P680-2C</p> <p>Verifies Narrow Range Level A or B level signal is selected by:</p> <ul style="list-style-type: none"> • Level A or B SELECTED pushbutton backlight should be energized • AUTO LEVEL SELECT pushbutton backlight should de-energize • RPV level should stabilize in the normal band
	CREW	Dispatch I&C to investigate Narrow Range Level C instrument oscillation
	CRS TS	<p>Enters LCO TRM 6.3.7, Feedwater/Main Turbine Trip Instrumentation:</p> <p>Condition A: One or more required channel(s) nonfunctional.</p> <ul style="list-style-type: none"> • A.1 Restore channel to FUNCTIONAL status (7 days)
	BOOTH	If dispatched, as I&C report after 2 minutes that a Narrow Range Level C transmitter voltage is fluctuating and will generate a Condition Report to troubleshoot
		END OF EVENT
	NOTES	
		Lead Examiner: Cue to proceed to the next event.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 3

Event Description: **ESF Transformer 12 Lockout with failure of HPCS Diesel Generator to auto start**
At the direction of the Lead Examiner, trigger Event 3 to cause an ESF Transformer 12 lockout.

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report ESF Transformer 12 lockout:</p> <ul style="list-style-type: none"> • P807-4A-B3, ESF XFMR 12 LOCKOUT TRIP • P807-4A-F4, ESF XFMR 12 TROUBLE • P807-1A-B1, SWYD XFMR T3 INCM FDR 152-1905 TRIP • P807-1A-B2, ESF DIST BUSES INCM FDR 152-1903 TRIP • P807-1A-B3, ESF DIST BUSES INCM FDR 152-1904 TRIP • ESF XFMR #12 ENERGIZED status light OFF on ESF Bus 17AC <p>Recognize and report HPCS Diesel Generator trip:</p> <ul style="list-style-type: none"> • P601-16A-A1, HPCS GEN TRIP/LOCKOUT • P601-16A-A2, HPCS DSL ENG TRIP • P601-16A-D3, HPCS DSL ENG TROUBLE <p>Recognize and report Bus 17AC loss of power:</p> <ul style="list-style-type: none"> • P601-16A-C1, 4.16KV BUS 17AC INCM FDR 152-1704 TRIP • P601-16A-F2, HPCS SYS UNDERVOLT • P601-16A-G1, 480V MCC 17B01 UNDERVOLT • P601-16A-H1, HPCS SYS NOT READY FOR AUTO START • P601-16A-E4, HPCS JKY PMP DISCH PRESS LO • P870-9A-3B, SSW DIV 3 OOSVC • P870-9A-F1, DG 13 TRIP UNIT TROUBLE • P870-9A-F2, SSW LOOP C LEAK HI • P870-9A-G1, DG 13 FUEL OIL XFER PMP CONT PWR FAIL
	CRS	<p>Enters Loss of AC Power ONEP, 05-1-02-I-4</p> <p>2.1 Directs BOP to restore Bus 17AC power from ESF Transformer 21</p>
	BOP	<p>Restores power to Bus 17AC from ESF Transformer 21 by closing breaker 152-1705 IAW Loss of AC Power ONEP, 05-1-02-I-4</p> <p>Closes P41-F011, SSW LOOP C RTN TO CLG TWR A (LOOP C), using its handswitch on P870-5C IAW SOI 04-1-01-P41-1, Standby Service Water System</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 3 (cont.)Event Description: **ESF Transformer 12 Lockout with failure of HPCS Diesel Generator to auto start (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS TS	<p>Enters LCO 3.8.1, AC Sources – Operating:</p> <p>Condition B: One required DG inoperable for reasons other than Condition F.</p> <ul style="list-style-type: none"> B.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuits (1 hour and every 8 hours) <p>AND</p> <ul style="list-style-type: none"> B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable (4 hours of discovery of Condition B with inoperability of redundant required feature(s)) <p>AND</p> <ul style="list-style-type: none"> B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failures (24 hours) <p>OR</p> <ul style="list-style-type: none"> B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s) (24 hours) <p>AND</p> <ul style="list-style-type: none"> B.4 Restore required DG to OPERABLE status (72 hours)
	CREW	<p>Dispatch plant operator/electrical maintenance to investigate HPCS Diesel Generator trip</p> <p>Dispatch electrical maintenance to investigate ESF Transformer 12 lockout</p>
	BOOTH	<p>Role Play: If asked to investigate, wait 2 minutes and report as plant operator that HPCS Diesel Generator has tripped due to overspeed. If asked for panel alarm coordinates, report the following:</p> <ul style="list-style-type: none"> P118-1A-A2, FAIL TO START/RUN P118-1A-B3, UNIT TRIP/LOCKOUT P118-1A-D2, OVERSPEED TRIP <p>A Condition Report will be required to troubleshoot.</p> <p>If asked to investigate, wait 2 minutes and report as plant operator/electrical maintenance the ESF Transformer 12 has a sudden pressure lockout. A Condition Report will be required to troubleshoot.</p>
		END OF EVENT
	NOTES	
		Lead Examiner: Cue to proceed to the next event.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 4Event Description: **Control Rod 24-53 drifting in/stuck at position 32**

At the direction of the Lead Examiner, trigger Event 4 to cause Control Rod 24-53FN to begin drifting in. Control Rod 24-53FN will stick when it reaches position 32.

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Report and respond to alarm P680-4A2-E4 CONT ROD DRIFT IAW ARI 04-1-02 1H13-P680-4A2-E4:</p> <ul style="list-style-type: none"> Depress ROD DRIFT pushbutton on P680-6C and identify Control Rod 24-53FN drifting by red LED illuminated for Control Rod 24-53FN Select Control Rod 24-53FN by depressing "24" and "53" pushbuttons on P680-6C and identify Control Rod 24-53FN drifting in by position indication <p>Report Control Rod 24-53FN drifting in to CRS</p> <p>Performs immediate operator actions IAW Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1</p> <ul style="list-style-type: none"> Apply continuous insert signal until Control Rod reaches zero by depressing the INSERT pushbutton
	CRS	<p>Enters and directs actions of Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1, Section 2.2 for single control rod drift</p> <p>2.2.1 Apply continuous inset signal until Control Rod reaches zero</p> <p>Verifies ATC is applying continuous insert signal to Control Rod 24-53FN</p> <p>Directs ATC to monitor for additional control rod drifts</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 5Event Description: **Control Rod 24-53 stuck at position 32****Control Rod 24-53FN will stick when it reaches position 32.**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and reports Control Rod 24-53FN stops moving at position 32
	CRS	<p>Directs action IAW Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1, Section 2.2 for single control rod drift</p> <p>2.2.2 If control rod cannot be inserted to zero or will not remain at zero, then reduce core flow to 70 mlbm/hr.</p> <p>Directs ATC to lower core flow to 70 mlbm/hr using Recirc Flow Control Valves A and B in fast detent</p>
	ATC	<p>Lowers core flow to 70 mlbm/hr using Recirculation Flow Control Valves A and B using fast detent</p> <p>Determines and reports reactor is operating in the OPRM Armed region of Power-To-Flow map</p> <p>Assumes THI Watch without concurrent duties until directed by CRS</p> <p>Monitors for additional control rod drifts by depressing ROD DRIFT pushbutton on P680-6C and verifying no additional red LEDs illuminated.</p>
	CRS	<p>Enters and directs actions of Reduction in Recirculation Flow ONEP, 05-1-02-III-3</p> <p>3.1 Monitor APRMs, LPRMs, SRM period meters, and OPRM computer trends.</p> <p>Directs ATC to monitor APRMs and LPRMs for thermal hydraulic instability</p> <p>Steps 3.2 and 3.3 are N/A</p>
	CRS	<p>3.4 If operation is determined to be in the OPRM Armed region, then perform the following:</p> <p>3.4.1 Verify at least 3 OPRM channels are not bypassed</p> <p>Direct BOP to verify at least 3 OPRM channels are not bypassed</p> <p>After Feedwater temperature has stabilized, directs ATC that THI Watch with concurrent duties is allowed</p>
	BOP	Verifies and reports all OPRM channels are operable using PDS

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 5 (cont.)Event Description: **Control Rod 24-53 stuck at position 32 (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Steps 3.5 and 3.6 are N/A 3.7 If both loops are operating, then perform the following 3.7.1 N/A 3.7.2 At less than 78.7 Mlbm/hr, balance loop flows to within 4460 gpm. Directs ATC to verify Recirculation Loop flows are balanced within 4460 gpm
	ATC	Reports Recirc Loop A and B loop flows and verifies flows within 4460 gpm
	CRS	Directs actions of Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1, Section 3.5 for inability to drive control rods 3.5.1 Directs BOP to verify CRD drive water pressure is equal to or greater than 260 psid
	BOP	Verifies CRD drive water pressure is equal to or greater than 260 psig NOTE: BOP may adjust CRD drive water pressure by opening or closing C11-F003, CRD DRIVE WTR PRESS CONT VLV.
	CRS	3.5.2 Direct BOP to verify stabilizing valves are operating properly and in-service FCV is operating properly
	BOP	Verifies CRD stabilizing valves are operating properly by observing CRD DRIVE WTR HDR FLO A, B, C and D on panel P601 Contact plant operator to verify in-service CRD FCV is operating properly
	BOOTH	Role Play: If asked to verify in-service CRD FCV is operating properly, wait 2 minutes and report using <u>Plant Pager</u> as plant operator that CRD FCV A appears to operating properly
	CRS	3.5.3 Direct BOP to verify CRD suction flow path is adequate
	BOP	Verify CRD suction flow path is adequate by observing CRD system parameters on panel P601
	CRS	3.5.4 Contact Reactor Engineering to determine if Control Rod 24-53FN has been identified as having excessive friction due to channel bow and to perform analysis for Control Rod 24-53 drifting in
	BOOTH	Role Play: If contacted, as Reactor Engineering report that Control Rod 24-53FN HAS NOT been identified as having excessive friction due to channel bow and analysis will be done concerning Control Rod 24-53 drifting in

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 4/5 (cont.)Event Description: **Control Rod 24-53 drifting in/stuck at position 32 (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	<p>Step 3.5.4 actions are N/A due to Control Rod not being identified as having excess friction</p> <p>3.5.5. If Control Rod that will not move has not been identified determined as having excessive friction due to channel bow, then raise CRD drive water pressure in 25 psid increments and attempt to drive the affected rod.</p> <p>Direct BOP to raise CRD drive water pressure in 25 psid increments up to 350 psid</p> <p>Direct ATC to attempt to insert Control Rod 24-53FN after each CRD drive water pressure adjustment</p>
	BOP	Raises CRD drive water pressure in 25 psid increments by throttling closed CRD DRIVE WTR PRESS CONT VLV, C11-F003, using its handswitch
	ATC	<p>Attempts to insert Control Rod 24-53FN after each CRD drive water pressure adjustment by performing the following:</p> <ul style="list-style-type: none"> • Verifying Control Rod 24-53FN is selected • Depressing INSERT pushbutton • Observing Control Rod 24-53FN position indication
	BOOTH	<u>Role Play: If asked to report local CRD drive water pressure, using RNI DRAW panel mimic P601-22B-3 report indicated drive water pressure on C11-R602</u>
NOTE to Examiners: Due to the next event automatically triggering when CRD drive water pressure is raised to 325 psid, a follow up question should be asked concerning the stuck control rod and Technical Specification requirements.		
	CRS TS	<p>Enters LCO 3.1.3, Control Rod Operability:</p> <p>Condition A: One withdrawn control rod stuck.</p> <ul style="list-style-type: none"> • A.1 Verify stuck control rod separation criteria are met (immediately) <p>AND</p> <ul style="list-style-type: none"> • A.2 Disarm the associated control rod drive (CRD) (2 hours) <p>AND</p> <ul style="list-style-type: none"> • A.3 Perform SR 3.1.3.3 (insert each withdrawn control rod at least one notch) for each withdrawn OPERABLE control rod (24 hours with thermal power greater than the low power setpoint) <p>AND</p> <ul style="list-style-type: none"> • A.4 Perform SR 3.1.1.1 (verify shutdown margin) (72 hours)

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 4/5 (cont.)Event Description: **Control Rod 24-53 drifting in/stuck at position 32 (cont.)**

TIME	Position	Applicant's Actions or Behavior
		END OF EVENT
	Notes	

NOTE To Examiners: When CRD drive water pressure is raised to 325 psid, the next event will automatically trigger, causing a Control Rod 32-37HJ to begin drifting in. At the discretion of the Lead Examiner, the next event can be manually triggered before CRD drive water pressure reaches 325 psid.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 6Event Description: **Control Rod 32-37HJ drifting in (second control rod drift)****When CRD drive water pressure is raised to 325 psid, Control Rod 32-37HJ will begin drifting in.**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report second control rod (32-37HJ) drift</p> <p>Performs immediate operator actions IAW Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1</p> <p>2.3.1 Manually scram the reactor</p> <p>Places Reactor Mode Switch to SHUTDOWN position</p> <p>Recognize and report all control rods not inserted due to a hydraulic block ATWS</p>
	CRS	<p>Directs ATC to insert a manual scram IAW Control Rod/Drive Malfunctions ONEP, 05-1-02-IV-1, immediate operator actions</p> <p>Enters Reactor Scram ONEP, 05-1-02-I-1, Turbine and Generator Trips ONEP, 05-1-02-I-2, and EP-2, RPV Control</p> <p>Directs all personnel to evacuate Containment due to reactor scram</p>
		END OF EVENT
	Notes	

NOTE to Examiners: The next event (ATWS) is already active.**CRS actions start on the next page of the Scenario Guide.****ATC actions start of Page 35 of the Scenario Guide.****BOP actions start on Page 44 of the Scenario Guide.**

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7Event Description: **Hydraulic Block ATWS (> 5% power)****ATWS Malfunction is already active.**

TIME	Position	Applicant's Actions or Behavior																				
	CRS	<p>Transitions from EP-2, RPV Control, to EP-2A, ATWS RPV Control</p> <p>Verifies ATC performed immediate actions of Reactor Scram ONEP, 05-1-02-I-1 for ATWS > 5%</p> <ul style="list-style-type: none"> Recirc Pump transferred to LFMGs ARI/RPT initiated ADS inhibited HPCS initiated and overridden SLC initiated Low pressure ECCS overridden <p>Directs all personnel to evacuate Containment due to reactor scram</p>																				
	CRS	<div style="border: 1px solid black; padding: 10px;"> <p>EP-2</p> <p style="text-align: center;">↓</p> <div style="border: 1px solid red; padding: 5px; margin: 5px;"> <p>1. Verify the Rx Mode Switch in SHUTDOWN.</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid red; padding: 5px; margin: 5px;"> <p>2. Evacuate affected areas.</p> </div> <p style="text-align: center;">↓</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">While in this procedure:</th> </tr> <tr> <th style="width: 50%; text-align: center;">IF</th><th style="width: 50%; text-align: center;">THEN</th></tr> </thead> <tbody> <tr> <td>Any control rod is withdrawn past position 02, AND The reactor will <u>not</u> remain subcritical under all conditions without boron</td><td>ATWS: Exit this procedure → Enter EP-2A</td></tr> <tr> <td>RPV level is unknown</td><td>FLOOD THE RPV: Exit this procedure → Enter EP-5</td></tr> <tr> <td>Aux Building isolates</td><td>Restore the Aux Building.</td></tr> </tbody> </table> <p style="text-align: center;">↓</p> <p>EP-2A</p> <p style="text-align: center;">↓</p> <div style="border: 1px solid red; padding: 5px; margin: 5px;"> <p style="text-align: center;">START</p> <p style="text-align: center;">↓</p> <p>1. Verify Rx recirc pumps transferred to LFMG. 2. Verify ARI/RPT initiation. 3. Inhibit ADS. 4. Override HPCS injection.</p> <p style="text-align: center;">↓</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">While in this procedure:</th> </tr> <tr> <th style="width: 50%; text-align: center;">IF</th><th style="width: 50%; text-align: center;">THEN</th></tr> </thead> <tbody> <tr> <td>All control rods are inserted to or beyond position 02, OR The reactor will remain subcritical under all conditions without boron</td><td>1. Terminate boron injection. 2. Exit this procedure → Enter EP-2</td></tr> <tr> <td>RPV level is unknown</td><td>FLOOD THE RPV: Exit this procedure → Enter EP-5A</td></tr> <tr> <td>Aux Building isolates</td><td>Restore the Aux Building.</td></tr> </tbody> </table> </div> </div>	While in this procedure:		IF	THEN	Any control rod is withdrawn past position 02, AND The reactor will <u>not</u> remain subcritical under all conditions without boron	ATWS: Exit this procedure → Enter EP-2A	RPV level is unknown	FLOOD THE RPV: Exit this procedure → Enter EP-5	Aux Building isolates	Restore the Aux Building.	While in this procedure:		IF	THEN	All control rods are inserted to or beyond position 02, OR The reactor will remain subcritical under all conditions without boron	1. Terminate boron injection. 2. Exit this procedure → Enter EP-2	RPV level is unknown	FLOOD THE RPV: Exit this procedure → Enter EP-5A	Aux Building isolates	Restore the Aux Building.
While in this procedure:																						
IF	THEN																					
Any control rod is withdrawn past position 02, AND The reactor will <u>not</u> remain subcritical under all conditions without boron	ATWS: Exit this procedure → Enter EP-2A																					
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While in this procedure:																						
IF	THEN																					
All control rods are inserted to or beyond position 02, OR The reactor will remain subcritical under all conditions without boron	1. Terminate boron injection. 2. Exit this procedure → Enter EP-2																					
RPV level is unknown	FLOOD THE RPV: Exit this procedure → Enter EP-5A																					
Aux Building isolates	Restore the Aux Building.																					

(CT-2) Inhibit ADS prior to automatic ADS valve opening during ATWS.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: Hydraulic Block ATWS (> 5% power) (cont.)

TIME	Position	Applicant's Actions or Behavior																		
	CRS	<div><p>LEVEL</p><p>Initiate each of the following which should have initiated but did not:</p><ul style="list-style-type: none">• Isolations• Emergency diesel generators<p>IF CTMT pressure cannot be maintained below 22.4 psig THEN Terminate RPV injection from external sources not needed for core cooling or to shut down the reactor.</p><p>Any MSL open?</p><p>No → Yes → Maintain the main condenser as a heat sink. OK to defeat MSL isolations. Art 7, 8</p><p>IF Reactor power is above 5% or unknown AND SP temperature is above 110°F AND Any SRV is open OR DW pressure is above 1.23 psig AND RPV level is above -167 in. THEN Go to ⑥</p><p>IF RPV level is above -70 in. THEN Go to ⑦</p><p>Using only Table L-3 systems, maintain RPV level between -191 in. and 53.5 in.</p><p>OK to initiate and override ECCS.</p><table border="1"><thead><tr><th>IF</th><th>AND</th><th>THEN</th></tr></thead><tbody><tr><td>RPV level cannot be restored and maintained above -191 in. using Table L-3 systems</td><td>Emergency Depressurization has not been performed</td><td>EMERGENCY DEPRESSURIZATION IS REQUIRED: Exit Level and Pressure → Enter Emergency Depressurization</td></tr><tr><td></td><td>Emergency Depressurization has been performed</td><td>1. Use Table L-3 and Table L-4 and Table L-2 systems. 2. IF RPV level and cannot be restored and maintained above -191 in., THEN... Exit all EPs → Enter all SAPs</td></tr></tbody></table><p>Lower level to reduce subcooling:</p><ol style="list-style-type: none">1. Terminate and prevent all RPV injection except:<ul style="list-style-type: none">• Boron injection• CRD• RCICOK to defeat interlocks.2. Let level drop to -70 in. (Wide Range).<p>Lowered level: -70 in.</p><p>Nominal Band -70 in. to -130 in. Maximum Band -70 in. to -191 in.</p><p>Lower level to reduce power:</p><ol style="list-style-type: none">1. Terminate and prevent all RPV injection except:<ul style="list-style-type: none">• Boron injection• CRD• RCICOK to defeat interlocks.2. Let level drop until:<ul style="list-style-type: none">• Power is below 5%OR• Level drops to -167 in. (Compensated Fuel Zone)OR• All SRVs stay closed and DW pressure stays below 1.23 psig.<p>Lowered level: -191 in. to lowered level</p><p>Using only Table L-3 systems, maintain RPV level between -191 in. and the lowered level recorded at ⑦ or ⑧.</p><table border="1"><thead><tr><th>IF</th><th>AND</th><th>THEN</th></tr></thead><tbody><tr><td>RPV level cannot be restored and maintained above -191 in. using Table L-3 systems</td><td>Emergency Depressurization has not been performed</td><td>EMERGENCY DEPRESSURIZATION IS REQUIRED: Exit Level and Pressure → Enter Emergency Depressurization</td></tr><tr><td></td><td>Emergency Depressurization has been performed</td><td>1. Use Table L-3 and Table L-4 and Table L-2 systems. 2. IF RPV level and cannot be restored and maintained above -191 in., THEN... Exit all EPs → Enter all SAPs</td></tr></tbody></table></div>	IF	AND	THEN	RPV level cannot be restored and maintained above -191 in. using Table L-3 systems	Emergency Depressurization has not been performed	EMERGENCY DEPRESSURIZATION IS REQUIRED: Exit Level and Pressure → Enter Emergency Depressurization		Emergency Depressurization has been performed	1. Use Table L-3 and Table L-4 and Table L-2 systems. 2. IF RPV level and cannot be restored and maintained above -191 in., THEN... Exit all EPs → Enter all SAPs	IF	AND	THEN	RPV level cannot be restored and maintained above -191 in. using Table L-3 systems	Emergency Depressurization has not been performed	EMERGENCY DEPRESSURIZATION IS REQUIRED: Exit Level and Pressure → Enter Emergency Depressurization		Emergency Depressurization has been performed	1. Use Table L-3 and Table L-4 and Table L-2 systems. 2. IF RPV level and cannot be restored and maintained above -191 in., THEN... Exit all EPs → Enter all SAPs
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EP-2A**Table L-3**
Preferred ATWS Injection Systems

- Condensate/Feedwater
- CRD
 - Maximize CRD for flow.
- RCIC
 - Use CST suction if available.
 - OK to defeat isolations and interlocks. **Art 1, 3**
- RHR through shutdown cooling return
 - Inject through the HX as soon as possible.
 - OK to defeat isolations. **Art 12**
- SLC boron tank

③ ④

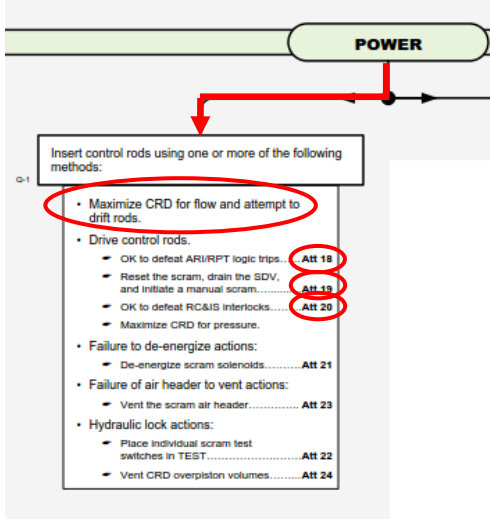
① ⑤
Nominal Band
-11.4 to 53.5 in.
Expanded Band
-30 in. to +50 in.
Nominal Band
-70 in. to -130 in.

① ③

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs BOP to terminate feedwater injection to the reactor vessel Verifies Feedwater flow is terminated Directs BOP to maintain RPV water level between -70" and -130" wide range
	CRS	Directs I&C to install EP Attachment 8 for MSIVs Directs I&C to install EP Attachment 12 for RHR injection through feedwater sparger Directs I&C to install EP Attachments 1 and 3 for RCIC

(CT-3) During failure to scram conditions with power > 5%, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range prior to exiting EP-2A

	CRS	 <p style="text-align: right; font-size: 24pt;">EP-2A</p>
	CRS	<p>Directs ATC to maximize CRD for flow</p> <p>Directs I&C to install EP Attachment 18, 19, and 20 to defeat RC&IS interlocks and RPS scram signals</p> <p>When RPV level lowers below -41.6" wide range, directs ATC to verify Level 2 initiations, isolations and diesel generators and restore the Auxiliary Building</p>
	BOOTH	<p>Role Play: When directed to install Attachments, trigger the following Events as each Attachment is directed:</p> <p>Attachment 1 – Event 11</p> <p>Attachment 3 – Event 12</p> <p>Attachment 8 – Event 13</p> <p>Attachment 12 – Event 14</p> <p>Attachment 18 – Event 15</p> <p>Attachment 19 – Event 16</p> <p>Attachment 20 – Event 17</p> <p>Notify CRS as each Attachment indicates DONE.</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	<div><pre>graph TD POWER[POWER] --> Q2{Is reactor power above 5%?} Q2 -- Yes --> Q3{SP temperature reaches 110°F} Q2 -- No --> Q3 Q3 --> I1((1)) I1 --> I1_1[Inject boron into the RPV using both SLC pumps.] I1_1 --> I1_2[IF Boron cannot be injected using SLC] I1_2 --> I1_3[THEN Inject boron using RCIC or HPCS....Att 28] I1_3 --> Q4{WHEN SLC tank level drops to 2000 gal} Q4 --> Q5{Are both SLC pumps running?} Q5 -- No --> Q7{WHEN SLC tank level drops to 0 gal} Q5 -- Yes --> Q6[Trip one SLC pump.] Q6 --> Q7 Q7 --> Q8[Trip the running SLC pump.]</pre><p>EP-2A</p></div>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	<p>Directs ATC to verify SLC is injecting into the reactor</p> <p>When SLC reported not injecting, contacts Work Control to install Attachment 28 for Alternate SLC injection</p>
	CRS	<p>EP-2A</p>
	CRS	<p>Direct ATC to maintain RPV pressure between 800 and 1060 psig using Bypass Valves and Main Steam Line Drains</p> <p>Directs ATC to maximize Suppression Pool Cooling</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 8Event Description: **Reactor Feed Pump trip**

When reactor level has been lowered below -70" wide range and stable, at the direction of the Lead Examiner trigger Event 8 if RFPT A is being used for level control or Event 9 if RFPT B is being used.

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Reactor Feed Pump trip
	CRS	Directs BOP to start the standby Reactor Feed Pump IAW 04-1-01-E12-1, Attachment 6, per 02-S-01-43, Transient Mitigation Strategy
	CREW	Dispatch plant operator/maintenance to investigate Reactor Feed Pump trip
NOTE to Examiners: CRS may direct a reactor pressure reduction as follows to allow RPV injection with Condensate Booster Pumps instead of starting the standby Reactor Feed Pump.		
	CRS	Directs ATC to lower reactor pressure to 450 – 600 psig using Bypass Jack IAW 02-S-01-43, Transient Mitigation Strategy
(CT-4) Restores injection using Condensate/Feedwater to restore/maintain RPV level above -191" CFZ before exiting EP-2A.		

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 9Event Description: **ESF Bus 15AA power loss**

Before control rods are inserted, at the direction of the Lead Examiner, trigger Event 20 to trip feeder breaker 152-1514, BUS 15AA FDR FM ESF XFMR 11, causing a loss of power to ESF Bus 15AA. Div 1 DG will automatically start and restore power to ESF Bus 15AA

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report ESF Bus 15AA power loss and Div 1 Diesel Generator has restore ESF Bus 15AA power. Recognize and report Division 1 ECCS overrides lost Recognize and report Instrument Air isolation to Containment
	CRS	Directs ATC to override LPCS and RHR A pumps and valves IAW EP-2A
	CRS	Directs ATC to restore Instrument Air to Containment IAW EP-2A
	CRS	Directs ATC to maximize CRD flow IAW EP-2A

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	When Attachments 18, 19, and 20 are installed, directs ATC to maximize CRD for pressure and scram and drive control rods

(CT-1) When control rods fail to scram, crew inserts all control rods to position 02 or beyond before exiting EP-2A.

	BOOTH	When control rod movement is reported to CRS, <u>at the direction of the Lead Examiner</u> , trigger <u>Event 10</u> to allow all control rods to insert.
	CRS	<pre> graph TD START([START]) --> Steps[1. Verify Rx recirc pumps transferred to LFMG. 2. Verify ARI/RPT initiation. 3. Inhibit ADS. 4. Override HPCS injection.] Steps --> Decision{While in this procedure.} Decision -- IF --> IF_Conditions["All control rods are inserted to or beyond position 02, OR the reactor will remain subcritical under all conditions without boron injection, OR RPV level is unknown OR Aux Building isolates"] Decision -- THEN --> THEN_Actions["1. Terminate boron injection. 2. Exit this procedure -> Enter EP-2A. FLOOD THE RPV: Exit this procedure -> Enter EP-5A. Restore the Aux Building."] </pre>
	CRS	When all control rods are inserted, exits EP-2A, ATWS RPV Control, and re-enters EP-2, RPV Control
	CRS	Directs BOP to restore and control RPV level between +11.4" to +53.5" narrow range

NOTE to Examiners: Scenario objectives have been met when the crew has inserted all control rods to position 02 or beyond, EP-2A is exited and level band has been changed to +11.4" to +53.5" narrow range.

END OF SCENARIO

	Notes	
	BOOTH	When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7Event Description: **Hydraulic Block ATWS (> 5% power)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Performs immediate operator actions of Reactor Scram ONEP, 05-1-02-I-1:</p> <p>2.1 Confirm all Control Rods are fully inserted</p> <p>Recognize and report all not inserted due to a hydraulic block ATWS</p> <p>2.2 Confirm reactor power decreasing</p> <p>Report reactor power is greater than 5%</p> <p>Steps 2.3 and 2.4 are N/A</p>
	ATC	<p>2.5 If an ATWS occurs, the perform the following:</p> <p>2.5.1 Verify Reactor Recirc Pumps are transferred to LFMGs</p> <p>2.5.2 Initiate ARI/RPT</p> <p>Arms and depresses ATWS ARI/RPT Channel 1 and Channel 2 pushbuttons</p>
	ATC	<p>2.5.3 Inhibit ADS.</p> <p>Places ADS A and ADS B MANUAL INHIBIT switches to INHIBIT position</p>
	ATC	<p>2.5.4 Initiate and override HPCS IAW 02-S-01-43, Transient Mitigation Strategy.</p> <p>While holding 1E22F004, HPCS INJ SHUTOFF VLV handswitch in CLOSE position, arm and depress manual system initiation pushbutton for HPCS</p> <p>After indication of pump start, then trip HPCS Pump</p> <p>Ensure HPCS Pump and 1E22F004, HPCS INJ SHUTOFF VLV override alarms are sealed in</p>

(CT-2) Inhibit ADS prior to automatic ADS valve opening during ATWS.**(CT-3) During failure to scram conditions with power > 5%, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range**

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>2.5.5 If ATWS is greater than 5% power, then perform the following:</p> <p>a. Initiate Standby Liquid Control.</p> <p>Places SLC PMP A and SLC PMP B key-locked switches to START</p> <p>b. Initiate and override low pressure ECCS IAW 02-S-01-43, Transient Mitigation Strategy, by performing the following:.</p> <ul style="list-style-type: none"> Arms and depresses LPCS/RHR A MAN INIT pushbutton After indication of LPCS and RHR A pump starts, then trip LPCS pump Place LPCS and RHR A injection valve handswitches to CLOSE position Ensure LPCS pump and LPCS and RHR A valve override alarms are sealed in Arms and depresses RHR B/RHR C MAN INIT pushbutton After indication of RHR B and RHR C pump starts, then trip RHR C pump Close RHR B and RHR C injection valves Ensure RHR C pump and RHR B and RHR C injection valve override alarms are sealed in Ensure associated Division 1 and 2 diesel generators are running with cooling water
(CT-3) During failure to scram conditions with power > 5%, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range		
		Report to CRS that Reactor Scram immediate operator actions are complete except for maximizing Suppression Pool Cooling

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Verifies SLC injection into reactor IAW SOI 04-1-01-C41-1, Attachment VI by performing the following:</p> <ol style="list-style-type: none"> 1. Verify system initiation by observing the following: <ol style="list-style-type: none"> a. F004A and F004B squib valves fired: <ul style="list-style-type: none"> • White SQUIB VALVE READY light OFF • Annunciator SBLC SYS A and B OOSVC • Amber status light SQUIB A and B LOSCONT or PWR LOSS is ON b. C41-F001A and F001B TANK OUTLET VALVES are OPEN c. SBLC PUMPS A and B running d. RWCU isolates: <ul style="list-style-type: none"> • G33-F004 closed (SLC A initiated) • G33-F001 and F251 closed (SLC B initiated) e. Verify SLC is injecting into the RPV by observing the following: <ul style="list-style-type: none"> • SBLC pump discharge pressure exceeds reactor pressure • SBLC tank level lowering • Nuclear Instrumentation lowering <p>Recognize low SLC discharge pressure and reports SLC is not injecting into RPV</p>
	ATC	<p>Maximize Suppression Pool Cooling IAW SOI 04-1-01-E12-1, Attachment VI:</p> <ol style="list-style-type: none"> (1) Ensure SSW is in service by observing the following: <ul style="list-style-type: none"> • SSW A and SSW B Pumps running • P41-F001A and F001B, SSW PMP A and B DISCH VLV are open • P41-F005A and F005B, SSW LOOP A and B RTN TO CLG TWR A and B are open • P41-F014A and F014B, SSW INL TO RHR HX A and B are open • P41-F006A and F006B, SSW PMP A and B RECIRC VLV are closed. (2) Verify open E12-F003A and F003B, RHR HX A and B OUTL VLV (3) NOTE to Examiners: Step 3 is N/A because CTMT Spray has not initiated. (4) N/A Pumps are already running (5) Open E12-F024A and F024B, RHR A and RHR B TEST RTN TO SUPP POOL (6) Close E12-F048A and F048B, RHR HX A and B BYP VLV (7) Verify E12-F064A and F064B, RHR A and RHR B MIN FLO TO SUPP POOL, close when flow exceeds 1154 gpm on the respective pumps

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Maximizes CRD for flow IAW SOI 04-1-01-C11-1, Attachment VIII, by performing the following:</p> <p>Start CRD PUMP A IAW ONEP 05-1-02-IV-1, Control Rod/Drive Malfunctions ONEP, immediate operator actions:</p> <p>2.1.2 If running CRD pump trips, then start standby CRD pump as follows:</p> <p>2.1.2.a If required, re-energize MCCs 15B42 and 16B42 on 1H13-P864. Start CRD PUMP A AUX OIL PUMP.</p> <p>2.1.2.b Place CRD SYS FLO CONT in MANUAL and reduce output to zero.</p> <p>2.1.2.c Start CRD pump A</p> <p>Per SOI 04-1-01-C11-1, Attachment VIII:</p> <p>(1) Start CRD Pump B oil pump</p> <p>(2) Start CRD Pump B</p> <p>(3) Place CRD SYS FLO CONT C11-R600 in MANUAL</p> <p>(4) Using CRD SYS FLO CONT C11-R600, fully open C11-F002A(B), CRD FLO CONT VLV</p> <p>(5) If maximizing CRD for flow, then fully open C11-F003, CRD DRIVE WTR PRESS CONT VLV</p> <p>Reports to CRS that CRD is maximized for flow</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	Verifies and reports Level 2 isolations complete using the isolation status board as a quick reference and verifying the following alarms: <ul style="list-style-type: none">• P870-3A-A4, CTMT-DRWL ISOL DIV 1 OPER annunciator sealed in• P870-3A-B3, AUX BLDG ISOL DIV 1 OPER annunciator sealed in• P870-9A-A4, CTMT-DRWL ISOL DIV 2 OPER annunciator sealed in• P870-9A-B3, AUX BLDG ISOL DIV 2 OPER annunciator sealed in
	ATC	Verifies RCIC automatic initiation and injecting 800 gpm into reactor.
	ATC	Restores the Auxiliary Building IAW ONEP 05-1-02-III-5, Automatic Isolations, Attachment II 1) If Plant Air compressors are available, then OPEN/CHECK OPEN the following Instrument Air valves on 1H13-P870: Section 3C <ul style="list-style-type: none">• P53-F001 (After 30 sec T.D.) Section 9C <ul style="list-style-type: none">• P53-F007 (After 30 sec T.D.)

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
		<p style="text-align: center;"><u>CAUTION</u></p> <p>IF Drywell Chilled Water is restored after isolation when Drywell temperature exceeds 200°F, THEN a water hammer MAY occur AND rupture Drywell cooler tubes due to voiding in piping. IF Drywell temperatures exceed 200°F (CRD Cavity temperatures excluded), THEN Drywell Chilled Water Should NOT be unisolated until controlled startup can be performed per SOI 04-1-01-P72-1 OR Drywell temperature has returned to < 200°F.</p> <p>2) If all Drywell temperatures are less than 200°F (CRD Cavity temperatures excluded) AND Drywell Chillers are available, THEN RESTORE Drywell Chilled Water as follows:</p> <p style="margin-left: 40px;">a. IF required, RE-ENERGIZE MCC's 15B42 AND 16B42 on 1H13-P864</p> <p style="margin-left: 40px;">b. AFTER a 30 second time delay, OPEN the following valves on 1h13-P870:</p> <p style="margin-left: 40px;"><u>Section 3C</u></p> <ul style="list-style-type: none"> • P72-F121 • P72-F122 • P72-F125 <p style="margin-left: 40px;"><u>Section 9C</u></p> <ul style="list-style-type: none"> • P72-F123 • P72-F126 • P72-F124 <p style="margin-left: 40px;">c. ENSURE at least one Drywell Chilled Water pump is running</p> <p style="margin-left: 40px;">d. ENSURE Drywell Coolers are in operation</p> <p>3) Step is N/A</p> <p>4) The following valves Will NOT close due to being gagged open. As time permits, give these valves an OPEN signal to lift actuator off of gag.</p> <p style="margin-left: 40px;"><u>Section 3C</u></p> <ul style="list-style-type: none"> • P53-F026A <p style="margin-left: 40px;"><u>Section 9C</u></p> <ul style="list-style-type: none"> • P53-F026B
	ATC	Verifies that Turbine Pressure Control system and Bypass Valves are maintaining reactor pressure between 800 psig and 1060 psig

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME

Position

Applicant's Actions or Behavior

NOTE to Examiners: The following step will be performed if CRS directs RPV pressure lowered to 450 to 600 psig.

ATC

Lowers RPV pressure to 450 to 600 psig IAW SOI 04-1-01-N32-2, Attachment V, by performing the following:

- Energize Manual Bypass Controller by simultaneously depressing MANUAL BYPASS CONTROL RELEASE pushbutton and MANUAL BYPASS VALVE CONTROLLER ON pushbutton until ON pushbutton becomes illuminated
- Lowers reactor pressure by depressing RAISE pushbutton to adjust Main Turbine Bypass Valves the desired amount OPEN

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 9Event Description: **ESF Bus 15AA power loss****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report ESF Bus 15AA power loss Recognize and report Division 1 ECCS system overrides lost Recognize and report Instrument Air isolation to Containment
	ATC	Overrides LPCS and RHR A pumps by placing their respective handswitches to STOP IAW EP-2A and 02-S-01-43, Transient Mitigation Strategy Places associated injection valve handswitches to CLOSE position Ensure associated pump and valve override alarms are sealed in
	ATC	Restores Instrument Air to Containment by opening P53-F001, INST AIR SPLY HDR TO CTMT
	ATC	Maximizes CRD for flow by re-starts CRD Pump A by performing the following IAW SOI 04-1-01-C11-1, Attachment VIII: <ul style="list-style-type: none">• Energize MCC 15B42 by placing MCC 15B42 FDR FM LCC 15BA4 handswitch to CLOSE• Start CRD PMP A AUX OIL PMP• Start CRD PUMP A

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7 (cont.)Event Description: **Hydraulic Block ATWS (> 5% power) (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Maximizes CRD for pressure IAW 04-1-01-C11-1, Attachment VIII, by performing the following:</p> <p>6. If maximizing CRD for pressure, then fully close C11-F003, CRD DRIVE WTR PRESS CONT VLV, to maximize drive water pressure</p> <p>Scram control rods by performing the following:</p> <ul style="list-style-type: none"> Reset scram signal (only one division required) Allow Scram Discharge Volume to drain Arm and depress Manual Scram Pushbuttons for reset division <p>Drive control rods by performing the following:</p> <ul style="list-style-type: none"> Reset scram signal (only one division required) Select control rod Select gang drive mode Depress INTIMER SKIP pushbutton until control rods indicate 00 <p>Recognize and report all Control Rods inserted</p>
	Notes	
		Return to Page 34 for completion of ATC actions.

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7Event Description: **Hydraulic Block ATWS (> 5% power)****BOP ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Performs immediate operator actions of Reactor Scram ONEP, 05-1-02-I-1 for ATWS > 5%:</p> <p>2.5.5.c If directed to "Terminate and Prevent Feedwater Injection", then:</p> <p>2.5.5.c.1 Put 1C34-LK-R600, FW LVL MASTER CONT in manual mode by depressing MAN pushbutton</p> <p>2.5.5.c.2 Lower 1C34-LK-R600, FW LVL MASTER CONT setpoint by depressing the OUT↓ pushbutton until OUTPUT is at -5.00 percent</p>
(CT-3) During failure to scram conditions with power > 5%, terminate and prevent all injection from all sources (except boron, CRD, and RCIC) as necessary to lower RPV level to below -70" wide range prior to exiting EP-2A.		
	BOP	<p>Transfers to Startup Level Control IAW SOI 04-1-01-N21-1, Attachment VII, by performing the following:</p> <ol style="list-style-type: none"> Perform the following: <ul style="list-style-type: none"> Minimize the output of 1C34-LK-R602, RX WTR LVL SU CONT, to close N21-F513 Minimize the output of 1N21-HC-R609, FW CU RECIRC VLV to close N21-F510 Depress the CLOSE pushbutton for the N21-F040, FW SU BYP VLV, and ensure valve is closed Open the following valves: <ul style="list-style-type: none"> N21-F001, SU FCV OUTL ISOL VLV N21-F010A, HP FW HTR STRNG A SU OUTL VLV N21-F010B, HP FW HTR STRNG B SU OUTL VLV Select MAN on FW LVL MASTER CONT (1C34-LK-R600). Close the following valves: <ul style="list-style-type: none"> N21-F009A, FW HTR 6A OUTL VLV N21-F009B, FW HTR 6B OUTL VLV NOTE to Examiner: Step is N/A because both RFPTs are in service If using a RFPT, then place a RFPT in SPEED AUTO with respective discharge pressure approximately 250 psid above reactor pressure Ensure open RFP A(B) DISCH VLV N21-F014A(B) for RFPTs that are operating or as needed to establish a flow path for Condensate Adjust 1C34-LK-R602, RX WTR LVL SU CONT, as necessary in MAN or AUTO to control N21-F513 to maintain desired reactor level. N21-F040 and N21-F009A(B) may be OPENED/CLOSED as necessary to augment flow <p>When reactor level lowers to -70" wide range level, injects with Feedwater using 1C34-LK-R602, RX WTR LVL SU CONT, to maintain reactor water level between -70" and -130" wide range level</p>

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 8Event Description: **Reactor Feed Pump trip****BOP ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Reactor Feed Pump trip
	BOP	<p>Starts the standby Reactor Feed Pump IAW 04-1-01-N21-1, Feedwater System, Attachment VI, and 02-S-01-43, Transient Mitigation Strategy, by performing the following:</p> <ol style="list-style-type: none"> 1. Restore one Reactor Feed Pump to operation as follows: <ol style="list-style-type: none"> a. Ensure RFPT A(B) CONTROLS "MANUAL" pushbutton is backlit b. Ensure an AC lube oil pump is running for the RFPT to be restarted. c. Ensure Instrument Air is available. d. NOTE to Examiners: Step is N/A because RFPTs did not trip of low condenser vacuum e. NOTE to Examiners: Step is N/A because RFPT discharge valve is open on RFPT being started f. NOTE to Examiners: Step is N/A because RFPT being started is not tripped g. To place RFP in service, perform the following: <ul style="list-style-type: none"> • If Turbine is ONLINE, then raise pump speed using the RAISE pushbutton as required to obtain discharge pressure approx. 250 psig above reactor pressure • If fine control of the RFPT is required, then select SPEED AUTO <p>Adjust 1C34-LK-R602, RX WTR LVL SU CONT, as necessary in MAN to control N21-F513 to maintain RPV level between -70" and -130" wide range. N21-F040 and N21-F009A(B) may be OPENED/CLOSED as necessary to augment flow</p>
NOTE to Examiners: IF CRS directs a reactor pressure reduction to allow injection of Condensate into the reactor instead of starting the standby Reactor Feed Pump, BOP will perform the following:		
	BOP	Adjust 1C34-LK-R602, RX WTR LVL SU CONT, as necessary in MAN to control N21-F513 to maintain RPV level between -70" and -130" wide range. N21-F040 and N21-F009A(B) may be OPENED/CLOSED as necessary to augment flow
(CT-4) Restores injection using Condensate/Feedwater to restore/maintain RPV level above -191" CFZ before exiting EP-2A.		

Op-Test No: NRC LOT 12-2017Scenario No: 2Event No: 7Event Description: **Hydraulic Block ATWS (> 5% power)****BOP ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	BOP	Restores and maintains RPV water level between +11.4" and +53.5" narrow range using 1C34-LK-R602, RX WTR LVL SU CONT
	Notes	
		Return to Page 34 for completion of BOP actions.

INITIAL CONDITIONS

- A. Plant Status: 100% power, middle of cycle
- B. Tech. Spec. Limitations in effect: None
- C. Significant problems/abnormalities: None
- D. Integrated Risk: Green
- E. Division Work Week: Division 3
- F. Evolutions/maintenance for the up-coming shift :
 - Transfer ESF Bus 17AC from ESF Transformer 21 to ESF Transformer 12 in preparation for red-tagging breaker 152-1705, 17AC FDR FM ESF 21, for preventative maintenance.

Facility: <u>Grand Gulf Nuclear Station</u> Scenario No.: <u>3</u> Op-Test No.: <u>GGNS 12-2017</u>			
Examiners: _____		Operators: _____	
_____		_____	
_____		_____	

Event No.	Malf. No.	Event Type [†]	Event Description
1	N/A	N (BOP,ATC,CRS)	Transfer RPS Bus B from normal to alternate power supply
2	p864_2a_d_2	TS (CRS) C (BOP,CRS)	Division 2 Diesel Generator lube oil leak
3	ltb21n091b ltb21n091f	I (ATC,BOP,CRS) A(CREW) TS (CRS)	Division 2 ECCS initiation on spurious RPV low level signal
4	fw163c	R (ATC,CRS) A(CREW)	Loss of condenser vacuum
5	r21135 rr063b	M(CREW)	LOP/LOCA (EP-2, 3)
6	e22052	C(ATC,BOP,CRS)	HPCS Pump trip * (CT-1) Inhibit ADS prior to automatic ADS valve opening during a LOCA * (CT-2) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ. (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)
7	rr040a rr041a	C(ATC,CRS)	Failure of Division 1 ECCS to automatically initiate * (CT-3) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates ECCS systems for injection prior to RPV pressure lowering below 300 psig

[†] (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec
 * **Critical Task** (As defined in NUREG 1021 Appendix D)

CREW notation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

Reason for Revision: Editorial changes to enhance Technical Specification actions.

Objectives: To evaluate the applicants' ability to operate the facility in response to the following evolutions:

1. Transfer RPS Bus B from normal to alternate power supply.
2. Respond to a Division 2 Diesel Generator lube oil leak.
3. Respond to a Division 2 ECCS initiation on spurious RPV low level signal.
4. Respond to a loss of condenser vacuum.
5. Respond to a loss of Offsite Power / LOCA
6. Respond to a HPCS Pump trip.
7. Respond to a failure of Division 1 ECCS to automatically initiate.

Initial Conditions: Plant is operating at 100% power.

Inoperable Equipment:

- TBCW Pump C is tagged out for motor oil replacement.
- CRD Pump B is tagged out of service for oil replacement in the speed increaser.

Turnover:

Planned activities for this shift are:

- Transfer RPS Bus B from normal to alternate power supply IAW SOI 04-1-01-C71-1, Section 5.1, in preparation for preventative maintenance on the RPS B Motor Generator.
- The Motor Generator will be tagged out on the next shift.
- No scram or isolation surveillances are in progress or planned for this shift.

Scenario Notes:

This scenario is a NEW Scenario.

Validation Time: 75 minutes

Quantitative Attributes Table			
Attribute	E3-304-1 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> • HPCS Pump trip (E6) • Failure of Division 1 ECCS to automatically initiate (E7)
Abnormal Events	2-4	2	<ul style="list-style-type: none"> • Spurious Division 2 ECCS initiation (Loss of One or Both RPS Buses ONEP and Automatic Isolations ONEP) (E3) • Loss of condenser vacuum (Loss of Condenser Vacuum ONEP) (E4)
Major Transients	1-2	2	<ul style="list-style-type: none"> • LOP • LOCA
EOP entries requiring substantive action	1-2	2	<ul style="list-style-type: none"> • EP-2 • EP-3
EOP contingencies requiring substantive action	0-2	2	<ul style="list-style-type: none"> • EP-2 Alternate Level Control • EP-2 Emergency Depressurization
EOP based Critical Tasks	2-3	3	<ul style="list-style-type: none"> • (CT-1) Inhibit ADS prior to automatic ADS valve opening during a LOCA • (CT-2) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ. (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task) • (CT-3) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates ECCS systems for injection prior to RPV pressure lowering below 300 psig
Normal Events	N/A	1	<ul style="list-style-type: none"> • Transfer RPS Bus B from normal to alternate power supply (E1)
Reactivity Manipulations	N/A	1	<ul style="list-style-type: none"> • Lower core flow to 70 mlbm using Reactor Recirc Flow Control Valves (E4)
Instrument / Component failures	N/A	5	<ul style="list-style-type: none"> • Division 2 Diesel Generator lube oil leak (E2) • Spurious Division 2 ECCS initiation (E3) • Loss of vacuum (E4) • HPCS Pump trip (E6) • Failure of Division 1 ECCS to automatically initiate (E7)
Total Malfunctions	N/A	6	<ul style="list-style-type: none"> • Division 2 Diesel Generator lube oil leak (E2) • Spurious Division 2 ECCS initiation (E3) • Loss of vacuum (E4) • LOP/LOCA (E5) • HPCS Pump trip (E6) • Failure of Division 1 ECCS to automatically initiate (E7)

Top 10 systems and operator actions important to risk that are tested:

- Div 1 & 2 EDGs (Event 2)
- ADS (Event 5)
- Offsite Power (Event 5)
- Failure to manually depressurize with ADS/SRVs (Event 5)

SCENARIO ACTIVITIES:

The plant is operating at 100% power. TBCW Pump C is tagged out of service. CRD Pump B is tagged out of service.

Event 1 – Transfer RPS Bus B from normal to alternate power supply

After the crew assumes the shift, the BOP will transfer RPS Bus B from normal to alternate power supply per 04-1-01-C71-1, Reactor Protection System SOI, Section 5.1. The ATC will reset the half-scam.

Event 2 - Division 2 Diesel Generator lube oil leak (Triggered by Lead Examiner)

After RPS Bus B is transferred to alternate power, annunciator “DIV 2 DSL GEN TROUBLE” will alarm. BOP will dispatch plant operator to investigate. After 2 minutes, the plant operator will report lube oil spraying out from the Division 2 Lube Oil Circulating Pump discharge piping and lube oil sump level is 20” below the top of the sump, which is less than 350 gallons. The BOP will place Division 2 Diesel Generator in the MAINTENANCE Mode IAW SOI 04-1-01-P75-1, Standby Diesel Generator System, Attachment VI. The CRS will enter LCO 3.8.3.E and LCO 3.8.1.B.

Event 3 - Division 2 ECCS initiation on spurious RPV low level signal (Triggered by Lead Examiner)

When Tech Specs have been addressed, a spurious Division 2 ECCS initiation on low RPV level will occur. The BOP will verify the initiation is spurious by two independent means and recover from the Division 2 ECCS initiation using 04-1-01-E12-1, Residual Heat Removal System SOI, Attachment IX. CRS will enter 05-1-02-I-4, Loss of AC Power. The ATC will recognize the Division 2 half-scam due to RPS Bus B loss of power. CRS will enter 05-1-02-III-2, Loss of One or Both RPS Buses ONEP. BOP will restore RPS Bus B to normal power supply and the ATC will reset the Division 2 half-scam. The CRS will enter LCO 3.3.5.1.B, 3.3.5.1.F, 3.3.6.1.A, B, and F, 3.3.6.3.B and 3.3.6.4.B.

Event 4 - Loss of condenser vacuum (Triggered by Lead Examiner)

When Division 2 ECCS initiation has been reset, systems have been secured and Tech Specs have been addressed, a main condenser leak will result in a slow loss of condenser vacuum. The CRS will enter 05-1-02-V-8, Loss of Condenser Vacuum ONEP. The ATC will lower core flow to 70 mlbm/hr using Recirc Flow Control Valves in fast detent. When condenser vacuum continues to lower, the ATC will insert a manual scram.

Event 5/6 - LOP/LOCA/HPCS Pump trip (Automatically triggered)

When the reactor is scrammed, a total loss of offsite power occurs, followed by a small recirculation pipe break after 5 minutes. HPCS pump will trip when it is initiated (**Event 6**). The CRS enters EP-2 and EP-3. RPV level will lower due to the leak being greater than the capacity of RCIC. When the CRS determines there are insufficient high pressure injection sources to maintain RPV level above -160” wide range, enters Alternate Level Control contingency of EP-2. ATC will inhibit ADS to prevent automatic operation (**CT-1**). When RPV level lowers to -160” wide range, the crew will emergency depressurize the RPV using ADS/SRVs (**CT-2**) and restore RPV level with Division 1 ECCS systems.

Event 7 - Failure of Division 1 ECCS to automatically initiate (Automatically triggered)

Division 1 ECCS will fail to automatically initiate on either high drywell pressure or low RPV level. ATC will manually initiate Division 1 ECCS using the lock-collared pushbutton (**CT-3**) IAW EN-OP-200, Plant Transient Response Rules.

The exercise ends when emergency depressurization is complete and RPV level restoration is being controlled.

Critical Task	(CT-1) Inhibit ADS prior to automatic ADS valve opening during a LOCA	(CT-2) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)
EVENT	6	6
Safety Significance	<p>Permitting automatic ADS initiation may be undesirable for the following reasons:</p> <ul style="list-style-type: none"> • ADS actuation can impose a severe thermal transient on the RPV and may complicate efforts to control RPV water level. • If only steam-driven systems are available for injection, ADS actuation may directly lead to loss of adequate core cooling and subsequent core damage. • The conditions assumed in the design of the ADS actuation logic (e.g., no operator action for 115 seconds after event initiation) may not exist when the actions specified in this step are being performed. • The operating crew can draw on much more information than is available to the ADS logic (e.g., equipment out of service for maintenance, operating experience with certain systems, probability of restoration of off-site power, etc.) and can better judge, based on instructions contained in the EPGs/SAGs, when and how to depressurize the RPV. <p>Defeating the logic relieves the operating crew of the task of detecting timer initiation during execution of the more complex steps of Contingency #1 and precludes unnecessary and unwanted automatic initiations. Subsequent steps provide explicit and detailed instructions for controlling RPV water level and specify when emergency depressurization is appropriate.</p>	<p>The MSCWL is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. When water level decreases below MSCWL with injection, clad temperatures may exceed 1500°F.</p>
Cueing	Step L-5 of EP-2, RPV CONTROL, Alternate Level Control Contingency	Wide range indication (SPDS and PDS) falls to -160" and lowering trend continues, and, before -160" wide range is reached, initial conditions, field reports, and control room indications convey that adequate high pressure injection cannot be restored before level falls below -191" CFZ.
Performance Indicator	Manipulation of ADS A and ADS B MANUAL INHIBIT switches on panel P601 vertical section.	Manipulation of seven of the eight ADS/SRVs on panel P601: B21-F041K B21-F047L B21-F041F B21-F047A B21-F051C B21-F041D B21-F051A B21-F051B
Performance Feedback	<p>Inhibit switches click into INHIBIT position on panel P601 vertical section.</p> <p>White indicating light on ADS A and ADS B MANUAL INHIBIT switches illuminate.</p> <p>Receipt of ADS/SRV A and ADS/SRV B OOSVC alarms on panel P601/18A-H2 and P601/19A-H2.</p>	Crew will observe ADS/SRV light indication go from green to red, reactor pressure lowering on SPDS and panel P601 indications.

Justification for the chosen performance limit	The 115 second ADS timer allows sufficient time for the crew to recognize and override automatic operation of the system. As long as ADS is inhibited before ADS valves open, reactor pressure will not be reduced.	The MSCWL (-191" CFZ) is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. Emergency depressurization is allowed when level goes below TAF (-160" wide range) and should be performed, if in the judgment of the CRS, level cannot be maintained above -191" CFZ. Since it is intended for the scenario supporting this CT to, early in the event, clearly indicate no high pressure injection systems can be made available to reverse the lowering level trend, the crew will have time to communicate and opens at least seven ADS/SRVs before -191" CFZ.
BWR Owners Group Appendix	App. B, step C1-1	App. B, Contingency #1 Step C1-4
License Bases Documents	02-S-01-40, EP Technical Bases, Attachment IV, Step L-5 UFSAR Chapter 15A.6.3.1	02-S-01-40, EP Technical Bases, Attachment IV, Step L-7 – through L-13 UFSAR Chapter 15A.6.3.1

*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

Critical Task	(CT-3) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates or aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig	
EVENT	7	
Safety Significance	Failure to recognize the auto initiation not occurring, and failure to take manual action per Conduct of Ops will result in unavailability of safety-related equipment necessary to provide adequate core cooling, otherwise resulting in core damage and a large offsite release.	
Cueing	Indication of ECCS systems not initiating with initiation conditions present: <ul style="list-style-type: none"> • Indication of Drywell pressure ≥ 1.39 psig or RPV level ≤ -150.3" wide range • White light on LPCS/RHR A INIT RESET pushbutton extinguished on panel P601 • Green light on and red light extinguished on LPCS and RHR A pump handswitches on panel P601 	
Performance Indicator	Operator manually initiates Division 1 ECCS by rotating the arming collar and depressing the LPCS/RHR A MAN INIT pushbutton on panel P601.	
Performance Feedback	Red light on and green light extinguished on LPCS and RHR A pump handswitches on panel P601. Rising level trend on indications on panel P601, PDS and SPDS. Rising flow rate on LPCS and/or RHR A flow indicators on panel P601, PDS, and SPDS.	
Justification for the chosen performance limit	Attempting to align high pressure ECCS systems must be performed to determine their availability by the time TAF is reached in order to properly implement EP-2 decision steps regarding restoring and maintaining RPV level. Attempting to align low pressure ECCS systems can only be done once RPV pressure falls below the injection valve RPV pressure permissive and will only be effective once RPV pressure falls below the shutoff head of the respective ECCS pump. The reduction in RPV pressure will normally be via Emergency Depressurization, which is a separate critical task bounded by a minimum RPV level.	
BWR Owners Group Appendix	App. B, Contingency 1, step C1-3	
License Bases Documents	02-S-01-40, EP Technical Bases, Attachment IV, Step L-14 UFSAR Chapter 15A.6.3.1	

* If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)

Simulator Setup:

A. Initialization

1. Log off all simulator PDS and SPDS computers (PDS and SPDS must come up after the simulator load for proper operation).
2. Startup the simulator using Simulator Instructor's Job Aid section 7.3.

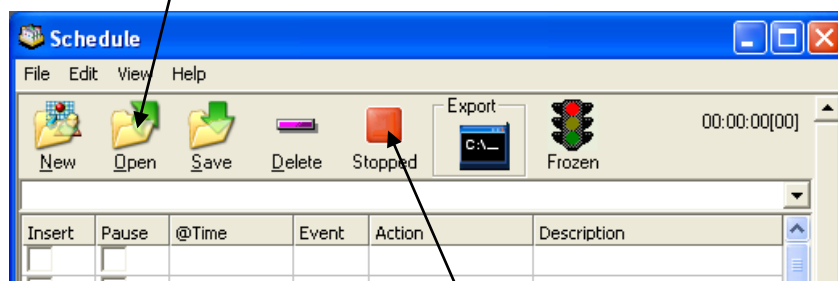
Note:

Prior to running the Schedule File, ensure no Event Files are Open. If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.

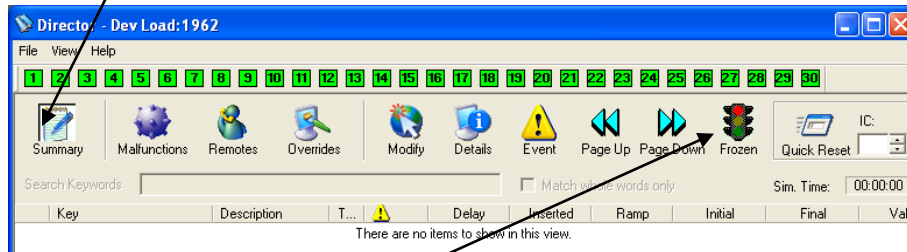


4. Set the Simulator to **IC-102** and perform switch check (Using Quick Reset in Director).
5. Click on "**Open**" in the Schedule window and Open Schedule File "**12-2017 NRC Exam Scenario 3.sch**" (in the Schedule Directory)



6. In Schedule window, click on the "**Stopped**" red block. The red block will change to a green arrow and indicate the scenario is active ("**Running**").

7. Click the Summary tab in the Director window. Verify the schedule files are loaded and opened per Section B below. (Note: Any actions in the schedule file without a specific time will not load into the director until triggered.)



8. Take the simulator out of freeze.
9. Log on to all simulator PDS and SPDS computers.
10. Verify or perform the following:
- IC-102
 - Place red tag on TBCW C pump handswitch
 - Place red tag on CRD PMP B and CRD PUMP B AUX OIL PUMP handswitches
 - Ensure all procedures are marked as indicated for turnover conditions
 - Advance all chart recorders and ensure all pens are inking properly
 - Clear any graphs and trends off PDS and SPDC
11. Run through any alarms and ensure alarms are on. (**Note: On T-Rex, to verify alarms are ON, the indicator will indicate "Alarms On"**).
12. Place the simulator in Freeze.

File loaded verification:

Schedule - 12-2017 NRC Scenario 3.sch

File Edit View Help

New Open Save Delete Running Export Running

00:00:57[00]

Insert	Pause	@Time	Event	Action	Description
				^ 12-2017 NRC Scenario 3	
				^ Event 1 - NORMAL - Place RPS B on ALT PWR source	
				^ Event 2 - COMPONENT - Div 2 DG lube oil leak	TS 3.8.1.B - Place DG in MAINTENANCE
✓		00:00:00		Insert malfunction p864_2a_d_2 to ON on event 2	DIV 2 DSL GEN TROUBLE
✓		00:00:00		Create event 28 zlo2(913) == 1	Div 2 DG running
✓		00:00:00		Insert malfunction n41141b after 120 on event 28	Emergency Diesel Generator B Trip
✓		00:00:00		Insert malfunction p864_2a_c_1 to OFF on event 28	DG 12 GROUND OVERCURRENT
✓		00:00:00		Insert remote p75058 to MAINT on event 9	DG DIV 2 MAINTENANCE MODE
				^ Event 3 - COMPONENT - Spurious Div 2 ECCS Initiation	
✓		00:00:00		Insert override DI_1E12M617 to ARMED on event 3	P601/17B RHR B/RHR C MAN INIT ARM
✓		00:00:00		Insert override DI_1E12M617D to DEPRS on event 3 delete in 2	P601/17B RHR B/RHR C MAN INIT DEPRS
✓		00:00:00		Insert malfunction p601_17a_a_3 to OFF on event 3 delete in 5	RHR B/RHR C MAN INIT SWITCH IN ARMED
✓		00:00:00		Create event 25 zlo4(493) == 1	
			25	Modify override DI_1E12M617 to NORM	P601/17B RHR B/RHR C MAN INIT ARM
				^ Event 4 - RX - Loss of Vacuum	
✓		00:00:00		Insert malfunction fw163c from 6.00000 to 15.00000 in 600 on event 4	Loss of Condenser C Vacuum (variable)
				^ Event 5 - MAJOR - Loss of Power / LOCA	
✓		00:00:00		Create event 5 zdl1(645) == 1	Mode Switch in SHUTDOWN
✓		00:00:00		Insert malfunction r21135 on event 5	Switchyard Fault (500 and 115KV)
✓		00:00:00		Insert malfunction e22052	High Pressure Core Spray Pump Trip
✓		00:00:00		Insert malfunction rr063b after 300 to 1.00000 on event 5	Recirc Loop B Non-Isolable Suction Rupture
				^ Event 6 - COMPONENT - Failure of Div 1 ECCS to initiate	Loss of Condenser C Vacuum (variable)
✓		00:00:00		Insert malfunction rr040a to 0	DW Press Xmtr B21-N094A Fails (VAR)
✓		00:00:00		Insert malfunction rr040e to 0	DW Press Xmtr B21-N094E Fails (VAR)
✓		00:00:00		Create event 29 xalk_level_wr == -55	Reactor level at -55 inches
✓		00:00:00		Insert malfunction rr041a to 50.00000 on event 29	RPV Level Xmtr B21-N091A Fails (VAR)
✓		00:00:00		Insert malfunction rr041e to 50.00000 on event 29	RPV Level Xmtr B21-N091E Fails (VAR)

Execute: Insert malfunction p601_17a_e_2 to CRY_WOLF on event 3
Execute: Insert remote ATT12 to INSTALL on event 12
Execute: Insert remote ATT03 to INSTALL on event 11
Execute: Insert remote ATT01 to INSTALL on event 10
Execute: Insert override LD 1C11M609B R to FALSE

Ready

Schedule - 12-2017 NRC Scenario 3.sch

File Edit View Help

New Open Save Delete Running Export Running

00:00:03[00]

Insert	Pause	@Time	Event	Action	Description
				^ TBCW Pump C Tagged Out	
✓		00:00:00		Insert override DI_1P43M600C to STOP	P870/05C TBCW PMP C : P43-C001C
✓		00:00:00		Insert override LO_1P43M600C_G to FALSE	P870/05C TBCW PMP C:P43-C001C - DF
✓		00:00:00		Insert override LO_1P43M600C_R to FALSE	P870/05C TBCW PMP C:P43-C001C - DF
				^ CRD Pump B tagged OOS	
✓		00:00:00		Insert remote c11646 to OUT	CRD PUMP B BREAKER
✓		00:00:00		Insert override DI_1C11M609B to STOP	P601/22C CRD PMP B AUX OIL PMP
✓		00:00:00		Insert override LO_1C11M609B_G to FALSE	P601/22C CRD PMP B AUX OIL PMP:C11-C001B - DF
✓		00:00:00		Insert override LO_1C11M609B_R to FALSE	P601/22C CRD PMP B AUX OIL PMP:C11-C001B - DF
				^ EP Attachments	
✓		00:00:00		Insert remote ATT01 to INSTALL on event 10	Defeating RCIC High Supp. Pool Water Level Suction Transfer
✓		00:00:00		Insert remote ATT03 to INSTALL on event 11	Defeating all RCIC Isolation and Non-Mechanical Trip Interlocks
✓		00:00:00		Insert remote ATT12 to INSTALL on event 12	Defeating RHR SDC Injection Valve Isolation
✓		00:00:00		Insert malfunction p601_17a_e_2 to CRY_WOLF on event 3	RX LVL 1 (-150") LO

Execute: Insert malfunction p601_17a_e_2 to CRY_WOLF on event 3
Execute: Insert remote ATT12 to INSTALL on event 12
Execute: Insert remote ATT03 to INSTALL on event 11
Execute: Insert remote ATT01 to INSTALL on event 10
Execute: Insert override LO_1C11M609B_R to FALSE

Ready

Director - Dev Load:1962

File View Help

Summary Malfunctions Remotes Overrides Modify Details Event Page Up Page Down Running Quick Reset IC: 102

Search Keywords: Match whole words only Sim. Time: 00:00:38

Key	Description	T...	Delay	Inserted	Ramp	Initial	Final	Value
✓ p870_6a_e_2	CNDSR VAC BRKR LVL LO		00:00:00	00:00:00	00:00:00		FAIL OFF	FAIL OFF
p864_2a_d_2	DIV 2 DSL GEN TROUBLE	2	00:00:00		00:00:00		ON	NORMAL
n41141b	Emergency Diesel Generator B Trip	28	00:02:00	00:00:00			Active	InActive
p864_2a_c_1	DG 12 GROUND OVERCURRENT	28	00:00:00		00:00:00		OFF	NORMAL
p601_17a_a_3	RHR B/RHR C MAN INIT SWITCH IN ARMED	3	00:00:00		00:00:00		OFF	NORMAL
fw163c	Loss of Condenser C Vacuum (variable)	4	00:00:00		00:10:00	6	15	0
r21135	Switchyard Fault (500 and 115KV)	5	00:00:00		00:00:00		Active	InActive
✓ e22052	High Pressure Core Spray Pump Trip		00:00:00	00:00:00	00:00:00		Active	Active
rr063b	Recirc Loop B Non-Isolable Suction Rupture	5	00:05:00		00:00:00		1	0
✓ rr040a	DW Press Xmtr B21-N094A Fails (VAR)		00:00:00	00:00:00	00:00:00		0	0
✓ rr040e	DW Press Xmtr B21-N094E Fails (VAR)		00:00:00	00:00:00	00:00:00		0	0
rr041a	RPV Level Xmtr B21-N091A Fails (VAR)	29	00:00:00		00:00:00		50	0
rr041e	RPV Level Xmtr B21-N091E Fails (VAR)	29	00:00:00		00:00:00		50	0
p601_17a_e_2	RX LVL 1 (-150") LO	3	00:00:00		00:00:00		CRY_WOLF	NORMAL
p75058	DG DIV 2 MAINTENANCE MODE	9	00:00:00		00:00:00		MAINT	OPER
✓ c11646	CRD PUMP B BREAKER		00:00:00	00:00:00	00:00:00		OUT	OUT
ATT01	Defeating RCIC High Supp. Pool Water Level Suction Transfer	10	00:00:00		00:00:00		INSTALL	00:00:00
ATT03	Defeating all RCIC Isolation and Non-Mechanical Trip Interlocks	11	00:00:00		00:00:00		INSTALL	00:00:00
ATT12	Defeating RHR SDC Injection Valve Isolation	12	00:00:00		00:00:00		INSTALL	00:00:00
DI_1E12M617	P601/17B RHR B/RHR C MAN INIT ARM	3	00:00:00		00:00:00		ARMED	NORM
DI_1E12M617D	P601/17B RHR B/RHR C MAN INIT DEPRS	3	00:00:00		00:00:00		DEPRS	NORM
✓ DI_1P43M600C	P870/05C TBCW PMP C : P43-C001C		00:00:00	00:00:00	00:00:00		STOP	STOP
✓ LO_1P43M600C_G	P870/05C TBCW PMP C:P43-C001C - DF		00:00:00	00:00:00	00:00:00		FALSE	TRUE
✓ LO_1P43M600C_R	P870/05C TBCW PMP C:P43-C001C - DF		00:00:00	00:00:00	00:00:00		FALSE	FALSE
✓ DI_1C11M609B	P601/22C CRD PMP B AUX OIL PMP		00:00:00	00:00:00	00:00:00		STOP	STOP
✓ LO_1C11M609B_G	P601/22C CRD PMP B AUX OIL PMP:C11-C001B - DF		00:00:00	00:00:00	00:00:00		FALSE	TRUE
✓ LO_1C11M609B_R	P601/22C CRD PMP B AUX OIL PMP:C11-C001B - DF		00:00:00	00:00:00	00:00:00		FALSE	FALSE

Ready

Procedures that may be used in this scenario:

Procedure No.	Rev	Procedure Title
04-1-01-C11-1	154	Control Rod Drive Hydraulic System
04-1-01-C41-1	123	Standby Liquid Control System
04-1-01-C71-1	35	Reactor Protection System
04-1-01-E12-1	147	Residual Heat Removal System
04-1-01-E30-1	25	Suppression Pool Makeup System
04-1-01-E51-1	136	Reactor Core Isolation Cooling System
04-1-01-E61-1	41	Combustible Gas Control System
04-1-01-P75-1	106	Standby Diesel Generator System
04-1-02-1H13-P601	161	Alarm Response Instruction Panel No.: 1H13-P601
04-1-02-1H13-P680	233	Alarm Response Instruction Panel No.: 1H13-P680
04-1-02-1H13-P864	31	Alarm Response Instruction Panel No.: 1H13-P864
04-1-02-1H13-P870	154	Alarm Response Instruction Panel No.: 1H13-P870
04-S-02-SH13-P807	32	Alarm Response Instruction Panel No.: SH13-P807
04-1-02-1H22-P401	118	Alarm Response Instruction Panel No.: 1H22-P401
05-1-02-I-1	130	Reactor Scram
05-1-02-I-2	37	Turbine and Generator Trips
05-1-02-I-4	51	Loss of AC Power
05-1-02-III-2	26	Loss of One or Both RPS Buses
05-1-02-III-3	115	Reduction In Recirculation System Flow Rate
05-1-02-III-5	49	Automatic Isolations
05-1-02-V-1	24	Loss of Component Cooling Water
05-1-02-V-8	24	Loss of Condenser Vacuum
05-S-01-EP-1	36	Emergency / Severe Accident Procedure Support Documents
05-S-01-EP-2	45	RPV Control
05-S-01-EP-3	29	Containment Control
Tech Spec 3.3.5.1		
Tech Spec 3.3.6.1		
Tech Spec 3.3.6.3		
Tech Spec 3.3.6.4		
Tech Spec 3.8.1		
Tech Spec 3.8.3		

Expected Alarms:

P680-7A-A2, RX SCRAM TRIP
P864-2A-D2, DIV 2 DSL GEN TROUBLE
P864-2A-B1, DIV 2 DSL GEN TRIP
P864-2A-D1, DG 12 AUTO START NOT AVAIL
P601-17A-D2 RHR PMP B AUTO START
P601-17A-H3 RHR C SYS OOSVC
P601-17A-B3 RHR B-RHR C ACTUATED
P807-3A-H4 STATIC INVRTR 1Y97 TROUBLE
P807-3A-H3 STATIC INVRTR 1Y82 TROUBLE
P807-3A-H2 STATIC INVRTR 1Y81 TROUBLE
P601-17A-D5 RHR PMP C AUTO START
P870-8A-E1 CCW PMP B DISCH PRESS LO
P870-8A-A1 CCW PMP B TRIP
P870-5A-C2 CCW PMP A-C DISCH PRESS LO
P680-4A2-B6 FPCC FLTR DMIN SYS TROUBLE
P845-1A-A4 ADSORBER TRAIN A FLOW HIGH-LOW
P845-1A-B4 ADSORBER TRAIN B FLOW HIGH-LOW
P680-4A2-E3 OG PNL P845 TROUBLE
P680-10A-C9 LP CNDSR SHELL PRESS HI
P680-10A-A8 TURB VAC LO

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>3</u>	Event No: <u>1</u>
Event Description: <u>Transfer RPS Bus B from normal to alternate power supply</u>			
TIME	Position	Applicant's Actions or Behavior	
	BOP	<p>Transfers RPS Bus B from normal to alternate power supply IAW SOI 04-1-01-C71-1, Section 5.1 by performing the following:</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Before transferring power on an energized RPS bus, ENSURE NO SCRAM OR ISOLATION surveillances are in progress <u>AND ALL</u> MSIV solenoids are energized. (MSIV solenoids <u>Can</u> be verified energized by all MSIV solenoid lights energized <u>AND</u> all pilot solenoids indicate amperage on 1H13-P622 and 1H13-P623)</p> <p>Verifies MSIV solenoids are energized by verifying all MSIV solenoid lights are energized and all pilot solenoids indicate amperage on 1H13-P622 and 1H13-P623</p> <p>NOTE to Examiner: Applicant should use Video Wall to verify status of MSIV solenoids</p> <p>5.1.2.a Check GENERATOR B ALTERNATE FEED AVAILABLE lights are lit on 1H13-P610</p> <p>5.1.2.b Place handswitch MG SET B TRANSFER handswitch on 1H13-P610 to ALT B</p>	
	ATC	<p>Reports Division 2 half-scrum</p> <ul style="list-style-type: none"> • P680-7A-A2, RX SCRAM TRIP alarm • RPS B scram solenoid lights de-energized on P680-5C/7C <p>Resets Division 2 half-scrum IAW SOI 04-1-01-C71-1, Section 5.1 by performing the following:</p> <p>5.1.2.c Place SCRAM RESET handswitches for tripped channels in RESET on 1H13-P680</p> <p>Places RPS DIV 2 and RPS DIV 4 SCRAM RESET switches to RESET</p> <p>Verifies annunciator P680-7A-A2, RX SCRAM TRIP clears</p> <p>Verifies all RPS B scram solenoid lights are energized on P680-5C/7C</p>	

Op-Test No: <u>NRC LOT 12-2017</u>			Scenario No: <u>3</u>			Event No: <u>1 (cont.)</u>		
Event Description: <u>Transfer RPS Bus B from normal to alternate power supply (cont.)</u>								
TIME	Position	Applicant's Actions or Behavior						
	BOP	Report to CRS that RPB Bus B has been transferred to alternate power supply						
		END OF EVENT						
	Notes							
	Lead Examiner: Cue to proceed to the next event							

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 2Event Description: **Division 2 Diesel Generator lube oil leak**

At the direction of the Lead Evaluator, trigger Event 2 to cause a Division 2 Diesel Generator Trouble annunciator.

TIME	Position	Applicant's Actions or Behavior
	BOP	Responds to alarm P864-2A-D2, DIV 2 DSL GEN TROUBLE Dispatch plant operator to investigate Division 2 Diesel Generator trouble alarm
	BOOTH	Role Play: If asked to investigate, wait 2 minutes and report as plant operator that oil is spraying out of a break in the discharge of the Lube Oil Circulation Pump. The pump has been secured, but oil is still draining out the pipe Report that annunciator P401-1A-B2, LOW LEVEL LUBE TANK is in alarm and lube oil tank level indication on P401 is approximately 1/8 If asked level of oil in tank, report level is approximately 20" below the top of the sump fill hole If asked amount of oil in tank, report that according to ARI, there is less than 350 gallons of oil in tank
	BOP	Determine amount of oil in Division 2 Diesel Generator Lube Oil Tank is less than 350 gallons using ARI 04-1-02-1H22-P401-1A-B2, LOW LEVEL LUBE TANK Report to CRS that per ARI Tech Spec 3.8.3 should be entered
	CRS	Direct BOP to place Division 2 Diesel Generator in MAINTENANCE mode IAW 04-1-01-P75-1, Standby Diesel Generator System, Attachment VI NOTE to Evaluators: If Division 2 Diesel Generator is not placed in MAINTENANCE mode, the diesel generator will auto start on the next event and will trip after 2 minutes.
	CRS TS	Enters LCO 3.8.3, Diesel Fuel Oil, Lube Oil, and Starting Air: Condition B: One or more DGs with lube oil inventory: 1. For DG 11 or 12, < 410 gal and > 350 gal • B.1 Restore lube oil inventory to within limits (48 hours) Condition E: Required Actions and associated Completion Time not met. • E.1 Declare associated DG inoperable (immediately)

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 2 (cont.)Event Description: **Division 2 Diesel Generator lube oil leak (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS TS	<p>Enters LCO 3.8.1, AC Sources – Operating:</p> <p>Condition B: One required DG inoperable for reasons other than Condition F.</p> <ul style="list-style-type: none"> B.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuits (1 hour and every 8 hours) <p>AND</p> <ul style="list-style-type: none"> B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable (4 hours of discovery of Condition B with inoperability of redundant required feature(s)) <p>AND</p> <ul style="list-style-type: none"> B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failures (24 hours) <p>OR</p> <ul style="list-style-type: none"> B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s) (24 hours) <p>AND</p> <ul style="list-style-type: none"> B.4 Restore required DG to OPERABLE status (72 hours)
	BOP	<p>Places Division 2 Diesel Generator in MAINTENANCE IAW SOI 04-1-01-P75-1, Standby Diesel Generator System, Attachment VI:</p> <ol style="list-style-type: none"> Place Standby Diesel Generator 12 in MAINTENANCE mode by simultaneously depressing Remote 1H13-P864 and Local 1H22-P401 MAINTENANCE MODE SELECT pushbuttons. LOCAL pushbutton must be RELEASED first for Diesel to remain in MAINTENANCE mode Verify: <ul style="list-style-type: none"> The UNIT TRIPPED red light on 1H22-P401 remains on Alarm DIESEL GENERATOR IN MAINTENANCE on 1H22-P401 actuates following a one-minute time delay after Diesel is in MAINTENANCE mode <p>Verifies P864-2A-B1, DIV 2 DSL GEN TRIP annunciator alarms</p> <p>Verifies P864-2A-D1, DG 12 AUTO START NOT AVAIL, alarms</p>
	BOOTH	<p>Role Play: If asked, inform Control Room you are ready to place Division 2 Diesel Generator in MAINTENANCE mode</p> <p>When directed to depress the local Division 2 Diesel Generator MAINTENANCE MODE SELECT pushbutton, trigger Event 9</p> <p>After 1 minutes, report Division 2 Diesel Generator is in MAINTENANCE mode</p>

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>3</u>	Event No: <u>2 (cont.)</u>
Event Description: <u>Division 2 Diesel Generator lube oil leak (cont.)</u>			
TIME	Position	Applicant's Actions or Behavior	
		END OF EVENT	
	Notes		
		Lead Examiner: Cue to proceed to the next event	

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 3Event Description: **Division 2 ECCS initiation on spurious RPV low level signal****At the direction of the Lead Evaluator, trigger Event 3 to cause a Division 2 initiation on spurious RPV low level signal.**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report Division 2 ECCS initiation signal on RPV low level</p> <p>Verify and report RPV low level signal is spurious by two independent indications</p> <ul style="list-style-type: none"> • No CTMT or Drywell isolation signals present • Wide range RPV level in normal band • Narrow range RPV level in normal band
	CRS	<p>Direct BOP to recover from the Division 2 ECCS initiation signal IAW SOI 04-1-01-E12-1, Residual Heat Removal System, Attachment IX</p> <p>Enters ONEP 05-1-02-I-4, Loss of AC Power</p>
	BOP	<p>Recovers from Division 2 ECCS initiation signal IAW 04-1-01-E12-1, Residual Heat Removal System, Attachment IX</p> <p>RECOVER from a Division 2 ECCS Initiation as follows:</p> <ol style="list-style-type: none"> 1. VERIFY Reactor Level is > 150.3 inches 2. VERIFY Drywell Pressure is < 1.39 psig. 3. IF an inadvertent initiation has occurred, THEN VERIFY all trip units causing initiation have been reset OR bypassed 4. DEPRESS the RHR B/C INIT RESET pushbutton. IF white light over pushbutton stays out, THEN the initiation signal is Reset 5. DEPRESS the DIV 2 LSS PNL RESET pushbutton on panel 1H13-P864 ENSURE ALL LSS system annunciators on 1H13-P864 are clear AND ENSURE all the following LSS panel lights are on AND all other lights are off: <ul style="list-style-type: none"> • ESF POWER ON • BOP POWER ON • DIV 2 LSS PNL RESET white light illuminates on 1H13-P864 6. RESET the Div 2 CGCS logic by PLACING the CGCS DIV 2 MAN INIT RESET keylock switch to RESET 7. STOP the DRWL PURGE COMPR B 8. CLOSE E61-F003B <p>Re-energizes MCC 16B42 IAW ONEP 05-1-02-I-4, Loss of AC Power</p>
	ATC	<p>Recognize and report a Division 2 half-scam</p> <ul style="list-style-type: none"> • H13-P680-7A-A2 RX SCRAM TRIP alarm • Division 2 RPS scram solenoid lights out on P680-5C/7C
	BOP	<p>Recognize and report loss of RPB Bus B alternate power supply</p> <p>Recognize and report CCW Pump B power loss and CCW Pump C automatically started</p>

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 3 (cont.)Event Description: **Division 2 ECCS initiation on spurious RPV low level signal (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Enters ONEP 05-1-02-III-2, Loss of One or Both RPS Buses Directs BOP to transfer RPB Bus B to normal power supply Contacts Work Control to stop all work on RPS MG B May enter ONEP 05-1-02-V-1, Loss of Component Cooling Water
	BOP	Transfers RPS Bus B to RPS MG B IAW ONEP 05-1-02-III-2, Loss of One or Both RPS Buses: 3.1.3 IF "B" RPS Bus is de-energized THEN PLACE MG SET B TRANSFER switch on Panel 1H13-P610 to available power source Places MG SET B TRANSFER switch to MG B Reports to CRS that RPS Bus B is transferred to normal power supply
	CRS	Directs ATC to reset Division 2 half-scam IAW ONEP 05-1-02-III-2, Loss of One or Both RPS Buses
	ATC	Resets Division 2 half-scam IAW ONEP 05-1-02-III-2, Loss of One or Both RPS Buses: 3.1.4 RESET Half-Scram using EITHER HS M601A AND C OR HS-M601B AND D on Panel 1H13-P680 by PLACING switches momentarily to reset. Places HS-M601B and D on Panel 1H13-P680 to RESET Verifies Division 2 half-scam reset: <ul style="list-style-type: none"> • H13-P680-7A-A2 RX SCRAM TRIP alarm cleared • Division 2 RPS scram solenoid lights energized on P680-5C1
	BOP	3.1.5 ENSURE all MSIV solenoids are energized AND all MSIV pilot solenoids indicate amperage on panels 1H13-P622 AND 1H13-P623 Verifies MSIV solenoids are energized by verifying all MSIV solenoid lights are energized and all pilot solenoids indicate amperage on 1H13-P622 and 1H13-P623. NOTE to Examiner: Applicant should use Video Wall to verify status of MSIV solenoids.
	CRS	Enters Inadequate Decay Heat Removal ONEP, 05-1-02-III-1 Directs BOP to monitor Spent Fuel Pool temperature
	CRS	Dispatch I&C to investigate spurious low RPV level initiation of Division 2 ECCS
	BOOTH	Role Play: If dispatched, after 2 minutes report as I&C that no trip units are sealed in, but trip units B21-N691B and B21-N691F voltage outputs are erratic and unstable.

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 3 (cont.)Event Description: **Division 2 ECCS initiation on spurious RPV low level signal (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS TS	<p>Enters LCO 3.3.5.1, Emergency Core Cooling System (ECCS) Instrumentation:</p> <p>Condition A: One or more required channels inoperable.</p> <ul style="list-style-type: none"> A.1 Enter the Condition referenced in Table 3.3.5.1-1 for the channel. (Immediately) Affected Functions: 1.a, 2.a (Condition B), 4.a, 5.a (Condition F) <p>Condition B: As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p> <ul style="list-style-type: none"> B.1 Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable (1 hour from discovery of loss of initiation capability for feature(s) in both divisions) AND B.3 Place channel in trip (24 hours) <p>Examiner Note: B.2 is not entered since it is only applicable for Functions 3.a and 3.b.</p> <p>Condition F: As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p> <ul style="list-style-type: none"> F.1 Declare ADS valves inoperable (1 hour from discovery of loss of ADS initiation capability in both trip systems) AND F.2 Place channel in trip (96 hours from discovery of inoperable channel concurrent with HPCS or RCIC inoperable AND 8 days) <p>Examiner Note: F.2 is required even though HPCS and RCIC are operable since the Completion Time includes "... AND 8 days." Therefore the channel is required to be placed in trip within 8 days.</p>
	CRS TS	<p>Enters LCO 3.3.6.1, Primary Containment and Drywell Isolation Instrumentation:</p> <p>Condition A. One or more required channels inoperable.</p> <ul style="list-style-type: none"> A.1 Place channel in trip (12 hours for Functions 2.b, 5.b, 5.c, and 5.d AND 24 hours for Functions other than Functions 2.b, 5.b, 5.c, and 5.d) Affected Functions: 1.a, 2.c (therefore Completion Time is 24 hours)

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 3 (cont.)Event Description: **Division 2 ECCS initiation on spurious RPV low level signal (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS TS	<p>Enters LCO 3.3.6.3, RHR Containment Spray System Instrumentation:</p> <p>Condition A: One or more required channels inoperable.</p> <ul style="list-style-type: none"> A.1 Enter the Condition referenced in Table 3.3.6.3-1 for the channel. (Immediately) Affected Function: 3 (Condition B) <p>Condition B: As required by Required Action A.1 and referenced in Table 3.3.6.3-1.</p> <ul style="list-style-type: none"> B.1 Declare associated RHR containment spray subsystem inoperable (1 hour from discovery of loss of RHR containment spray initiation capability in both trip systems AND B.2 Place channel in trip (24 hours)
	CRS TS	<p>Enters LCO 3.3.6.4, Suppression Pool Makeup (SPMU) System Instrumentation:</p> <p>Condition A: One or more required channels inoperable.</p> <ul style="list-style-type: none"> A.1 Enter the Condition referenced in Table 3.3.6.4-1 for the channel. (Immediately) Affected Function: 2 (Condition B) <p>Condition B: As required by Required Action A.1 and referenced in Table 3.3.6.4-1.</p> <ul style="list-style-type: none"> B.1 Declare associated SPMU subsystem inoperable (1 hour of discovery of loss of SPMU initiation capability in both trip systems AND B.2 Place channel in trip (24 hours)
		END OF EVENT
	Notes	
	Lead Examiner: Cue to proceed to the next event	

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 4Event Description: **Loss of condenser vacuum****At the direction of the Lead Examiner, trigger Event 4 to cause a loss of condenser vacuum.**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report condenser vacuum lowering: <ul style="list-style-type: none"> • Generator megawatts lowering • Offgas flow rising • LP Condenser C shell pressure rising on N19-R604C indicator on Panel 1H13-P680
	CRS	Directs BOP to monitor condenser vacuum Enters ONEP 05-1-02-V-8, Loss of Condenser Vacuum Directs ATC to lower core flow to 70 mlbm/hr in using Recirculation FCVs in fast detent
	BOP	Monitors and reports condenser vacuum indication and trend
	ATC	Lowers core flow to 70 mlbm/hr using Recirculation Flow Control Valves A and B in fast detent Determines and reports reactor is operating in the OPRM Armed Region of the Power-To-Flow map Assumes THI Watch without concurrent duties
	CRS	Enters Reduction in Recirculation Flow ONEP, 05-1-02-III-3 3.1 Monitor APRMs, LPRMs, SRM period meters, and OPRM Computer Trends Directs ATC to monitor for hydraulic instability Steps 3.2 and 3.3 are N/A
	CRS	Verifies Feedwater temperature is stable Directs ATC that THI Watch with concurrent duties is allowed
	CRS	3.4 If operation is determined to be in OPRM Armed Region, perform the following: 3.4.1. Verify that at least 3 OPRM channels are not bypassed (i.e. are enabled) per TS 3.3.1.1-1, Item 2.f Directs BOP to verify at least 3 OPRM channels are not bypassed
	BOP	Verifies at least 3 OPRM channels are not bypassed: <ul style="list-style-type: none"> • Computer points C51NC085, 86, 87, 88 OPRM ENABLED alarmed on PDS • Computer points C51NC075, 76, 77, 78 OPRM INOP not alarmed on PDS Reports all OPRM channels are operable

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 4 (cont.)Event Description: **Loss of condenser vacuum (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Step 3.5 and 3.6 are N/A 3.7 If both loops are operating, then perform the following: 3.7.2 At less than 78.7 mlbm/hr core flow, balance loop flows to within 4460 gpm Directs ATC to balance Recirculation Loop flows to within 4460 gpm
	ATC	Reports Recirculation Loop flows and adjusts Recirculation Loop flows, if necessary, using Recirculation Flow Control Valves A and B to within 4460 gpm
	CREW	Dispatch plant operators to investigate condenser leaks
	CRS	Recognize condenser vacuum is still lowering and directs ATC to insert a manual scram Directs all personnel to evacuate Containment due to reactor scram
	ATC	Places Reactor Mode Switch to SHUTDOWN Verifies all control rods are inserted
	CRS	Enters Reactor Scram ONEP, 05-1-02-I-1, Turbine and Generator Trips ONEP, 05-1-02-I-2 and EP-2
		END OF EVENT
	Notes	
Proceed to the next event for LOP/LOCA NOTE to Examiners: CRS actions start on the next page of the Scenario Guide BOP actions start on Page 34 of the Scenario Guide ATC actions start on Page 36 of the Scenario Guide		

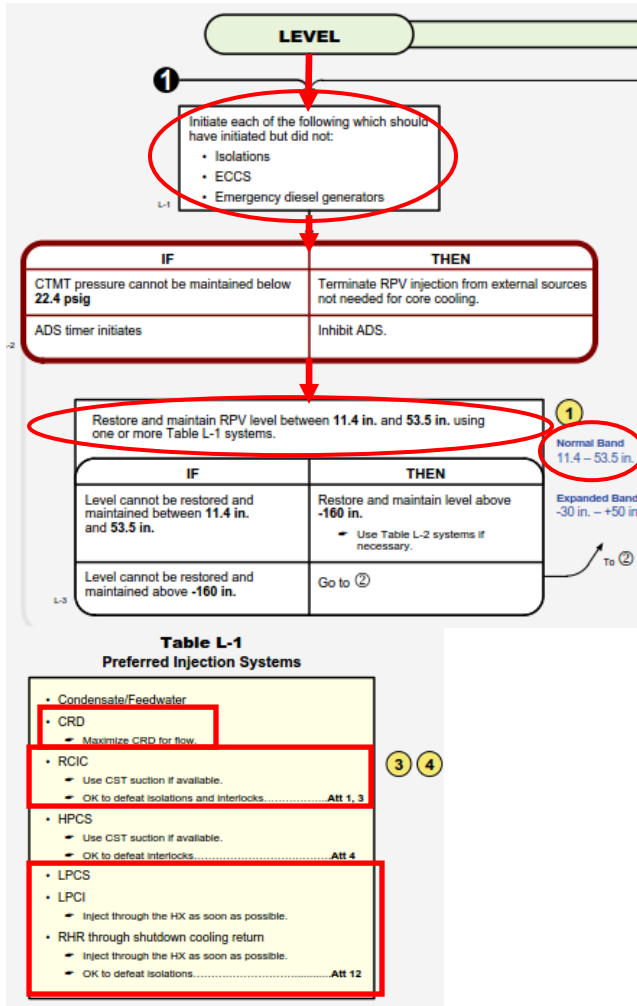
Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate****LOP will occur when Reactor Mode Switch is taken to SHUTDOWN. LOCA will occur after 5 minutes. HPCS Pump trip and failure of Division 1 ECCS to initiate is already active.**

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognize and report loss of offsite power Recognize and report 16AB failed to re-energize due to loss of Division 2 Diesel Generator Recognize and report MSIVs closed. Recognize and report loss of all Reactor Feed Pumps
	CRS	Enters ONEP 05-1-02-I-4, Loss of AC Power Directs ATC to initiate Standby Gas Treatment System A

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)

TIME	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: right;">EP-2</p> <p>Direct BOP to initiate RCIC and maintain RPV level between -30" and +50" wide range level</p>
	CRS	Directs I&C to install Attachment 1 and 3 for RCIC
	BOOTH	<p>Role Play: When directed to install Attachments, trigger the following Events as each Attachment is directed:</p> <p>Attachment 1 – Event 10</p> <p>Attachment 3 – Event 11</p> <p>Inform CRS when each Attachment indicates DONE</p>

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)

TIME	Position	Applicant's Actions or Behavior
	CRS	Re-enters EP-2, RPV Control.
	CRS	 <p>EP-2</p> <p>Directs ATC to verify high drywell pressure initiations, isolations and emergency diesel generators and restore Auxiliary Building</p> <p>Direct BOP to monitor and report RPV water level</p> <p>Direct BOP to maximize CRD for flow</p> <p>Directs I&C to install Attachment 12 for RHR</p>
	CREW	<p>Recognize and report HPCS Pump trip</p> <p>Recognize and report failure of Division 1 ECCS to initiate</p>

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs ATC to manually initiate Division 1 ECCS IAW EN-OP-200, Plant Transient Response Rules.
(CT-3) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates or aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig		
	CREW	Dispatch plant operator / electrical maintenance to investigate HPCS Pump trip.
	BOOTH	Role Play: If dispatched, as plant operator/electrical maintenance report after 2 minutes that HPCS pump breaker, 152-1702, is tripped and electrical is investigating. When directed to install Attachments, trigger Event 12 and inform CRS when Attachment indicates DONE.
	CRS	Recognize RPV level lowering and enters Alternate Level Control leg of EP-2.

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)

TIME	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">Alternate Level Control</p> <p style="text-align: right; font-size: 2em;">EP-2</p> <p>Direct ATC to inhibit ADS</p> <p>Direct ATC to initiate SLC A</p> <p>Direct BOP to verify LPCS and RHR A are available for injection</p>

(CT-1) Inhibit ADS prior to automatic ADS valve opening during a LOCA

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)

TIME	Position	Applicant's Actions or Behavior
	CRS	Enters EP-3, Containment Control
	CRS	<p>EP-3</p> <p>Monitors HCTL on SPDS</p> <p>May direct ATC to initiate Division 1 Suppression Pool Makeup System</p>
	CRS	<p>EP-3</p> <p>Directs ATC to verify CTMT and DW hydrogen analyzers operating and energize Division 1 igniters</p>

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6/7 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)

TIME	Position	Applicant's Actions or Behavior
	CRS	When RPV level lowers to -160 inches wide range, exits EP-2 Pressure leg and enters Emergency Depressurization leg of EP-2
	CRS	<p>EP-2</p> <p>Verifies Suppression Pool level is greater than 10.5 ft using SPDS</p> <p>Directs ATC to open 8 ADS/SRVs</p> <p>Directs BOP to monitor for ECCS injection</p>

(CT-2) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ. (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>3</u>	Event No: <u>5/6/7 (cont.)</u>
Event Description: <u>LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)</u>			
TIME	Position	Applicant's Actions or Behavior	
	CRS	Direct BOP to monitor RPV level and report when level is greater than TAF (-160 inches wide range)	
	CRS	Directs BOP to restore and maintain RPV level between -30 inches and +50 inches wide range with ECCS systems	
NOTE to Examiners: Scenario objectives have been met when the crew has depressurized the RPV and level is being raised in a controlled manner to restore it to -30" to +50" wide range			
END OF SCENARIO			
	Notes		
	BOOTH	When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating	

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)****BOP ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Reactor Feed Pumps tripped.
	BOP	<p>Manually initiates RCIC IAW 04-1-01-E51-1, Reactor Core Isolation Cooling System, Attachment VI:</p> <ol style="list-style-type: none"> 1. IF desired, ARM AND DEPRESS RCIC MAN INIT pushbutton 2. VERIFY SSW A is running with adequate flow path <p>Manually controls RCIC flow to maintain RPV water level between -30 inches and +50 inches wide range level</p>
	BOP	Monitors and report RPV level
	BOP	<p>Maximizes CRD for flow IAW SOI 04-1-01-C11-1, Attachment VIII, by performing the following:</p> <p>Re-start CRD PUMP A IAW ONEP 05-1-02-IV-1, Control Rod/Drive Malfunctions ONEP, immediate operator actions:</p> <ol style="list-style-type: none"> 2.1.2 If running CRD pump trips, then start standby CRD pump as follows: <ol style="list-style-type: none"> 2.1.2.a If required, re-energize MCCs 15B42 and 16B42 on 1H13-P864 Start CRD PUMP A AUX OIL PUMP 2.1.2.b Place CRD SYS FLO CONT in MANUAL and reduce output to zero 2.1.2.c Start CRD pump A <p>Per SOI 04-1-01-C11-1, Attachment VIII:</p> <ol style="list-style-type: none"> (1) NOTE to Examiners: Step is N/A because oil pump for CRD Pump A is already running (2) NOTE to Examiners: Step is N/A because CRD Pump B is tripped (3) Place CRD SYS FLO CONT C11-R600 in MANUAL (4) Using CRD SYS FLO CONT C11-R600, fully open C11-F002A(B), CRD FLO CONT VLV (5) If maximizing CRD for flow, then fully open C11-F003, CRD DRIVE WTR PRESS CONT VLV <p>Reports to CRS that CRD is maximized for flow to extent possible</p>
	BOP	<p>Verifies LPCS and RHR A are available for injection:</p> <ul style="list-style-type: none"> • LPCS and RHR A pumps running • LPCS and RHR A injection valves green lights energized

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)****BOP ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Monitors P601 panel indications for ECCS injection into RPV:</p> <ul style="list-style-type: none"> • E21-F005, LPCS INJ SHUTOFF VLV, open indication on P601-21C • E21-F006, LPCS TESTABLE CHK VLV, open indication on P601-21C • E21-R600, LPCS PMP DISCH FLO, indication rising on P601-21B • E12-F042A, RHR A INJ SHUTOFF VLV, open indication on P601-20C • E12-F041A, RHR A TESTABLE CHK VLV, open indication on P601-20C • E12-R603A, RHR PMP A DISCH FLO, indication rising on P601-20B <p>Recognize and report ECCS injection into RPV</p>
	BOP	Monitors RPV level and reports to CRS when RPV level is greater than TAF (-160 inches wide range)
	BOP	Controls injection from LPCS and RHR A by throttling valves and/or cycling pumps to raise and maintain RPV level -30 inches to +50 inches wide range
	Notes	
		Return to Page 33 for completion of BOP actions.

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	Verifies SRVs are controlling RPV pressure between 800 to 1060 psig on Lo-Lo Set
	ATC	Manually initiates Standby Gas Treatment System A by depressing SGTS DIV 1 MAN INIT pushbuttons A and C
	ATC	<p>Verifies ECCS initiations and recognizes and reports to CRS Division 1 ECCS fails to initiate</p> <p>Recognizes and reports to CRS that HPCS Pump is tripped</p> <p>Recognizes and reports to CRS that ESF Bus 16AB is de-energized</p> <p>Manually initiates Division 1 ECCS by arming and depressing LPCS/RHR A INIT pushbutton IAW EN-OP-200, Plant Transient Response Rules</p> <p>Verifies Div 1 DG running with cooling water</p> <p>Provides ECCS Status report to CRS</p>
(CT-3) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates or aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig		
	ATC	<p>Verifies and reports high drywell pressure isolations complete using the isolation status board as a quick reference and verifying the following alarms:</p> <ul style="list-style-type: none"> • P870-3A-A4, CTMT-DRWL ISOL DIV 1 OPER annunciator sealed in • P870-3A-B3, AUX BLDG ISOL DIV 1 OPER annunciator sealed in • P870-9A-A4, CTMT-DRWL ISOL DIV 2 OPER annunciator sealed in • P870-9A-B3, AUX BLDG ISOL DIV 2 OPER annunciator sealed in
	ATC	<p>Restores the Auxiliary Building IAW ONEP 05-1-02-III-5, Automatic Isolations, Attachment II</p> <p>1) If Plant Air compressors are available, then OPEN/CHECK OPEN the following Instrument Air valves on 1H13-P870:</p> <p>Section 3C</p> <ul style="list-style-type: none"> • P53-F001 (After 30 sec T.D.) <p>Section 9C</p> <ul style="list-style-type: none"> • P53-F007 (After 30 sec T.D.)

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)**ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p style="text-align: center;"><u>CAUTION</u></p> <p>IF Drywell Chilled Water is restored after isolation when Drywell temperature exceeds 200°F, THEN a water hammer MAY occur AND rupture Drywell cooler tubes due to voiding in piping. IF Drywell temperatures exceed 200°F (CRD Cavity temperatures excluded), THEN Drywell Chilled Water Should NOT be unisolated until controlled startup can be performed per SOI 04-1-01-P72-1 OR Drywell temperature has returned to < 200°F.</p> <p>2) If all Drywell temperatures are less than 200°F (CRD Cavity temperatures excluded) AND Drywell Chillers are available, THEN RESTORE Drywell Chilled Water as follows:</p> <ol style="list-style-type: none"> IF required, RE-ENERGIZE MCC's 15B42 AND 16B42 on 1H13-P864 AFTER a 30 second time delay, OPEN the following valves on 1h13-P870: <u>Section 3C</u> <ul style="list-style-type: none"> P72-F121 P72-F122 P72-F125 <u>Section 9C</u> <ul style="list-style-type: none"> P72-F123 P72-F126 P72-F124 ENSURE at least one Drywell Chilled Water pump is running ENSURE Drywell Coolers are in operation <p>3) Step is N/A</p> <p>4) The following valves Will NOT close due to being gagged open. As time permits, give these valves an OPEN signal to lift actuator off of gag. <u>Section 3C</u> <ul style="list-style-type: none"> P53-F026A <u>Section 9C</u> <ul style="list-style-type: none"> P53-F026B </p>
	ATC	Provides ECCS Status report to CRS
	ATC	Inhibits ADS by ADS A and ADS B MANUAL INHIBIT switches to INHIBIT position

(CT-1) Inhibit ADS prior to automatic ADS valve opening during a LOCA

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: **LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Initiates SLC A by placing the SLC PMP A key-locked switch to START</p> <p>Verifies SLC injection into reactor IAW SOI 04-1-01-C41-1, Attachment VI by performing the following:</p> <ol style="list-style-type: none"> 1. Verify system initiation by observing the following: <ol style="list-style-type: none"> a. F004A squib valve fired: <ul style="list-style-type: none"> • White SQUIB VALVE READY light OFF • Annunciator SBLC SYS A OOSVC • Amber status light SQUIB A LOSCONT or PWR LOSS is ON b. C41-F001A TANK OUTLET VALVE is OPEN c. SBLC PUMPS A d. RWCU isolates: <ul style="list-style-type: none"> • G33-F004 closed (SLC A initiated) e. Verify SLC is injecting into the RPV by observing the following: <ul style="list-style-type: none"> • SBLC pump discharge pressure exceeds reactor pressure • SBLC tank level lowering • Nuclear Instrumentation lowering <p>Report to CRS that SLC A has been initiated and is injecting into the RPV</p>
	ATC	<p>If directed, manually initiates Division 1 Suppression Pool Makeup IAW 04-1-01-E30-1, Suppression Pool Makeup System, Attachment V:</p> <ul style="list-style-type: none"> • Place the Division 1 SPMU MODE SEL handswitch to AUTO • Place the Division 1 SPMU DUMP TEST switch in TEST • Depress both Division 1 SPMU MAN INIT pushbuttons <p>Verify suppression pool level is increasing</p> <p>Report to CRS Division 1 Suppression Pool Makeup has been initiated</p>

Op-Test No: NRC LOT 12-2017Scenario No: 3Event No: 5/6 (cont.)Event Description: LOP/LOCA/HPCS Pump Trip/Division 1 ECCS fails to automatically initiate (cont.)**ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Verify Division 1 CTMT and DW hydrogen analyzers are operating and energize hydrogen igniters IAW 04-1-01-E61-1, Combustible Gas Control System, Attachment V:</p> <ol style="list-style-type: none"> 1. VERIFY Running A CTMT AND A DW H2 Analyzers OR Start by PLACING handswitch to START 2. VERIFY the amber light ON for the 0 – 10% scale on recorder 1E61-R602A 3. ENSURE A CTMT AND A DW H2 Analyzers have been in service for > 60 sec 4. Verify A CTMT AND A DW H2 Concentration is < 2.9% AND THEN <ul style="list-style-type: none"> • ENERGIZE Div 1 H2 Igniters by PLACING H2 IGNITER SYS A handswitch to ON <p>Reports to CRS that Division 1 CTMT and DW hydrogen igniters are energized</p>
	ATC	<p>Open 8 ADS/SRVs by placing the key-locked handswitch for the following valves to OPEN:</p> <ul style="list-style-type: none"> • B21-F041K • B21-F047L • B21-F041F • B21-F047A • B21-F051C • B21-F041D • B21-F051A • B21-F051B
<p>(CT-2) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ. (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)</p>		
	Notes	
Return to Page 33 for completion of ATC actions.		

INITIAL CONDITIONS

- A. Plant Status: 100% power, middle of cycle
- B. Tech. Spec. Limitations in effect: None
- C. Significant problems/abnormalities:
 - 1. TBCW Pump C is tagged out for motor oil replacement.
 - 2. CRD Pump B is tagged out of service for oil replacement in the speed increaser.
- D. Integrated Risk: Green
- E. Division Work Week: Division 2
- F. Evolutions/maintenance for the up-coming shift :
 - 1. Transfer RPS Bus B from normal to alternate power supply in preparation for maintenance on the RPS B Motor Generator.
 - 2. The Motor Generator will be tagged out on the next shift.
 - 3. No scram or isolation surveillances are in progress or planned for this shift.

Facility: Grand Gulf Nuclear Station Scenario No.: 4 Op-Test No.: GGNS 12-2017

Examiners: _____ Operators: _____

Event No.	Malf. No.	Event Type [†]	Event Description
1	N/A	N (ATC,CRS)	Withdraw control rods to 10% Bypass Valve position
2	fw115c	C (ATC,CRS) A (CREW)	Condensate Pump C trip
3	pte22n654c_a	TS (CRS) I (BOP,CRS)	HPCS CST Level Lo trip unit failing high
4	fw274	C(ATC,CRS) A(CREW)	Startup Level Control controller failing downscale (Feedwater Malfunctions ONEP)
** 5	r21142u r21134g n41140a	TS (CRS) C(BOP,CRS) A (CREW)	ESF Transformer 11 trip with failure of Div 1 DG to start and failure 15BA4 to re-energize (Loss of AC Power ONEP)
6	ms066a ms183a ms184a	M (CREW)	Main Steam Tunnel steam leak with failure of one steam line to isolate * (CT-1) When MSIVs fail to isolate, manually scram the reactor and close the MSIVs prior to Steam Tunnel temperature exceeding 250°F (Max Safe Temperature)
7	b21f065b_i fw171b	M (CREW)	Feedwater Line B line break inside Drywell with B21-F065B power loss
8	e22052	C (ATC,BOP,CRS)	HPCS Pump Trip * (CT-2) Inhibit ADS prior to automatic ADS valve opening during a LOCA * (CT-3) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)
9	r21219	C (BOP,CRS)	LPCS logic power failure * (CT-4) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig

[†] (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

***** Critical Task (As defined in NUREG 1021 Appendix D)

CREW notation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

Reason for Revision: Editorial changes to enhance Technical Specification actions.

**** - See Note on following page**

Revision 3

**** NOTE for Scenario 4 (Crew 1 – I1, R1, R2)**

During the ES-303 documenting and grading review of Scenario 4, the examiners determined that Crew 1 created a new Critical Task (CT) during their response to Event 5, ESF Transformer 11 trip with failure of Div 1 DG to start and failure of bus 15BA4 to re-energize (applicable procedure was the Loss of AC Power ONEP). During this event, the crew was expected to recognize available control room indications and diagnose a loss of Instrument Air (IA) to Containment. The crew was then expected to take necessary actions to restore IA to Containment with sufficient timeliness to prevent multiple control rods to drift and subsequent reactor SCRAM.

However, the crew failed to restore IA to Containment causing multiple control rods to drift, which presented a condition requiring a reactor SCRAM. Because the crew failed to take actions to prevent a challenge to plant safety (unintentional reactor protection system actuation), a post-scenario CT was identified by the examiners.

Specifically, the crew failed to recognize that the trip of ESF 11 transformer caused a loss of power to the bus that powers the Instrument Air to Containment Isolation valve (F0001). Per design, valve F0001 failed closed on loss of power, which caused a loss of IA to Containment. When IA pressure in Containment lowered, multiple control rods began to drift. The crew correctly recognized and diagnosed that multiple control rods were drifting and immediately SCRAMMED the reactor.

The Chief Examiner consulted with HQ staff and confirmed the crew response to Event 5 constituted a post-scenario CT.

Objectives: To evaluate the applicants' ability to operate the facility in response to the following evolutions:

1. Withdraw control rods to 10% Bypass Valve position
2. Respond to Condensate Pump B trip.
3. Respond to a HPCS CST Level LO trip unit failing high.
4. Respond to a Startup Level Control controller failing downscale.
5. Respond to an ESF Transformer 11 trip with a failure of Div 1 DG and failure of 15BA4 to re-energize.
6. Respond to an Main Steam Tunnel steam leak with failure of one steam line to isolate.
7. Respond to a Feedwater Line B line break inside the Drywell with B21-F065B power loss.
8. Respond to a HPCS Pump trip.
9. Respond to a LPCS logic power failure.

Initial Conditions:

- Reactor power is approximately 4% power
- Reactor pressure is 750 psig

Inoperable Equipment: None

Turnover:

- Reactor startup is in progress:
 - Step 45 of IOI 03-1-01-1, Attachment XV
 - Step 96 of Control Rod Movement Sequence is complete
 - SJAE B is in service
- Condensate System is lined up as follows:
 - Condensate Pumps A and C in service
 - Condensate Booster Pump C in service
 - Reactor Feed Pump A in service at approximately 950 psig discharge pressure
 - CFFF is in service
 - 4 Deep-Bed Condensate Demineralizers are in service
- Annunciators P680-4A2-C5, CONT ROD WITHDRAWAL BLOCK, and P680-4A1-A7, CRD DRIVE WTR TO RX ΔP HI, are flagged as expected annunciators

Planned activities for this shift are:

- Withdraw control rods until 10% Bypass Valve position on the lagging valve, then continue raising TURB STM PRESSURE DEMAND setpoint to 935 psig per step 45 of IOI 03-1-01-1, Attachment XV

Scenario Notes:

This scenario is a NEW Scenario.

Validation Time: 60 minutes

Quantitative Attributes Table			
Attribute	E3-304-1 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> • HPCS Pump Trip (E8) • LPCS Logic power failure (E9)
Abnormal Events	2-4	3	<ul style="list-style-type: none"> • Condensate Pump C trip (Feedwater Malfunctions ONEP) (E2) • Startup Level Control Controller fails downscale (Feedwater Malfunctions ONEP) (E4) • ESF Transformer 11 trip with failure of Div 1 DG to start and failure 15BA4 to re-energize (Loss of AC Power ONEP) (E5)
Major Transients	1-2	2	<ul style="list-style-type: none"> • Main Steam Tunnel steam leak with failure of one steam line to isolate (E6) • Feedwater Line B line break inside the Drywell with B21-F065B power loss (E7)
EOP entries requiring substantive action	1-2	3	<ul style="list-style-type: none"> • EP-4 • EP-2 • EP-3
EOP contingencies requiring substantive action	0-2	2	<ul style="list-style-type: none"> • EP-2 Alternate Level Control • EP-2 Emergency Depressurization
EOP based Critical Tasks	2-3	4	<ul style="list-style-type: none"> • (CT-1) When MSIVs fail to isolate, manually scram the reactor and close the MSIVs prior to Steam Tunnel temperature exceeding 250°F (Max Safe Temperature) • (CT-2) Inhibit ADS prior to automatic ADS valve opening during a LOCA • (CT-3) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ. (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task.) • (CT-4) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig
Normal Events	N/A	1	<ul style="list-style-type: none"> • Withdraw control rods to 10% Bypass Valve position (E1)
Reactivity Manipulations	N/A	0	<ul style="list-style-type: none"> • N/A
Instrument / Component failures	N/A	6	<ul style="list-style-type: none"> • Condensate Pump C trip (E2) • HPCS CST Level LO trip unit failing high (E3) • Startup Level Control controller failing downscale (E4) • ESF Transformer 11 trip with failure of Div 1 DG to start and failure 15BA4 to re-energize (Loss of AC Power ONEP) (E5) • HPCS Pump trip (E8) • LPCS logic power failure (E9)

Total Malfunctions	N/A	8	<ul style="list-style-type: none">• Condensate Pump C trip (E2)• HPCS CST Level LO trip unit failing high (E3)• Startup Level Control controller failing downscale (E4)• ESF Transformer 11 trip with failure of Div 1 DG to start and failure 15BA4 to re-energize (Loss of AC Power ONEP) (E5)• Main Steam Tunnel steam leak with failure of one steam line to isolate (E6)• Feedwater Line B line break inside the Drywell with a B21-F065B power loss (E7)• HPCS pump trip (E8)• LPCS logic power failure (E9)
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Top 10 systems and operator actions important to risk that are tested:

ADS (Event 7)

RHR (Event 9)

ESF Power (R20) (Event 5)

Condensate (Event 2)

Failure to manually depressurize with ADS/SRVs (Event 8)

Failure to align alternate power to 4.16 KV or 6.9KV buses (Event 5)

SCENARIO ACTIVITIES:

The plant is operating at 4% power during a reactor startup.

Event 1 - Withdraw control rods to 10% Bypass Valve position

After the crew assumes the shift, the ATC will withdraw control rods in accordance with Control Rod Movement Sequence IAW SOI 04-1-01-C11-2, Rod Control and Information System.

Event 2 – Condensate Pump C trip (Triggered by Lead Examiner)

At the direction of the Lead Examiner, Condensate Pump C will trip. CRS will enter 05-1-02-V-7, Feedwater System Malfunctions ONEP, and direct ATC to start Condensate Pump B IAW SOI 04-1-01-N19-1.

Event 3 - HPCS CST Level Lo trip unit failing upscale (Triggered by Lead Examiner)

After actions of Condensate Pump C trip are complete, HPCS CST Level LO trip unit, E22-N654C, will fail high. CRS will enter LCO 3.3.5.1 Condition A and, using Table 3.3.5.1-1, enter LCO 3.3.5.1 Condition D. CRS will direct BOP to transfer HPCS suction from CST to Suppression Pool IAW SOI 04-1-01-E22-1.

Event 4 - Startup Level Control controller failing downscale (Triggered by Lead Examiner)

After HPCS Pump suctions are swapped and Tech Specs addressed, the Startup Level Control Controller will begin failing low, resulting in RPV level lowering. ATC will take manual control of the Startup Level Controller and restore RPV level to normal band IAW 05-1-02-V-7, Feedwater System Malfunctions ONEP, immediate actions. CRS will enter 05-1-02-V-7, Feedwater System Malfunctions ONEP.

Event 5 – ESF Transformer 11 trip with failure of 15BA4 to re-energize (Triggered by Lead Examiner)

After RPV level is stabilized, ESF Transformer 11 will trip. Division 1 Diesel Generator will fail to start. CRS will enter 05-1-02-I-4, Loss of AC Power ONEP, 05-1-02-III-5, Automatic Isolations ONEP and 05-1-02-III-1, Inadequate Decay Heat Removal ONEP. BOP will re-energize Bus 15AA from ESF Transformer 12 and restore Instrument Air to CTMT by opening P53-F001. BOP will recognize the failure of 15BA4 to re-energize. CRS will enter LCO 3.8.7, Condition A, for LCC 15BA4 failure and LCO 3.8.1.B for failure of Division 1 Diesel Generator.

NOTE: CRS is not expected to formulate plans for recovery of Fuel Pool Cooling and Cleanup or Reactor Water Cleanup systems within the time frame of this scenario.

Event 6 - Main Steam Tunnel steam leak with failure of one steam line to isolate (Triggered by Lead Examiner)

When ESF Bus 15AA has been re-energized and Tech Specs addressed, a steam leak in the Auxiliary Building Main Steam Tunnel will occur. The 'A' Steam Line will fail to isolate. The CRS will enter EP-4 and direct the ATC to manually scram the reactor and the BOP to manually close B21-F022A, INBD MSIV, and B21-F028A, OTBD MSIV (**CT-1**). When the reactor is scrammed, the CRS will enter EP-2.

Event 7 - Feedwater Line B line break inside Drywell with B21-F065B power loss (Triggered automatically)

When the reactor is scrammed, an unisolable Feedwater Line 'B' break in the Drywell will occur. The BOP will secure all Condensate Pumps and close B21-F065B, FW INL SHUTOFF VLV. B21-F065B will not close due to a power loss when its CLOSE handswitch is depressed.

Event 8 – HPCS Pump Trip (Triggered automatically)

When Drywell pressure reaches 1.39 psig, HPCS Pump will trip and ESF Bus 16AB will lockout after 5 minutes causing a loss of all Division 2 ECCS. When CRS determines there are insufficient high pressure injection sources to maintain RPV level above -160" wide, enters Alternate Level Control contingency of EP-2. Crew will inhibit ADS to prevent automatic operation **(CT-2)**. When RPV level lowers to -160" wide range, the crew will emergency depressurize the RPV using ADS/SRVs **(CT-3)** and restore RPV level with Division 1 ECCS systems.

Event 9 - LPCS logic power failure (Triggered automatically)

When Drywell pressure rises to 1.39 psig, a LPCS logic power failure will occur. BOP will respond using ARI 04-1-02-1H13-P601-21A-H8, LPCS SYS OOSVC, and manually align Div 1 ECCS systems for injection to the RPV **(CT-4)**.

The exercise ends when emergency depressurization is complete and RPV level restoration is being controlled.

Critical Task	(CT-1) When MSIVs fail to isolate, manually scram the reactor and close the MSIVs prior to Steam Tunnel temperature exceeding 250°F (Max Safe Temperature)	(CT-2) Inhibit ADS prior to automatic ADS valve opening during a LOCA
EVENT	6	8
Safety Significance	<p>If a primary system is discharging into the secondary containment when this step of the procedure is reached, one of three conditions must exist:</p> <ul style="list-style-type: none"> • A primary system break cannot be isolated because system operation is required to assure adequate core cooling or to shut down the reactor. • No isolation valves exist upstream of a primary system break, or if isolation valves do exist, they cannot be closed because of some mechanical/ electrical/pneumatic failure. • The source of the discharge cannot be determined. <p>Since the RPV is the only significant source of heat, other than a fire, which might cause area temperatures to increase to their maximum safe operating values, the action of manually scrambling the reactor should terminate increasing secondary containment temperatures.</p> <p>If temperatures in any one of the areas listed in Table SC-1 of the Secondary Containment Control guideline approach their maximum safe operating value, adequate core cooling, containment integrity, safety of personnel, or continued operability of equipment required to perform EPG actions can no longer be assured.</p>	<p>Permitting automatic ADS initiation may be undesirable for the following reasons:</p> <ul style="list-style-type: none"> • ADS actuation can impose a severe thermal transient on the RPV and may complicate efforts to control RPV water level. • If only steam-driven systems are available for injection, ADS actuation may directly lead to loss of adequate core cooling and subsequent core damage. • The conditions assumed in the design of the ADS actuation logic (e.g., no operator action for 115 seconds after event initiation) may not exist when the actions specified in this step are being performed. • The operating crew can draw on much more information than is available to the ADS logic (e.g., equipment out of service for maintenance, operating experience with certain systems, probability of restoration of off-site power, etc.) and can better judge, based on instructions contained in the EPGs/SAGs, when and how to depressurize the RPV. <p>Defeating the logic relieves the operating crew of the task of detecting timer initiation during execution of the more complex steps of Contingency #1 and precludes unnecessary and unwanted automatic initiations. Subsequent steps provide explicit and detailed instructions for controlling RPV water level and specify when emergency depressurization is appropriate.</p>
Cueing	<p>Main Steam Tunnel temperature rising on PDS.</p> <p>Main Steam Tunnel temperature alarms on panel P601.</p> <p>MSIV open position indication on panel P601 and panel P858.</p>	Step L-5 of EP-2, RPV CONTROL, Alternate Level Control Contingency
Performance Indicator	<p>Operator places the Reactor Mode Switch to SHUTDOWN on panel P680.</p> <p>Operator manipulates switches for MSIVs for Steam Line 'A' to CLOSE on panel P601.</p>	Manipulation of ADS A and ADS B MANUAL INHIBIT switches on panel P601 vertical section.
Performance Feedback	<p>RPS Group lights de-energized on panel P680.</p> <p>Control Rod full –in indication on panel P680.</p> <p>Reactor power trend on nuclear instrumentation on panel P680.</p> <p>Green light indication energized and red light indication off for MSIVs for Steam Line 'A' on panel P601 and P858.</p>	<p>Inhibit switches click into INHIBIT position on panel P601 vertical section.</p> <p>White indicating light on ADS A and ADS B MANUAL INHIBIT switches illuminate.</p> <p>Receipt of ADS/SRV A and ADS/SRV B OOSVC alarms on panel P601/18A-H2 and P601/19A-H2.</p>
Justification for the chosen performance limit	If temperatures in any one of the areas listed in Table SC-1 of the Secondary Containment Control guideline approach their maximum safe operating value, adequate core cooling, containment integrity, safety of personnel, or continued operability of equipment required to perform EPG actions can no longer be assured.	The 115 second ADS timer allows sufficient time for the crew to recognize and override automatic operation of the system. As long as ADS is inhibited before ADS valves open, reactor pressure will not be reduced.
BWR Owners Group Appendix	App. B, step SC/T-4 and SC/T-4.1	App. B, step C1-1

Licensed Bases Documents	02-S-01-40, EP Technical Bases, Attachment VII, Step 8 through 10 UFSAR Chapter 15.6.4	02-S-01-40, EP Technical Bases, Attachment IV, Step L-5 UFSAR Chapter 15A.6.5.3
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*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

Critical Task	(CT-3) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)	(CT-4) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig
EVENT	8	9
Safety Significance	The MSCWL is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. When water level decreases below MSCWL with injection, clad temperatures may exceed 1500°F.	Failure to recognize the auto initiation not occurring, and failure to take manual action per Conduct of Ops will result in unavailability of safety-related equipment necessary to provide adequate core cooling, otherwise resulting in core damage and a large offsite release.
Cueing	Wide range indication (SPDS and PDS) falls to -160" and lowering trend continues, and, before -160" wide range is reached, initial conditions, field reports, and control room indications convey that adequate high pressure injection cannot be restored before level falls below -191" CFZ.	Indication of ECCS systems not initiating with initiation conditions present: <ul style="list-style-type: none"> • Indication of Drywell pressure ≥ 1.39 psig or RPV level ≤ -150.3" wide range • White light on LPCS/RHR A INIT RESET pushbutton extinguished on panel P601 • Green light on and red light extinguished on LPCS and RHR A pump handswitches on panel P601 • LPCS SYS OOSVC annunciator on panel P601
Performance Indicator	Manipulation of seven of the eight ADS/SRVs on panel P601: B21-F041K B21-F047L B21-F041F B21-F047A B21-F051C B21-F041D B21-F051A B21-F051B	Operator manually manipulates switches for Div 1 ECCS pumps and directs operators to manually open Div 1 ECCS injection valves from Division 1 Remote Shutdown Panel (RHR A) and locally (LPCS).
Performance Feedback	Crew will observe ADS/SRV light indication go from green to red, reactor pressure lowering on SPDS and panel P601 indications.	Red light on and green light extinguished on LPCS and/or RHR A pump and valve handswitches on panel P601. Rising level trend on indications on panel P601, PDS and SPDS. Rising flow rate on LPCS and/or RHR A flow indicators on panel P601, PDS, and SPDS
Justification for the chosen performance limit	The MSCWL (-191" CFZ) is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. Emergency depressurization is allowed when level goes below TAF (-160" wide range) and should be performed, if in the judgment of the CRS, level cannot be maintained above -191" CFZ. Since it is intended for the scenario supporting this CT to, early in the event, clearly indicate no high pressure injection systems can be made available to reverse the lowering level trend, the crew will have time to communicate and open 7 of 8 ADS/SRVs before -191" CFZ.	Attempting to align high pressure ECCS systems must be performed to determine their availability by the time TAF is reached in order to properly implement EP-2 decision steps regarding restoring and maintaining RPV level. Attempting to align low pressure ECCS systems can only be done once RPV pressure falls below the injection valve RPV pressure permissive and will only be effective once RPV pressure falls below the shutoff head of the respective ECCS pump. The reduction in RPV pressure will normally be via Emergency Depressurization, which is a separate critical task bounded by a minimum RPV level.
BWR Owners Group Appendix	App. B, Contingency #1 Step C1-4	App. B, Contingency 1, step C1-3

Licensed Bases Documents	02-S-01-40, EP Technical Bases, Attachment IV, Step L-7 – through L-13 UFSAR Chapter 15A.6.5.3	02-S-01-40, EP Technical Bases, Attachment IV, Step L-14 UFSAR Chapter 15A.6.5.3
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*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

Simulator Setup:

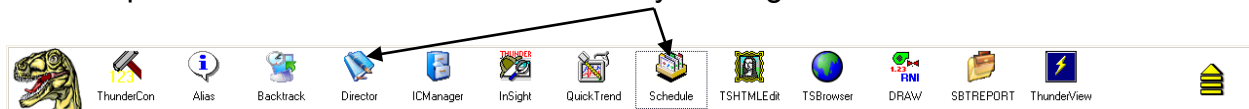
A. Initialization

1. Log off all simulator PDS and SPDS computers (PDS and SPDS must come up after the simulator load for proper operation).
2. Startup the simulator using Simulator Instructor's Job Aid section 7.3.

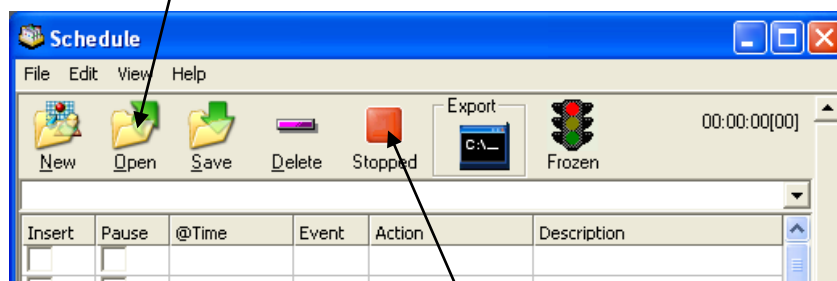
Note:

Prior to running the Schedule File, ensure no Event Files are Open. If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.

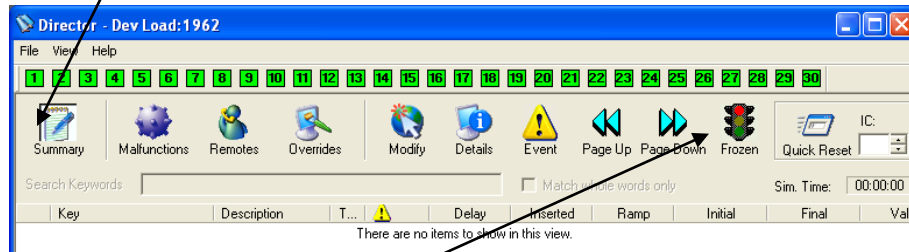


4. Set the Simulator to **IC-103** and perform switch check (Using Quick Reset in Director).
5. Click on "**Open**" in the Schedule window and Open Schedule File "**12-2017 NRC Exam Scenario 4.sch**" (in the Schedule Directory)



6. In Schedule window, click on the "**Stopped**" red block. The red block will change to a green arrow and indicate the scenario is active ("**Running**").

7. Click the Summary tab in the Director window. Verify the schedule files are loaded and opened per Section B below. (Note: Any actions in the schedule file without a specific time will not load into the director until triggered.)



8. Take the simulator out of freeze.
9. Log on to all simulator PDS and SPDS computers.
10. Verify or perform the following:
- IC-103
 - Ensure the correct rod movement sequence available at the P680 and marked up through Step 96 complete
 - Provide applicants with copy of 02-S-01-27, Operations Philosophy, Attachment 1, Control Rod Movement Expectation
 - Provide applicants with copy of 04-1-01-C11-2, Rod Control and Information System, Section 3, Precautions and Limitations, and Section 4.3, RC&IS Rod/Rod Gang Notch Out.
 - Ensure all procedures are marked as indicated for turnover conditions
 - Set IRM recorder scales
 - Advance all chart recorders and ensure all pens inking properly
 - Clear any graphs and trends off of SPDS
 - Place a tape flag on annunciator P680-4A2-C5, CONT ROD WITHDRAWAL BLOCK
 - Place a tape flag on annunciator P680-4A1-A7, CRD DRIVE WTR TO RX ΔP HI
 - Place red tag on Generator Disconnect pushbutton
11. Run through any alarms and ensure alarms are on. (**Note: On T-Rex, to verify alarms are ON, the indicator will indicate “Alarms On”**).
12. Place the simulator in Freeze.

File loaded verification:

Schedule - 12-2017 NRC Scenario 4.sch

File Edit View Help

New Open Save Delete Running Export Running 00:00:04[00]

Insert	Pause	@Time	Event	Action	Description
				^ 12-2017 NRC Scenario 4	
				^Event 1 - NORMAL - Withdraw Control Rods to 10% Bypass Valve P	
				^ Event 3 - INSTRUMENT - CST Level LO trip unit fails upscale	TS 3.3.5.1.D
✓		00:00:00		Insert malfunction PTE22N654C_a on event 3	override (fails high)
				^ Event 2 - COMPONENT - Condensate Pump C Trip	ABNORMAL (FW Malfunction)
✓		00:00:00		Insert malfunction fw115c on event 2	Condensate Pump C Trip
				^ Event 5 - COMPONENT - ESF 11 Lockout	ABNORMAL (Loss of AC & Isolation ONEP) TS 3.8.7.A
✓		00:00:00		Insert malfunction r21134g on event 5	ESF Transformer 11 Lockout
✓		00:00:00		Insert malfunction r21142u on event 5	480 V Bus 15BA4 Overcurrent Trip
✓		00:00:00		Insert malfunction n41140a on event 5	Emergency Diesel Generator A Fail to Start
				^ Event 4 - COMPONENT - Startup Level Controller fails low	ABNORMAL (FW Malfunctions)
✓		00:00:00		Insert malfunction fw274 to 4.5 in 180 on event 4	Feedwater Startup level Controller Fails Open (0-100%)
				^ Event 6 - MAJOR - Aux Stm Tunnel leak with MSIVs fail to close	
✓		00:00:00		Insert malfunction ms066a to 0.50000 on event 6	Steam Leak in Aux Bldg Tunnel: MSL A
✓		00:00:00		Insert malfunction ms183a	INBD MSIV 1B21-F022A, OVER-RIDE (fail as is)
✓		00:00:00		Insert malfunction ms184a	OTBD MSIV 1B21-F028A, OVER-RIDE (fail as is)
✓		00:00:00		Create event 29 iodb21m601a(1) == 1	INBD MSIV F022A HS to CLOSE
			29	Delete malfunction ms183a	INBD MSIV 1B21-F022A, OVER-RIDE (fail as is)
✓		00:00:00		Create event 28 iodb21m602a(1) == 1	OTBD MSIV F028A HS to CLOSE
			28	Delete malfunction ms184a	OTBD MSIV 1B21-F028A, OVER-RIDE (fail as is)
				^ Small Recirc Line Break LOCA - MAJOR	
✓		00:00:00		Create event 7 zdi1(645) == 1	Reactor Mode Switch to SHUTDOWN
✓		00:00:00		Insert malfunction rr063a to 1.00000 on event 7	Recirc Loop A Non-Isolable Suction Rupture
				^ Event 7 - COMPONENT - FW Line Break in DW w/F065B power loss	
✓		00:00:00		Insert malfunction b21F065b_j	override (loss of power when stroke)
✓		00:00:00		Insert malfunction fw171b to 50.00000 on event 7	Feedwater Line B ruptures inside Drywell.
Execute: Insert remote c11647 to RESET on event 8					
Execute: Create event 24 zdi1(645) == 1					
Execute: Create event 25 xcr4(41n048) > 160					
Execute: Insert malfunction e22052 on event 26					
Execute: Insert malfunction i21139f after 300 on event 26					

Ready NUM

Schedule - 12-2017 NRC Scenario 4.sch

File Edit View Help

New Open Save Delete Running Export Running

00:02:15[00]

Insert	Pause	@Time	Event	Action	Description
				^ Event 8 - COMPONENT - LPCS Logic Power Failure	
✓		00:00:00		Create event 26 xapt_dw_press > 1.39	
✓		00:00:00		Insert remote r21219 to OPEN on event 26	DC TO LPCS BKR 72-11A18 CONTROL
				^ 16 Bus Lockout	
✓		00:00:00		Insert malfunction r21139f after 300 on event 26	4160 V Bus 16AB Overcurrent Trip
				^Event 8 - HPCS Pump trip	
✓		00:00:00		Insert malfunction e22052 on event 26	High Pressure Core Spray Pump Trip
				^ Modify Steam Leak after alarm	
✓		00:00:00		Create event 25 xcr4t41n048 > 160	MN STM TNL AMBIENT TEMP HI alarm setpoint
			25	Modify malfunction ms066a to 0.30000	Steam Leak in Aux Bldg Tunnel: MSL A
				^ Modify Steam Leak after scram	
✓		00:00:00		Create event 24 zdl1(645) == 1	
			24	Modify malfunction ms066a to 0.80000 in 120	Steam Leak in Aux Bldg Tunnel: MSL A
				^ Reset RC&IS	
✓		00:00:00		Insert remote c11647 to RESET on event 8	RC&IS Reset
				^ Manually opening E21-F005 LPCS INJ VLV	
			9	Ramp E22VFM(1) to 1 in 90	
			10	Ramp E22VFM(1) to 0 in 90	

Execute: Insert remote c11647 to RESET on event 8
Execute: Create event 24 zdl1(645) == 1
Execute: Create event 25 xcr4t41n048 > 160
Execute: Insert malfunction e22052 on event 26
Execute: Insert malfunction r21139f after 300 on event 26

Ready

NUM

Director - Dev Load:1962

File View Help

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Summary Malfunctions Remotes Overrides Modify Details Event Page Up Page Down Running Quick Reset IC: 103

Search Keywords Match whole words only Sim. Time: 00:02:48

Key	Description	T...	Delay	Inserted	Ramp	Initial	Final	Value
PTE22N654C_a	override (fails high)	3	00:00:00	Inserted	00:00:00		Active	InActive
fw115c	Condensate Pump C Trip	2	00:00:00		00:00:00		Active	InActive
r21134g	ESF Transformer 11 Lockout	5	00:00:00		00:00:00		Active	InActive
r21142u	480 V Bus 15BA4 Overcurrent Trip	5	00:00:00		00:00:00		Active	InActive
n41140a	Emergency Diesel Generator A Fail to Start	5	00:00:00		00:00:00		Active	InActive
fw274	Feedwater Startup level Controller Fails Open (0-100%)	4	00:00:00		00:03:00		4.5	33.8734
ms066a	Steam Leak in Aux Bldg Tunnel: MSL A	6	00:00:00		00:00:00		0.5	0
ms183a	INBD MSIV 1B21-F022A, OVER-RIDE (fail as is)		00:00:00	00:00:00	00:00:00		Active	Active
ms184a	OTBD MSIV 1B21-F028A, OVER-RIDE (fail as is)		00:00:00	00:00:00	00:00:00		Active	Active
rr063a	Recirc Loop A Non-Isolable Suction Rupture	7	00:00:00		00:00:00		1	0
b21f065b_i	override (loss of power when stroke)		00:00:00	00:00:00	00:00:00		Active	Active
fw171b	Feedwater Line B ruptures inside Drywell.	7	00:00:00		00:00:00		50	0
r21139f	4160 V Bus 16AB Overcurrent Trip	26	00:05:00		00:00:00		Active	InActive
e22052	High Pressure Core Spray Pump Trip	26	00:00:00		00:00:00		Active	InActive
r21219	DC TO LPCS BKR 72-11A18 CONTROL	26	00:00:00		00:00:00		OPEN	CLOSE
c11647	RCIS Reset	8	00:00:00		00:00:00		RESET	NORM

Ready

NUM

Procedures that may be used in this scenario:

Procedure No.	Rev	Procedure Title
03-1-01-IOI-1	172	Cold Shutdown To Generator Carrying Minimum Load
04-1-01-C11-1	154	Control Rod Drive Hydraulic System
04-1-01-C41-1	123	Standby Liquid Control System
04-1-01-E12-1	147	Residual Heat Removal System
04-1-01-N21-1	74	Feedwater System
04-1-01-N32-2	33	Turbine Generator Control
04-1-01-R21-17	10	ESF Bus 17AC
04-1-02-1H13-P601	161	Alarm Response Instruction Panel No.: 1H13-P601
04-1-02-1H13-P680	233	Alarm Response Instruction Panel No.: 1H13-P680
04-1-02-1H13-P864	31	Alarm Response Instruction Panel No.: 1H13-P864
04-1-02-1H13-P870	154	Alarm Response Instruction Panel No.: 1H13-P870
04-S-02-SH13-P807	32	Alarm Response Instruction Panel No.: SH13-P807
05-1-02-I-1	130	Reactor Scram
05-1-02-I-2	37	Turbine and Generator Trips
05-1-02-I-4	51	Loss of AC Power
05-1-02-III-3	115	Reduction In Recirculation System Flow Rate
05-1-02-III-5	49	Automatic Isolations
05-1-02-IV-1	117	Control Rod / Drive Malfunctions
05-S-01-EP-1	36	Emergency / Severe Accident Procedure Support Documents
05-S-01-EP-2	45	RPV Control
Tech Spec 3.1.3		
Tech Spec 3.8.1		

Expected Alarms:

P680-4A2-C5, CONT ROD WITHDRAWL BLOCK
P680-1A-A3, CNDS PMP C TRIP
P601-16A-H5, HPCS SYS OOSVC
P680-3A-A3, RX LVL 40"/32" HI/LO
P680-2A-C9, DFCS TROUBLE
P807-4A-E6, ESF XFMR 11 TROUBLE
P807-4A-B2, ESF XFMR 11 LOCKOUT TRIP
P807-1A-B5, ESF DIST BUSES INCM FDR 152-1902
P807-1A-B4, ESF DIST BUSES INCM FDR 152-1901
P864-1A-A3, 4.16KV BUS 15AA UNDERVOLTAGE
P864-1A-D1, DG 11 AUTO START NOT AVAIL
P864-1A-D2, DIV 1 DSL GEN TROUBLE
P864-1A-D3, 480V LCC 15BA1 UNDERVOLT
P864-1A-D4, 480V LCC 15BA2 UNDERVOLT
P864-1A-F4, 480V LCC 15BA6 UNDERVOLT
P864-1A-F3, 480V LCC 15BA5 UNDERVOLT
P864-1A-E4, 480V LCC 15BA4 UNDERVOLT
P864-1A-E3, 480V LCC 15BA3 UNDERVOLT
P680-5A-C4, SCRAM PILOT VLV AIR HDR PRESS LO
P680-4A2-A4, RC&IS INOP
P864-1A-A4, 4.16KV BUS 15AA INCM FDRS TRIP
P807-3A-H1, STATIC INVRTR 1Y80 TROUBLE
P807-3A-G4, STATIC INVRTR 1Y79 TROUBLE
P807-3A-G3, STATIC INVRTR 1Y98 TROUBLE
P807-1A-A6, ESF XFMR 11 INCM FDR 552-1104 TRIP
P601-18A-A3, MSL PIPE TNL CH-B TEMP HI
P601-18A-A4, MSL PIPE TNL CH-C TEMP HI
P601-19A-A3, MSL PIPE TNL CH-A TEMP HI
P601-19A-A4, MSL PIPE TNL CH-D TEMP HI

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>4</u>	Event No: <u>1</u>
Event Description: <u>Withdraw control rods to 10% Bypass Valve position</u>			
NOTE to Examiner: Obtaining 10% Bypass Valve position is not required to satisfy this event. Next event can be triggered when Examiner is satisfied with the applicants' performance.			
TIME	Position	Applicant's Actions or Behavior	
	ATC	<p>Withdraw control rods IAW the approved Control Rod Movement Sequence, starting at Step 97, and 04-1-01-C11-2, Rod Control and Information System, until the lagging Main Turbine Bypass Valve is 10% open</p> <p>4.3.2.a Select either INDIVIDUAL OR GANG DRIVE mode using DRIVE MODE pushbutton on OCM and check that SELECTED DRIVE mode indicating comes ON</p> <p>ATC selects INDIVIDUAL DRIVE mode using DRIVE MODE pushbutton and verifying INDIV DRIVE light energized.</p> <p>Performs the following actions to withdraw Control Rods 20-21EE, 44-45LL, 44,21LE and 20-45EL from position 04 to position 08</p> <p>4.3.2.b Select rod/rod gang to be moved by depressing corresponding ROD SELECT pushbuttons on Rod Select panel on 1H13-P680</p> <p>4.3.2.c Check rod position(s) is displayed for selected rod/rod gang on RDM</p> <p style="text-align: center;">NOTE</p> <p>A rod gang selection should have the GANG position displayed also on the RDM.</p> <p style="text-align: center;">CAUTION</p> <p>If Control Rod blocks occur, the cause must be determined and corrective action taken before further Control Rod withdrawal can take place for that Control Rod.</p> <p>4.3.2.d Check that selected rod/rod gang is allowed to be withdrawn by RPC by:</p> <ul style="list-style-type: none"> • Observing WITHDRAW BLOCK light is OFF <p>OR</p> <ul style="list-style-type: none"> • Depressing WITHDRAW OK pushbutton on OCM <p>AND</p> <ul style="list-style-type: none"> • observing a green status light on RDM for that rod/rod gang <p>4.3.2.e Momentarily depress WITHDRAW pushbutton and observe the following:</p> <ol style="list-style-type: none"> (1) The IN light energizes momentarily, then goes OFF (2) The DATA FAULT light may flash ON, then OFF if RAW DATA is selected (3) The OUT light will come ON, then go OFF (4) SETTLE light comes ON for approximately 6.0 seconds (5) ROD/GANG position on RDM shows new ROD/GANG position (6) Monitor nuclear instrumentation for changes in indication <p>4.3.2.g Withdraw each rod/rod gang in accordance with selected sequence provided by Reactor Engineering</p>	

Op-Test No: <u>NRC LOT 12-2017</u>			Scenario No: <u>4</u>			Event No: <u>1 (cont.)</u>		
Event Description: <u>Withdraw control rods to 10% Bypass Valve position (cont.)</u>								
TIME	Position	Applicant's Actions or Behavior						
	ATC	Monitors position of Bypass Control Valves during control rod movement						
	BOP	Peer checks Control Rod selection while monitoring reactor parameters						
		END OF EVENT						
	Notes							
	Lead Examiner: Cue to proceed to the next event.							

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 2Event Description: **Condensate Pump C trip****At the direction of the Lead Examiner, trigger Event 2 to cause the Condensate Pump C to trip.**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Respond to alarm P680-1A-A3, CNDS PMP C TRIP and report to CRS</p> <p>3.2 Start an idle Condensate pump, if available</p> <p>3.3 Monitor N19-R609, CNDS BST PMP SUCT HDR PRESS, on 1H13-P680-1B</p> <p>3.4 Reduce Reactor Power as necessary to maintain Condensate Booster pump suction pressure > 100 psig or to stabilize Feedwater flow</p> <p>3.5 Refer to ONEP 05-1-02-V-7, Feedwater System Malfunctions</p> <p>4.1 Close 1N19-F024C, CNDS PMP C DISCH VLV, on 1H13-P680</p> <p>4.2 Identify and correct cause of pump trip</p>
	CRS	<p>Enters ONEP 05-1-02-V-7, Feedwater Malfunctions</p> <p>Steps 3.1 through 3.4 are N/A</p> <p>3.5 Start standby Condensate, Condensate Booster, and Reactor Feed Pumps as necessary per applicable SOI</p> <p>Directs ATC to start Condensate Pump B IAW SOI 04-1-01-N19-1, Section 4.3</p>
	ATC	<p>Starts Condensate Pump B IAW SOI 04-1-01-N19-1, Section 4.3:</p> <p>4.3.2.a(3) To prevent damaging Condensate Pump discharge pressure indicator (PI-R002B), close the Instrument Isolation valve for the pressure indicator associated with the Condensate pump to be started</p> <p>Dispatch plant operator to close Condensate Pump B discharge pressure indicator, PI-R002B, Instrument Isolation valve</p> <p>NOTE to Examiners: Step 4.3.2.a(3) may be N/A'd by the CRS.</p> <p>4.3.2.a(4) Start Condensate Pump C003B by depressing CNDS PMP B START pushbutton</p> <p>4.3.2.a(5) After a five-second time delay, Condensate Pump Discharge Valve F024B will open</p> <p>(a) If it did not open, then open valve by depressing CNDS PMP B DISCH VLV-JOG OPEN pushbutton</p> <p>4.3.2.a(6) Check discharge pressure is approximately 250 psig on CNDS PMP DISCH HDR PRESS indicator, PI-R607</p> <p>4.3.2.a(7) Check total condensate flow by observing CNDS PMPS MIN FLO indicator FI-R621, for minimum pump flow indication ≥ 5.0 mlbm/hr for 2-pump operation OR ≥ 7.5 mlbm/hr for 3-pump operation</p> <p>4.3.2.a(9) Open Condensate Pump discharge pressure indicator (PI-R002B) Instrument Isolation valve, which was closed in Step 4.3.2.a(3)</p>

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 2 (cont.)Event Description: **Condensate Pump C trip (cont.)**

TIME	Position	Applicant's Actions or Behavior
	BOOTH	<p>If contacted to close Condensate Pump B discharge pressure indicator, PI-R002B, Instrument Isolation valve, after 2 minutes report as plant operator that valve is closed</p> <p>If contacted to open Condensate Pump B discharge pressure indicator, PI-R002B, Instrument Isolation valve, after 1 minutes report as plant operator that valve is open</p>
	CREW	<p>Dispatch plant operator / electrical maintenance to investigate Condensate Pump C trip</p> <p>Dispatch plant operator to perform post-start checks on Condensate Pump B</p>
	BOOTH	<p>If contacted, after 2 minutes report as plant operator that breaker 152-1409 for Condensate Pump C has tripped on timed overcurrent and electrical maintenance is investigating</p> <p>If contacted, after 2 minutes report as plant operator that post-start checks on Condensate Pump B are satisfactory</p>
		END OF EVENT
	Notes	
	Lead Examiner: Cue to proceed to the next event	

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 3Event Description: **HPCS CST Level Lo trip unit failing upscale****At the direction of the Lead Examiner, trigger Event 3 to cause the HPCS CST Level Lo trip unit to fail upscale**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Respond to alarm P601-16A-H5, HPCS SYS OOSVC and report to CRS</p> <p>3.1 IDENTIFY the problem from the amber status lights</p> <p>Report TRIP UNIT IN CAL/GR FAIL status light energized on P601-16B</p> <p>3.2 ATTEMPT to determine the cause of the status alarm</p> <p>Checks status of HPCS trip units on panel P625 and determine trip unit E22-N654C, CST LEVEL LO, is in gross fail high</p> <p>May reset gross fail on trip unit, but trip unit will still indicate upscale high</p>
	CREW	Contacts I&C to troubleshoot problem with trip unit E22-N654C, CST LEVEL LO
	BOOTH	If contacted, after 2 minutes as I&C report that trip unit E22-N654C is failed full upscale and electrical maintenance will generate a Condition Report to troubleshoot
	CRS TS	<p>Enters LCO 3.3.5.1, Emergency Core Cooling System (ECCS) Instrumentation:</p> <p>Condition A: One or more required channels inoperable.</p> <ul style="list-style-type: none"> A.1 Enter the Condition referenced in Table 3.3.5.1-1 for the channel. Affected Function: 3d (Condition D) <p>Condition D: As required by Required Action A.1 and referenced in Table 3.3.5.1-1</p> <p>D.1 NOTE Only applicable if HPCS pump suction is not aligned to the suppression pool</p> <p>Declare HPCS inoperable (1 hour from discovery of loss of HPCS initiation capability)</p> <p>NOTE to Examiners: Per TS Bases, HPCS initiation capability for Function 3d refers to HPCS suction swap capability</p> <p>AND</p> <p>D.2.1 Place trip unit E22-N654C, CST LEVEL LO, in trip condition (24 hours)</p> <p>OR</p> <p>D.2.2 Align the HPCS pump suction to the suppression pool (24 hours)</p>
	CRS	Directs BOP to align HPCS pump suction to the suppression pool IAW 04-1-01-E22-1
	BOOTH	If CRS decides to delay swapping HPCS suction, coordinate with Lead Examiner to prompt CRS as Shift Manager that HPCS suction needs to be swapped to support troubleshooting E22-N654C.

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 3 (cont.)Event Description: **HPCS CST Level Lo trip unit failing upscale (cont.)**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Aligns HPCS pump suction to the suppression pool per SOI 04-1-01-E22-1, Section 5.4:</p> <p>5.4.2.a PLACE HPCS MOV TEST handswitch on 1H13-P601-16B to TEST position</p> <p>5.4.2.b VERIFY that "HPCS SYS OOSVC" annunciator (1H13-P601-16A-H5) alarms</p> <p>5.4.2.c VERIFY that status light HPCS MOV IN TEST STATUS (1H13-P601-16B) comes On</p> <p>5.4.2.d CHECK E22-F001, HPCS PMP SUCT FM CST, is OPEN</p> <p>5.4.2.e CHECK E22-F015, HPCS PMP SUCT FM SUPP POOL, is CLOSED</p> <p>5.4.2.f OPEN E22-F015, HPCS PMP SUCT FM SUPP POOL</p> <p>5.4.2.g WHEN E22-F015 was OPENED, THEN ENSURE E22-F001, HPCS PMP SUCT FM SUPP POOL, CLOSED</p> <p>5.4.2.h PLACE HPCS MOV TEST handswitch on 1H13-P601-16B to NORM position</p> <p>5.4.2.i VERIFY that "HPCS SYS OOSVC" annunciator (1H13-P601-16A-H5) clears</p> <p>5.4.2.j VERIFY that status light HPCS MOV IN TEST STATUS (1H13-P601-16B) goes OFF</p> <p>NOTE to Examiners: HPCS SYS OOSVC annunciator will not clear unless trip unit gross fail is reset</p>
		END OF EVENT
	Notes	
	Lead Examiner: Cue to proceed to the next event	

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 4Event Description: **Startup Level Control controller failing downscale****At the direction of the Lead Examiner, trigger Event 4 to cause the Startup Level Control controller to begin failing downscale**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Startup Level Control Valve controller failing downscale <ul style="list-style-type: none"> P680-3A-A3, RX LVL 40"/32" HI/LO Startup Level Controller C34-LK-R602 on P680-1D output lowering
	CRS	Enters ONEP 05-1-02-V-7, Feedwater Malfunctions 2.2 IF Feedwater System Controller malfunction has occurred, THEN PLACE affected controller in MANUAL AND OPERATE as necessary to control reactor water level Directs ATC to place Startup Level Control controller in MANUAL and control RPV level between +32 inches and + 42 inches narrow range
	ATC	Places Startup Level Control controller in MANUAL and operates as necessary in MANUAL to control RPV level between +32 inches and +42 inches narrow range IAW ONEP 05-1-02-V-7, Feedwater Malfunctions <ul style="list-style-type: none"> P680-2A-C9 DFCS TROUBLE alarm expected
	CREW	Contacts Work Control/I&C to investigate failure of Startup Level Control Valve controller
	BOOTH	If contacted, as I&C report after 2 minutes that Startup Level Control Valve controller will require a Condition Report for troubleshooting
		END OF EVENT
	Notes	
	Lead Examiner: Cue to proceed to the next event	

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 5Event Description: **ESF Bus 15AA feeder breaker trip with failure of 15BA4 to re-energize****At the direction of the Lead Examiner, trigger Event 5 to cause a ESF Bus 15AA feeder breaker trip and 15BA4 failure to re-energize**

TIME	Position	Applicant's Actions or Behavior
	BOP	Respond and report ESF Transformer 11 trip and loss of power to ESF Bus 15AA Recognize and reports Division 1 Diesel Generator failed to start and restores 15AA bus voltage from ESF Transformer 12. Verifies that ESF Bus 15AA voltage returns to normal Recognize and report failure of MCC 15BA4 to re-energize
	CRS	Enters ONEP 05-1-02-I-4, Loss of AC Power Enters ONEP 05-1-02-III-5, Automatic Isolations Directs BOP to perform applicable subsequent actions of 05-1-02-I-4, Loss of AC Power ONEP Directs BOP to recover systems per 05-1-02-III-5, Automatic Isolations ONEP
	CREW	Dispatch plant operator / electrical maintenance to investigate trip of ESF Transformer 11. Dispatch plant operator to investigate trip of Division 1 Diesel Generator.
	ATC	Recognize and report RC&IS Channel 1 inoperative Recognize and report loss of Fuel Pool Cooling and Cleanup system Recognize and report loss of Reactor Water Cleanup system
	CRS	Enters Inadequate Decay Heat Removal ONEP, 05-1-02-III-1, for loss of spent fuel pool cooling NOTE to Examiners: The CRS may direct frequent monitoring of spent fuel pool temperature but is not expected to formulate plans for recovery of FPCCU or RWCU within the time frame of this scenario
	CREW	Contacts I&C to reset RC&IS INOP alarm
	BOOTH	If contacted as I&C to reset RC&IS, after 2 minutes trigger Event 7, then report to Control Room that RC&IS is reset If dispatched, as operator, after 2 minutes, report that Division 1 Diesel Generator is tripped on low control air pressure (P400-1A-F1). If asked, report control air pressure is 35 psig. If dispatched, as operator, after 2 minutes, report that ESF Transformer 11 has tripped on sudden pressure. Electrical Maintenance is generating a Condition Report to troubleshoot

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 5 (cont.)Event Description: **ESF Bus 15AA feeder breaker trip with failure of 15BA4 to re-energize (cont.)**

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Performs applicable subsequent actions of 05-1-02-I-4, Loss of AC Power ONEP</p> <p>3.1.2 IF the affected bus is re-energized, THEN RECOVER systems as follows:</p> <p>a. RESTORE Instrument Air and Plant Service Water per Attachment II of ONEP 05-1-02-III-5, Automatic Isolations</p> <p>Per Attachment II of ONEP 05-1-02-III-5, Automatic Isolations:</p> <p>Restore Auxiliary Building Isolations as follows:</p> <p>1) IF Plant Air Compressors are available, THEN OPEN/CHECK OPEN the following Instrument Air valves on 1H13-P870:</p> <p><u>Section 3C</u></p> <ul style="list-style-type: none"> • P53-F001 (After 30 sec T.D.) <p>2) N/A</p> <p>3) N/A</p> <p>4) The following valves <u>Will NOT</u> close due to being gagged open. As time permits, give these valves an <u>OPEN</u> signal to lift actuator off of gag</p> <p><u>Section 3C</u></p> <ul style="list-style-type: none"> • P53-F026A <p>b. RESTORE other systems per ONEP 05-1-02-III-5, Automatic Isolations</p> <p>Restores system from isolations due to loss of Div 1 power per 05-1-02-III-5, Automatic Isolations ONEP Attachment I and subsequent actions and respective system SOIs</p> <p>Systems include:</p> <ul style="list-style-type: none"> • P45, Floor and Equipment Drains System • P11, Condensate and Refueling Water Transfer System • T41, Auxiliary Building Ventilation System • T42, Fuel Pool Ventilation System • P52, Service Air System • P21, Makeup Water Treatment System • P66, Domestic Water System <p>NOTE to Examiners: Not all systems will be restored during the timeframe of this scenario</p>

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 5 (cont.)Event Description: **ESF Bus 15AA feeder breaker trip with failure of 15BA4 to re-energize (cont.)**

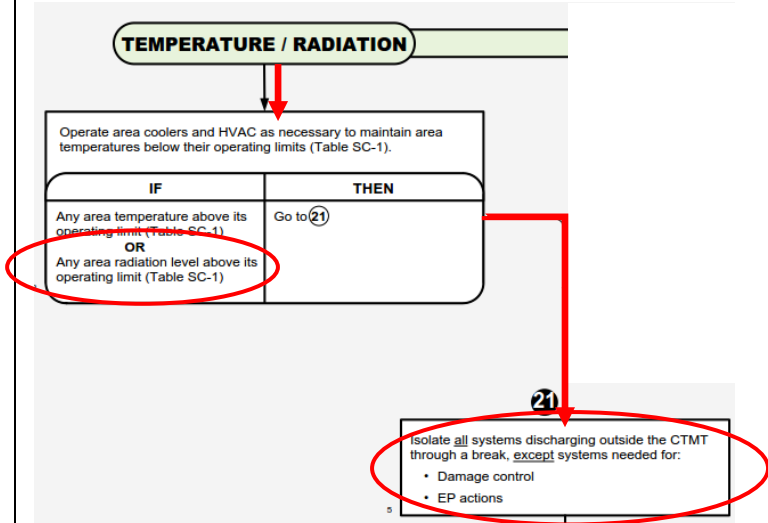
TIME	Position	Applicant's Actions or Behavior
	BOP	<p>3.1.5 IF Aux building isolation dampers closed on loss of power, THEN DEPRESS SGTS DIV 1(2) MAN INIT pushbuttons (A AND C for Division 1, B AND D for Division 2)</p> <p>3.1.7 N/A</p> <p>3.1.8 On 1H13-P601, RESET respective DIV 1(2) NSSSS isolation logic, IF possible</p> <p>3.1.12 NOTIFY Chemistry to ensure SGTS Sping AND AXM Radiation Monitors are functioning correctly after loss of power</p>
	CRS	<p>Directs BOP to evaluate Control Room panels to determine what equipment is affected by the loss of 15BA4</p> <p>Uses SOI 04-1-01-R21-15 to determine what equipment is affected by the loss of 15BA4</p>
	BOP	<p>Evaluates Control Room panels to determine what equipment is affected by the loss of 15BA4</p> <p>Affected systems included:</p> <ul style="list-style-type: none"> • Div 1 Drywell Cooling fans and coolers • CRD A Oil Pump • CCW and SSW to Fuel Pool Cooling and Cleanup Heat Exchangers • Standby Gas Treatment A • SLC Operating & Mixing Heaters • Drywell Purge Compressor Aux Oil Pump • LPCS Room Cooler Fan • ESF Room Cooler Fans • SSW Cooling to Drywell Purge Compressor A

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 5 (cont.)Event Description: **ESF Bus 15AA feeder breaker trip with failure of 15BA4 to re-energize (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CREW	Dispatch operator to investigate trip of breaker 52-15401, LCC 15BA4 Feeder Breaker Dispatch Electrical Maintenance to investigate trip of breaker 52-15401, LCC 15BA4 Feeder Breaker
	BOOTH	If dispatched, as operator report after 2 minutes that breaker 52-15401 is tripped free and a Condition Report will be required to troubleshoot
	CRS TS	<p>Enters LCO 3.8.1, AC Sources – Operating:</p> <p>Condition B: One required DG inoperable for reasons other than Condition F.</p> <ul style="list-style-type: none"> B.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuits (1 hour and every 8 hours) <p>AND</p> <ul style="list-style-type: none"> B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable (4 hours of discovery of Condition B with inoperability of redundant required feature(s)) <p>AND</p> <ul style="list-style-type: none"> B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failures (24 hours) <p>OR</p> <ul style="list-style-type: none"> B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s) (24 hours) <p>AND</p> <ul style="list-style-type: none"> B.4 Restore required DG to OPERABLE status (72 hours)
	CRS TS	<p>Enters LCO 3.8.7, Distribution Systems – Operating</p> <p>Condition A: One or more Division 1 or 2 AC electrical power distribution subsystem(s) inoperable.</p> <ul style="list-style-type: none"> A.1 Restore Division 1 and 2 AC electrical power distribution subsystems to OPERABLE status (8 hours)
		END OF EVENT
	Notes	
	Lead Examiner: Cue to proceed to the next event.	

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 6

Event Description: **Main Steam Tunnel steam leak with failure of one steam line to isolate**
At the direction of the Lead Examiner, trigger Event 6 to cause a steam leak in the Aux Steam Tunnel with a failure of one steam line to isolate

TIME	Position	Applicant's Actions or Behavior																								
	BOP	<p>Recognize and report Main Steam Tunnel high temperature</p> <ul style="list-style-type: none"> P601-18A-A3, MSL PIPE TNL CH-B TEMP HI P601-18A-A4, MSL PIPE TNL CH-C TEMP HI P601-19A-A3, MSL PIPE TNL CH-A TEMP HI P601-19A-A4, MSL PIPE TNL CH-D TEMP HI <p>Identifies and reports to CRS alarms are EP-4 entry condition</p> <p>Reports Main Steam Tunnel temperature and trend to CRS using EP-4 Operating Guide</p> <p>NOTE to Examiners: ATC may recognize rising trend on PDS computer prior to alarms.</p>																								
	CREW	Recognize and report 'A' Main Steam Line failed to isolate																								
	CRS	<p>Enters EP-4, Auxiliary Building Control</p>  <p>Table SC-1 Aux Building Area Parameters</p> <table> <thead> <tr> <th>Area</th><th>Operating Limit</th><th>Max Safe Value</th></tr> </thead> <tbody> <tr> <td colspan="3">TEMPERATURE</td></tr> <tr> <td>MSL PIPE TUNNEL TEMP</td><td>185°F (P601-19A/18A-A3/A4)</td><td>250°F (E31-N604A,B,C,D,E,F)</td></tr> <tr> <td>RHR-A EQUIP AREA TEMP</td><td>165°F (P601-20A-B1)</td><td>225°F (E31-N608A, N610A)</td></tr> <tr> <td>RHR-B EQUIP AREA TEMP</td><td>165°F (P601-20A-B1)</td><td>225°F (E31-N608B, N610B)</td></tr> <tr> <td>RCIC EQUIP AREA TEMP</td><td>185°F (P601-21A-G3)</td><td>212°F (E31-N602A/B)</td></tr> <tr> <td>RWCU-PUMP ROOM 1 TEMP</td><td>170°F (P680-11A-A1)</td><td>NA</td></tr> <tr> <td>RWCU-PUMP ROOM 2 TEMP</td><td>170°F (P680-11A-A2)</td><td>NA</td></tr> </tbody> </table> <p>Directs ATC to place the Mode Switch to SHUTDOWN</p> <p>Directs BOP to isolate the 'A' Main Steam Line</p>	Area	Operating Limit	Max Safe Value	TEMPERATURE			MSL PIPE TUNNEL TEMP	185°F (P601-19A/18A-A3/A4)	250°F (E31-N604A,B,C,D,E,F)	RHR-A EQUIP AREA TEMP	165°F (P601-20A-B1)	225°F (E31-N608A, N610A)	RHR-B EQUIP AREA TEMP	165°F (P601-20A-B1)	225°F (E31-N608B, N610B)	RCIC EQUIP AREA TEMP	185°F (P601-21A-G3)	212°F (E31-N602A/B)	RWCU-PUMP ROOM 1 TEMP	170°F (P680-11A-A1)	NA	RWCU-PUMP ROOM 2 TEMP	170°F (P680-11A-A2)	NA
Area	Operating Limit	Max Safe Value																								
TEMPERATURE																										
MSL PIPE TUNNEL TEMP	185°F (P601-19A/18A-A3/A4)	250°F (E31-N604A,B,C,D,E,F)																								
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RWCU-PUMP ROOM 1 TEMP	170°F (P680-11A-A1)	NA																								
RWCU-PUMP ROOM 2 TEMP	170°F (P680-11A-A2)	NA																								

(CT-1) When MSIVs fail to isolate, manually scram the reactor and close the MSIVs prior to Steam Tunnel temperature exceeding 250°F (Max Safe Temperature)

Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>4</u>	Event No: <u>6 (cont.)</u>
Event Description: <u>Main Steam Tunnel steam leak with failure of one steam line to isolate (cont.)</u>			
TIME	Position	Applicant's Actions or Behavior	
	ATC	Places Mode Switch to SHUTDOWN Perform immediate operator actions of ONEP 05-1-02-I-1, Reactor Scram: 2.1 CONFIRM all Control Rods are fully inserted 2.2 CONFIRM Reactor power decreasing	
	BOP	Isolates 'A' Main Steam Line by placing B21-F022A, MSL A DRWL INBD ISOL, and B21-F028A, MSL A CTMT OTBD ISOL, handswitches to CLOSE Verify and report to CRS that 'A' Main Steam Line is isolated	
(CT-1) When MSIVs fail to isolate, manually scram the reactor and close the MSIVs prior to Steam Tunnel temperature exceeding 250°F (Max Safe Temperature)			
	CRS	Enters ONEP 05-1-02-I-1, Reactor Scram Enters EP-2, RPV Control	
		END OF EVENT	
	Notes		
<u>NOTE: Next Event will automatically trigger when Mode Switch is placed in SHUTDOWN.</u> NOTE to Examiners: CRS actions start on the next page of the Scenario Guide ATC actions start on Page 36 of the Scenario Guide BOP actions start on Page 41 of the Scenario Guide			

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss**

When the Mode Switch is placed in SHUTDOWN, Event 7 will automatically trigger to cause a Feedwater Line B break inside the Drywell with B21-F065B power loss. (A small recirc break is also added to represent a leak downstream of the feedwater check valve)

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Feedwater Line B break inside Drywell
	CREW	Recognize and report high drywell pressure
	CRS	<p>Enters EP-2, RPV Control</p> <p>Table L-1 Preferred Injection Systems</p> <ul style="list-style-type: none"> • Condensate/Feedwater • CRD <ul style="list-style-type: none"> ➤ Maximize CRD for flow. • RCIC <ul style="list-style-type: none"> ➤ Use CST suction if available. ➤ OK to defeat isolations and interlocks.Att 1, 3 • HPSCS <ul style="list-style-type: none"> ➤ Use CST suction if available.Att 4 ➤ OK to defeat interlocks.Att 4 • LPCS <ul style="list-style-type: none"> • LPCI <ul style="list-style-type: none"> ➤ Inject through the HX as soon as possible. • RHR through shutdown cooling return <ul style="list-style-type: none"> ➤ Inject through the HX as soon as possible. ➤ OK to defeat isolations.Att 12 <p>Directs BOP to monitor and report RPV level</p> <p>Directs ATC to verify high drywell pressure initiations, isolations and emergency diesel generators</p>

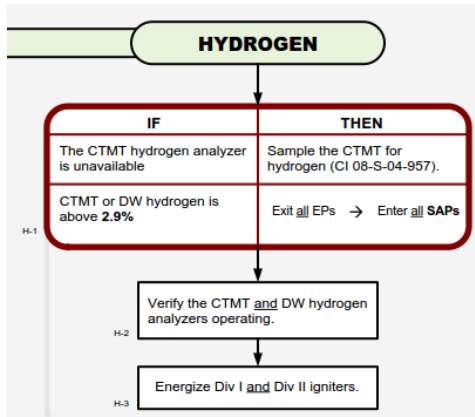
Op-Test No: <u>NRC LOT 12-2017</u>		Scenario No: <u>4</u>	Event No: <u>8/9</u>
Event Description: <u>HPCS Pump trip / LPCS logic power failure</u>			
TIME	Position	Applicant's Actions or Behavior	
	CREW	Recognize and report HPCS Pump trip Recognize and report LPCS Logic Power failure Recognize and report ESF Bus 16AB lockout	
	CRS	Direct BOP to take actions for LPCS logic power failure IAW ARI 04-1-02-1H13-P601-21A-H8, LPCS OOSVC Direct ATC to maximize CRD for flow Directs I&C to install Attachment 12 for RHR Direct ATC to restore the Auxiliary Building	
	CREW	Dispatch plant operator/electrical maintenance to investigate HPCS pump trip Dispatch plant operator/electrical maintenance to investigate ESF Bus 16AB lockout	
	BOOTH	<u>Role Play:</u> If dispatched, as plant operator/electrical maintenance report after 2 minutes that HPCS pump breaker, 152-1702, is tripped and electrical maintenance is investigating If dispatched, as plant operator/electrical maintenance report after 3 minutes that ESF Bus 16AB has an overcurrent lockout and electrical maintenance is investigating When directed to install Attachment 12, trigger <u>Event 12</u> and inform CRS when Attachment indicates DONE	

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8 (cont.)Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss/HPCS Pump trip (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Recognize RPV level lowering and enters Alternate Level Control leg of EP-2
		<p>Alternate Level Control</p> <p>IF CTMT pressure cannot be maintained below 22.4 psig THEN Terminate RPV injection from external sources not needed for core cooling. Go to ①</p> <p>IF RPV level can be restored and maintained above -160 in. THEN Go to ①</p> <p>IF Less than 2 Injection Subsystems can be lined up THEN Commence lining up as many Table L-2 systems as possible.</p> <p>WHEN RPV level drops to -160 in.</p> <p>BEFORE RPV level drops to -191 in.</p> <p>EMERGENCY DEPRESSURIZATION IS REQUIRED: Exit Pressure → Enter Emergency Depressurization</p> <p>Injection Subsystems</p> <ul style="list-style-type: none"> Condensate HPCS LPCS RHR-A (LPCI or SDC) RHR-B (LPCI or SDC) LPCI-C <p>Table L-2 Alternate Injection Systems</p> <ul style="list-style-type: none"> RHR Service Water Crosstie Condensate Transfer..... Att 25 Fire System..... Att 26 ECCS jockey pumps SLC test tank..... Att 27 SLC boron tank Portable pumps..... FSG-003 RCIC using suction from the UCP..... FSG-002 RCIC from outside the Control Room..... FSG-007 <p>Direct ATC to inhibit ADS</p> <p>Direct ATC to initiate SLC A and B</p> <p>Direct BOP to verify ECCS systems are available for injection</p>

(CT-2) Inhibit ADS prior to automatic ADS valve opening during a LOCA

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8 (cont.)Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPSCS Pump trip (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs Work Control to install Attachment 26 using HPSCS piping
	CRS	Enters EP-3, Containment Control
	CRS	 <p style="text-align: right; font-size: 2em; font-weight: bold;">EP-3</p> <p>Directs ATC to verify CTMT and DW hydrogen analyzers operating and energize Division 1 igniters</p>
	BOOTH	Role Play: If dispatched, as plant operator/electrical maintenance report after 2 minutes that ESF Bus 16AB is locked out on timed overcurrent. Electrical maintenance is investigating
	CRS	When RPV level lowers to -160 inches wide range, exits EP-2 Pressure leg and enters Emergency Depressurization leg of EP-2

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9 (cont.)

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> </div> <div style="flex: 0.2; text-align: center; font-size: 2em; font-weight: bold;">EP-2</div> </div> <p>Verifies Suppression Pool level is greater than 10.5 ft using SPDS</p> <p>Directs ATC to open 8 ADS/SRVs</p> <p>Directs BOP to inject with Division 1 ECCS systems</p>
<p>(CT-3) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)</p>		
<p>(CT-4) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig</p>		

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9 (cont.)

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure (cont.)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Direct BOP to monitor RPV level and report when level is greater than TAF (-160 inches wide range)
	CRS	Directs BOP to restore and maintain RPV level between -30 inches and +50 inches wide range with available ECCS systems
	BOOTH	<p>IF directed to close E12-F042A, RHR A INJ SHUTOFF VLV from Remote Shutdown Panel, using RNI DRAW drawing P150-1C-3 and perform the following:</p> <ul style="list-style-type: none"> • Modify RHR A INJ SHUTOFF switch to CLOSE • Modify RHR A INJ SHUTOFF switch to AUTO <p>IF directed to close E21-F005, LPCS INJ VLV, trigger <u>Event 10</u></p>
<p>NOTE to Examiners: Scenario objectives have been met when the crew has depressurized the RPV and level is being raised in a controlled manner to restore it to -30" to +50" wide range</p>		
END OF SCENARIO		
	Notes	
	BOOTH	When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure**

ATC ACTIONS

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Verifies and reports Division 2 and Division 3 ECCS initiated</p> <p>Recognize and report HPCS Pump trip</p> <p>Recognize and report LPCS logic power failure</p> <p>Verifies and reports high drywell pressure isolations complete</p> <p>Verifies and reports Division 2 and Division 3 Diesel Generators running with cooling water</p>
	BOP	<p>Maximizes CRD for flow IAW SOI 04-1-01-C11-1, Attachment VIII, by performing the following:</p> <p>Re-start CRD PUMP A IAW ONEP 05-1-02-IV-1, Control Rod/Drive Malfunctions ONEP, immediate operator actions:</p> <p>2.1.2 If running CRD pump trips, then start standby CRD pump as follows:</p> <p style="padding-left: 40px;">2.1.2.a If required, re-energize MCCs 15B42 and 16B42 on 1H13-P864</p> <p style="padding-left: 40px;">2.1.2.b Place CRD SYS FLO CONT in MANUAL and reduce output to zero</p> <p style="padding-left: 40px;">2.1.2.c Start CRD pump A</p> <p>Per SOI 04-1-01-C11-1, Attachment VIII:</p> <p>(1) ENSURE oil pump is running on the non-running CRD pump A(B).</p> <p>(2) With one CRD pump already running, THEN START standby CRD PMP A(B)</p> <p>(3) PLACE CRD SYS FLO CONT C11-R600 in MANUAL</p> <p>(4) USING CRD SYS FLO CONT C11-R600, fully OPEN C11-F002A(B), CRD FLO CONT VLV</p> <p>(5) If maximizing CRD for flow, THEN FULLY OPEN C11-F003, CRD DRIVE WTR PRESS CONT VLV</p> <p>Reports to CRS that CRD is maximized for flow to extent possible</p>
	CREW	Recognize and report ESF Bus 16AB lockout

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure**

ATC ACTIONS

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Restores the Auxiliary Building IAW ONEP 05-1-02-III-5, Automatic Isolations, Attachment II</p> <p>1) IF Plant Air compressors are available, THEN OPEN/CHECK OPEN the following Instrument Air valves on 1H13-P870:</p> <p><u>Section 3C</u></p> <ul style="list-style-type: none">• P53-F001 (After 30 sec T.D.) <p><u>Section 9C</u></p> <ul style="list-style-type: none">• P53-F007 (After 30 sec T.D.) <p>NOTE to Examiners: ESF Bus 16AB will lockout 5 minutes after Drywell pressure reaches 1.39 psig. Division 2 isolation valves will fail as is and may not be able to be manipulated if applicant attempts to restore Aux Building after the bus lockout</p>

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure****ATC ACTIONS**

TIME	Position	Applicant's Actions or Behavior
	ATC	<p style="text-align: center;"><u>CAUTION</u></p> <p><u>IF</u> Drywell Chilled Water is restored after isolation when Drywell temperature exceeds 200°F, <u>THEN</u> a water hammer <u>MAY</u> occur <u>AND</u> rupture Drywell cooler tubes due to voiding in piping. <u>IF</u> Drywell temperatures exceed 200°F (CRD Cavity temperatures excluded), <u>THEN</u> Drywell Chilled Water <u>Should NOT</u> be unisolated until controlled startup <u>Can</u> be performed per SOI 04-1-01-P72-1 <u>OR</u> Drywell temperature has returned to < 200°F</p> <p>2) <u>IF</u> all Drywell temperatures are less than 200°F (CRD Cavity temperatures excluded) <u>AND</u> Drywell Chillers are available, <u>THEN RESTORE</u> Drywell Chilled Water as follows:</p> <p>a. <u>IF</u> required, <u>RE-ENERGIZE</u> MCC's 15B42 AND 16B42 on 1H13-P864</p> <p>b. <u>AFTER</u> a 30 second time delay, <u>OPEN</u> the following valves on 1h13-P870:</p> <p style="padding-left: 40px;"><u>Section 3C</u></p> <ul style="list-style-type: none"> • P72-F121 • P72-F122 • P72-F125 <p style="padding-left: 40px;"><u>Section 9C</u></p> <ul style="list-style-type: none"> • P72-F123 • P72-F126 • P72-F124 <p>c. <u>ENSURE</u> at least one Drywell Chilled Water pump is running</p> <p>d. <u>ENSURE</u> Drywell Coolers are in operation</p> <p>3) Step is N/A</p> <p>4) The following valves <u>Will NOT</u> close due to being gagged open. As time permits, give these valves an <u>OPEN</u> signal to lift actuator off of gag.</p> <p style="padding-left: 40px;"><u>Section 3C</u></p> <ul style="list-style-type: none"> • P53-F026A <p style="padding-left: 40px;"><u>Section 9C</u></p> <ul style="list-style-type: none"> • P53-F026B <p>NOTE to Examiners: ESF Bus 16AB will lockout 5 minutes after Drywell pressure reaches 1.39 psig. Division 2 isolation valves will fail as is and may not be able to be manipulated if applicant attempts to restore Aux Building after the bus lockout</p>

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure**

ATC ACTIONS

TIME	Position	Applicant's Actions or Behavior
	ATC	Inhibits ADS by ADS A and ADS B MANUAL INHIBIT switches to INHIBIT position
(CT-2) Inhibit ADS prior to automatic ADS valve opening during a LOCA		
	ATC	<p>Initiates SLC A and SLC B by placing the SLC PMP A and SLC B key-locked switches to START</p> <p>Verifies SLC injection into reactor IAW SOI 04-1-01-C41-1, Attachment VI by performing the following:</p> <ol style="list-style-type: none"> 1. VERIFY system initiation by OBSERVING the following: <ol style="list-style-type: none"> a. F004A AND F004B SQUIB VALVES FIRED: <ul style="list-style-type: none"> • White SQUIB VALVE READY light OFF • Annunciator SBLC SYS A OOSVC • Amber status light SQUIB A LOSCONT or PWR LOSS is ON b. C41-F001A AND F001B TANK OUTLET VALVE are OPEN c. SBLC PUMPS A AND B RUNNING d. RWCU isolates: <ul style="list-style-type: none"> • G33-F004 CLOSED (SLC A Initiated) • G33-F001 AND F251 CLOSED (SLC B Initiated) e. VERIFY SLC is INJECTING INTO the RPV by observing the following: <ul style="list-style-type: none"> • SBLC pump discharge pressure exceeds reactor pressure • SBLC tank level lowering • Nuclear Instrumentation lowering <p>Report to CRS that SLC A has been initiated and is injecting into the RPV</p> <p>NOTE to Examiners: ESF Bus 16AB will lockout 5 minutes after Drywell pressure reaches 1.39 psig. SLC B may not be available when the applicant initiates SLC</p>

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 7/8/9

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure**

ATC ACTIONS

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Verify Division 1 and Division 2 CTMT and DW hydrogen analyzers are operating and energize hydrogen igniters IAW 04-1-01-E61-1, Combustible Gas Control System, Attachment V:</p> <ol style="list-style-type: none"> 1. VERIFY Running A(B) CTMT AND A(B) DW H2 Analyzers OR Start by PLACING handswitch(es) to START 2. VERIFY the amber light ON for the 0 – 10% scale on recorder 1E61-R602A(B) 3. ENSURE A(B) CTMT AND A(B) DW H2 Analyzers have been in service for > 60 sec 4. Verify A(B) CTMT AND A(B) DW H2 Concentration is < 2.9% AND THEN <ul style="list-style-type: none"> • ENERGIZE Div 1 H2 Igniters by PLACING H2 IGNITER SYS A handswitch to ON. • ENERGIZE Div 1 H2 Igniters by PLACING H2 IGNITER SYS A handswitch to ON. <p>Reports to CRS that Division 1 CTMT and DW hydrogen igniters are energized. NOTE to Examiners: ESF Bus 16AB will lockout 5 minutes after Drywell pressure reaches 1.39 psig. Division 2 hydrogen analyzers and igniters may not be available when the applicant performs these actions</p>
	ATC	<p>Open 8 ADS/SRVs by placing the key-locked handswitch for the following valves to OPEN:</p> <ul style="list-style-type: none"> • B21-F041K • B21-F047L • B21-F041F • B21-F047A • B21-F051C • B21-F041D • B21-F051A • B21-F051B
<p>(CT-3) When RPV level lowers to -160" wide range and cannot be maintained above -191" CFZ (MSCWL) and insufficient high pressure injection systems are available to restore level, crew begins to Emergency Depressurize by opening at least seven SRVs before RPV level lowers below -191" CFZ (Momentary shrink below -191" due to automatic SRV closure does not constitute failure of this critical task)</p>		
	Notes	
Return to Page 35 for completion of ATC actions		

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 78/9

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure**

BOP ACTIONS

TIME	Position	Applicant's Actions or Behavior
	BOP	Trips running Condensate Pumps to minimize the leak in the Drywell per 02-S-01-27, Operations Philosophy Closes B21-F065B, FW INL SHUTOFF VLV to isolate the Feedwater line Recognize and reports B21-F065B, FW INL SHUTOFF VLV, power loss
	BOP	Monitors and reports RPV level and trend
	BOP	Performs actions for LPCS logic power failure IAW ARI 04-1-02-1H13-P601-21A-H8, LPCS OOSVC: 4.6 Manually starts LPCS pump 4.6.2 Manually starts RHR A pump 4.6.3 Dispatch plant operator to Remote Shutdown Panel and standby to open E12-F042A, RHR A INJ SHUTOFF VLV 4.6.6 Dispatch plant operator to standby locally at E21-F005, LPCS INJ SHUTOFF VLV
	CREW	Recognize and report ESF Bus 16AB lockout
	BOP	Reports ECCS systems available: <ul style="list-style-type: none"> LPCS with manual opening of E21-F005, LPCS INJ SHUTOFF VLV. RHR A with E12-F042A, RHR A INJ SHUTOFF VLV, control from Remote Shutdown Panel

Op-Test No: NRC LOT 12-2017Scenario No: 4Event No: 78/9 (cont.)

Event Description: **Feedwater Line B line break inside Drywell with B21-F065B power loss / HPCS Pump trip / LPCS logic power failure (cont.)**

BOP ACTIONS

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Directs plant operator to manually open E21-F005, LPCS INJ SHUTOFF VLV</p> <p>Directs plant operator to manually open E12-F042A, RHR A INJ SHUTOFF VLV from Remote Shutdown Panel</p>
(CT-4) When operating injection systems cannot maintain RPV level and ECCS systems fail to automatically initiate, crew manually initiates or aligns ECCS systems for injection prior to RPV pressure lowering below 300 psig		
	BOOTH	<p>When directed to manually open E210F005, LPCS INJ SHUTOFF VLV, trigger <u>Event 9</u></p> <p>When directed to open E12-F042A, RHR A INJ SHUTOFF VLV from Remote Shutdown Panel, using RNI DRAW drawing P150-1C-3 and perform the following:</p> <ul style="list-style-type: none"> • Set RHR A INJ DISABLE switch to ENABLE • Set RHR A INJ SHUTOFF switch to OPEN • Modify RHR A INJ SHUTOFF switch to AUTO <p>If directed to manually close E21-F005, LPCS INJ SHUTOFF VLV, trigger <u>Event 10</u></p>
	BOP	<p>Monitors P601 panel indications for ECCS injection into the RPV:</p> <ul style="list-style-type: none"> • E21-F005, LPCS INJ SHUTOFF VLV, open indication (P601-21C) • E21-F006, LPCS TESTABLE CHK VLV, open indication (P601-21C) • E21-R600, LPCS PMP DISCH FLO, indication rising (P601-21B) • E12-F042A, RHR A INJ SHUTOFF VLV, open indication (P601-20C) • E12-F041A, RHR A TESTABLE CHK VLV, open indication (P601-20C) • E12-R603A, RHR PMP A DISCH FLO, indication rising (P601-20B)
	BOP	Monitors RPV level and reports to CRS when RPV level is greater than TAF (-160 inches wide range)
	BOP	Controls injection from LPCS and RHR A by throttling valves and/or cycling pumps to raise and maintain RPV level -30 inches to +50 inches wide range
	Notes	
Return to Page 35 for completion of BOP actions		

INITIAL CONDITIONS

A. Plant Status:

- Reactor startup is in progress with power at approximately 4%:
 - Step 45 of IOI 03-1-01-1, Attachment XV
 - Step 96 of Control Rod Movement Sequence is complete
 - SJAE B is in service
- Condensate System is lined up as follows:
 - Condensate Pumps A and C in service
 - Condensate Booster Pump C in service
 - Reactor Feed Pump A in service at approximately 950 psig discharge pressure
 - CFFF is in service
 - 4 Deep-Bed Condensate Demineralizers are in service
- Annunciators P680-4A2-C5, CONT ROD WITHDRAWAL BLOCK, and P680-4A1-A7, CRD DRIVE WTR TO RX Δ P HI, are flagged as expected annunciators

B. Tech. Spec. Limitations in effect: None

C. Significant problems/abnormalities: None

D. Integrated Risk: High

E. Division Work Week: Division 2

F. Evolutions/maintenance for the up-coming shift :

1. Withdraw control rods until 10% Bypass Valve position on the lagging valve, then continue raising TURB STM PRESSURE DEMAND setpoint to 935 psig per step 45 of IOI 03-1-01-1, Attachment XV.

Facility: **Grand Gulf Nuclear Station** Date of Exam: **12/2017** Operating Test No.: **LOT12-2017**

A P P L I C A N T	E V E N T T Y P E	Scenarios															T O T A L	M I N I M U M(*)		
		1			2			3			4									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION									
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	R	I	U				
I1 I2	RX					1		0			0			1	1	1	0			
	NOR					0		1			1			2	1	1	1			
	I/C					3		4			6			13	4	4	2			
	MAJ					2		2			2			6	2	2	1			
	TS							2			2			4	0	2	2			
I3	RX				0				1		0			1	1	1	0			
	NOR				1				1		1			3	1	1	1			
	I/C				6				3		6			15	4	4	2			
	MAJ				2				2		2			6	2	2	1			
	TS				3						2			5	0	2	2			
I4	RX						0	0				0		0	1	1	0			
	NOR						1	1				1		3	1	1	1			
	I/C						3	4				3		10	4	4	2			
	MAJ						2	2				2		6	2	2	1			
	TS							2						2	0	2	2			
R1 R3	RX						0			0		0		0	1	1	0			
	NOR						1			1		1		3	1	1	1			
	I/C						3			3		3		9	4	4	2			
	MAJ						2			2		2		6	2	2	1			
	TS														0	2	2			
R2 R4	RX								1				0	1	1	1	0			
	NOR								1				0	1	1	1	1			
	I/C								3				3	6	4	4	2			
	MAJ								2				2	4	2	2	1			
	TS														0	2	2			
R5	RX					1				0			0	1	1	1	0			
	NOR					0				1			0	1	1	1	1			
	I/C					3				3			3	9	4	4	2			
	MAJ					2				2			2	6	2	2	1			
	TS														0	2	2			

B/U	RX	0	1	0												1	1	0
	NOR	1	0	1												1	1	1
	I/C	6	3	4												4	4	2
	MAJ	2	2	2												2	2	1
	TS	3														0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the at-the-controls (ATC) and balance-of-plant (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional I/C malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For new reactor facility licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: **Grand Gulf Nuclear Station**Date of Examination: **12/2017**Operating Test No.: **LOT12-2017**

Competencies	APPLICANTS															
	RO (1,3) <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO (2,4) <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO (5) <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I (1,2) <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	BOP 2	BOP 3	ATC 4	1	2	ATC 3	BOP 4	1	ATC 2	BOP 3	BOP 4	1	ATC 2	SRO 3	SRO 4
Interpret/Diagnose Events and Conditions		3,5,6, 7,8	2,3,4, 5,6	2,4,6, 7,8			3,4,5, 6,7	3,5,6, 7,9		2,4,5, 6,7,9	2,3,5, 6	3,5,6, 7,9		3,5,6, 7,8	2,3,4,5, 6,7	2,3,4,5, 6,7,8,9
Comply with and Use Procedures (1)		1,3,5, 6,7,8	1,2,3, 4,5,6	1,2,4, 6,7,8			1,3,4, 5,6,7	3,5,6, 7,9		2,4,5, 6,7,9	1,2,3, 5,6	3,5,6, 7,9		1,3,5, 6,7,8	ALL	ALL
Operate Control Boards (2)		1,3,5, 6,7,8	1,2,3, 5,6	1,2,4, 6,7,8			1,3,4, 5,6,7	3,5,6, 7,9		2,4,5, 6,7,9	1,2,3, 5,6	3,5,6, 7,9		1,3,5, 6,7,8	N/A	N/A
Communicate and Interact		1,3,5, 6,7,8	1,2,3, 4,5,6	1,2,4, 6,7,8			1,3,4, 5,6,7	3,5,6, 7,9		2,4,5, 6,7,9	1,2,3, 5,6	3,5,6, 7,9		1,3,5, 6,7,8	ALL	ALL
Demonstrate Supervisory Ability (3)		N/A	N/A	N/A			N/A	N/A		N/A	N/A	N/A		N/A	ALL	ALL
Comply with and Use TS (3)		N/A	N/A	N/A			N/A	N/A		N/A	N/A	N/A		N/A	2,3	3,5

Notes:

(1) Includes TS compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)

Facility: **Grand Gulf Nuclear Station**Date of Examination: **12/2017**Operating Test No.: **12/2017**

Competencies	APPLICANTS															
	RO <input type="checkbox"/> SRO-I (3) <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I (4) <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	SRO 2	ATC 3	SRO 4	1	BOP 2	SRO 3	ATC 4	1	2	3	4	1	2	3	4
	Interpret/Diagnose Events and Conditions		2,3,4,5, 6,7,8,9	3,4,5, 6,7	2,3,4,5, 6,7,8,9		3,5,6, 7,8	2,3,4, 5,6,7	2,4,6, 7,8							
Comply with and Use Procedures (1)		ALL	1,3,4, 5,6,7	ALL		1,3,5, 6,7,8	ALL	1,2,4, 6,7,8								
Operate Control Boards (2)		N/A	1,3,4, 5,6,7	N/A		1,3,5, 6,7,8	N/A	1,2,4, 6,7,8								
Communicate and Interact		ALL	1,3,4, 5,6,7	ALL		1,3,5, 6,7,8	ALL	1,2,4, 6,7,8								
Demonstrate Supervisory Ability (3)		ALL	N/A	ALL		N/A	ALL	N/A								
Comply with and Use TS (3)		2,3,5	N/A	3,5		N/A	2,3	N/A								

Notes:

(1) Includes TS compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)