Facility: **Grand Gulf Nuclear Station** Date of Examination: **12/10/2012**

Examination Level: RO ☒ SRO ☐ Operating Test Number: LOT-2012

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations		
Conduct of Operations	P-R	Review Cooldown Record GJPM-OPS-2012AR1 2.1.23 (4.3)
Equipment Control	M-R	Determine Tagging Requirements GJPM-OPS-2012AR2 2.2.41 (3.5)
Radiation Control	N-R	Emergency Exposure Limits GJPM-OPS-2012AR3 2.3.4 (3.2)
Emergency Procedures/Plan	N-R	Reactor Water Level Determination GJPM-OPS-2012AR4 2.4.34 (4.2)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: **Grand Gulf Nuclear Station** Date of Examination: **12/10/2012**

Examination Level: RO ☐ SRO ☒ Operating Test Number: LOT-2012

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N-R	Reactor Water Chemistry Required Actions GJPM-OPS-2012AS1 2.1.34 (3.5)
Conduct of Operations	M-R	Manual Risk Assessment GJPM-OPS-2012AS2 K/A 2.1.20 (4.6)
Equipment Control	N-R	Tagout approval GJPM-OPS-2012AS3 2.2.41(3.9)
Radiation Control	N-R	Rad limits for Emergency GJPM-OPS-2012AS4 2.3.4 (3.7)
Emergency Procedures/Plan	N-R	Protective Action Recommendation Determination GJPM-OPS-2012AS5 2.4.44 (4.4)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AR1

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AR1

JPM Title: Review Cooldown Record

Facility Number: GJPM-OPS-2011AR2
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 15 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	2/15/12
	Exam Developer	Date
Ops Review:	John Oaks	9/10/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/10/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/12
	Project Lead or Exam Team Lead	Date

Review Cooldown Record

Setting:	Classroom
Type:	RO
Task:	CRO-ADMIN-07
K&A:	2.1.25 (3.9/4.2) 2.1.23 (4.3/4.4)
Safety Function:	N/A
Performance:	Actual
Reference(s):	03-1-01-3, Plant Shutdown; TS 3.4.11
Handout(s):	03-1-01-3 Attachment 3 with data (Attached) Current TS Figure 3.4.11-1
# Manipulations:	N/A
# Critical Steps:	2
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Review the cooldown record data sheet for plant shut down in accordance with 03-1-01-3 and Tech Spec 3.4.11 and identify the Tech Spec and Administrative cooldown rate limits have been exceeded.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The Plant is in Mode 3.
- Plant cooldown is in progress for a planned shutdown.
- A non-licensed operator has collected cooldown data using 03-1-01-3 Attachment 3, but no reviews have been performed.

Initiating Cue(s):

- The CRS directs you to review the cooldown data recorded by the non-licensed operator as the Reactor Operator in accordance with 03-1-01-3 to determine whether any limits have been exceeded.

Admin Task: Review Cooldown Record

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will review cooldown data recorded on 03-1-01-3 Attachment 3 and identify the Tech Spec limit of 100F/hr has been exceeded.

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

Step 1: 03-1-01-3 Attachment 3	
☐* *Review temperature data on 03-1-01-3 Attachment 3 and determine:* ☐* *The administrative limit of 90F was exceeded* ☐* *The Tech Spec limit of 100F was exceeded*	
Standard:	The operator will calculate cooldown rates for reactor vessel temperatures and determine if any limits were exceeded. The operator will compare the pressures and temperatures recorded to curve B of TS Figure 3.4.11-1. The operator identifies the Administrative Limit of 90F/hr and the TS limit of 100F/hr was exceeded in the hour from 0300 to 0400 on Recirc Suction Temperatures A and B respectively.
Cue:	
Notes:	**R643 pt. 5 reads 311~~1~~F at 0300 and 215F at 0400 for a 96F/hr cooldown rate during this period.** **R643 pt. 6 reads 313~~1~~F at 0300 and 212~~5~~F at 0400 for a 101F/hr cooldown rate during this period.** SAT / UNSAT

Step 2: 03-1-01-3 Attachment 3
☐* *Complete the review section of the cooldown data sheet of 03-1-01-3 Attachment 3 page 1 of 3.* ☐* *Check the Tech Spec Acceptance Criteria as "Unacceptable"* ☐* *Check the Admin Limit Criteria as "Unacceptable"* ☐ Initial as Verifier on right column of the Cooldown table ☐ Sign the "Review performed by" line at the bottom of the page
Standard: Fills out the data sheet correctly
Cue:
Notes: **See attached Key** SAT / UNSAT

Task Standard(s):
Review the cooldown record data sheet for plant shut down in accordance with 03-1-01-3 and Tech Spec 3.4.11 and identify the Tech Spec~~k~~ and Administrative cooldown rate limits have been exceeded. SAT / UNSAT
Remember to record stop time

Follow-Up Questions & Answers:

Comments:

DATA SHEET I
PLANT SHUTDOWN
HEATUP/COOLDOWN DATA SHEETS
SAFETY RELATED

SHEET 1 of 1

Record Every 30 Minutes; Recorder 1B21-R643 suggested for temps, **IF NOT** available, PDS May be used.

Date	REACTOR VESSEL TEMPERATURES						PRESSURE			
Today / TIME	R643 Pt.1 HEAD FLANGE	R643 Pt.2 BOTTOM HEAD	R643 Pt.3 SHELL FLANGE	R643 Pt.4 BOTTOM DRAIN	R643 Pt.5 RECIRC A SUCT	R643 Pt.6 RECIRC B SUCT	REACTOR PRESSURE	TEMPS MEET TS CURVE per SR3.4.11.1** Y/N	INITIALS PERF	INITIALS VERIF*
0200 (Start Time)	430	308	401	349	370	372	184	Y	mp	
02 30**	406	284	388	325	344	345	112	Y	mp	
03 00	375	258	359	303	**311**	**313**	85	Y	mp	
03 30	348	231	329	249	264	266	49	Y	mp	
04 00	305	188	289	217	**215**	**212**	37	Y	mp	
04 30	297	175	294	199	201	203	22	Y	mp	
05 00	289	158	279	194	197	199	10	Y	mp	

*Tech Spec Acceptance Criteria: *Verifier to **EVALUATE** every 60-minute segment to ensure H/U, C/D limits (< 100°F/Hr) are **NOT** exceeded.
Every 30 minutes **COMPARE head flange temperature, shell flange temperature **AND** reactor pressure to **ENSURE** reactor metal temperature vs. reactor pressure is to the right of the curve as required in Tech Spec SR 3.4.11.1.

Tech Spec Acceptance Criteria: Acceptable [ ] Unacceptable [X] Admin Limit Criteria (≤ 90°F/HR): Acceptable [ ] Unacceptable [X]

Review performed by _____ / _____ / _____
(Reactor Operator) Date Time

DEFICIENCIES: CR Issued # _____ LCO Entered # _____

APPROVAL: Shift Supv/Mgr _____ Date _____

Give this page to the student

Initial Condition(s):

- The Plant is in Mode 3.
- Plant cooldown is in progress for a planned shutdown.
- A non-licensed operator has collected cooldown data using 03-1-01-3 Attachment 3, but no reviews have been performed.

Initiating Cue(s):

- You have been directed to review the cooldown data recorded by the non-licensed operator as the Reactor Operator in accordance with 03-1-01-3 to determine whether any limits have been exceeded.

DATA SHEET I
PLANT SHUTDOWN
HEATUP/COOLDOWN DATA SHEETS
SAFETY RELATED

SHEET 1 of 1

Record Every 30 Minutes; Recorder 1B21-R643 suggested for temps, **IF NOT** available, PDS May be used.

Date	REACTOR VESSEL TEMPERATURES						PRESSURE			
Today TIME	R643 Pt.1 HEAD FLANGE	R643 Pt.2 BOTTOM HEAD	R643 Pt.3 SHELL FLANGE	R643 Pt.4 BOTTOM DRAIN	R643 Pt.5 RECIRC A SUCT	R643 Pt.6 RECIRC B SUCT	REACTOR PRESSURE	TEMPS MEET TS CURVE per SR3.4.11.1** Y/N	INITIALS PERF	INITIALS VERIF*
0200 (Start Time)	430	308	401	349	370	372	184	Y	mp	
02 30**	406	284	388	325	344	345	112	Y	mp	
03 00	375	258	359	303	311	313	85	Y	mp	
03 30	348	231	329	249	264	266	49	Y	mp	
04 00	305	188	289	217	215	212	37	Y	mp	
04 30	297	175	294	199	201	203	22	Y	mp	
05 00	289	158	279	194	197	199	10	Y	mp	

*Tech Spec Acceptance Criteria: *Verifier to **EVALUATE** every 60-minute segment to ensure H/U, C/D limits (< 100°F/Hr) are **NOT** exceeded.
Every 30 minutes **COMPARE head flange temperature, shell flange temperature **AND** reactor pressure to **ENSURE** reactor metal temperature vs. reactor pressure is to the right of the curve as required in Tech Spec SR 3.4.11.1.

Tech Spec Acceptance Criteria: Acceptable [ ] Unacceptable [ ] Admin Limit Criteria (≤ 90°F/HR): Acceptable [ ] Unacceptable [ ]

Review performed by_____/_____/_____
(Reactor Operator) Date Time

DEFICIENCIES: CR Issued # _____ LCO Entered # _____

APPROVAL: Shift Supv/Mgr _____Date _____

DATA SHEET II
PLANT SHUTDOWN
HEATUP/COOLDOWN DATA SHEETS
SAFETY RELATED

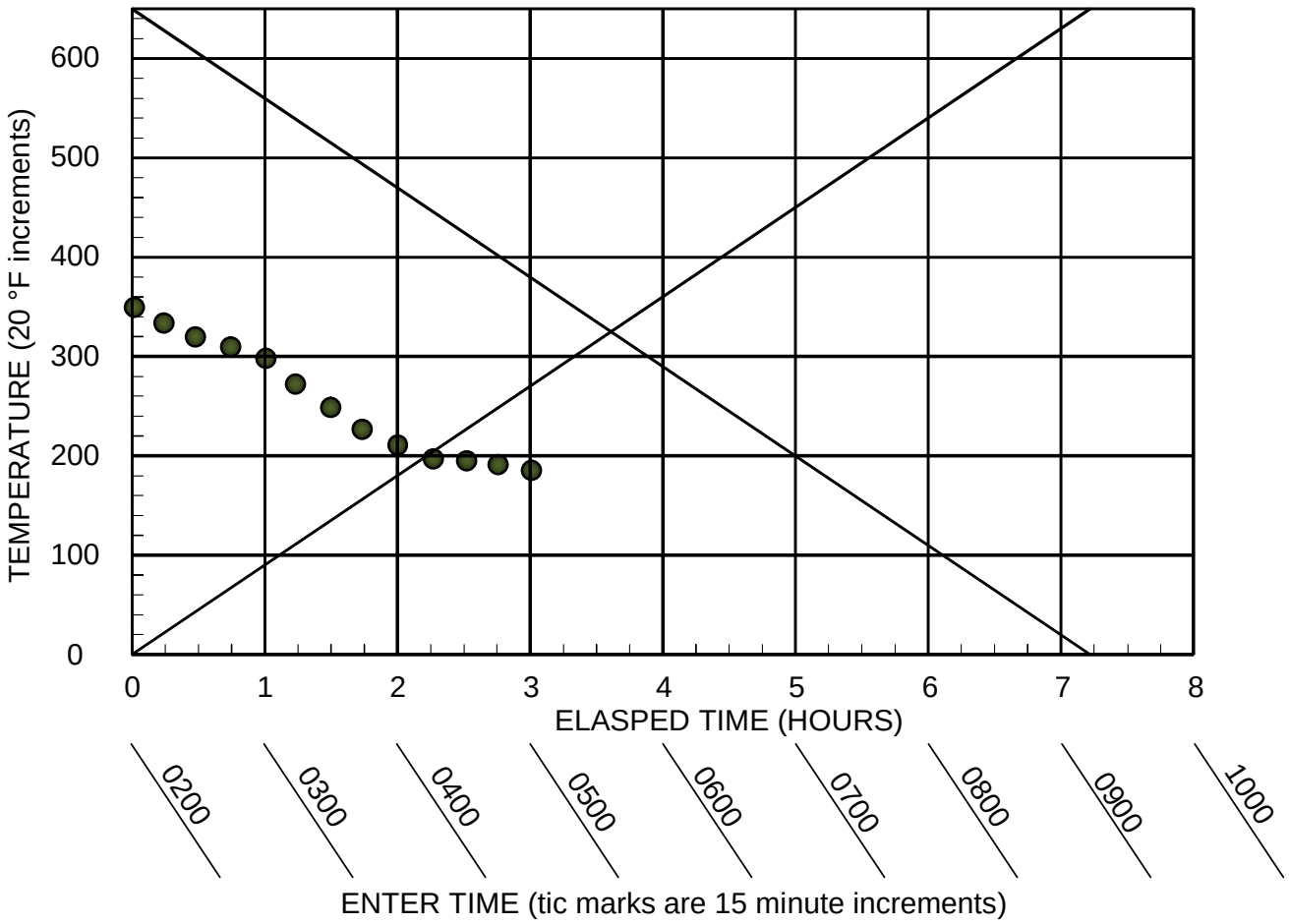
CAUTION

Exceeding 100°F/hr is a violation of Tech Specs

Check Recorder Point Used:

Recirc A ☐ Recirc B ☐ Bottom Head Drain ☑

MAINTAIN the Heatup or Cooldown Rate less than the slope of the curve.
(Administrative limit of 90 degree F/hr.)



Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AR2

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AR2

JPM Title: Determine Tagging Requirements

Facility Number: GJPM-OPS-2011AR3
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☒ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 30 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	3/1/12
	Exam Developer	Date
Ops Review:	James Mergner	9/10/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oaks	9/10/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/12
	Project Lead or Exam Team Lead	Date

Determine Tagging Requirements

Setting:	Classroom
Type:	RO
Task:	CRO-ADMIN-05
K&A:	2.2.13 (4.1/4.3), 2.2.41 (3.5/3.9)
Safety Function:	N/A
Performance:	Actual
Reference(s):	EN-OP-102 (Protective and Caution Tagging)
	04-1-01-E21-1 (Low Pressure Core Spray System)
	E-1182-7
	M-1087
Handout(s):	EN-OP-102
	04-1-01-E21-1 (P&L's and Lineup tables)
	E-1182-7
	M-1087
	M-1096
# Manipulations:	N/A
# Critical Steps:	2
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- All required isolations are identified and correctly documented on the Tagout Tags Sheet in accordance with EN-OP-102

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is in MODE 4.
- The LPCS jockey pump is being replaced.

Initiating Cue(s):

- The CRS 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.
  - Do not use the main suction and discharge piping for the LPCS pump (e.g. do not use components on 14" 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.
- The next sequential tag serial number is "01."

Determine Tagging Requirements

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will determine the proper isolations for the LPCS Jockey Pump.

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

Step 1: EN-OP-102 5.3[2](e)/Att. 9.2
☐* *The operator 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)* ☐ HS M611 (Control Room Handswitch)
Standard: Determines the appropriate boundaries.
Cue:
Notes: **See the attached KEY for details.** SAT / UNSAT

Step 2: EN-OP-102 5.3[4]	
☐* *Complete the Tagout Tags Sheet of EN-OP-102-01 Attachment 9.3* See attached Tagout Tags Sheet KEY	
Standard:	Completes the Tagout Tags Sheet with required components from Step 1.
Cue:	
Notes:	**EN-OP-102 Attachment 9.2 section 7.0 contains the Tagging Sequence guidance.** **JPM complete when the operator completes the Tagout Tags Sheet.** SAT / UNSAT

Task Standard(s):

All required isolations are identified and correctly documented on the Tagout Tags Sheet in accordance with EN-OP-102

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is in MODE 4.
- The LPCS jockey pump is being replaced.

Initiating Cue(s):

- The CRS 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.
    - Do not use the main suction and discharge piping for the LPCS pump (e.g. do not use components on 14" 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.
- The next sequential tag serial number is "01."

ATTACHMENT 9.3 TAGOUT TAGS SHEET

CLEARANCE: ___**MANUAL**_____ TAGOUT: ___XXXX_____

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	*D	* 52-151108 LPCS JKY PMP 15B11	2	*OPEN							
2	D	HS M611 LPCS Jockey Pump Handswitch 1H13-P601	1	*NUET							
3	*D	* E21-F032 LPCS Jockey Pump Suction Area 9 Elevation 93'	4	*CLOSED							
4	*D	* E21-F034 LPCS Jockey Pump Disch Stop Check Area 9 Elevation 93'	3	*CLOSED							
5	*D	* E21-F035 LPCS Jockey Pump Minimum Flow Area 9 Elevation 93'	5	*CLOSED							
6	*D	* E21-FX020 Supp Pool Level Transmitters Fill Area 9 Elevation 93'	5	*CLOSED							

KEY

ATTACHMENT 9.3 TAGOUT TAGS SHEET

CLEARANCE: ___**MANUAL**_____ TAGOUT: ___XXXX_____

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

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AR3

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AR3 JPM Title: Emergency Exposure Limits

Facility Number: NA
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 15 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	2/21/12
	Exam Developer	Date
Ops Review:	James Mergner	9/11/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oaks	9/11/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/12
	Project Lead or Exam Team Lead	Date

Emergency Exposure Limits

Setting:	Classroom
Type:	RO
Task:	CRO-ADMIN-15
K&A:	2.3.4 (3.2/3.7)
Safety Function:	N/A
Performance:	Actual
Reference(s):	10-S-01-17 (Emergency Personnel Exposure Control)
	EN-RP-201 (Dosimetry Administration)
Handout(s):	10-S-01-17
	EN-RP-201
	Calculator
# Manipulations:	N/A
# Critical Steps:	4
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Determines that the Plant General Manager and Radiation Protection Manager must approve the dose extension to 3,532 mrem during an Unusual Event and that 3,532 mrem is within the limits administratively established during an Alert using 10-S-01-17 and EN-RP-201.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- An Unusual Event has been declared due to radiation levels in containment.
- Max expected radiation exposure for containment entry is 14,000 mrem/hr.
- Your current year-to-date exposure TEDE is 32 mrem.
- A task you are qualified to perform in containment is required to mitigate the radiation concern.

Initiating Cue(s):

- The CRS directs you to enter containment to mitigate the radiation concern.
- Your task will take 15 minutes inside containment.
- Considering only TEDE and your exposure inside containment:
    - Who must approve your exposure limits for this task?
    - How would this change if an Alert was declared?

Emergency Exposure Limits

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator 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.

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

Step 1: Calculation
☐* *Determine expected final exposure following the task.* $\frac{14{,}000 \text{ mrem}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60\text{min}} \cdot 15 \text{ min} = 3{,}500 \text{ mrem} + 32 \text{ mrem} = 3{,}532 \text{ mrem}$
Standard: Determines the correct exposure.
Cue:
Notes: SAT / UNSAT

Step 2: 10-S-01-17 section 6.1.2
☐* *Determine the administrative dose limits and extension process of EN-RP-201 (Dosimetry Administration) is applicable.*
Standard: Determines that the normal dose extension process applies unless an Alert or above is declared.
Cue:
Notes: SAT / UNSAT

Step 3: EN-RP-201 section 5.4
☐* *Determine that the Radiation Protection Manager and Plant General Manager must approve the exposure for this task using table in section 5.4 of EN-RP-201.*
Standard: Determines correct approval requirements.
Cue:
Notes: SAT / UNSAT

Step 4: 10-S-01-17 section 6.1.3

☐* *Determine that when an Alert is declared exposure limits are administratively raised to the federal limit of 5 rem/yr.*

Standard: States that in an emergency declaration of Alert or higher the exposure limit is administratively raised and no approval is required.

Cue:

Notes:

SAT / UNSAT

Task Standard(s):

Determines that the Plant General Manager and Radiation Protection Manager must approve the dose extension to 3,532 mrem during an Unusual Event and that 3,532 mrem is within the limits administratively established during an Alert using 10-S-01-17 and EN-RP-201.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- An Unusual Event has been declared due to radiation levels in containment.
- Max expected radiation exposure for containment entry is 14,000 mrem/hr.
- Your current year-to-date exposure TEDE is 32 mrem.
- A task you are qualified to perform in containment is required to mitigate the radiation concern.

Initiating Cue(s):

- The CRS directs you to enter containment to mitigate the radiation concern.
- Your task will take 15 minutes inside containment.
- Considering only TEDE and your exposure inside containment:
    - Who must approve your exposure limits for this task?
    - How would this change if an Alert was declared?

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AR4

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AR4

JPM Title: Reactor Water Level Determination

Facility Number: NA
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 10 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	2/22/12
	Exam Developer	Date
Ops Review:	John Oaks	9/11/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/11/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/12
	Project Lead or Exam Team Lead	Date

Reactor Water Level Determination

Setting:	Classroom
Type:	RO
Task:	CRO-C61-OFFNORM-5
K&A:	2.1.25 (3.9/4.2); 2.4.34 (4.2/4.1)
Safety Function:	N/A
Performance:	Actual
Reference(s):	05-1-02-II-1 (Shutdown from the Remote Shutdown Panel)
Handout(s):	05-1-02-II-1 Attachment 1
	Photo of RSP level and pressure indications (attached)
# Manipulations:	N/A
# Critical Steps:	2
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Determines Narrow Range reactor water level is 42.5” (between 40” and 45”), that RCIC is injecting to the reactor and HPCS is not injecting to the reactor.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The Control Room has been evacuated per 05-1-02-II-1 (Shutdown from the Remote Shutdown Panel).
- An Alert has been declared for the Control Room Evacuation.
- The Condensate/Feedwater system is not available for inventory control.
- All actions for Control Room evacuation have been completed.
    - Reactor Mode Switch is in SHUTDOWN
    - All control rods are inserted
    - MSIV's are closed
    - RCIC is initiated
    - HPCS is initiated
- **NO** 05-1-02-II-1 attachments are installed.
- All SRV's are currently CLOSED and reactor pressure is stable.
- You report to the Remote Shutdown Panel to establish reactor level control.

Initiating Cue(s):

- The CRS directs you to determine Narrow Range reactor water level and the status of HPCS and RCIC.
- Use the attached image for current plant conditions.
- Consider only the given plant conditions.

Reactor Water Level Determination

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will evaluate plant conditions at the Remote Shutdown Panel to determine Narrow Range reactor water level and the status of injection sources.

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

Step 1: 05-1-02-II-1 Attachment 1
☐* *Determine Narrow Range reactor water level is 42.5"*
Standard: Identify correct Narrow Range Level.
Cue:
Notes: **Narrow Range level between 41" and 44" is acceptable.** SAT / UNSAT

Step 2: 05-1-02-II-1 Attachment 1	
☐* *Determines that RCIC is still running and injecting water to the reactor.*	
Standard:	Determines the status of RCIC.
Cue:	
Notes:	
	SAT / UNSAT

Step 3:	
☐* *Determine that HPCS is not injecting to the reactor since the E22-F004 (HPCS injection valve) closed on Wide Range reactor Level 8 (53.5").*	
Standard:	Determines the status of HPCS.
Cue:	
Notes:	**HPCS is not monitored or controllable from the RSP. If reactor level falls to Wide Range reactor Level 2 (-41.6"), E22-F004 will open and HPCS will begin to inject to the reactor. The operator will need to determine this from memory of system operation as there are no references at the RSP to determine the status of HPCS.** **To meet the critical task, the operator need only state that HPCS is not injecting to the reactor.**
	SAT / UNSAT

Task Standard(s):

Determines Narrow Range reactor water level is 42.5” (between 40” and 45”), that RCIC is injecting to the reactor and HPCS is not injecting to the reactor.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

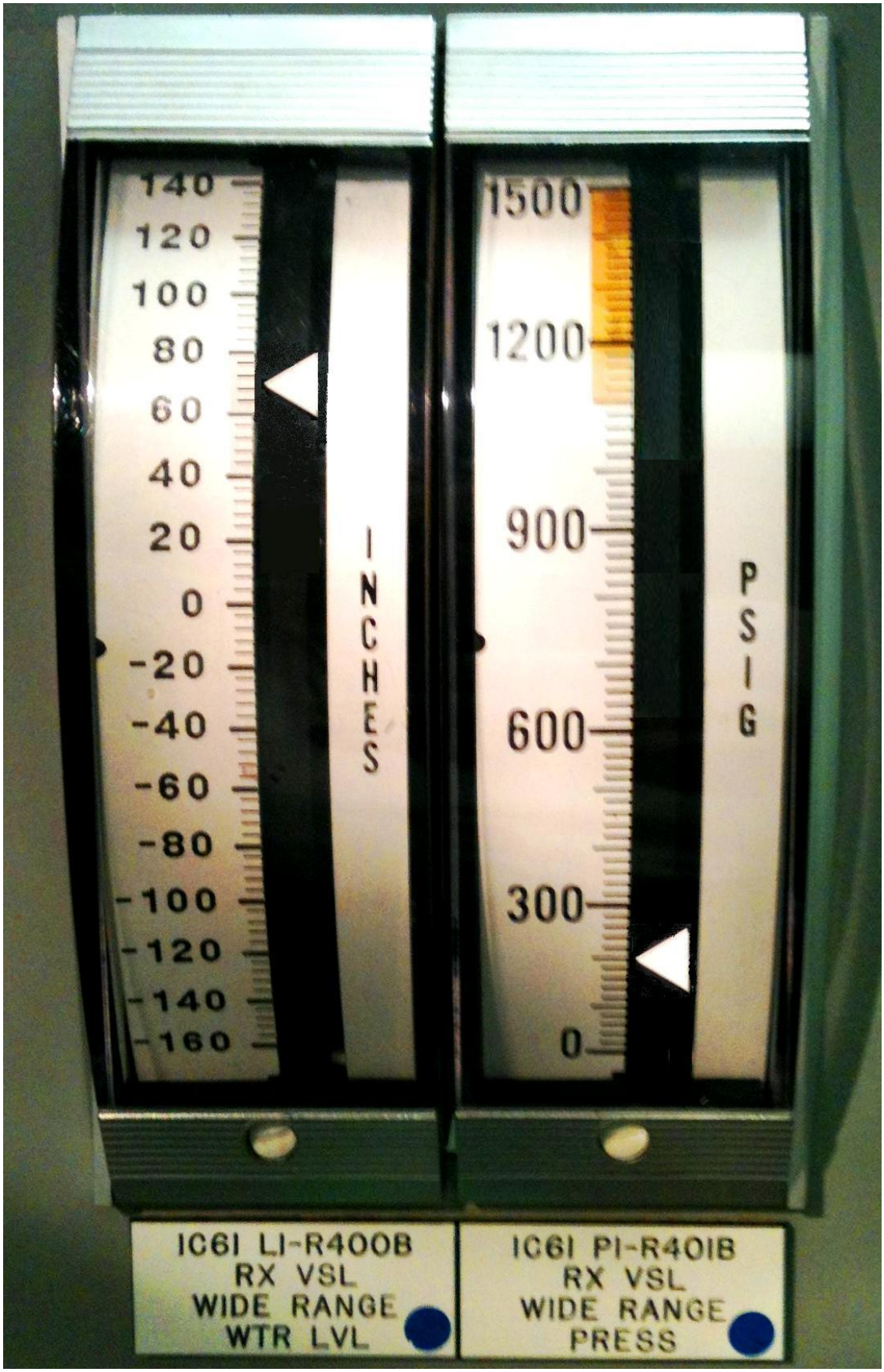
Give this page to the student

Initial Condition(s):

- The Control Room has been evacuated per 05-1-02-II-1 (Shutdown from the Remote Shutdown Panel).
- An Alert has been declared for the Control Room Evacuation.
- The Condensate/Feedwater system is not available for inventory control.
- All actions for Control Room evacuation have been completed.
    - Reactor Mode Switch is in SHUTDOWN
    - All control rods are inserted
    - MSIV's are closed
    - RCIC is initiated
    - HPCS is initiated
- **NO** 05-1-02-II-1 attachments are installed.
- All SRV's are currently CLOSED and reactor pressure is stable.
- You report to the Remote Shutdown Panel to establish reactor level control.

Initiating Cue(s):

- The CRS directs you to determine Narrow Range reactor water level and the status of HPCS and RCIC.
- Use the attached image for current plant conditions.
- Consider only the given plant conditions.


140
120
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-40
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-80
-100
-120
-140
-160
INCHES
1500
1200
900
600
300
0
PSIG
IC61 LI-R400B
RX VSL
WIDE RANGE
WTR LVL
IC61 PI-R401B
RX VSL
WIDE RANGE
PRESS

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AS1

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AS1

JPM Title: Reactor Water Chemistry Required Actions

Facility Number: NA
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 10 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	2/29/12
	Exam Developer	Date
Ops Review:	Roger Bond	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Jonathan Smith	9/18/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/18/12
	Project Lead or Exam Team Lead	Date

Reactor Water Chemistry Required Actions

Setting:	Classroom
Type:	SRO
Task:	SRO-A&E-OFFNORM-2
K&A:	2.1.34 (2.7/3.5), 2.1.20 (4.6/4.6)
Safety Function:	N/A
Performance:	Actual
Reference(s):	05-1-02-V-12 (Condensate/Reactor Water High Conductivity)
Handout(s):	05-1-02-V-12
# Manipulations:	N/A
# Critical Steps:	1
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Determines from a review of CRS's narrative logs and Condensate/Reactor Water High Conductivity ONEP that the crew's next priority is taking actions per step 3.9 (actions for condenser tube break).

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The Control Room is implementing the actions of 05-1-02-V-12 (Condensate/Reactor Water High Conductivity ONEP).
- All related actions and plant conditions are as discussed in the attached narrative logs.
- Shift turnover is in progress.
- The current time is 0600.

Initiating Cue(s):

- The Shift Manager directs you to determine what the shift priority should be next with regards to the Condensate/Reactor Water High Conductivity ONEP.

Reactor Water Chemistry Required Actions

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This task requires the operator to interpret plant chemistry data and based on current conditions and a review of the CRS's narrative log what the next course of action should be using plant procedures.

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

Step 1: 05-1-02-V-12

☐* *Determine by reviewing the CRS's narrative log that:*

☐ ONEP steps 3.1, 3.3, and 3.4 have been performed.

☐ ONEP steps 3.2 will require the crew monitor for unexplained power changes.

☐ ONEP step 3.5 will require the commencement of a normal reactor shutdown beginning at 23:57 tonight if chemistry is not restored.

☐ ONEP step 3.6 in NA.

☐ ONEP steps 3.7 and 3.8 have been performed.

☐* *ONEP step 3.9 is the next priority for the shift since indications of a condenser tube leak are indicated.*

Standard: Correctly identifies the performance status of each step.

Cue:

Notes: **The operator may be specific about what step 3.9 requires. Only comments regarding the status of step 3.9 are required to meet the critical task.**

SAT / UNSAT

Task Standard(s):

Determines from a review of CRS's narrative logs and Condensate/Reactor Water High Conductivity ONEP that the crew's next priority is taking actions per step 3.9 (actions for condenser tube break).

SAT / UNSAT

Remember to record stop time

CRS Narrative Log

GGNS Operations | Nights

Yesterday	22:08:00	Placed SSW A in STBY following chem add.
Yesterday	23:45:07	Received annunciator "CNDS PMP DISCH CNDCT HI" P680-1A-D2 and is sealed in. Condensate Pump discharge conductivity on 1P33-CR-R615 blue pen is 0.09 umhos. RWCU influent conductivity is 0.15 umhos on 1G33-CR-R601 blue pen. Previous logs reveal that Condensate Pump discharge conductivity has trended up from 0.06 umhos over the last 2 weeks. There was no observable rise in Feedwater conductivity.
ONEP step 3.1		
ONEP step 3.3		Chemistry was notified per the ARI.
Yesterday	23:57:00	Chemistry sample results show Reactor Water Conductivity is 0.19 umho/cm, Reactor Water Chlorides are 57 ppb, and Reactor Water Sulfates are 12 ppb. Entered Condensate/Reactor Water High Conductivity ONEP. Core thermal power is stable.
ONEP step 3.2, 3.4, & 3.5		
Today	00:12:59	Duty Manager and Chemistry notified per step 3.4 of Condensate/Reactor Water High Conductivity ONEP.
ONEP step 3.4		
Today	00:36:11	Chemistry notified of need for demineralizer capacity determination.
ONEP step 3.7 & 3.8		N22-F512, CNDS DEMIN DIFF PRESS VLV, is verified closed.
Today	01:02:21	Lowered Recirc Flow to maintain reactor power below thermal limits as briefed at the beginning of shift.
ONEP step 3.2		
Today	02:17:08	Noticed that Condenser Hotwell levels are approximately 3" higher than normal (N19-R606A-C and N19-R605).
Today	04:21:15	Received annunciator "CNDS DMIN EFL CNDCT HI" P680-1A-D3 and is sealed in. Feedwater conductivity is trending up. FW/CNDS CNCDT red pen is reading 0.07 umhos. RWCU influent conductivity is 0.19 umhos on 1G33-CR-R601 blue pen. The condensate filter system differential pressure is stable.
Today	05:01:32	Begin resin exchanges for all condensate demineralizers.
Today	05:53:10	Control Room was notified of a problem in Radwaste preventing demin resin exchanges. Radwaste estimates 9 hours to begin demin resin exchanges.

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The Control Room is implementing the actions of 05-1-02-V-12 (Condensate/Reactor Water High Conductivity ONEP).
- All related actions and plant conditions are as discussed in the attached narrative logs.
- Shift turnover is in progress.
- The current time is 0600.

Initiating Cue(s):

- The Shift Manager directs you to determine what the shift priority should be next with regards to the Condensate/Reactor Water High Conductivity ONEP.

CRS Narrative Log

GGNS Operations Nights

Yesterday	22:08:00	Placed SSW A in STBY following chem add.
Yesterday	23:45:07	Received annunciator “CNDS PMP DISCH CNDCT HI” P680-1A-D2 and is sealed in. Condensate Pump discharge conductivity on 1P33-CR-R615 blue pen is 0.09 umhos. RWCU influent conductivity is 0.15 umhos on 1G33-CR-R601 blue pen. Previous logs reveal that Condensate Pump discharge conductivity has trended up from 0.06 umhos over the last 2 weeks. There was no observable rise in Feedwater conductivity. Chemistry was notified per the ARI.
Yesterday	23:57:00	Chemistry sample results show Reactor Water Conductivity is 0.19 umho/cm, Reactor Water Chlorides are 57 ppb, and Reactor Water Sulfates are 12 ppb. Entered Condensate/Reactor Water High Conductivity ONEP. Core thermal power is stable.
Today	00:12:59	Duty Manager and Chemistry notified per step 3.4 of Condensate/Reactor Water High Conductivity ONEP.
Today	00:36:11	Chemistry notified of need for demineralizer capacity determination. N22-F512, CNDS DEMIN DIFF PRESS VLV, is verified closed.
Today	01:02:21	Lowered Recirc Flow to maintain reactor power below thermal limits as briefed at the beginning of shift.
Today	02:17:08	Noticed that Condenser Hotwell levels are approximately 3” higher than normal (N19-R606A-C and N19-R605).
Today	04:21:15	Received annunciator “CNDS DMIN EFL CNDCT HI” P680-1A-D3 and is sealed in. Feedwater conductivity is trending up. FW/CNDS CNCDT red pen is reading 0.07 umhos. RWCU influent conductivity is 0.19 umhow on 1G33-CR-R601 blue pen. The condensate filter system differential pressure is stable.
Today	05:01:32	Begin resin exchanges for all condensate demineralizers.
Today	05:53:10	Control Room was notified of a problem in Radwaste preventing demin resin exchanges. Radwaste estimates 9 hours to begin demin resin exchanges.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AS2

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AS2

JPM Title: Manual Risk Assessment

Facility Number: GJPM-OPS-2011AS2
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☒ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 20 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	2/23/12
	Exam Developer	Date
Ops Review:	Roger Bond	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Jonathan Smith	9/18/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/18/12
	Project Lead or Exam Team Lead	Date

Manual Risk Assessment

Setting:	Classroom
Type:	RO
Task:	SRO-ADMIN-15
K&A:	2.1.20 (4.6/4.6); 2.1.25 (3.9/4.2); 2.2.17 (2.6/3.8)
Safety Function:	N/A
Performance:	Actual
Reference(s):	01-S-18-6 (Risk Assessment of Maintenance Activities)
	Tech Specs
	Tech Spec Bases
	E-1186-47
Handout(s):	01-S-18-6
	Tech Specs (Available 3.6.3.2)
	Tech Spec Bases (Available 3.6.3.2)
# Manipulations:	N/A
# Critical Steps:	1
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Risk Assessment is performed per 01-S-18-6, applying at least Attachment IV and Attachment V Table 5, to determine that a risk color of YELLOW exists for the current plant conditions.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is operating at rated power with the following:
  - LPCS jockey pump is seized. Repair is expected to take 3 days.
  - A fault in the E61 Hydrogen Igniter TB1CA18 has disabled igniters:
    - D107, D109, D111, D112, D114, D116, D119, D121 and D123
- The EOOS computer software is not available.

Initiating Cue(s):

- The Shift Manager directs you to determine the risk color for the current conditions.

Electrical Print Reading

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This task is to use GGNS procedure 01-S-18-6 (Risk Assessment of Maintenance Activities) to perform a risk assessment and determine the associated risk color.

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

Step 1: 01-S-18-6 Step 6.5.2.a
☐ When the EOOS tool is not available for risk assessments, use Attachment IV (Level 1 out of service guidance table for use when EOOS is unavailable) for EOOS related risk and qualitative guidance in Attachment V.
Standard: Recognizes need to use both Attachment IV and Attachment V to perform this risk assessment.
Cue:
Notes: SAT / UNSAT

Step 2: 01-S-18-6 Attachment IV
☐ Determine that E21, Low Pressure Core Spray, out-of-service yields a risk color of GREEN.
Standard: Determines correct risk color.
Cue:
Notes: SAT / UNSAT

Step 3: TS 3.6.3.2
☐ Determine that all Division 1 Drywell igniters are out-of-service. This leaves < 90% of the Division 1 igniters in service and therefore INOP's the Division 1 train of igniters.
Standard: Identify the correct igniters as out-of-service and the Division 1 train of igniters as not available.
Cue:
Notes: SAT / UNSAT

Step 4: 01-S-18-6 Attachment V
☐* *Complete Attachment V, Table 1 Risk Assessment* ☐ Check "Yes" Applicability for "Hydrogen Igniters or Analyzers not available" ☐ Check "No" Applicability for the remainder of options ☐* *Refer to Table 5*
Standard: Check "Yes" in appropriate box and refer to Table 5. All other Applicability boxes are checked "NO."
Cue:
Notes: SAT / UNSAT

Step 5: 01-S-18-6 Attachment V
☐* *Review Attachment V, Table 5 and determine proper risk color is YELLOW since 90% or less of the Division 1 igniters are INOP per TS 3.6.3.2.*
Standard: Determines the correct risk color.
Cue:
Notes: SAT / UNSAT

Task Standard(s):

Risk Assessment is performed per 01-S-18-6, applying at least Attachment IV and Attachment V Table 5, to determine that a risk color of YELLOW exists for the current plant conditions.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is operating at rated power with the following:
  - LPCS jockey pump is seized. Repair is expected to take 3 days.
  - A fault in the E61 Hydrogen Igniter TB1CA18 has disabled igniters:
    - D107, D109, D111, D112, D114, D116, D119, D121 and D123
- The EOOS computer software is not available.

Initiating Cue(s):

- The Shift Manager directs you to determine the risk color for the current conditions.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AS3

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AS3 JPM Title: Tagout Approval____

Facility Number: _____
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 30 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	3/5/12
	Exam Developer	Date
Ops Review:	Roger Bond	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Jonathan Smith	9/18/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/18/12
	Project Lead or Exam Team Lead	Date

Tagout Approval

Setting:	Classroom
Type:	RO
Task:	CRO-ADMIN-05
K&A:	2.2.13 (4.1/4.3), 2.2.41 (3.5/3.9)
Safety Function:	N/A
Performance:	Actual
Reference(s):	EN-OP-102 (Protective and Caution Tagging)
	04-1-01-E21-1 (Low Pressure Core Spray System SOI)
	E-1182-7
	M-1087
Handout(s):	EN-OP-102
	04-1-01-E21-1
	E-1182-7
	M-1087
	Tagout Tags Sheet (Attached)
# Manipulations:	N/A
# Critical Steps:	1
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- The operator indentifies the tagout lacks the required isolations per EN-OP-102.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is in MODE 4.
- The LPCS jockey pump is to be replaced.

Initiating Cue(s):

- As CRS you are tasked to verify the adequacy of the proposed tagout for work on the LPCS Jockey Pump.
- For the purpose of this task restoration configuration is not required.
- Document errors or inadequate boundaries.

Admin Task: Tagout Approval

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will determine the proper isolations for the LPCS Jockey Pump.

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

Step 1: EN-OP-102 5.3[2](e)/Att. 9.2

☐ The operator 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)
- ☐ HS M611 (Control Room Handswitch)
- ☐ E21-F223 (Jockey Pump Discharge Drain/Pump Vent)
- ☐ E21-F224 (Jockey Pump Discharge Drain/Pump Vent)
- ☐ E21-F225 (Jockey Pump Suct Test Conn Isol)
- ☐ E21-F226 (Jockey Pump Suct Test Conn Isol)

Standard: Determines the appropriate boundaries.

Cue:

Notes: **The valves listed are the minimum required valves required to perform work. Any combination of valves that adequately isolates the LPCS Jockey Pump and provides a drain or vent path will meet the requirements of this step (including extra valves and breakers).**

SAT / UNSAT

Step 2: EN-OP-102 5.3[4]

☐* *The Operator documents the following:*

☐* *E21-F034 is required to be CLOSED to isolate the LPCS Jockey Pump Discharge.*

☐* *E21-F226 is required to be OPEN to complete the drain path (in line with E21-F225).*

☐* *E21-FX020 is required to be CLOSED to isolate the Supp. Pool Level Transmitters Fill.*

☐ E21-F223 and E21-F224 are required to be OPEN to establish a vent path.

☐ E21-F011 is not required for this tag.

Standard: Documents deficiencies.

Cue:

Notes: **These requirements can be specifically found in EN-OP-102 Attachment 9.2 sections 1.1 and 2.1 and Attachment 9.3 sections 1.1 and 1.4. Any words that demonstrate an equivalent understanding is acceptable.**

The task is complete when the operator determines the adequacy for this Tagout.

SAT / UNSAT

Task Standard(s):

The operator indentifies the tagout lacks the required isolations per EN-OP-102.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is in MODE 4.
- The LPCS jockey pump is to be replaced.

Initiating Cue(s):

- As CRS you are tasked to verify the adequacy of the proposed tagout for work on the LPCS Jockey Pump.
- For the purpose of this task restoration configuration is not required.
- Document errors or inadequate boundaries.

ATTACHMENT 9.3 **TAGOUT TAGS SHEET**

CLEARANCE: ___**MANUAL**_____ TAGOUT: ___XXXX_____

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	D	52-151108 LPCS JKY PMP 15B11	2	OPEN							
2	D	HS M611 LPCS Jockey Pump Handswitch 1H13-P601	1	NUET AFTER STOP							
3	D	E21-F032 LPCS Jockey Pump Suction Area 9 Elevation 93'	4	CLOSED							
4	D	E21-F011 LPCS MIN FLO TO SUPP POOL 1H13-P601	3	AUTO AFTER CLOSE							
5	D	E21-F035 LPCS Jockey Pump Minimum Flow Area 9 Elevation 93'	5	CLOSED							
6	D	E21-F225 Jockey Pump Suct Test Conn Isol Area 9 Elevation 93'	5	OPEN							
7	D	E21-F226 Jockey Pump Suct Test Conn Isol Area 9 Elevation 93'	5	CLOSED							

For Training Only

Date of Examination: 12/10/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AS4

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AS4

JPM Title: Emergency Exposure Limits

Facility Number: NA
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 20 min

Applicant: _____ Examiner: _____

Performance Time: _____ Performance Rating: SAT UNSAT

Comments:

Prepared By:	Mark Pait	2/22/12
	Exam Developer	Date
Ops Review:	Roger Bond	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Jonathan Smith	9/18/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/18/12
	Project Lead or Exam Team Lead	Date

Emergency Exposure Limits

Setting:	Classroom
Type:	RO
Task:	CRO-ADMIN-15
K&A:	2.3.4 (3.2/3.7)
Safety Function:	N/A
Performance:	Actual
Reference(s):	10-S-01-1 (Activation of the Emergency plan)
	10-S-01-17 (Emergency Personnel Exposure Control)
	EN-RP-201 (Dosimetry Administration)
Handout(s):	10-S-01-1 / EPP 01-02 (Flow Chart)
	10-S-01-17
	EN-RP-201
	Calculator
# Manipulations:	N/A
# Critical Steps:	4
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Determines that the Plant General Manager and Radiation Protection Manager must approve the dose extension to 3,532 mrem during an Unusual Event.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant operating at 55% power.
- There are high radiation levels in containment.
- Max expected radiation exposure for containment entry is 14,000 mrem/hr.
- Offgas flow is 75 cfm.
- Computer point D173001 has been in alarm for 70 minutes.
- Computer point D173002 has been in alarm for 5 minutes.
- Offgas Pre-treatment radiation monitor is reading 1,250 mR/hr.
- An operator qualified to perform a task in containment to mitigate the radiation concern has a current year-to-date exposure TEDE of 32mrem.
- The site Emergency Plan has been activated for the current conditions.

Initiating Cue(s):

- You are directed by the SM to determine the requirements to send the qualified operator into containment to mitigate the radiation concern.
- The task will take 15 minutes inside containment.
- Who must approve the exposure limits for this task considering only TEDE, the current Emergency Classification, and the operator's exposure inside containment?

Electrical Print Reading

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator 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.

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

Step 1: 10-S-01-1 Flowchart SU9
☐* *Determine that the station meets the threshold for an Unusual Event ONLY.*
Standard: Determines the correct Emergency Classification as Unusual Event.
Cue:
Notes: SAT / UNSAT

Step 2: Calculation
☐* *Determine expected final exposure following the task.* $\frac{14{,}000 \text{ mrem}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60\text{min}} \cdot 15 \text{ min} = 3{,}500 \text{ mrem} + 32 \text{ mrem} = 3{,}532 \text{ mrem}$
Standard: Determines the correct exposure.
Cue:
Notes: SAT / UNSAT

Step 3: 10-S-01-17 section 6.1.2
☐* *Determine the administrative dose limits and extension process of EN-PR-201 (Dosimetry Administration) is applicable.*
Standard: Determines that the normal dose extension process applies unless an Alert or above is declared.
Cue:
Notes: SAT / UNSAT

Step 4: EN-RP-201 section 5.4
☐* *Determine that the Radiation Protection Manager **and** Plant General Manager must approve the exposure for this task using table in section 5.4 of EN-RP-201.*
Standard: Determines correct approval requirements.
Cue:
Notes: SAT / UNSAT

Task Standard(s):
Determines that the Plant General Manager and Radiation Protection Manager must approve the dose extension to 3,532 mrem during an Unusual Event. SAT / UNSAT
Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant operating at 55% power.
- There are high radiation levels in containment.
- Max expected radiation exposure for containment entry is 14,000 mrem/hr.
- Offgas flow is 75 cfm.
- Offgas Pre-treatment radiation monitor is reading 1,250 mR/hr.
- Computer point D173001 has been in alarm for 70 minutes.
- Computer point D173002 has been in alarm for 5 minutes.
- An operator qualified to perform a task in containment to mitigate the radiation concern has a current year-to-date exposure TEDE of 32mrem.
- The site Emergency Plan has been activated for the current conditions.

Initiating Cue(s):

- You are directed by the SM to determine the requirements to send the qualified operator into containment to mitigate the radiation concern.
- The task will take 15 minutes inside containment.
- Who must approve the exposure limits for this task considering <u>only</u> TEDE, the <u>current</u> Emergency Classification, and the operator's exposure inside containment?

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012AS5

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012AS5 JPM Title: PAR Determination

Facility Number: NA
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☒ Time Critical **15 MIN**	☐ Alternate Path	Validation Time: 10 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	2/28/12
	Exam Developer	Date
Ops Review:	Roger Bond	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	Jonathan Smith	9/18/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/18/12
	Project Lead or Exam Team Lead	Date

Protective Action Recommendation Determination

Setting:	Classroom
Type:	SRO
Task:	SRO-A&E-41
K&A:	2.4.44 (2.4/4.4)
Safety Function:	N/A
Performance:	Actual
Reference(s):	10-S-01-12 (Radiological Assessment and Protective Action Recommendations)
	10-S-01-1 (Activation of the Emergency Plan)
	EPP 06-01 (Emergency Notification Form)
Handout(s):	10-S-01-12
	EPP 06-01 (Attached)
# Manipulations:	N/A
# Critical Steps:	3
Group:	N/A

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Task Standard(s):

- Within 15 minutes determine that an Extended PAR is warranted and sectors C, D, and E should be evacuated to 10 miles.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant was shut down at 0245 this morning by inserting a manual scram.
- The site Emergency Plan has been activated.
- A site General Emergency was declared at 0718 due to a loss of two barriers and a potential loss of third barrier (FG1).
- A "Standard PAR" was issued with the declaration of a General Emergency at 0718 to evacuate all sectors to 2 miles and sectors R, A, and B to 5 miles.
- New dose projections and wind direction changes warrant a new notification and PAR recommendation.
- A new Emergency Notification form (EPP-06-01) has been completed except for item 5, Recommended Protective Actions.

Initiating Cue(s):

- The Shift Manager directs you to recommend a new PAR and complete item 5 of the Emergency Notification Form.
- Directions from 10-S-01-6 (Notification of Offsite Agencies and Plant On-Call Emergency Personnel) to complete item 5 of the Emergency Notification Form are as follows:
    - Select the correct Protective Action Recommendation on line 5 in accordance with 10-S-01-12 (Radiological Assessment and Protective Action Recommendations).
    - Reference attachment VI of 10-S-01-12 for guidance on what sectors to include.
- This Task is <u>time critical</u>.

Electrical Print Reading

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This task is to use GGNS procedure 01-S-18-12 (Radiological Assessment and Protective Action Recommendations) to determine appropriate PAR actions.

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

Step 1: 10-S-01-12 Section 6.2	
☐* *Using dose data from item 12 of Notification Form, determine that an extended PAR is warranted with evacuation of all sectors 2 miles and sectors C, D, and E to 10 miles.*	
Standard:	Determines new PAR.
Cue:	
Notes:	**This can be determined using only section 6.2.1 or can also reference section 6.2.5.**
	SAT / UNSAT

Step 2: 10-S-01-12 Section 6.2.5.d-f
☐* *Determine that sectors C, D, and E are the only sectors to be filled in on the Emergency Notification form.*
Standard: Determines evacuation for correct sectors.
Cue:
Notes: **Attachments V & VI also guide the operator on which sectors to include on the Emergency Notification form.** SAT / UNSAT

Step 3: Emergency Notification form
☐* *Check box 5C on the Emergency Notification form and list sectors C, D, and E as the sectors to evacuate to 10 miles.*
Standard: Completes the form correctly.
Cue:
Notes: SAT / UNSAT

Task Standard(s):

Within 15 minutes determine that an Extended PAR is warranted and sectors C, D, and E should be evacuated to 10 miles.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant was shut down at 0245 this morning by inserting a manual scram.
- The site Emergency Plan has been activated.
- A site General Emergency was declared at 0718 due to a loss of two barriers and a potential loss of third barrier (FG1).
- A "Standard PAR" was issued with the declaration of a General Emergency at 0718 to evacuate all sectors to 2 miles and sectors R, A, and B to 5 miles.
- New dose projections and wind direction changes warrant a new notification and PAR recommendation.
- A new Emergency Notification form (EPP-06-01) has been completed except for item 5, Recommended Protective Actions.

Initiating Cue(s):

- The Shift Manager directs you to recommend a new PAR and complete item 5 of the Emergency Notification Form.
- Directions from 10-S-01-6 (Notification of Offsite Agencies and Plant On-Call Emergency Personnel) to complete item 5 of the Emergency Notification Form are as follows:
    - Select the correct Protective Action Recommendation on line 5 in accordance with 10-S-01-12 (Radiological Assessment and Protective Action Recommendations).
    - Reference attachment VI of 10-S-01-12 for guidance on what sectors to include.
- This Task is <u>time critical</u>.

Facility: **GRAND GULF NUCLEAR STATION** Date of Examination: 12/10/2012

Exam Level: RO ☒ SRO-I ☐ SRO-U ☐ Operating Test No.: LOT-2012

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. 201001 A4.01 (3.1/3.1) / Rotate Operating CRD Pumps GJPM-OPS-2012CR1	A-D-S	1
b. 209001 A4.02 (3.5/3.4) / Quarterly Valve Surveillance GJPM-OPS-2012CR2	M-S	2
c. 239001 2.1.30 (4.4/4.0) / Close and Open a MSIV GJPM-OPS-2012CR3	D-S	3
d. 245000 700000 AA1.03 (3.8/3.7) / Adjust Generator VARs GJPM-OPS-2012CR4	A-N-S	4
e. 219000 295026 EA1.01 (4.1/4.1) / Shift RHR System to Suppression Pool Cooling GJPM-OPS-2012CR5	A-M-S-EN-L	5
f. 264000 A4.05 (3.6/3.7) / Parallel Diesel Generator with the Grid GJPM-OPS-2012CR6	D-S	6
g. 212000 A2.03 (3.3/3.5) / Reactor Manual Scram Switch Test GJPM-OPS-2012CR7	A-P-S	7
h. 272000 A4.02 (3.0/3.0) / Area Radiation Monitor Functional Test GJPM-OPS-2012CR8	D-S	9
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 295019 AA1.01 (3.5/3.3) / Install Nitrogen Bottle on ADS Air Supply GJPM-OPS-2012PS1	P-E-L-R	3
j. 212000 2.1.20 (4.6/4.6) / Energize RPS Alternate Feed GJPM-OPS-2012PS2	D	7
k. 286000 2.4.25 (3.3/3.7) / Manually Initiate Fire Protection GJPM-OPS-2012PS3	A-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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **GRAND GULF NUCLEAR STATION** Date of Examination: 12/10/2012

Exam Level: RO ☐ SRO-I ☒ SRO-U ☐ Operating Test No.: LOT-2012

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. 201001 A4.01 (3.1/3.1) / Rotate Operating CRD Pumps GJPM-OPS-2012CR1	A-D-S	1
b.		
c. 239001 2.1.30 (4.4/4.0) / Close and Open a MSIV GJPM-OPS-2012CR3	D-S	3
d. 245000 700000 AA1.03 (3.8/3.7) / Adjust Generator VARs GJPM-OPS-2012CR4	A-N-S	4
e. 219000 295026 EA1.01 (4.1/4.1) / Shift RHR System to Suppression Pool Cooling GJPM-OPS-2012CR5	A-M-S-EN-L	5
f. 264000 A4.05 (3.6/3.7) / Parallel Diesel Generator with the Grid GJPM-OPS-2012CR6	D-S	6
g. 212000 A2.03 (3.3/3.5) / Reactor Manual Scram Switch Test GJPM-OPS-2012CR7	A-P-S	7
h. 272000 A4.02 (3.0/3.0) / Area Radiation Monitor Functional Test GJPM-OPS-2012CR8	D-S	9
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 295019 AA1.01 (3.5/3.3) / Install Nitrogen Bottle on ADS Air Supply GJPM-OPS-2012PS1	P-E-L-R	3
j. 212000 2.1.20 (4.6/4.6) / Energize RPS Alternate Feed GJPM-OPS-2012PS2	D	7
k. 286000 2.4.25 (3.3/3.7) / Manually Initiate Fire Protection GJPM-OPS-2012PS3	A-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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **GRAND GULF NUCLEAR STATION** Date of Examination: 12/10/2012

Exam Level: RO ☐ SRO-I ☐ SRO-U ☒ Operating Test No.: LOT-2012

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a.		
b.		
c.		
d. 245000 700000 AA1.03 (3.8/3.7) / Adjust Generator VARs GJPM-OPS-2012CR4	A-N-S	4
e. 219000 295026 EA1.01 (4.1/4.1) / Shift RHR System to Suppression Pool Cooling GJPM-OPS-2012CR5	A-M-S-EN-L	5
f.		
g.		
h. 272000 A4.02 (3.0/3.0) / Area Radiation Monitor Functional Test GJPM-OPS-2012CR8	D-S	9
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 295019 AA1.01 (3.5/3.3) / Install Nitrogen Bottle on ADS Air Supply GJPM-OPS-2012PS1	P-E-L-R	3
j.		
k. 286000 2.4.25 (3.3/3.7) / Manually Initiate Fire Protection GJPM-OPS-2012PS3	A-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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Date of Examination: 12/07/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR1

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR1

JPM Title: Rotate Operating CRD Pumps

Facility Number: GJPM-OPS-C110181
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☒ Alternate Path	Validation Time: 15 Min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Jonathan Sparks	5/1/10
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	10/22/2012
	Project Lead or Exam Team Lead	Date

Rotate Operating CRD Pumps

Setting:	Simulator
Type:	RO
Task:	CRO-C11(1)-8
K&A:	201001 A4.01 (3.1/3.1)
	295022 AA1.01 (3.1/3.2)
	2.1.30 (4.4/4.0)
Safety Function:	1
Performance:	Actual
Reference(s):	04-1-01-C11-1 (Control Rod Drive hydraulic System SOI)
	05-1-02-IV-1 (Control Rod/Drive Malfunctions ONEP)
Handout(s):	04-1-01-C11-1
# Manipulations:	6
# Critical Steps:	5

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC-121
- Run Schedule File "2012 NRC JPM CR1"

OR

- In expert command, execute the following lines of code:
  - create event 1 iodic11m606a(2) == 1 & iodic11m606b(3) ==1
  - Insert malfunction c11028b after 5 on event 1
  - create event 2 zlo4(956) == 1
  - Insert remote c11031 after 2 to 100 in 30 on event 2
  - Insert remote c11030 after 0 to 0 in 30 on event 2
  - Modify remote c11030 to 100 in 5 on event 3 (no @time, but insert a 3 in the event field)

Safety Concerns:

- None

Task Standard:

- CRD Pump "A" is operating at 54-66 gpm CRD system flow as indicated on C11-R600 per the immediate operator actions of 05-1-02-IV-1 (Control Rod/Drive Malfunctions ONEP).

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The Plant is at rated power
- Electrical Maintenance has requested CRD Pump "A" be secured to allow performance of preventive maintenance.
- All prerequisites per 04-1-01-C11-1 (Control Rod Drive Hydraulic System SOI) are met for the CRD Pump rotation.
- CRD Pump pre-start pump checks are completed and a local operator is standing by for performance of local actions.

Initiating Cue(s):

- The CRS directs you to rotate CRD pumps to CRD Pump "B" operating and CRD Pump "A" secured per 04-1-01-C11-1 section 5.5.

Rotate Operating CRD Pumps

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will rotate CRD pumps and respond to a CRD pump trip using plant procedures.

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

Step 1: 04-1-01-C11-1 Step 5.5.2 a	
☐ To prevent Flow Control valve oscillations, **CLOSE** Discharge Valve F217A(B) for pump that is **NOT** running.	
Standard:	Directs the local operator to close C11-F217B
Cue:	**Report as local operator (Aux Building Operator) that C11-F217B is closed.**
Notes:	SAT / UNSAT

Step 2: 04-1-01-C11-1 Step 5.5.2 b

☐ **SLOWLY OPEN** pump vent F109A(B) for pump to be started **AND RECLOSE WHEN** vented.

Standard: Directs the local operator to vent the "B" CRD Pump.

Cue: **Report as the local operator C11-F109B was opened then closed and that the "B" CRD Pump is vented.**

Notes:

SAT / UNSAT

Step 3: 04-1-01-C11-1 Step 5.5.2 c

☐* ***START*** *CRD PMP A(B)* ***AND IMMEDIATELY****, But* ***SLOWLY, OPEN*** *Discharge Valve F217A(B).*

Standard: Directs the local operator to slowly open C11-F217B when the "B" CRD pump is started. Starts the "B" CRD pump.

Cue: **Wait 15 seconds and report as the local operator C11-F217B is open.**

Notes: **Controls for CRD operation are located in the control room on P601 section 22.**

SAT / UNSAT

Step 4: 04-1-01-C11-1 Step 5.5.2 d
☐ **CHECK** CRD System flow has stabilized between 54 to 66 gpm.
Standard: Checks flow on C11-R600
Cue:
Notes: SAT / UNSAT

Step 5: 04-1-01-C11-1 Step 5.5.2 e
☐ **CLOSE** CRD Pump A(B) Disch Valve F217A(B) for CRD pump being removed from service.
Standard: Directs the local operator to close C11-F217A
Cue: **Report as the local operator C11-F217A is closed.**
Notes: SAT / UNSAT

Step 6: 04-1-01-C11-1 Step 5.5.2 f	
☐* ***STOP*** *CRD Pump A(B) being removed from service.*	
Standard:	Stops the "A" CRD pump.
Cue:	
Notes:	**When the "A" CRD pump is stopped, the "B" CRD pump will trip**
	SAT / UNSAT

Step 7: 04-1-01-C11-1 Step 5.5.2 g	
☐* ***SLOWLY OPEN*** *CRD Pump Disch Valve F217A(B) for CRD pump stopped.*	
Standard:	Directs the local operator to open C11-F217A
Cue:	Booth Operator: Trigger EVENT 3 when directed to OPEN F217A Evaluator: **Report as local operator that C11-F217A is open when booth operator indicates EVENT 3 is triggered.**
Notes:	**This step is only critical if C11-F217A was previously closed.**
	SAT / UNSAT

Step 8: 05-1-02-IV-1 Step 2.1.2 a-d

☐* ***IF** running CRD pump trips, **THEN START** standby CRD pump as follows:*

☐* ***PLACE** CRD SYS FLO CONT in MANUAL **AND REDUCE** output to Zero.*

☐* ***START** standby CRD pump.*

☐* ***IF** no scram signal is present, **THEN SLOWLY ADJUST** CRD SYS FLO CONT to 54-66 gpm after charging pressure is normal.*

☐ **RETURN** CRD SYS FLO CONT to AUTO with tapeset at 54-66 gpm.

Standard: Performs all the ONEP immediate actions for a tripped CRD pump from memory.

Cue:

Notes: **Task is complete when the operator returns the CRD SYS FLO CONT to AUTO.**

SAT / UNSAT

Task Standard(s):

CRD Pump "A" is operating at 54-66 gpm CRD system flow as indicated on C11-R600 per the immediate operator actions of 05-1-02-IV-1 (Control Rod/Drive Malfunctions ONEP).

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The Plant is at rated power
- Electrical Maintenance has requested CRD Pump “A” be secured to allow performance of preventive maintenance.
- All prerequisites per 04-1-01-C11-1 (Control Rod Drive Hydraulic System SOI) are met for the CRD Pump rotation.
- CRD Pump pre-start pump checks are completed and a local operator is standing by for performance of local actions.

Initiating Cue(s):

- The CRS directs you to rotate CRD pumps to CRD Pump “B” operating and CRD Pump “A” secured per 04-1-01-C11-1 section 5.5.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR2

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR2

JPM Title: Quarterly Valve Surveillance

Facility Number: GJPM-OPS-E2104
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☒ Modified	☐ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 20 Min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/7/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oakes	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Quarterly Valve Surveillance

Setting:	Simulator
Type:	RO
Task:	CRO-E21-NORMAL-8
K&A:	209001 A4.02 (3.5/3.4)
Safety Function:	2
Performance:	Actual
Reference(s):	06-OP-1E21-Q-0002 (LPCS MOV Functional Test)
Handout(s):	06-OP-1E21-Q-0002
	06-OP-1E21-Q-0002 Data Sheet 1 marked up to correct step.
	Stop Watch
# Manipulations:	4
# Critical Steps:	5

Simulator Setup/Required Plant Conditions:

- Any IC where LPCS is in standby (IC 122).
- Run Schedule File 2012 NRC JPM CR2

  OR
- In expert command, execute the following lines of code:
  - create event 1 iodie21m600(1) == 0
  - Insert override LO_1E21M600_R to TRUE on event 1 delete in 99
  - Insert remote e21643 to OUT
  - OPTIONAL COMMAND LINES (allows valve to be stroked twice):
  - create event 2 et_array(1) == 1 & iodie21m600(1) == 1
  - create event 3 et_array(2) == 1 & iodie21m600(1) == 0
  - Insert override LO_1E21M600_R to TRUE on event 3 delete in 99

To setup without resetting the IC:

- Return MOV Test switch to NORM
- Start LPCS Jockey Pump

Safety Concerns:

- None

Task Standard:

- Determines the stroke time for E21-F001 is 99 seconds and exceeds the “maximum acceptable stroke time of 97 seconds” and that the IST Acceptance Criteria is “Evaluation Required.”

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The Plant is at power.
- The LPCS pump breaker 152-1506 is racked out.
- Surveillance 06-OP-1E21-Q-0002 (LPCS MOV Functional Test) is due.
- Prerequisites are complete
- RP has reviewed the surveillance.
- The Control Room Supervisor has given permission to start the test.

Initiating Cue(s):

- The CRS directs you to perform steps 5.1.3, 5.1.4, 5.1.5 and 5.1.12 for the valve tested in 06-OP-1E21-Q-0002.
- Another operator will complete the rest of the surveillance.

Quarterly Valve Surveillance

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This task requires that the operator conduct quarterly system valve stroke surveillance. The operator will document that step 5.1.5f does not meet it's time requirement.

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

Step 1: 06-OP-1E21-Q-0002 Step 5.1.3

☐ **PERFORM** the following:

☐ On 1H13-P601-21B, **PLACE** the LPCS MOV TEST handswitch to the TEST position.

☐ **ENSURE** the "LPCS SYS OOSVC" annunciator 1H13-P601-21A (H-8), Alarms. (Annunciator should already be in due to pump breaker racked out)

☐ On 1H13-P601-21B, **ENSURE** the LPCS MOV IN TEST STATUS light comes On.

☐ Initial as completed on Data Sheet 1

Standard: Places LPCS MOV TEST switch to Test, record completion on Attachment I Data Sheet 1.

Cue:

Notes: The initial conditions indicate that the LPCS pump breaker is already racked out.

SAT / UNSAT

NOTE

All controls **AND** indications are on 1H13-P601-21C unless otherwise indicated.

Step 2: 06-OP-1E21-Q-0002 Step 5.1.4
☐* ***STOP** the LPCS Jockey Pump.*
Standard: Stops the jockey pump as indicated by Green light ON and Red light OFF for the pump and record completion on Attachment I Data Sheet 1.
Cue:
Notes: SAT / UNSAT

Step 3: 06-OP-1E21-Q-0002 Step 5.1.5a
☐ **OBSERVE** remote indication on 1H13-P601-21C indicates 1E21-F001 is OPEN.
Standard: Observe Red light ON and Green light OFF for E21-F001.
Cue:
Notes: SAT / UNSAT

Step 4: 06-OP-1E21-Q-0002 Step 5.1.5b
☐* ***CLOSE** 1E21-F001, LPCS PMP SUCT FM SUPP POOL **AND RECORD** stroke time closed.*
Standard: Place keylock switch for E21-F001 to close and simultaneously start a stopwatch. When the Green light is ON and the Red light goes OFF, stops the stop watch and record the time (99 seconds) and completion on Attachment I Data Sheet 1.
Cue:
Notes: **The red indicating light is timed to go out after a 99 second delay. The time recorded needs to be 98 to 101 seconds to be acceptable (this allows for the simulator scan time to see the switch is in the closed position).** SAT / UNSAT

Step 5: 06-OP-1E21-Q-0002 Step 5.1.5c

☐ **VERIFY** F001 remote indication 1H13-P601-21C indicates CLOSED.

Standard: Observe Green light ON and Red light OFF for E21-F001 and record completion on Attachment I Data Sheet 1.

Cue:

Notes:

SAT / UNSAT

Step 6: 06-OP-1E21-Q-0002 Step 5.1.5d

☐ On 1H13-P601-21B, VERIFY F001 in CLOSE position status light comes On.

Standard: Observe the White status light is ON and record completion on Attachment I Data Sheet 1.

Cue:

Notes:

SAT / UNSAT

Step 7: 06-OP-1E21-Q-0002 Step 5.1.5e
☐* ***VERIFY*** *F001 stroke time closed is greater than* ***OR*** *equal to minimum acceptable stroke time closed listed on Data Sheet I.*
Standard: Checks "Yes" and record completion on Attachment I Data Sheet 1.
Cue:
Notes: SAT / UNSAT

Step 8: 06-OP-1E21-Q-0002 Step 5.1.5f
☐* ***VERIFY*** *F001 stroke time closed is less than* ***OR*** *equal to maximum acceptable stroke time closed listed on Data Sheet I.*
Standard: Checks "No" and record completion on Attachment I Data Sheet 1.
Cue: **If candidate stops to inform the CRS, then acknowledge and direct the candidate to continue with the surveillance.**
Notes: **Actual stroke time should have been recorded at 99 seconds.** SAT / UNSAT

Step 9: 06-OP-1E21-Q-0002 Step 5.1.5g
☐* ***VERIFY*** *F001 stroke time closed is less than* ***OR*** *equal to the Limiting Value of Full Stroke Time closed listed on Data Sheet I.*
Standard: Checks "Yes" and record completion on Attachment I Data Sheet 1.
Cue:
Notes: SAT / UNSAT

Step 10: 06-OP-1E21-Q-0002 Step 5.1.5h
☐* ***OPEN*** *F001*.
Standard: Place keylock switch in OPEN and record completion on Attachment I Data Sheet 1.
Cue:
Notes: SAT / UNSAT

Step 11: 06-OP-1E21-Q-0002 Step 5.1.5i
☐ **VERIFY** F001 remote indication on 1H13-P601-21C indicates OPEN.
Standard: Observe Red light ON and Green light OFF for E21-F001 and record completion on Attachment I Data Sheet 1.
Cue:
Notes: SAT / UNSAT

Step 12: 06-OP-1E21-Q-0002 Step 5.1.12

☐* ***INDEPENDENTLY DETERMINE*** *IST power operated valve operability in accordance with the following criteria:*

a.* *Valve stroke time acceptability*

(1) Acceptable (A) - Stroke time is shorter than **OR** equal to Maximum Acceptable Stroke Time **AND** longer than **OR** equal to Minimum Acceptable Stroke Time.

(2)* *Evaluation Required (E) - Stroke time is longer than Maximum Acceptable Stroke Time (but **NOT** longer than Limiting Value of Full-Stroke Time) **OR** shorter than Minimum Acceptable Stroke Time.*

(3) Unacceptable (U) - Stroke time is longer than Limiting Value of Full-Stroke Time.

Standard: Checks "Evaluation Required (E)" and record completion on Attachment I Data Sheet 1.

Cue:

Notes: **Task is complete when the operator determines that IST Acceptance Criteria for E21-F001 is "Evaluation Required."**

SAT / UNSAT

Task Standard(s):

Determines the stroke time for E21-F001 is 99 seconds and exceeds the "maximum acceptable stroke time of 97 seconds" and that the IST Acceptance Criteria is "Evaluation Required."

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The Plant is at power.
- The LPCS pump breaker 152-1506 is racked out.
- Surveillance 06-OP-1E21-Q-0002 (LPCS MOV Functional Test) is due.
- Prerequisites are complete
- RP has reviewed the surveillance.
- The Control Room Supervisor has given permission to start the test.

Initiating Cue(s):

- The CRS directs you to perform steps 5.1.3, 5.1.4, 5.1.5 and 5.1.12 for the valve tested in 06-OP-1E21-Q-0002.
- Another operator will complete the rest of the surveillance.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR3

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR3

JPM Title: Close and Open a MSIV

Facility Number: GJPM-OPS-B2105
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 15 Min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/8/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oakes	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Close and Open a MSIV

Setting:	Simulator
Type:	RO
Task:	CRO-B21-SU/SD-1
K&A:	239001 A4.01 (4.2/4.0)
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	3
Performance:	Actual
Reference(s):	04-1-01-B21-1 (Nuclear Boiler System SOI)
Handout(s):	04-1-01-B21-1
# Manipulations:	5
# Critical Steps:	3

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC-122
- In 04-1-01-B21-1 step 4.3.1 e is marked N/A

If running 2012CR7, then core flow may be raised to 85 mlbm/hr. This setup is not consistent with actual plant operation, but will allow for the JPM to run without a negative impact. If a candidate should inquire about plant conditions, inform the candidate that the simulator is setup to allow multiple JPMs to run at the same time.

Safety Concerns:

- None

Task Standard:

- The B21-F028D is stroked and maintained closed using the Slow Closing MSIV procedure and reopened using the Opening MSIVs procedure.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- All MSIV's are currently open.
- No NSSSS isolations are present.
- The Prerequisite in section 4.3 "Turbine pressure is set > 150psig above reactor pressure," was marked N/A.
- Reactor water level has been raised to +40" for this evolution.

Initiating Cue(s):

- The CRS directs you to cycle closed and then open B21-F028D using 04-1-01-B21-1 Nuclear Boiler System SOI sections 5.4 and 4.3.
- B21-F028D is to remain closed for 10 minutes.
- A caution tag will not be necessary due to the short time the MSIV will be closed.
- All prerequisites are verified met.

Close and Open a MSIV

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will close B21-F028D using 04-1-01-B21-1 section 5.4 and then reopen B21-F028D using section 4.3.

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

Step 1: 04-1-01-B21-1 Step 5.4.2a	
☐* ***PLACE*** *associated MSIV handswitch on 1H13-P601 to TEST* ***AND DEPRESS*** *MSIV TEST pushbutton.*	
Standard:	Closes B21-F028D and observes the Green indicating light ON and the Red indicating light OFF.
Cue:	
Notes:	**B21-F028D will immediately re-open if the operator releases the Test pushbutton before taking the MSIV handswitch to the CLOSE position. If the operator unintentionally releases the pushbutton the MSIV will re-open, the test should be performed again correctly.** SAT / UNSAT

Step 2: 04-1-01-B21-1 Step 5.4.2b	
☐* ***IF** desired, **WHEN** MSIV is fully CLOSED, **PLACE** MSIV handswitch from TEST to CLOSE, **THEN RELEASE** pushbutton.*	
Standard:	When the B21-F028D is closed, the operator places the B21-F028D handswitch in the CLOSE position and releases the TEST pushbutton.
Cue:	**When the handswitch is in CLOSE, cue the candidate that 10 minutes has elapsed.**
Notes:	04-1-01-B21-1 Step 5.4.2c is NA since the initiating cue indicates that a Caution tag will not be necessary. SAT / UNSAT

Step 3: 04-1-01-B21-1 Step 4.3.2a	
☐* ***OPEN** outboard MSIVs, **IF** there is no dP across them , by **PLACING** handswitches MSL A, B, C, **AND** D CTMT OTBD ISOL handswitches for 1B21-F028A, B, C, **AND** D to AUTO.*	
Standard:	Places the B21-F028D handswitch to the AUTO position and observes that the B21-F028D strokes open via the valve position indicating lights.
Cue:	**If the operator attempts to look at indications on 1H13-P655 (not modeled in the simulator), inform the operator that there is no dP across B21-F028D.**
Notes:	The operator may verify prerequisites are met to open the MSIV; however, since seven of the eight MSIVs are open, all prerequisites are already met. All other steps in the 4.3 procedure are not applicable. **The task is complete when B21-F028D is opened using step 4.3.2 of the SOI.** SAT / UNSAT

Task Standard(s):

The B21-F028D is stroked and maintained closed using the Slow Closing MSIV procedure and reopened using the Opening MSIVs procedure.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- All MSIV's are currently open.
- No NSSSS isolations are present.
- The Prerequisite in section 4.3 "Turbine pressure is set > 150psig above reactor pressure," was marked N/A.

Initiating Cue(s):

- The CRS directs you to cycle closed and then open B21-F028D using 04-1-01-B21-1 Nuclear Boiler System SOI sections 5.4 and 4.3.
- A caution tag will not be necessary due to the short time the MSIV will be closed.
- All prerequisites are verified met.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR4

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR4 JPM Title: Adjust Generator VARs

Facility Number: _____
(If Bank or Modified from Bank)

JPM Attributes:

☒ New	☐ Modified	☐ Direct from bank
☐ Time Critical	☒ Alternate Path	Validation Time:

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/8/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Adjust Generator VAR

Setting:	Simulator
Type:	RO
Task:	CRO-N51-NORMAL-1
K&A:	245000 A4.14 (2.5/2.5), A3.10 (2.5/2.6)
	700000 AA1.03 (3.8/3.7)
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	4
Performance:	Actual
Reference(s):	04-1-01-N40-1 (Main Generator and Auxiliaries SOI)
Handout(s):	04-1-01-N40-1
# Manipulations:	8
# Critical Steps:	6

Simulator Setup/Required Plant Conditions:

- Any Power IC. With Generator on line.
- Ensure MVAR output is about 0 MVAR.
- Run Schedule File 2012 NRC JPM CR4
- Circle and Slash all prerequisites in the 04-1-01-N40-1

OR

- In expert command, execute the following lines of code:
  - create event 1 ioao2_eu(19) > 145
  - Insert malfunction n41102 on event 1 delete in 5
- Circle and Slash all prerequisites in the 04-1-01-N40-1

Safety Concerns:

- None

Task Standard:

- The operator raises generator MVAR output to >145 MVAR (in accordance with 04-1-01-N40-1) and responds to the generator auto voltage regulator failure by lowering generator MVAR to between -100 and +100 MVAR in manual control (in accordance with 04-1-02-1H13-P680-9A-C15) and then transfers the TVR back to AUTO mode (in accordance with 04-1-01-N40-1).

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is operating at 67 % power.
- The load dispatcher has directed GGNS to raise MVAR output to +160 MVAR.
- All prerequisites are met for this evolution.

Initiating Cue(s):

- The CRS directs you to raise generator MVAR output to +160 MVAR.
- The Shift Manager will allow momentary MVAR output above +170 MVAR for the purpose of this adjustment.

Adjust Generator VAR

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will raise generator MVAR output and then respond to a generator auto voltage regulator trip using the alarm response procedure and then return the TVR to AUTO.

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

Step 1: 04-1-01-N40-1 4.4.2a	
☐* ***RAISE*** *Main Generator MVARS by* ***DEPRESSING*** *the TVR CONT "RAISE" pushbutton on 1H13-P680-9C until desired MVARS is obtained on GEN MEGAVARS recorder 1N41-R608.*	
Standard:	Raises TVR while monitoring MVAR indication on P680.
Cue:	
Notes:	**The TVR will trip to MANUAL when MVAR exceed 145 MVAR. This will be apparent due to annunciator P680-9A-C-15 (Exciter TVR CAB Fail).** **Exceeding -170 MVAR or +250 MVAR constitutes a failure as these are the maximum safe values for the generator as specified in ENS-DC-199.** SAT / UNSAT

Step 2: 04-1-01-N40-1 4.4.2a	
☐* *Stop raising MVAR when* annunciator P680-9A-C15 (Exciter TVR CAB Fail) comes in.	
Standard:	Release Raise pushbutton. Does not continue to +160 MVAR with the regulator in manual.
Cue:	
Notes:	**ARI P680-9A-C15 directs the operator to maintain between -100 and +100 MVARs.**
	SAT / UNSAT

Step 3: 04-1-02-1H13-P680-9A-C15 Step 3.2	
☐ **MONITOR** TVR controller on 1H13-P680-9C to determine whether controller has transferred to MANUAL, TVR MODE SEL MAN light lit.	
Standard:	When annunciator P680-9A-C-15 annunciates, the operator refers to the ARI and determines that the TVR is in MANUAL.
Cue:	**If the operator seeks guidance from the CRS, direct the operator to perform the immediate actions as directed by the ARI.**
Notes:	Step 3.1 of the ARI is NA since the generator remains online.
	SAT / UNSAT

Step 4: 04-1-02-1H13-P680-9A-C15 Step 3.4

☐* ***ADJUST*** *Generator voltage as needed to maintain generator within capability curves. SOI 04-1-01-N40-1 limits MVARS to -100 to +100 MVARS while in Manual.*

Standard: Lowers generator MVAR to <100 MVARs.

Cue: **When generator MVARs are between -100 and +100 MVARs and stable, direct the operator as CRS that the TVR has been repaired and to now place the TVR in Automatic.**

Notes: Step 3.3 directs the operator to use the same raise/lower pushbuttons to control voltage in manual as in automatic. Step 3.5 directs the operator to maintain the generator as close to 0 MVARs as possible.

SAT / UNSAT

Step 5: 04-1-01-N40-1 5.2.2a

☐* ***SIMULTANEOUSLY DEPRESS*** *TVR MODE SEL MATCH* ***AND*** *REL pushbuttons on 1H13-P680-9C. TVR Will remain in MANUAL operation.*

☐ **ENSURE** TVR MODE SEL MATCH **AND** MAN lights are illuminated on P680-9C.

Standard: Places the TVR in MATCH mode.

Cue:

Notes:

SAT / UNSAT

Step 6: 04-1-01-N40-1 5.2.2b

☐ **DEPRESS** TVR CONT LOWER **OR** RAISE pushbuttons as necessary on 1H13-P680-9C **AND ENSURE** the following occurs:

☐ AUTOMATIC setpoint indicator GEN OTPT (N51-R602) responds on 1H13-P680-9D.

☐ VOLT BAL meter (N51-R603) responds on 1H13-P680-9D.

☐ Generator MVARS does **NOT** change.

Standard: Verify correct system response.

Cue:

Notes: The candidate may use the Raise and/or Lower button with no penalty; however, the Lower button is the one that will show plant response.

SAT / UNSAT

Step 7: 04-1-01-N40-1 5.2.2c

☐* ***DEPRESS*** *TVR CONT LOWER* ***OR*** *RAISE pushbutton(s) as necessary until TVR MAN VOLT BAL (N51-R603) indicator is as close to zero as possible.*

Standard: Adjust MAN VOLT BAL to near zero.

Cue:

Notes: This instrument is very difficult to get to go to exactly zero; therefore, close is acceptable. If it is already near zero, this is not critical.

The candidate may use the Raise and/or Lower button with no penalty.

SAT / UNSAT

Step 8: 04-1-01-N40-1 5.2.2d

☐* ***SIMULTANEOUSLY DEPRESS*** *TVR MODE SEL AUTO* ***AND*** *REL pushbutton on 1H13-P680-9C until AUTO light illuminates,* ***AND*** *MANUAL* ***AND*** *MATCH lights are extinguished. A minor change in generator MVARS May occur.*

Standard: Places the TVR in AUTO mode.

Cue:

Notes: **Task is complete when the TVR is returned to AUTO mode.**

SAT / UNSAT

Task Standard(s):

The operator raises generator MVAR output to >145 MVAR (in accordance with 04-1-01-N40-1) and responds to the generator auto voltage regulator failure by lowering generator MVAR to between -100 and +100 MVAR in manual control (in accordance with 04-1-02-1H13-P680-9A-C15) and then transfers the TVR back to AUTO mode (in accordance with 04-1-01-N40-1).

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is operating at 60% power.
- The load dispatcher has directed GGNS to raise MVAR output to +170 MVAR.

Initiating Cue(s):

- The CRS directs you to raise generator MVAR output to +170 MVAR.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR5

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR5

JPM Title: Shift RHR system to Suppression Pool Cooling

Facility Number: GJPM-OPS-E1225
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☒ Modified	☐ Direct from bank
☐ Time Critical	☒ Alternate Path	Validation Time: 20 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/13/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Shift RHR System to Suppression Pool Cooling

Setting:	Simulator
Type:	RO
Task:	CRO-E12-003, CRO-E12-015, CRO-E12-019
K&A:	219000 A2.14 (4.1/4.3)
	295026 EA1.01 (4.1/4.1)
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	5
Performance:	Actual
Reference(s):	04-1-01-E12-1 (Residual Heat Removal System SOI)
Handout(s):	04-1-01-E12-1 Attachment VI (Maximizing Suppression Pool Cooling)
# Manipulations:	5
# Critical Steps:	6

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC 123
- Run Schedule file 2012 NRC JPM CR5
- In ThunderView, open the "_Operator.thd" file and set up the following:
  - Enable level control by clicking on the green "Disabled" block
  - Set the level band to -30 to +30 in.
  - Set the level band system to HPCS.

OR

- In expert command, execute the following lines of code:
  - create event 1 zlo4(806) == 0
  - insert malfunction e12050c on event 1
- In ThunderView, open the "_Operator.thd" file and set up the following:
  - Enable level control by clicking on the green "Disabled" block
  - Insert malfunction e22159a to 0 (Kill power to the E22-F004 for level control)
  - Set the level band to -30 to +30 in.
  - Set the level band system to HPCS.

Safety Concerns:

- None

Task Standard(s):

- RHR Loop B was placed in Suppression Pool Cooling mode per SOI 04-1-01-E12-1 Attachment VI and then realigned to LPCI mode.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A LOCA in the drywell is in progress.
- Emergency Depressurization has been performed.
- RHR B is in Containment Spray Mode.
- Division 1 ECCS is out of service due to a loss of power.
- HPCS and RHR C are maintaining reactor water level.
- Reactor water level band is +30 inches to -30 inches

Initiating Cue(s):

- The CRS directs you to maintain reactor water level in band and realign RHR Loop B from Containment Spray to Suppression Pool Cooling mode, with cooling maximized, using 04-1-01-E12-1 Att. VI (hard card for Suppression Pool Cooling).

Shift RHR System to Suppression Pool Cooling

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- RHR B is operating in Containment Spray Mode under Post-LOCA conditions. The other three low pressure ECCS systems are maintaining reactor water level. The candidate will realign RHR B valves to place Suppression Pool Cooling B in service, without securing RHR B pump. When Suppression Pool Cooling B has been maximized, RHR C pump will trip, and the candidate will realign RHR B to LPCI mode for RPV level control.

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

Step 1: 04-1-01-E12-1 Att. VI (1)

☐ **ENSURE** SSW is in service by **OBSERVING** the following:

- ☐ SSW A(B) Pump running
- ☐ P41-F001A(B), SSW PMP A(B) DISCH VLV is Open
- ☐ P41-F005A(B), SSW LOOP A(B) RTN TO CLG TWR A(B) is Open
- ☐ P41-F014A(B), SSW INL TO RHR HX A(B) is Open
- ☐ P41-F006A(B), SSW PMP A RECIRC VLV is Closed

Standard: Observes that SSW B is running and supplying cooling to RHR B.

Cue:

Notes: **SSW B is already in service and supplying water.**

SAT / UNSAT

Step 2: 04-1-01-E12-1 Att. VI (2)
☐ **VERIFY OPEN** E12-F003A(B), RHR HX A(B) OUTL VLV.
Standard: Verify that E12-F003B is open by observing its position indicating meter on H13-P601.
Cue:
Notes: SAT / UNSAT

Step 3: 04-1-01-E12-1 Att. VI (3)

☐* ***RESET*** *Ctmt Spray Logic A(B),* ***IF*** *necessary per the following:*

☐* ***DEPRESS*** *CTMT SPR A(B) RESET pushbutton.*

☐ **VERIFY** white light above CTMT SPR A(B) RESET pushbutton extinguishes.

☐ **OVERRIDE** E12F042A(B) RHR A(B) INJ SHUTOFF VLV CLOSED (Unless overridden by previous EP step).

☐ **VERIFY** E12F028A(B) CTMT SPRAY A(B) SPARGER INJ VLV Closes.

Standard: Resets containment spray logic and overrides E12-F042B CLOSED.

Cue:

Notes: When E12-F042B is overridden, annunciator P601-17A-B-1 (RHR INJ VLV F042B MAN OVERRD) is in.

04-1-01-E12-1 Att. VI Step 4 should be N/A due to pump is already running.

SAT / UNSAT

Step 4: 04-1-01-E12-1 Att. VI (5)	
☐* ***OPEN*** *E12-F024A(B), RHR A(B) TEST RTN TO SUPP POOL.*	
Standard:	Opens E12-F024B
Cue:	
Notes:	**When E12-F024B is FULL OPEN, the RHR C pump will trip**.
	SAT / UNSAT

Step 5:	
☐* *Recognizes and reports that the RHR C Pump Tripped.*	
Standard:	Acknowledges and reports alarm P601-17A-A-4 (RHR Pump C OVERLD).
Cue:	
Notes:	**The applicant is expected to maintain reactor water level as the first priority without CRS direction per 02-S-01-27, Operations Philosophy step 6.1.1(d)** **Sequence of the next two steps is not critical (JPM steps 6 & 7).**
	SAT / UNSAT

Step 6: 04-1-01-E12-1 Step 5.2.2d(2)

☐* ***CLOSE** F024B, RHR B TEST RTN TO SUPP POOL.*

Standard: Closes E12-F024B.

Cue:

Notes: Operators are not expected to use the SOI procedure for this action per 02-S-01-27 (Operation's Philosophy). **Sequence of the next two steps is not critical (JPM steps 6 & 7).**

SAT / UNSAT

Step 7: 04-1-01-E12-1 Step 5.4.2b(2)

☐* ***OPEN** F042B, RHR B INJ SHUTOFF VLV.*

Standard: Opens E12-F042B

Cue:

Notes: Operators are not expected to use the SOI procedure for this action per 02-S-01-27 (Operation's Philosophy).

JPM is complete when E12-F024B is closed and E12-F042B is opened.

SAT / UNSAT

Task Standard(s):

RHR Loop B was placed in Suppression Pool Cooling mode per SOI 04-1-01-E12-1 Attachment VI and then realigned to LPCI mode.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- A LOCA in the drywell is in progress.
- Emergency Depressurization has been performed.
- RHR B is in Containment Spray Mode.
- Division 1 ECCS is out of service due to a loss of power.
- HPCS and RHR C are maintaining reactor water level.
- Reactor water level band is +30 inches to -30 inches

Initiating Cue(s):

- The CRS directs you to maintain reactor water level in band and realign RHR Loop B from Containment Spray to Suppression Pool Cooling mode, with cooling maximized, using 04-1-01-E12-1 Att. VI (hard card for Suppression Pool Cooling).

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR6

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR6

JPM Title: Parallel ESF Diesel to the Grid

Facility Number: GJPM-OPS-P7520
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 15 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/15/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oakes	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Parallel Diesel Generator with the Grid

Setting:	Simulator
Type:	RO
Task:	CRO-P75-008
K&A:	264000 A4.05 (3.6/3.7), A4.02 (3.4/3.4) 2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	6
Performance:	Actual
Reference(s):	04-1-01-P75-1 (Standby Diesel Generator System SOI)
Handout(s):	04-1-01-P75-1
# Manipulations:	7
# Critical Steps:	7

Simulator Setup/Required Plant Conditions:

- Reset Simulator to IC 121
  OR
- Any IC.
- Open the feeder from ESF 11 to bus 15AA
- Restore the auxiliary building and other plant systems as desired to minimize distractions.

Safety Concerns:

- None

Task Standard(s):

- Offsite Power has been paralleled to bus 15AA IAW SOI 04-1-01-P75-1 section 4.3.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A loss of ESF-11 supplying bus 15AA occurred.
- Standby Diesel Generator 11 started and is supplying loads on the 15AA Bus.
- ESF-11 is unavailable.

Initiating Cue(s):

- The CRS directs you to parallel ESF-12 to bus 15AA per Section 4.3 of procedure 04-1-01-P75-1.
- All prerequisites, precautions and limitations of 04-1-01-P75-1 for this evolution have been verified to be met.

Parallel Diesel Generator with the Grid

Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid
Parallel Diesel Generator with the Grid

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This JPM begins with DG11 carrying ESF bus 15AA following a loss of power to the bus. The operator will establish the proper conditions for the diesel generator and reconnect offsite power to bus 15AA from ESF Transformer 12.

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

Step 1: 04-1-01-P75-1 step 4.3.2a
☐ **SELECT** phase of Bus 15AA voltage to be MONITORED with VM 4.16 kV BUS 15AA handswitch as indicated on R21-R615A.
Standard: The operator selects the correct handswitch and moves it to any position other than OFF.
Cue:
Notes:

SAT / UNSAT

Step 2: 04-1-01-P75-1 step 4.3.2b
☐* ***PLACE*** *Offsite Power Source Breaker 152-1511 SYNC handswitch in the ON position.*
Standard: The operator selects the correct handswitch and moves it to the correct position.
Cue:
Notes: SAT / UNSAT

Step 3: 04-1-01-P75-1 step 4.3.2c
☐* ***PLACE*** *DG 11 PRL CONT handswitch momentarily to PRL (spring return to OFF) to defeat parallel interlock* ***AND PLACES*** *governor in the "DROOP" mode.* ☐ **ENSURE** AMBER Light above DIV 1 LSS TEST MODE SEL Switch comes ON.
Standard: The operator places the correct handswitch in the correct position.
Cue:
Notes: SAT / UNSAT

Step 4: 04-1-01-P75-1 step 4.3.2d
☐* ***ADJUST*** *Standby Diesel Generator 11 RUNNING VOLTS DIV 1 about 50 volts above INCOMING VOLTS DIV 1 with AUTO VOLT SETPOINT CONT DG 11 handswitch.*
Standard: The operator adjusts the diesel generator voltage 50 volts above the incoming voltage with the correct handswitch.
Cue:
Notes: SAT / UNSAT

Step 5: 04-1-01-P75-1 step 4.3.2e
☐* ***ADJUST*** *Standby Diesel Generator 11 speed to bring frequency within range of Offsite System frequency by* ***USING*** *MAN GOV CONT DG 11 handswitch so that synchroscope indicator is* ***ROTATING*** *slowly in the SLOW direction (counterclockwise).*
Standard: The operator adjusts the diesel generator frequency as described.
Cue:
Notes: Step 4.3.2f states that the operator is to allow the synchroscope to make "a few" revolutions to ensure frequency stability. SAT / UNSAT

Step 6: 04-1-01-P75-1 step 4.3.2g	
☐* ***WHEN*** *Standby Diesel Generator 11 speed is such that synchroscope indicator is moving slowly in the SLOW direction (counterclockwise)* ***AND*** *is approximately five minutes before the 12 o'clock position,* ***CLOSE*** *Offsite Power Source Breaker 152-1511* ☐ Immediately after closing Offsite Power Source breaker, **OBSERVE** BREAKER CLOSING lights to **ENSURE** breaker is Closed. (If not Closed, return BREAKER handswitch to TRIP position).	
Standard:	The operator closes breaker 152-1511 by rotating BUS 15AA FDR FM ESF XFMR 12 handswitch clockwise to CLOSE at the appointed synchroscope position. This action may be repeated, if necessary, if the closing attempt is unsuccessful.
Cue:	
Notes:	**CAUTION: Do not close an Offsite Power Source breaker with synchroscope indicator standing still if bus is powered from diesel generator.** SAT / UNSAT

Step 7: 04-1-01-P75-1 step 4.3.2h
☐* *As soon as Standby Diesel Generator 11 load has stabilized,* ***PLACE*** *breaker SYNC handswitch to the OFF position.*
Standard: The operator rotates the handswitch to the OFF position.
Cue:
Notes: **Task is complete when the SYNCH switch for breaker 152-1511 is placed in OFF.** SAT / UNSAT

Task Standard(s):

Offsite Power has been paralleled to bus 15AA IAW SOI 04-1-01-P75-1 section 4.3.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- A loss of ESF-11 supplying bus 15AA occurred.
- Standby Diesel Generator 11 started and is supplying loads on the 15AA Bus.
- ESF-11 is unavailable.

Initiating Cue(s):

- The CRS directs you to parallel ESF-12 to bus 15AA per Section 4.3 of procedure 04-1-01-P75-1.
- All prerequisites, precautions and limitations of 04-1-01-P75-1 for this evolution have been verified to be met.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR7

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR7

JPM Title: Reactor Manual Scram Switch Test

Facility Number: GJPM-OPS-C7105
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☒ Alternate Path	Validation Time: 15 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/14/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Reactor Manual Scram Switch Test

Setting:	Simulator
Type:	RO
Task:	CRO-C71-OFFNORM-005
K&A:	212000 A2.03 (3.3/3.5), A4.02 (3.6/3.7) 2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	7
Performance:	Actual
Reference(s):	06-OP-1C71-W-0001 (Reactor Manual Scram Switch Test Surveillance)
Handout(s):	06-OP-1C71-W-0001
# Manipulations:	5
# Critical Steps:	4

Simulator Setup/Required Plant Conditions:

- Load any >70 mlbm/hr core flow IC (IC 122)
- Open and Run schedule file 2012 NRC JPM CR7.sch
  OR
- In expert command, execute the following lines of code:
  - create event 10 zdi1(634) == 1 & iodic71m600a(2) == 1
  - Insert malfunction z025025_24_49 on event 10
  - Insert malfunction z025025_08_41 on event 10

To reset without resetting IC,

1. Delete malfunctions for dropped rods.
2. Reset ½ scram.
3. Override P680 annunciators for the following steps.
4. Use "_Full Core Display" ThunderView to reset rods to position 12288 (48).
5. Raise core flow to 107.9 mlbm/hr in IC 23 (or >80 mlbm/hr).
6. Close and re-open the schedule file.
7. Remove Annunciator overrides

Safety Concerns:

- None

Task Standard:

- Reactor core flow is lowered to 70 mlbm/hr and the operator determines the reactor is operating in the OPRM Trip Enabled Region of the Power to Flow Map per 05-1-02-IV-1.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is operating at 67%.

Initiating Cue(s):

- The CRS directs you to perform 06-OP-1C71-W-0001.
- All prerequisites are verified met.
- Start with Data Sheet 1 and go in order through Data Sheet 4.
- This task is not time critical.

Reactor Manual Scram Switch Test

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- The operator will perform 06-OP-1C71-W-0001 (Reactor Manual Scram Switch Test).
- When the operator depresses the first manual scram switch, two control rods (08-41 and 24-49) will scram due to a blown pilot solenoid fuse on the individual HCU units.
- The operator should recognize two scramed rods and lower core flow to 70 mlbm/hr and plot reactor power and core flow on the Power to Flow Map.

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

Step 1: 06-OP-1C71-W-0001 step 5.1	
☐ **OBTAIN** Shift Supervision's permission to start. Performer to **RECORD** Test Start Time on Data Package Cover Sheet.	
Standard:	Records the start time on the Surveillance Cover Sheet.
Cue:	**If the operator asks permission to begin the surveillance, inform the operator that the CRS has given permission to begin.**
Notes:	SAT / UNSAT

Step 2: 06-OP-1C71-W-0001 Data Sheet 1 step 5.2

☐ **VERIFY** the following lights are ON to ensure that **NO** RPS trip signals are present:

- ☐ RPS DIV 1 SCRAM SOL VLV 1A **AND** 1B lights ON (5C1)
- ☐ RPS DIV 2 SCRAM SOL VLV 2A **AND** 2B lights ON (7C1)
- ☐ RPS DIV 3 SCRAM SOL VLV 3A **AND** 3B lights ON (5C1)
- ☐ RPS DIV 4 SCRAM SOL VLV 4A **AND** 4B lights ON (7C1)

Standard: Observes white scram solenoid valve lights lit.

Cue:

Notes:

SAT / UNSAT

Step 3: 06-OP-1C71-W-0001 Data Sheet 1 step 5.3	
☐* ***ARM** the **Div 1** MAN SCRAM Switch (5C1) by rotating the collar clockwise*. ☐ VERIFY alarm RPS MAN SWITCH PERM is received (5A-B3) RPS MAN SWITCH SCRAM PERM alarm is ON	
Standard:	Rotates switch collar.
Cue:	
Notes: SAT / UNSAT	

Step 4: 06-OP-1C71-W-0001 Data Sheet 1 step 5.4	
☐* *Depress the MAN SCRAM Switch which was previously Armed.*	
Standard:	Depress MAN SCRAM Switch.
Cue:	
Notes:	**When the manual scram switch is depressed, two control rods will scram.** SAT / UNSAT

Step 5: 06-OP-1C71-W-0001 Data Sheet 1 step 5.5
☐ **VERIFY** the following: ☐ RPS SCRAM SOL VLVs lights 1A, 3A, on (5C1) **AND** 2A, 4A on (7C1) are OFF ☐ RPS SCRAM SOL VLVs lights 1B, 3B, on (5C1) **AND** 2B, 4B on (7C1) are ON ☐ RX SCRAM TRIP alarm is received (7A-A2) ☐ RX MAN SCRAM TRIP alarm is received (7A-A3)
Standard: Observes indications listed.
Cue:
Notes: SAT / UNSAT

Step 6: 06-OP-1C71-W-0001 Data Sheet 1 step 5.5.4	
☐* *Depress pushbutton SCRAM VLV (6C)* ***AND VERIFY*** *that* ***NO*** *scram valves are Open, as indicated by a green LED being OFF for all CRD/HCUs on the rod display map (6D) that are* ***NOT*** *tagged out.*	
Standard:	Determines that two Control Rods have scramed.
Cue:	
Notes:	**Control Rods 08-41 and 24-49 have scramed. Once the operator determines that rods have scramed the operator should enter the Control Rod/Drive Malfunctions ONEP.**
	SAT / UNSAT

Step 7: Control Rod/Drive Malfunctions ONEP step 2.4	
☐* ***Reduce*** *Reactor core flow to 70 mlbm/hr.*	
Standard:	Lowers core flow using both Recirc flow control valves in fast detent to 70 mlbm/hr (02-S-01-27 6.5.6).
Cue:	
Notes:	
	SAT / UNSAT

Step 8: Operation's Philosophy step 6.6.7
☐* *Plot reactor power and core flow on the Power to Flow Map.*
Standard: Plots power and flow in the OPRM Trip Enabled region.
Cue: This completes the task.
Notes: SAT / UNSAT

Task Standard(s):

Reactor core flow is lowered to 70 mlbm/hr and the operator determines the reactor is operating in the OPRM Trip Enabled Region of the Power to Flow Map per 05-1-02-IV-1.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is operating at 67%.

Initiating Cue(s):

- The CRS directs you to perform 06-OP-1C71-W-0001.
- All prerequisites are verified met.
- Start with Data Sheet 1 and go in order through Data Sheet 4.
- This task is not time critical.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012CR8

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012CR8

JPM Title: Area Radiation Monitor Functional Test

Facility Number: GJPM-OPS-D2101
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 20 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/14/12
	Exam Developer	Date
Ops Review:	Steve Reeves	9/12/2012
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oakes	9/13/2012
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/13/2012
	Project Lead or Exam Team Lead	Date

Area Radiation Monitor Functional Test

Setting:	Simulator
Type:	RO
Task:	CRO-D21-003
K&A:	272000 A4.02 (3.0/3.0)
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	9
Performance:	Actual
Reference(s):	04-1-03-D21-1 (Monthly Area Radiation Monitors Functional Test)
Handout(s):	04-1-03-D21-1 Attachment I
# Manipulations:	13
# Critical Steps:	11

Simulator Setup/Required Plant Conditions:

- Reset simulator to any IC
- Override annunciator P680-4A1-E6 **OFF**.

Safety Concerns:

- None

Task Standard(s):

- ARM D21K601 has been tested IAW 04-1-03-D21-1 Attachment I.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is at rated power.
- I&C has completed repair work on D21K601, RHR Room A Area Radiation Monitor, and the ARM is ready for Operations retest.

Initiating Cue(s):

- The CRS directs you to perform EPI 04-1-03-D21-1 Attachment I for D21K601 as a retest.
- Use the retest package provided.
- Another operator is assigned to manage any associated alarms on H13-P680.
- All prerequisites are complete

Area Radiation Monitor Functional Test

Notes: (Notes to Evaluator)

Task Overview: (Detailed description of task)

- This task is to perform the Monthly Area Radiation Monitors Functional Test for RHR Room A ARM.
- The evaluator will role play as the P680 operator responding to the expected AREA RAD PANEL P844 alarm (P680-4A1-E6) that occurs as a result of this testing. That alarm is overridden OFF in this JPM to prevent interrupting concurrent JPMs within the control room main panel area.

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

Step 1: 04-1-03-D21-1 Att. 1 Coversheet	
☐ Signs Test Performer on the data package cover sheet of 04-1-03-D21-1 Attachment I.	
Standard:	Signs, dates, and times Test Performer block on the Data Package Cover Sheet.
Cue:	
Notes:	SAT / UNSAT

Step 2: 04-1-03-D21-1 Att. 1 step 7.2.2a - 5a

☐* ***SELECT** OFF on Function switch for D21K601 on panel 1H13-P844.*

☐ **OBSERVE** "AREA RADIATION MONITORING SYSTEM FAILURE" annunciates o 1H13-P844.

☐ **OBSERVE** "AREA RAD PNL P844 TROUBLE" annunciates on 1H13-P680.

☐ **CHECK** FAIL SAFE green light extinguished.

Standard:	Selects OFF on Function switch of D21K601. Observes that P844-2A-A5 annunciator is in. Requests the ACRO to verify AREA RAD PNL P844 TROUBLE annunciates on P680. Observes the green FAIL SAFE indicator/CHECK SOURCE pushbutton on the monitor face of D21K601 backlight is off.
Cue:	**P680 annunciator "AREA RAD PNL P844 TROUBLE" is in alarm.**
Notes:	**If necessary, remind the operator that another operator is monitoring the P680 for annunciation.**

SAT / UNSAT

Step 3: 04-1-03-D21-1 Att. 1 step 7.2.6a	
☐* ***SELECT*** *OPERATE on Function switch for D21K601 on panel 1H13-P844.*	
Standard:	Selects OPERATE on Function switch of D21K601
Cue:	
Notes:	SAT / UNSAT

Step 4: 04-1-03-D21-1 Att. 1 step 7.2.7a	
☐ **CHECK** FAIL SAFE green light illuminated for D21K601 on panel 1H13-P844.	
Standard:	Observes the green FAIL SAFE indicator/CHECK SOURCE pushbutton on the monitor face of D21K601 backlight is on.
Cue:	
Notes:	SAT / UNSAT

Step 5: 04-1-03-D21-1 Att. 1 step 7.2.8a	
☐ **RESET** "AREA RAD PNL P844 TROUBLE" annunciator on 1H13-P680.	
Standard:	Requests the ACRO to verify annunciator AREA RAD PNL P844 TROUBLE resets on P680.
Cue:	**P680 annunciator "AREA RAD PNL P844 TROUBLE" alarm clear.**
Notes:	**This annunciator will automatically clear when the function switch is placed back in OPERATE.**
	SAT / UNSAT

Step 6: 04-1-03-D21-1 Att. 1 step 7.2.9a	
☐ **DISPLAY** recorder point #1 on D21R600 on panel 1H13-P844.	
Standard:	Locates D21R600 and describes actions to display point #1: • Depress the DISPLAY button on front of recorder. • Depress the #1 on keypad OR • Depress the UP or DOWN arrow key until #1 is displayed.
Cue:	**Point #1 is displayed.**
Notes:	
	SAT / UNSAT

Step 7: 04-1-03-D21-1 Att. 1 step 7.2.10-13a	
☐* ***DEPRESS AND HOLD*** *yellow TEST ALARM pushbutton for D21K601 on panel 1H13-P844.* ☐ **OBSERVE** meter indication **AND** point #1 on Recorder R600 travel upscale. ☐ **OBSERVE** respective "RADIATION HIGH" annunciator on 1H13-P844. ☐ **OBSERVE** "AREA RAD PNL P844 TROUBLE" annunciator on 1H13-P680.	
Standard:	Depresses button and observes indications. Requests the ACRO to verify annunciator AREA RAD PNL P844 TROUBLE resets on P680.
Cue:	**D21R600 Recorder Point #1 is traveling upscale** **P680 annunciator "AREA RAD PNL P844 TROUBLE" alarm received.**
Notes: SAT / UNSAT	

Step 8: 04-1-03-D21-1 Att. 1 step 7.2.14a	
☐* ***RELEASE** the yellow TEST ALARM pushbutton for D21K601 on panel 1H13-P844.*	
Standard:	Releases the yellow TEST ALARM pushbutton on the bottom of the monitor face.
Cue:	
Notes:	SAT / UNSAT

Step 9: 04-1-03-D21-1 Att. 1 step 7.2.15a	
☐ **CHECK** red HIGH ALARM light illuminated for D21K601 on panel 1H13-P844.	
Standard:	Observes the red HIGH ALARM indicator/RESET pushbutton on the monitor face of D21K601 backlight is on.
Cue:	
Notes:	SAT / UNSAT

Step 10: 04-1-03-D21-1 Att. 1 step 7.2.16-19a	
☐* ***DEPRESS AND RELEASE*** *red HIGH ALARM/RESET pushbutton for D21K601 on panel 1H13-P844.* ☐ CHECK red HIGH ALARM light extinguished. ☐ RESET "AREA RAD PNL P844 TROUBLE" annunciator on 1H13-P680. ☐ RESET "RADIATION HIGH" annunciator on 1H13-P844	
Standard:	Depresses and releases button, then observes indications. Requests the ACRO to verify annunciator AREA RAD PNL P844 TROUBLE resets on P680.
Cue:	**P680 annunciator "AREA RAD PNL P844 TROUBLE" alarm clear.**
Notes: SAT / UNSAT	

Step 11: 04-1-03-D21-1 Att. 1 step 7.2.20a

☐* ***DEPRESS AND HOLD green FAIL SAFE/CHECK SOURCE pushbutton.***

AND

☐ **OBSERVE that meter indication AND point #1 on Multipoint Recorder R600 Both indicate an increase in count rate**

THEN

☐ **RELEASE green FAIL SAFE/CHECK SOURCE pushbutton.**

Standard: Depress and release button while observing indications.

Cue: D21R600 Recorder Point #1 indicates an increasing count rate.

Notes: **This step will cause a high alarm if the check source pushbutton is held long enough to produce 100 mr/hr, which actually takes only a few seconds.**

SAT / UNSAT

Step 12: 04-1-03-D21-1 Att. 1 step 7.2.21a	
☐* ***PLACE AND HOLD*** *Function switch to ALARM*.	
Standard:	Places the function switch to alarm.
Cue:	
Notes:	The SOI step implies the switch will spring return to OPERATE, but depending on the particular ARM, the switch may have to be rotated manually back to OPERATE, as is true for this ARM.
	SAT / UNSAT

Step 13: 04-1-03-D21-1 Att. 1 step 7.2.22a	
☐ **VERIFY** meter indication travels to the setpoint of 100 mR/hr. Indicated value Should be within ± 20% of the specified value.	
Standard:	Verify alarm setpoint between 80 and 120 mR/hr.
Cue:	
Notes:	
	SAT / UNSAT

Step 14: 04-1-03-D21-1 Att. 1 step 7.2.23a	
☐* ***RELEASE*** *Function switch* ***AND OBSERVE*** *indication decreases to NORMAL.*	
Standard:	Places switch to OPERATE and observes indication.
Cue:	
Notes:	The SOI step implies the switch will spring return to OPERATE, but depending on the particular ARM, the switch may have to be rotated manually back to OPERATE, as is true for this ARM.
	SAT / UNSAT

Step 14: 04-1-03-D21-1 Att. 1 step 7.2.24a	
☐ **DEPRESS** red HIGH ALARM/RESET pushbutton to clear any spurious alarm.	
Standard:	Clears alarms
Cue:	
Notes:	This step becomes critical if there remains an alarm to be cleared. **Task is complete when the ARM is in operate and not in alarm.**
	SAT / UNSAT

Task Standard(s):

ARM D21K601 has been tested IAW 04-1-03-D21-1 Attachment I.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is at rated power.
- I&C has completed repair work on D21K601, RHR Room A Area Radiation Monitor, and the ARM is ready for Operations retest.

Initiating Cue(s):

- The CRS directs you to perform EPI 04-1-03-D21-1 Attachment I for D21K601 as a retest.
- Use the retest package provided.
- Another operator is assigned to manage any associated alarms on H13-P680.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012PS1

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012PS1

JPM Title: Install Nitrogen Bottle on ADS Air Supply

Facility Number: GJPM-OPS-EOP007
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 20 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/16/12
	Exam Developer	Date
Ops Review:		
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:		
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/14/12
	Project Lead or Exam Team Lead	Date

Install Nitrogen Bottle on ADS Air Supply

Setting:	Plant
Type:	NLO
Task:	AON-EP-002
K&A:	295019 AA1.01: 3.5/3.3
Safety Function:	3
Performance:	Actual
Reference(s):	05-S-01-EP-1 (Emergence/Severe Accident Procedure Support Documents)
Handout(s):	05-S-01-EP-1 Att. 7
# Manipulations:	4
# Critical Steps:	4

Simulator Setup/Required Plant Conditions:

- 9/139' and 9/166' are accessible

Safety Concerns:

- Wear appropriate personal protective equipment.
- Don't forget ALARA
- No climbing. Point up or down while you explain what you are going to do.

Task Standard(s):

- Nitrogen is being supplied to the ADS air supply at 125 psig. Step 2.4.2 of 05-S-01-EP-1 Attachment 7 is complete.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- EOP's have been entered
- Valves P53-F001, F007, F026A and F026B are open.
- Four nitrogen bottles are installed at the connection downstream of P53-FA01, with regulators attached.
- B21-F702A and B indicate < 125 psig

Initiating Cue(s):

- The CRS directs you to perform step 2.4.2 of EP Attachment 7.
- Another operator will complete the remaining steps of this attachment when directed
- This task is not Time Critical.

Install Nitrogen Bottle on ADS Air Supply

Notes: (Notes to Evaluator)

- This task is performed in the Auxiliary Building El. 139' and 166'.
- 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 OPERATE PLANT EQUIPMENT.

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.

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

Step 1: 05-S-01-EP-1, Att. 7 step 2.4.2 a.
☐ Close or Check closed 1P53-F003
Standard: Contacts Control Room to verify 1P53-F003 is closed.
Cue: **The Control Room reports that 1P53-F003 is closed.**
Notes: SAT / UNSAT

Step 2: 05-S-01-EP-1, Att. 7 step 2.4.2 b.	
☐ Close or Check closed 1P53-FA02	
Standard:	Checks closed valve 1P53-FA02 by turning the valve's handwheel in the clockwise direction
Cue:	**For valve 1P53-FA02, resistance is felt in the clockwise direction.**
Notes:	This valve is in a HRA.
	SAT / UNSAT

Step 3: 05-S-01-EP-1, Att. 7 step 2.4.2 c.	
☐* *Open gas cylinder valve.*	
Standard:	Rotates gas cylinder outlet valve in the counter-clockwise direction until resistance if felt
Cue:	**Resistance is felt in the counter-clockwise direction.**
Notes:	Manifold is on tool box next to 1P53-FA01
	SAT / UNSAT

Step 4: 05-S-01-EP-1, Att. 7 step 2.4.2 c. (cont)	
☐* *Adjust gas cylinder regulator to approximately 125 psig output pressure*.	
Standard:	Adjust gas cylinder regulator by rotating the regulator pressure adjustment valve in the clockwise direction until pressure is approximately 125 psig.
Cue:	**Gas cylinder regulator is indicating 125 psig**
Notes:	**The task is complete when 1C11-F102JB is closed.**
	SAT / UNSAT

Step 5: 05-S-01-EP-1, Att. 7 step 2.4.2 d.	
☐* *Open 1P53-FA01*.	
Standard:	Opens valve 1P53-FA01 by turning the valve's handwheel in the counter-clockwise direction
Cue:	**For valve 1P53-FA01, resistance is felt in the counter-clockwise direction**
Notes:	
	SAT / UNSAT

Step 6: 05-S-01-EP-1, Att. 7 step 2.4.2 e.
☐* *Unlock and slowly open 1P53-F043, while monitoring pressure on P53-R028*.
Standard: Removes the tie-wrap from valve 1P53-F043 and opens the valve by turning its handwheel 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 125 psig.**
Notes: SAT / UNSAT

Task Standard(s):

Nitrogen is being supplied to the ADS air supply at 125 psig. Step 2.4.2 of 05-S-01-EP-1 Attachment 7 is complete.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- EOP's have been entered
- Valves P53-F001, F007, F026A and F026B are open.
- Four nitrogen bottles are installed at the connection downstream of P53-FA01, with regulators attached.
- B21-F702A and B indicate < 125 psig

Initiating Cue(s):

- The CRS directs you to perform step 2.4.2 of EP Attachment 7.
- Another operator will complete the remaining steps of this attachment when directed
- This task is not Time Critical.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012PS2

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012PS2

JPM Title: Energize RPS Alternate Feed

Facility Number: GJPM-OPS-C7103
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☐ Alternate Path	Validation Time: 10 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/15/12
	Exam Developer	Date
Ops Review:	James Mergner	9/13/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	John Oaks	9/13/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/14/12
	Project Lead or Exam Team Lead	Date

Energize RPS Alternate Feed

Setting:	Plant
Type:	NLO
Task:	NOB-C71-002; NOB-C71-005
K&A:	212000
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6)
Safety Function:	7
Performance:	Actual
Reference(s):	04-1-01-C71-1 (Reactor Protection System SOI)
Handout(s):	04-1-01-C71-1
# Manipulations:	7
# Critical Steps:	5

Simulator Setup/Required Plant Conditions:

- Area is accessible
- Do not operate plant equipment.
- **Fill in the appropriate train for initial conditions and initiating cues prior to commencing the JPM (There are 3 blanks).**

Safety Concerns:

- Extreme caution should be taken around the RPS Motor Generator Set to prevent accidental contact with the controls.
- Use care when working around or near rotating equipment.
- Adjust which RPS Room to go to based on plant Protected Train.

Task Standard(s):

- RPS A(B) Alternate Feed is energized IAW SOI 04-1-01-C71-1.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant is operating at 100% power.
- Repairs have been completed on RPS ____ Alternate Feed.
- RPS ____ Bus is being supplied by the Normal Supply.
- Breaker to RPS MG Backup transformer is CLOSED.

Initiating Cue(s):

- The CRS directs you to energize the RPS Alternate Feed for RPS ____ per 04-1-01-C71-1 (Reactor Protection System SOI) section 4.3.

Energize RPS Alternate Feed

Notes: (Notes to Evaluator)

- JPM may be performed on either RPS A or B System, depending on plant conditions. The RPS train components are identified as A(B) within this JPM.
- DO NOT OPERATE PLANT EQUIPMENT.

Task Overview: (Detailed description of task)

- This task is to re-energize the RPS Alternate Feed following repairs per the SOI. This task is performed to return RPS A or B power to a normal status.

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

Step 1: 04-1-01-C71-1 step 4.3.2(4.3.3)b	
☐* ***CHECK*** *breaker on Regulator Cabinet 1XY77 (1XY78) in ON position.* ***IF*** *found OFF* ***OR*** *tripped,* ***THEN TAKE*** *handswitch to reset* ***AND*** *back to ON.*	
Standard:	Closes breaker on Regulator Cabinet 1XY77 (1XY78).
Cue:	**Circuit breaker is in OFF position.**
Notes:	Step 4.3.2(4.3.3)a was previously completed and noted in the initial conditions. The breaker referenced is located inside the CAA. If this was missed by the operator, cue them that step "a" was completed in the initial conditions. SAT / UNSAT

Step 2: 04-1-01-C71-1 step 4.3.2(4.3.3)c

☐ **CHECK** the ELECT PROT ASSY INPUT **AND** the POWER SUPPLY OUTPUT red lights are lit at the 1C71-S003E (1C71-S003H) ELECTRICAL PROTECTION ASSEMBLY panel.

Standard: Checks that both lights are on.

Cue: **Both lights are on.**

Notes:

SAT / UNSAT

Step 3: 04-1-01-C71-1 step 4.3.2(4.3.3)d-e

☐* ***VERIFY*** *the trip targets are reset on the following 1C71-S003E (1C71-S003H) relays:*

☐* *UNDER VOLTAGE*

☐ OVER VOLTAGE

☐* *UNDER FREQUENCY*

To reset the relay, **PUSH** the TARGET RESET pushbutton on the appropriate relay, on the 1C71-S003E (1C71-S003H) panel.

Standard: Resets the Under Voltage and Under Frequency trips.

Cue: **The trip targets for Under Voltage and Under Frequency are Orange (tripped). They clear as the resets are depressed.**

Notes:

SAT / UNSAT

Step 4: 04-1-01-C71-1 step 4.3.2(4.3.3)f	
☐* ***CLOSE** breaker 1C71-S003E (1C71-S003H)*	
Standard:	Closes the EPA breaker.
Cue:	**Breaker closes and remains closed.**
Notes:	SAT / UNSAT

Step 5: 04-1-01-C71-1 step 4.3.2(4.3.3)g	
☐ **CHECK** that the ELECT PROT ASSY OUTPUT red light on the 1C71-S003E (1C71-S003H) panel is lit.	
Standard:	Checks that light is on.
Cue:	**Light is on.**
Notes:	SAT / UNSAT

Step 6: 04-1-01-C71-1 step 4.3.2(4.3.3)h

☐ **CHECK** the ELECT PROT ASSY INPUT **AND** the POWER SUPPLY OUTPUT red lights are it at the 1C71-S003G (1C71-S003F) ELECTRICAL PROTECTION ASSEMBLY panel.

Standard: Checks that both lights are on.

Cue: **Both lights are on.**

Notes:

SAT / UNSAT

Step 7: 04-1-01-C71-1 step 4.3.2(4.3.3)i-j

☐ * ***VERIFY*** *the trip targets are reset on the following 1C71-S003G (1C71-S003F) relays:*

☐* *UNDER VOLTAGE*

☐ OVER VOLTAGE

☐* *UNDER FREQUENCY*

To reset the relay, **PUSH** the TARGET RESET pushbutton on the appropriate relay, on the 1C71-S003G (1C71-S003F) panel.

Standard: Resets the Under Voltage and Under Frequency trips.

Cue: **The trip targets for Under Voltage and Under Frequency are Orange (tripped). They clear as the resets are depressed.**

Notes:

SAT / UNSAT

Step 8: 04-1-01-C71-1 step 4.3.2(4.3.3)k	
☐* ***CLOSE** breaker 1C71-S003G (1C71-S003F)*	
Standard:	Closes the EPA breaker.
Cue:	**Breaker closes and remains closed.**
Notes:	SAT / UNSAT

Step 9: 04-1-01-C71-1 step 4.3.2(4.3.3)l	
☐ **CHECK** that the ELECT PROT ASSY OUTPUT red light on the 1C71-S003G (1C71-S003F) panel is lit.	
Standard:	Checks that light is on.
Cue:	**Light is on.**
Notes:	SAT / UNSAT

Step 10: 04-1-01-C71-1 step 4.3.2(4.3.3)m	
☐ **CHECK** closed CB1A(B) on panel 1C71-P001(1C71-P002).	
Standard:	Checks breaker.
Cue:	**Using provided photo (Do not actually open breaker panel) check breaker is in the ON position.**
Notes:	**Task is complete when CB1A(CB1B) is checked closed.**
	SAT / UNSAT

Task Standard(s):

RPS A(B) Alternate Feed is energized IAW SOI 04-1-01-C71-1.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- The plant is operating at 100% power.
- Repairs have been completed on RPS ____ Alternate Feed.
- RPS ____ Bus is being supplied by the Normal Supply.
- Breaker to RPS MG Backup transformer is CLOSED.

Initiating Cue(s):

- The CRS directs you to energize the RPS Alternate Feed for RPS ____ per the SOI.

Date of Examination: 10/22/2012
Operating Test Number: LOT 2012
Facility: Grand Gulf Nuclear Station
JPM Number: GJPM-OPS-2012PS3

GGNS

2012 NRC Operating Test

Job Performance Measure

JPM Number: GJPM-OPS-2012PS3

JPM Title: Manually Initiate Fire Protection

Facility Number: GJPM-OPS-P6405A
(If Bank or Modified from Bank)

JPM Attributes:

☐ New	☐ Modified	☒ Direct from bank
☐ Time Critical	☒ Alternate Path	Validation Time: 10 min

Applicant: _____ **Examiner:** _____

Performance Time: _____ **Performance Rating:** **SAT** **UNSAT**

Comments:

Prepared By:	Mark Pait	3/16/12
	Exam Developer	Date
Ops Review:	John Oaks	9/12/12
	1st Validation by Ops Rep or Ops Validation Crew	Date
Validated By:	James Mergner	9/12/12
	2nd Validation by Ops Validation Crew	Date
Approved By:	Mark Pait	9/12/12
	Project Lead or Exam Team Lead	Date

Manually Initiate Fire Protection

Setting:	Plant
Type:	NLO
Task:	AON-P64-001; NOB-R20-002
K&A:	286000 A2.08 (3.2/3.3)
	600000 AK1.02 (2.9/3.1), AA1.08 (2.6/2.9)
	2.1.30 (4.4/4.0), 2.1.20 (4.6/4.6), 2.4.25 (3.3/3.7)
Safety Function:	8
Performance:	Actual
Reference(s):	04-1-01-P64-3 (Fire Protection Cardox System SOI)
Handout(s):	04-1-01-P64-3
# Manipulations:	2
# Critical Steps:	3

Simulator Setup/Required Plant Conditions:

- Area is accessible
- Do not operate plant equipment.

Safety Concerns:

- Extreme caution should be taken around the RPS Motor Generator Set to prevent accidental contact with the controls.
- Use care when working around or near rotating equipment.
- Adjust which RPS Room to go to based on plant Protected Train.

Task Standard(s):

- The CO2 System for RPS MG Set B room has been actuated IAW SOI 04-1-01-P64-3.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A fire has been detected in the RPS MG Set Room B.
- Fire Brigade has been dispatched.
- You have arrived at the scene as a member of the Fire Brigade and you hear no CO2 flow going to the room.

Initiating Cue(s):

- The Fire Brigade Leader directs you to initiate CO2 flow using the pushbutton station.
- For the purpose of this JPM, do not don turnout gear.

Manually Initiate Fire Protection

Notes: (Notes to Evaluator)

- DO NOT OPERATE PLANT EQUIPMENT.

Task Overview: (Detailed description of task)

- This task is to manually initiate the Fire Suppression System for the RPS MG Set Room B locally. This is done to extinguish the fire.

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

Step 1: 04-1-01-P64-3 step 5.2.2a(1)
☐* ***PULL*** *the PULL handle on the pushbutton station to break the glass,* ☐* *and momentarily* ***DEPRESS*** *pushbutton to* ***INITIATE*** *an automatic timed released of CO2.*
Standard: Pulls handle to breaks glass and depresses pushbutton.
Cue: **You do not hear the flow of CO2.**
Notes: **DO NOT ALLOW THE OPERATOR TO OPERATE THE PULL HANDLE.** SAT / UNSAT

Step 2: 04-1-01-P64-3 step 5.2.2b(1)	
☐ * ***MANUALLY FLOOD*** *the CO2 Header as follows:* (a) ***REMOVE*** *the pin from the Master Valve Manual SVF373 Release Lever located near the 10 ton CO2 Storage Unit.* (b) ***PLACE*** *the Manual Release Lever to the* ***OPEN*** *position.*	
Standard:	Operator uses photo and points out the location of SVF373. The location of the pin and manual release lever. Describes removing the pin and operating the level to the open position.
Cue:	**If the operator starts to leave the area to perform this step or request another operator, give them a Photo of the area (Attached). Tell the student; given the photo describe the actions that are required.**
Notes:	If the operator starts to leave the area to perform this step, prompt him with the cue. SAT / UNSAT

Step 3: 04-1-01-P64-3 step 5.2.2b(2)

☐* **BREAK** glass with the small handle provided at the station,

☐* AND **ROTATE** the arm inside to the **OPEN** position to release CO_2 for the amount of time specified on each station. Arm Must be rotated to CLOSE to terminate the CO_2 release.

Standard: Breaks glass and rotates arm.

Cue: **You hear the flow of CO2.**

Notes: The valve identifier on this station is 1P64SVF544

SAT / UNSAT

Task Standard(s):

The CO2 System for RPS MG Set B room has been actuated IAW SOI 04-1-01-P64-3.

SAT / UNSAT

Remember to record stop time

Follow-Up Questions & Answers:

Comments:

Give this page to the student

Initial Condition(s):

- A fire has been detected in the RPS MG Set Room B.
- Fire Brigade has been dispatched.
- You have arrived at the scene as a member of the Fire Brigade and you hear no CO2 flow going to the room.

Initiating Cue(s):

- The Fire Brigade Leader directs you to initiate CO2 flow using the pushbutton station.
- For the purpose of this JPM, do not don turnout gear.

Facility: Grand Gulf Nuclear Station Scenario No.: 2 Op-Test No.: 12/12

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Start a Condensate Pump.
2. Withdraw Control Rods to Establish Main Turbine BCV's 10% open.
3. RPS "A" MG failure (Electric Power Monitoring Assembly INOPERABLE).
4. One IRM channel fails upscale.
5. Loss of TBCW.
6. Loss of ESF Transformer 21.
7. CST Rupture to CST/RWST Dike / Reactor Scram and Recirc Line Break.
8. RCIC fails to start on initiation.
9. Failure of automatic HPCS suction swap.

Initial Conditions: Reactor startup in progress.

- Reactor pressure is 400 psig
- Reactor power is 5%

Inoperable Equipment: None

Turnover:

- Crane operations are in progress on the south side of the Unit 1 Auxiliary Building.
- A reactor startup is in progress.
  - o Step 135 of Control Rod Movement Sequence is complete
  - o SJAE 'B' is in warm up 04-01-N62-1 step 4.2.2r
  - o Step 6.2.13 of 03-1-01-1
- The Condensate system is lined up as follows:
  - o CFFF is in service
  - o Precoat Filters are not in service
  - o 4 Deepbed demins are in service

Scenario Notes:

This is a new scenario. It was developed in part from plant OE found in CR-GGN-1996-00517 (Low CST Level).

Validation Time (60-90 min): 70 min

Event No.	Malf. No.	Event Type †	Event Description
1		N (BOP)	Start a Condensate Pump (04-1-01-N19-1 Condensate System)
2		R (ATC)	Withdraw Control Rods to Establish Main Turbine BCV's 10% open (04-1-01-C11-2 Rod Control and Information System)
3	c71077a	I (BOP, ATC) A (CREW) TS (CRS)	RPS "A" MG failure (05-1-02-III-2 Loss of One or Both RPS Buses) Electric Power Monitoring Assembly INOPERABLE (TS 3.3.8.2)
4	c51004g	I (ATC)	One IRM channel fails upscale
5	p43152b	I (BOP)	Loss of TBCW (05-1-02-V-2 Loss of Turbine Building Cooling Water)
6	r21180 r21218	C (BOP) A(CREW) TS(CRS)	Loss of ESF Transformer 21 (05-1-02-I-4, Loss of AC Power) Division 2 LSS Failure (TS 3.8.1)
7	fw273 rr063a fw226a fw115a r21139b r21139e e12188e	M (Crew)	CST Rupture to CST/RWST Dike / Reactor Scram and Recirc Line Break (05-1-02-IV-1 Control Rod/Drive Malfunctions, EP-2, EP-3) *** With no CRD pumps operating and reactor pressure less than 600 psig, when one scram accumulator associated with a withdrawn Control Rod is declared INOP, place the reactor mode switch to SHUTDOWN. Criterion is to give the highest priority to place the mode switch to SHUTDOWN when any HCU Accumulator Fault associated with a withdrawn control rod is verified to be due to low accumulator pressure.**
8	e51043 DI_1E51M625D	C (Crew)	RCIC fails to start on initiation (SOI 04-1-01-E51-1)
9	e22f015_j	I (Crew)	Failure of automatic HPCS suction swap *** When CST level is less than 5ft, OPEN E22-F015 (HPCS Suction from Suppression Pool). Criterion is to OPEN E22-F015 before reactor water level lowers to -191".**

† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

* **Critical Task** (As defined in NUREG 1021 Appendix D)

Quantitative Attributes Table

Normal Events	1	Abnormal Events	2
Reactivity Manipulations	1	Total Malfunctions	7
Instrument/Component Failures	6	EP Entries (Requiring substantive action)	1
Major Transients	1	EP Contingencies	0
Tech Spec Calls	2	Critical Tasks	2

Simulator Setup:

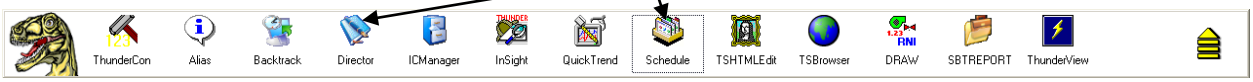
A. Initialization

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 6.3.

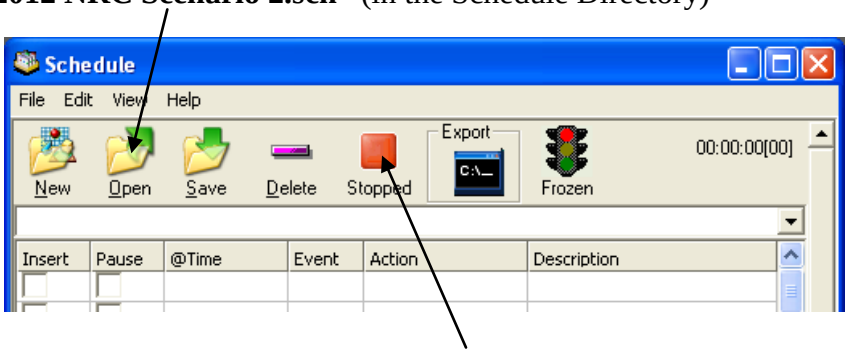
> *Note:*
> ***Prior to running the Schedule File, ensure no Event Files are Open.*** *If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.*

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.



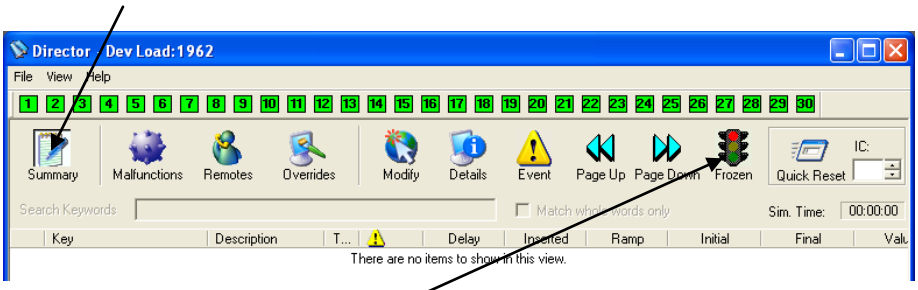
4. Set the Simulator to **IC-102** and perform switch check (Using Quick Reset in Director).

5. Click on "**Open"** in the Schedule window and Open Schedule File "**2012 NRC 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-102
    - Ensure the correct rod movement sequence available at the P680 and marked up to step 135 complete.
    - 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.

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.

B. File loaded verification:

Schedule - 2012 NRC Scenario 2.sch

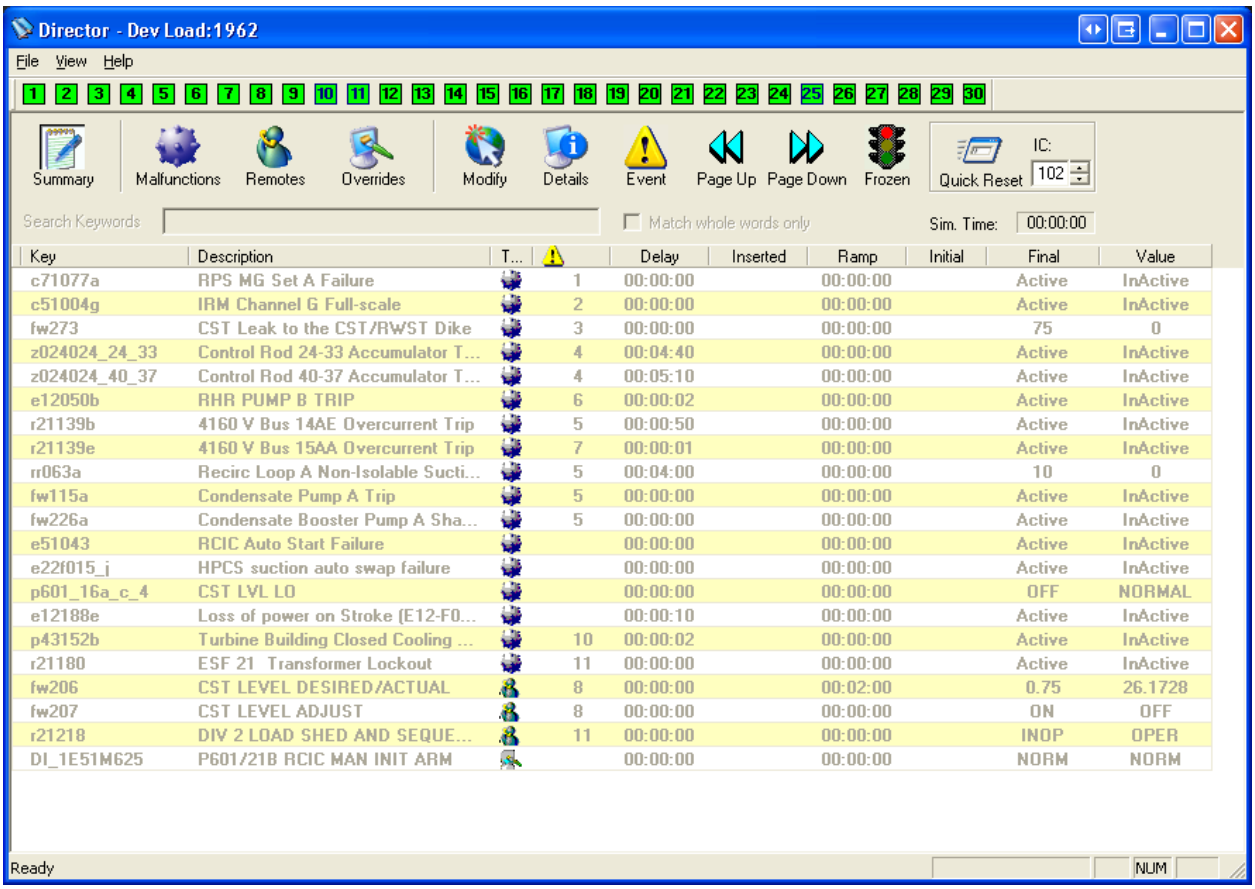
File Edit View Help

New Open Save Delete Running Export Frozen 00:00:00[00]

Insert	Pause	@Time	Event	Action	Description
				^NRC EXAM GGN 2012 Senario 2	
				=> RPS A MG EPA breaker S003A Trip	
✔		00:00:00		Insert malfunction c71077a on event 1	RPS MG Set A Failure
				=> IRM A fails downscale	
✔		00:00:00		Insert malfunction c51004g on event 2	IRM Channel G Full-scale
				=> CST Rupture	
✔		00:00:00		Insert malfunction fw273 to 75 on event 3	CST Leak to the CST/RWST Dike
✔		00:00:00		create event 4 XAL1P601_22A_A_3 == 1	
✔		00:00:00		Insert malfunction z024024_24_33 after 280 on event 4	Control Rod 24-33 Accumulator Trouble
✔		00:00:00		Insert malfunction z024024_40_37 after 310 on event 4	Control Rod 40-37 Accumulator Trouble
				=> Post SCRAM activities	
✔		00:00:00		create event 5 xcr4c34na011 < 100	MW < 100
✔		00:00:00		create event 6 zlo4(829) == 1	RHR PUMP B START
✔		00:00:00		create event 7 xcr4e21n003_c88 > 10 | xcr4e12n015a_c88 > 10	Div 1 ECCS is injecting
✔		00:00:00		create event 8 xml1rr063a == 1 & E22VFM(6) == 1 & E22VFM(7) == 1	Recirc line is broken
✔		00:00:00		Insert malfunction e12050b after 2 on event 6	RHR PUMP B TRIP
✔		00:00:00		Insert malfunction r21139b after 50 on event 5	4160 V Bus 14AE Overcurrent Trip
✔		00:00:00		Insert malfunction r21139e after 1 on event 7	4160 V Bus 15AA Overcurrent Trip
✔		00:00:00		Insert malfunction rr063a after 240 to 10 on event 5	Recirc Loop A Non-Isolable Suction Rupture
✔		00:00:00		Insert malfunction fw115a on event 5	Condensate Pump A Trip
✔		00:00:00		Insert malfunction fw226a on event 5	Condensate Booster Pump A Shaft Shear
✔		00:00:00		Insert remote fw206 to 0.75000 in 120 on event 8	CST LEVEL DESIRED/ACTUAL
✔		00:00:00		Insert remote fw207 to ON on event 8	CST LEVEL ADJUST
				=> SETUP	
✔		00:00:00		Insert malfunction e51043	RCIC Auto Start Failure
✔		00:00:00		Insert malfunction e22f015_j	HPCS suction auto swap failure
✔		00:00:00		Insert malfunction p601_16a_c_4 to OFF	CST LVL LO
✔		00:00:00		Insert malfunction e12188e after 10	Loss of power on Stroke (E12-F042C)
✔		00:00:00		Insert override DI_1E51M625 to NORM	P601/21B RCIC MAN INIT ARM
				=>Loss of TBCW	
✔		00:00:00		create event 25 zlo3(976) == 1	
✔		00:00:00		Insert malfunction p43152b after 2 on event 10	Turbine Building Closed Cooling Water Pump B
			25	Delete override LO_1P43M601C_W	P870/05C TBCW PMP C:P43-C001C - DF
				=>Loss of ESF 21 Xfmr/LSS Failure	
✔		00:00:00		Insert remote r21218 to INOP on event 11	DIV 2 LOAD SHED AND SEQUENCING STATUS
✔		00:00:00		Insert malfunction r21180 on event 11	ESF 21 Transformer Lockout

Execute: Insert malfunction r21180 on event 11
Execute: Insert remote r21218 to INOP on event 11
Execute: Insert malfunction p43152b after 2 on event 10
Execute: create event 25 zlo3(976) == 1
Execute: Insert override DI_1E51M625 to NORM

Ready NUM



Key	Description	T...	⚠	Delay	Inserted	Ramp	Initial	Final	Value
c71077a	RPS MG Set A Failure		1	00:00:00		00:00:00		Active	InActive
c51004g	IRM Channel G Full-scale		2	00:00:00		00:00:00		Active	InActive
fw273	CST Leak to the CST/RWST Dike		3	00:00:00		00:00:00		75	0
z024024_24_33	Control Rod 24-33 Accumulator T...		4	00:04:40		00:00:00		Active	InActive
z024024_40_37	Control Rod 40-37 Accumulator T...		4	00:05:10		00:00:00		Active	InActive
e12050b	RHR PUMP B TRIP		6	00:00:02		00:00:00		Active	InActive
r21139b	4160 V Bus 14AE Overcurrent Trip		5	00:00:50		00:00:00		Active	InActive
r21139e	4160 V Bus 15AA Overcurrent Trip		7	00:00:01		00:00:00		Active	InActive
rr063a	Recirc Loop A Non-Isolable Sucti...		5	00:04:00		00:00:00		10	0
fw115a	Condensate Pump A Trip		5	00:00:00		00:00:00		Active	InActive
fw226a	Condensate Booster Pump A Sha...		5	00:00:00		00:00:00		Active	InActive
e51043	RCIC Auto Start Failure			00:00:00		00:00:00		Active	InActive
e22f015_j	HPCS suction auto swap failure			00:00:00		00:00:00		Active	InActive
p601_16a_c_4	CST LVL LO			00:00:00		00:00:00		OFF	NORMAL
e12188e	Loss of power on Stroke (E12-F0...			00:00:10		00:00:00		Active	InActive
p43152b	Turbine Building Closed Cooling ...		10	00:00:02		00:00:00		Active	InActive
r21180	ESF 21 Transformer Lockout		11	00:00:00		00:00:00		Active	InActive
fw206	CST LEVEL DESIRED/ACTUAL		8	00:00:00		00:02:00		0.75	26.1728
fw207	CST LEVEL ADJUST		8	00:00:00		00:00:00		ON	OFF
r21218	DIV 2 LOAD SHED AND SEQUE...		11	00:00:00		00:00:00		INOP	OPER
DI_1E51M625	P601/21B RCIC MAN INIT ARM			00:00:00		00:00:00		NORM	NORM

Crew Turnover:

B. Assign the candidates crew positions.

C. Turnover the following conditions:

Power	4%
Pressure	400 psig
EOC	
EOOS	GREEN
Work Week	Division 2

- Crane operations are in progress on the south side of the Unit 1 Auxiliary Building.
- A reactor startup is in progress.
  - Step 135 of Control Rod Movement Sequence is complete
  - SJAE 'B' is in warm up 04-01-N62-1 step 4.2.2r
  - Step 6.2.13 of 03-1-01-1
- The Condensate system is lined up as follows:
  - CFFF is in service
  - Precoat Filters are <u>not</u> in service
  - 4 Deepbed demins are in service

Planned Evolutions this shift:

- Continue with startup IOI-1 step 6.2.13
  - Start Condensate Pump "C" (Pre-start Pump Checks are complete and all prerequisites are met).
  - Withdraw control rods to establish main turbine BCV's 10% open.
- <u>Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.</u>

D. Allow the crew to perform pre-shift brief and review procedures for planned evolutions.

E. Bring the crew into the Simulator, place the simulator is in RUN.

F. Allow the crew to walk down panels.

G. When the crew assumes the shift begin Scenario Activities.

SCENARIO ACTIVITIES:

A. Start SBT report and any other required recording devices (Video recording not allowed for NRC exams).

Start a Condensate Pump:

B. The crew will start Condensate Pump "C" using 04-1-01-N19-1, Condensate System SOI.
   1. If asked as the local operator, report that FK-R001 and FK-R003 are in "cascade."
   2. When directed to isolate PI-R002C, report that N19-FX019 was closed to isolate PI-R002C.
   3. When directed to un-isolate PI-R002C, report that N19-FX019 is open.

Withdraw Control Rods to Establish Main Turbine BCV's 10% OPEN:

C. The crew will withdraw control rods per 04-1-01-C11-2, Rod Control and Information System SOI (Information Use Procedure), to establish 10% Bypass Valve opening.
   1. There are no actions for this outside the Control Room.
   2. When the crew has completed step 137 of the sequence sheet or at the Lead Evaluator's discretion, Trigger **Event 1** to trip RPS 'A' MG.

RPS "A" MG failure:

D. The crew will enter the Loss of One or Both RPS Buses ONEP and:
   1. Re-energize RPS 'A' by placing the MG Set 'A' transfer switch to Alternate "A".
   2. Reset the Half-Scram
   3. Ensure MSIVs are open.
      a. When the BOP comes to the booth and asks the status of the pilot solenoids amperage on the back panels, reply that all MSIVs indicate normally.

E. When asked to investigate the cause of the bus trip, <u>and after the half-scram is reset</u>, inform the control room that (if not asked, report as Control Building Operator while taking rounds):
   1. the RPS "A" MG EPA breaker C71S003A and C71S003C (located on the Control Building, 189' el.) are tripped and the undervoltage flags are tripped. The motor-generator is operating normally.

2. you have also noted that the alternate feeder EPA breaker C71S003G underfrequency flag is tripped, but the breaker is still closed **(ensure that the CRS understands that this is the breaker currently powering the RPS "A" Bus).**
3. If sent as Electrical, report that underfrequency flag is a valid trip and the breaker should have opened.

F. When the CRS enters LCO 3.3.8.2 Condition 'A,' insert malfunction c51004g by triggering **Event 2** to cause IRM 'G' to fail upscale.

One IRM channel failure:

G. The crew will use the ARI and range IRM 'G' to range 10 then bypass IRM 'G' and reset the half scram.
   1. If asked as I&C to investigate IRM 'G', report that IRM 'G' is Full Scale and a work package is being written.
   2. If an operator comes to the booth to look at IRM 'G', tell the operator that it is Full Scale.
   3. When the half scram is reset Trigger **Event 10** to insert a loss of TBCW.

Loss of TBCW:

H. The crew will respond per Loss of TBCW ONEP.
   1. When the crew has stabilized TBCW by starting the 'C' TBCW pump Trigger **Event 11** to fail Div 1 LSS and trip ESF 21 Transformer.

Loss of ESF Transformer 21:

I. The crew will enter Loss of AC ONEP and reenergize 16AB via an alternate feeder.

J. If requested to reset RC&IS, use remote c11647 to reset RC&IS.

K. When the CRS enters LCO 3.8.1 Condition 'F' and any transient briefs are complete, at the Lead Evaluator's discretion, Trigger **Event 3** to insert a leak in the CST.

CST Rupture to CST/RWST Dike (CR-GGN-1996-00517):

L. The crew will respond to a CST Dike Sump Level alarm and dispatch an operator to check the CST dike.
   1. When dispatched as the local operator to the CST Dike, wait 3 min then report to the control room that a crane has tipped over onto the CST and there is a large hole in the side of the CST.
      a. If ask about the location of the hole, say you can't tell.
   2. When the CRD pump trips on low suction pressure, The CRS will enter 05-1-02-IV-1, CRD Malfunctions.

3. Since reactor pressure is below 600 psig, the first accumulator associated with a withdrawn control rod being declared INOP will require placing the Mode Switch to shutdown.

Reactor SCRAM with an Unisolable line break:

M. When the crew scrams the reactor, Condensate Pump 'A' will trip and Condensate Booster Pump 'A' will have a shaft shear (prevents feeding with condensate until loss of 14AE). One minute later the 14AE bus will trip. This prevents using condensate to feed the reactor (Auto Triggers 5,6,7). All low pressure ECCS systems will fail so that only HPCS, RCIC, and SLC will be available for injection. RCIC must be manually lined up (fails to auto initiate).
N. Four minutes after the crew scrams the reactor, a recirc line break ("A" side) will occur (Auto Trigger 5). **(Install EP Attachments as directed).**

Termination:

O. Once the HPCS suction has been aligned to the Suppression Pool and reactor level has stabilized in band (-30" to 30") or as directed by Lead Evaluator:
   - Take the simulator to Freeze and turn horns off.
   - Stop and save the SBT report and any other recording devices.
   - Instruct the crew to not erase any markings or talk about the scenario until after follow-up questions are asked.

Critical Tasks:

* With no CRD pumps operating and reactor pressure less than 600 psig, when one scram accumulator associated with a withdrawn Control Rod is declared INOP, place the reactor mode switch to SHUTDOWN. Criterion is to give the highest priority to place the mode switch to SHUTDOWN when any HCU Accumulator Fault associated with a withdrawn control rod is verified to be due to low accumulator pressure.

* When CST level is less than 5ft, OPEN E22-F015 (HPCS Suction from Suppression Pool). Criterion is to OPEN E22-F015 before reactor water level lowers to -191".

Op-Test No: 12/12 Scenario No: 2 Event No: 1

Event Description: **Start a Condensate Pump**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs the BOP to start Condensate Pump 'C' using 04-1-01-N19-1, Condensate System.
	BOP	Start Condensate Pump 'C' by: • Direct a local operator to ENSURE FK-R001 AND FK-R003 on 1H22-P171 are in cascade. • Direct a local operator to CLOSE the Instrument Isolation valve for the pressure indicator associated with Condensate Pump 'C'. • DEPRESS CNDS PMP 'C' START pushbutton. (Condensate Pump 'C' discharge valve will automatically open after 5 seconds) • CHECK discharge pressure is approximately 250 psig on PI-R607. • CHECK total condensate flow by observing CNDS PMPS MIN FLO indicator FI-R621 for minimum pump flow indication of > 5.0 mlbm/hr. • Direct a local operator to un-isolate the pressure indicator for Condensate Pump 'C'.

Op-Test No: 12/12 Scenario No: 2 Event No: 2

Event Description: **Withdraw Control Rods to Establish Main Turbine BCV's 10% open**

TIME	Position	Applicant's Actions or Behavior
	CRS	Conduct a reactivity brief (this was performed prior to the crew entering the simulator) Directs the BOP and ATC to coordinate and withdraw control rods IAW the approved Control Rod Movement Sequence and 04-1-01-C11-2, Rod Control and Information System. *NOTE: Event 3 will begin when step 137 of the Control Rod Movement Sequence is complete or when directed by the Lead Evaluator (CRS Evaluator).*
	ATC	Peer Check Control Rod Selection while monitoring reactor parameters.
	BOP	Select Control Rods per step 136 of the Control Rod Movement Sequence sheets (Should be in Gang mode and may use either continuous or notch withdraw). Step 136 Rods: 28-05, 36-61, 60-29, 04-37 Step 137 Rods: 16-09, 48-57, 56-17, 08-49 For continuous withdraw, simultaneously DEPRESS and HOLD WITHDRAW and CONT WITHDRAW pushbuttons. For notch withdraw MOMENTARILY DEPRESS WITHDRAW pushbutton and observe proper response.

Op-Test No: 12/12 Scenario No: 2 Event No: 3

Event Description: **RPS "A" MG failure**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and reports a half-scram with no additional annunciators and a trip of the RPS bus has occurred. ❖ As indicated by annunciator P680-7A-A-2, RX SCRAM TRIP coupled with a ½ scram and no other indications for why the ½ scram occurred. ❖ The GENERATOR 'A' NORMAL FEED AVAILABLE light is out on the P610 back panel.
	CRS	Enters the Loss of One or Both RPS Buses ONEP, 05-1-02-III-2. Direct the BOP to re-energize the A RPS bus using the alternate power source. Direct the ATC to reset the half-scram. Send a local operator to investigate the cause of the RPS A MG failure.
	BOP	When directed, Re-energize the A RPS Bus using the Alternate power source. • Place the MG SET A TRANSFER switch on the CONTROL ROD TEST INSTRUMENT PANEL (P610) to ALT 'A'
	ATC	When directed, reset the half-scram. • Place the division 1 & 3 scram RESET switches to RESET on the P680.
	CRS	Direct the BOP to ensure all MSIVs are energized.
	BOP	When directed, ensure all MSIV solenoid lights are on and all MSIV pilot solenoids indicate amperage on the P622 and P623 panels. (This is not modeled in the simulator. The operator should go to the instructor booth behind the P807 and simulate performance by stating to the instructor his intentions to perform the step. The instructor will provide the operator with a verbal cue concerning indications the operator observes).

Op-Test No: 12/12 Scenario No: 2 Event No: 3 cont.

Event Description: **RPS "A" MG failure**

TIME	Position	Applicant's Actions or Behavior
	CRS	Recognizes entry conditions and enters TS 3.3.8.2 Condition A. ❖ There are no indications in the control room for the EPMA breaker failure; however, the following report will be made to the control room: *When asked to investigate the cause of the bus trip, when the half-scram is reset, inform the control room that:* *1. the RPS "A" MG EPA breakers C71S003A & C71S003C (located on the Control Building, 189' el.) is tripped and the undervoltage flag is tripped.* *2. you have also noted that the alternate feeder EPA breaker C71S003G underfrequency flag is tripped, but the breaker is still closed (ensure that the CRS understands that this is the breaker currently powering the RPS "A" Bus).*

Op-Test No: 12/12 Scenario No: 2 Event No: 4

Event Description: **One IRM channel fails upscale**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and reports IRM G has failed upscale. ❖ As indicated by annunciators P680-4A2-C5, CONT ROD WITHDRAW BLOCK, and P680-7A-A9, IRM UPSC ALM, and P680-7A-A2, RX SCRAM TRIP, and P680-5A-B8, RPS CH C IRM UPSC TRIP/INOP ❖ IRM G will be "pegged" high.
	CRS	Directs the ATC to take actions for 04-1-02-1H13-P680-5A-B8 RPS CH C IRM UPSC TRIP/INOP alarm response procedure. • Determine that IRM 'G' is upscale • Range IRM 'G' up to range 10 • Bypass IRM 'G' • Reset the half scram when IRM 'G' is bypassed. *Note: the CRS may opt to simply bypass the affected IRM and reset the half scram. This is acceptable.*
	ATC	Using 04-1-02-1H13-P680-5A-A8 RPS CH A IRM UPSC TRIP/INOP alarm response: • Observe IRM 'G' is upscale • Range IRM 'G' up to range 10. • Bypass IRM 'G' • Reset the half scram by momentarily placing RPS Channel 3 SCRAM RESET switch to RESET

Op-Test No: 12/12 Scenario No: 2 Event No: 5

Event Description: **Loss of TBCW**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognizes and reports TBCW 'B' pump tripped and the standby TBCW 'C' pump failed to auto start. ❖ As indicated by annunciators P870-5A-B4, TBCW PMP B TRIP ❖ TBCW PMP C STBY white light is on but the pump is not running.
	CRS	Enter the Loss of TBCW ONEP, 05-1-02-V-2 and direct the BOP to start the standby TBCW pump. *Note: No other actions of the ONEP are required.*
	BOP	When directed, start TBCW 'C' Pump.

Op-Test No: 12/11 Scenario No: 5 Event No: 6

Event Description: **Loss of ESF Transformer 21/Division 2 LSS failure**

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognize and report ESF Transformer Lockout as indicated by: ❖ Annunciator P807-4A-B5, ESF XFMR 21 LOCKOUT TRIP ❖ Annunciator P807-4A-F2, ESF XFMR 21 TROUBLE ❖ Division 3 DG will start and reenergize the 17AC bus (16AB and 17AC is de-energized on a loss of ESF Transformer 21) ❖ There are also other alarms associated with the loss of power. Recognize and report 16AB bus de-energized and Division 2 DG did not reenergize the bus as indicated by: ❖ Half of the Control Room lights go out and stay out until the 16AB bus is reenergized. ❖ Annunciator P864-2A-H1, DIV 2 LSS SYS FAIL ❖ Annunciator P864-2A-3A, 4.16KV BUS 16AB UNDERVOLTAGE ❖ There are also other alarms associated with the loss of power.
	CRS	Enter Loss of AC Power ONEP, 05-1-02-I-2. Direct the BOP to Reenergize 16AB using an alternate feeder breaker and Reenergize 16B42.
	BOP	Reenergize 16AB with an alternate feeder breaker using one of the following sources: • ESF 12 via 152-1611 • ESF 21 via 152-1614 • Div 2 DG via 152-1608 Reenergize 16B42 via 52-16405 Perform a "board walk down" and determine and report the cause for 16AB not automatically reenergizing was due to a failure of Division 2 LSS as indicated by annunciator P864-2A-H1, DIV 2 LSS SYS FAIL and the DIV 2 LSS PNL FAIL status light (on P864-2B panel) being lit.
	CRS	Recognize and Enter LCO 3.8.1 Condition 'F' *Note: The CRS will begin to develop a plan to restore plant systems to normal; however, due to time restraints the next event should be initiated when satisfied with the crew's response.*

Op-Test No: 12/12 Scenario No: 2 Event No: 7

Event Description: **CST Rupture to CST/RWST Dike**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognizes and reports the following when they occur: ❖ P870-5A-D5, CST DIKE SMP LVL HI ❖ P870-5A-D4, CST LVL HI-LO In addition, the BOP should evaluate CST level as indicated by P11-LI-R601 on P870 and report lowering CST level.
	CRS	Send an operator to the CST Dike to determine if there is a leak to the CST Dike. Recognize the imminent loss of CRD and subsequent required reactor scram. Perform a transient brief to prepare the crew for the loss of CRD. When CRD pumps are tripped, enter the CRD Malfunctions ONEP, 05-1-02-IV-1. When the first HCU accumulator fault associated with a withdrawn control rod is determined to be due to low pressure, direct the ATC to manually scram the reactor. *NOTE: The CRS may opt to scram the reactor sooner based on conservative decision making these action are based on the limits of Tech Specs and procedures.*
	BOP	Keep the crew updated with CST level and the status of the CRD system.
	ATC	With no CRD pumps running and reactor pressure <600 psig, when one scram accumulator associated with a withdrawn control rod is declared INOP, manually inserts a reactor scram by placing the reactor mode switch to SHUTDOWN. * **With no CRD pumps operating and reactor pressure less than 600 psig, when one scram accumulator associated with a withdrawn Control Rod is declared INOP, place the reactor mode switch to SHUTDOWN. Criterion is to give the highest priority to place the mode switch to SHUTDOWN when any HCU Accumulator Fault associated with a withdrawn control rod is verified to be due to low accumulator pressure.** Provides a scram report to the CRS: • Reactor Mode SW in SHUTDOWN. • All Rods are IN. • Reactor power is 0%. • Reactor water level and trend. • Reactor pressure and trend. • Feedwater is recoverable. • Bypass valves are available.

Op-Test No: 12/12 Scenario No: 2 Event No: 7 cont.

Event Description: **CST Rupture to CST/RWST Dike**

TIME	Position	Applicant's Actions or Behavior
	CRS	Following the reactor scram the CRS will: Enter the SCRAM ONEP, 05-1-02-I-1. Enter EP-2, RPV Control Evacuate Containment Establish a level band of 11.4 – 53.5". When Drywell pressure exceeds 1.23 psig, the CRS will enter EP-3, Containment Control
	ATC	May attempt to restore Condensate Pumps; however, 50 seconds following the scram the 14AE bus will lockout preventing the restoration of feedwater. Manually initiate RCIC by arming and depressing the RCIC MAN INIT pushbutton. May also manually initiate HPCS by arming and depressing the HPCS MAN INIT pushbutton. Maintain the reactor within the established level band.
	CRS	After entering EP-3, Containment Control, direct the BOP to energize H2 igniters.
	BOP	When directed to energize H2 igniters, Place the H2 IGNITER SYS A & B switches to the ON position.

Op-Test No: 12/11	Scenario No: 2	Event No: 8
Event Description: **RCIC fails to start on initiation**		

TIME	Position	Applicant's Actions or Behavior
	ATC / BOP	Recognizes that RCIC does not start when manually initiated using Initiate push button. ❖ As indicated when nothing happens after the Initiate PB is depressed. Manually starts RCIC using Reactor Core Isolation Cooling System SOI 04-1-01-E51-1 Attachment VI. • Shift RCIC Flo controller to manual and reduce output to minimum. • Open E51-F046. • Start Gland Seal Compressor. • Open E51-F095. • After 6 seconds, Open E51-F045. • Raise turbine speed using flow controller in manual to develop pressure greater than reactor pressure. • Open E51-F013. • Adjust flow as necessary with Flo controller. • Verify SSW A is running with adequate flow path. Establish and maintain reactor water level in the established band (11.4" to 53.5")

Op-Test No: 12/12	Scenario No: 2	Event No: 9

Event Description: **Failure of automatic HPCS suction swap**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize the failure of the automatic HPCS suction swap. ❖ CST level below 5' and HPCS flow to reactor at 0 gpm combined with E22-F001 OPEN and E22-F015 CLOSED. The (HPCS) CST LVL LO annunciator P601-16A-C4 will not come in but the (RCIC) CST LVL LO annunciator P601-21A-B5 will come in. Manually align HPCS suction to the Suppression Pool by placing the handswitch for E22-F015 to OPEN. (02-S-01-27, Operations Philosophy, section 6.1.1 states that operators should take actions to assure overall plant/personnel safety or to protect plant equipment.) * **When CST level is less than 5ft, OPEN E22-F015 (HPCS Suction from Suppression Pool). Criterion is to OPEN E22-F015 before reactor water level lowers to -191".**

Give this page to the CRS

Turnover the following conditions:

Power	4%
Pressure	400 psig
EOC	
EOOS	GREEN
Work Week	Division 2

- Crane operations are in progress on the south side of the Unit 1 Auxiliary Building.
- A reactor startup is in progress.
  - Step 135 of Control Rod Movement Sequence is complete
  - SJAE 'B' is in warm up 04-01-N62-1 step 4.2.2r
  - Step 6.2.13 of 03-1-01-1
- The Condensate system is lined up as follows:
  - CFFF is in service
  - Precoat Filters are <u>not</u> in service
  - 4 Deepbed demins are in service

Planned Evolutions this shift:

- Continue with startup IOI-1 step 6.2.13
  - Start Condensate Pump "C" (Pre-start Pump Checks are complete and all prerequisites are met).
  - Withdraw control rods to establish main turbine BCV's 10% open.
- <u>Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.</u>

Facility: Grand Gulf Nuclear Station Scenario No.: 3 Op-Test No.: 12/12

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Secure the Division 1 Diesel Generator
2. Raise reactor power to 1450 MWe (100% RTP)
3. HPCS spurious initiation (DW Press)
4. RFPT 'B' Manual/Auto Controller Failure
5. Suppression Pool Leak
6. Loss of ESF 11 Transformer
7. ADS Valve fails to open

Initial Conditions: 95% power

Inoperable Equipment: B21-PIS-N667C , Drywell press hi, is failed high (TS 3.3.5.1 Condition B entered)

Turnover: Division 1 DG is running tied to the grid. 06-OP-1P75-M-0001, Standby Diesel Generator (SDG) 11 Functional Test is in progress ready for step 5.2.25.

Scenario Notes:

This is a new scenario. HPCS and Division 1 Diesel Generator are ranked in the top 10 important systems of the GGNS PRA analysis.

Validation Time (60-90 min): 60 min

Event No.	Malf. No.	Event Type †	Event Description
1	DI_1R21M608A DI_1P75M601A p864_1a_b_2	I (BOP) TS (CRS)	Secure the Division 1 Diesel Generator (04-1-01-P75-1, Standby Diesel Generator System section 4.4; TS 3.8.1 condition B)
2		R (ATC) N (BOP)	Raise reactor power to 1450 MWe (100% RTP) (03-1-01-2 attachment VIII, Power Operations – Temporary Downpower)
3	e22055 e22159a	I (BOP) TS (CRS)	HPCS spurious initiation (02-S-01-27, Operation's Philosophy section 6.6.3 – Spurious HPCS Initiation; TS 3.5.1 condition B)
4	fw121b p680_2a_e_12	A (Crew) I (ATC)	RFPT 'B' Manual/Auto Controller Failure (05-1-02-V-7, Feedwater System Malfunctions)
5	ct218d ct219a	M (Crew)	Suppression Pool Leak (EP-4 Aux Building Control; EP-3 Containment Control; EP-2 RPV Control) * **Crew manually scrams the reactor before SP level drops below 14.5'**
6	r21134g	C (Crew)	Loss of ESF 11 Transformer (05-1-02-I-4, Loss of AC Power)
7	DI_1B21M605D	I (Crew)	ADS Valve fails to open (EP-2, RPV Control Emergency Depressurization) * **When it is determined that Suppression Pool level cannot be maintained above 14.5', the crew opens 8 SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open at least seven SRVs prior to Suppression Pool level reaching 14.5' (In cases where Emergency Depressurization is anticipated, Rapid Depressurization with the BPVs satisfies this critical task).**

† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

* **Critical Task** (As defined in NUREG 1021 Appendix D)

Quantitative Attributes Table

Normal Events	1	Abnormal Events	1
Reactivity Manipulations	1	Total Malfunctions	6
Instrument/Component Failures	5	EP Entries (Requiring substantive action)	2
Major Transients	1	EP Contingencies	1
Tech Spec Calls	2	Critical Tasks	2

Simulator Setup:

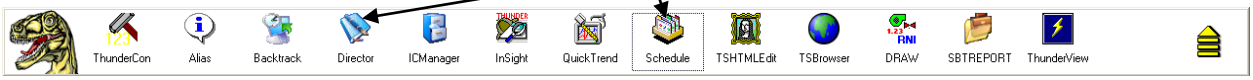
A. Initialization

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 6.3.

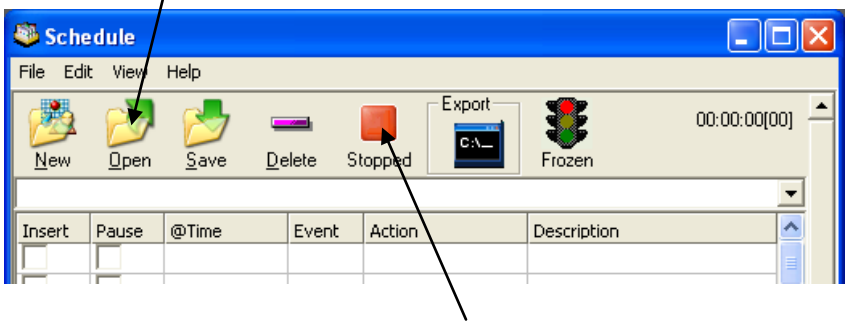
> *Note:*
> ***Prior to running the Schedule File, ensure no Event Files are Open.*** *If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.*

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.



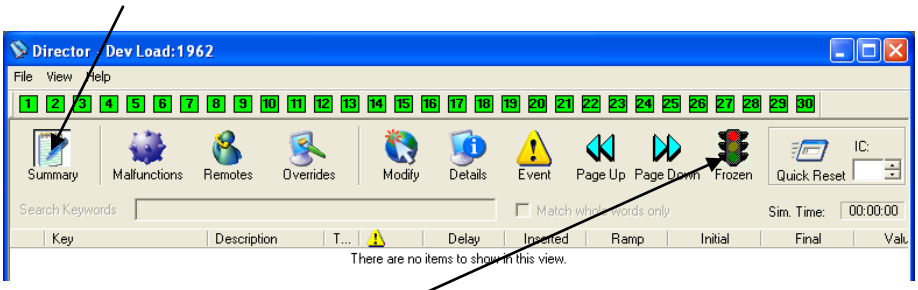
4. Set the Simulator to **IC-103** and perform switch check (Using Quick Reset in Director).

5. Click on "**Open"** in the Schedule window and Open Schedule File "**2012 NRC 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-103
    - Division 1 DG is running and tied to the grid near full load.
    - Provide a copy of 06-OP-1P75-M0001 marked up to step 5.2.25.
    - Ensure the correct rod movement sequence available at the P680.
    - Advance all chart recorders and ensure all pens inking properly.
    - Clear any graphs and trends off of 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.

B. File loaded verification:

Schedule - 2012 NRC Scenario 3.sch

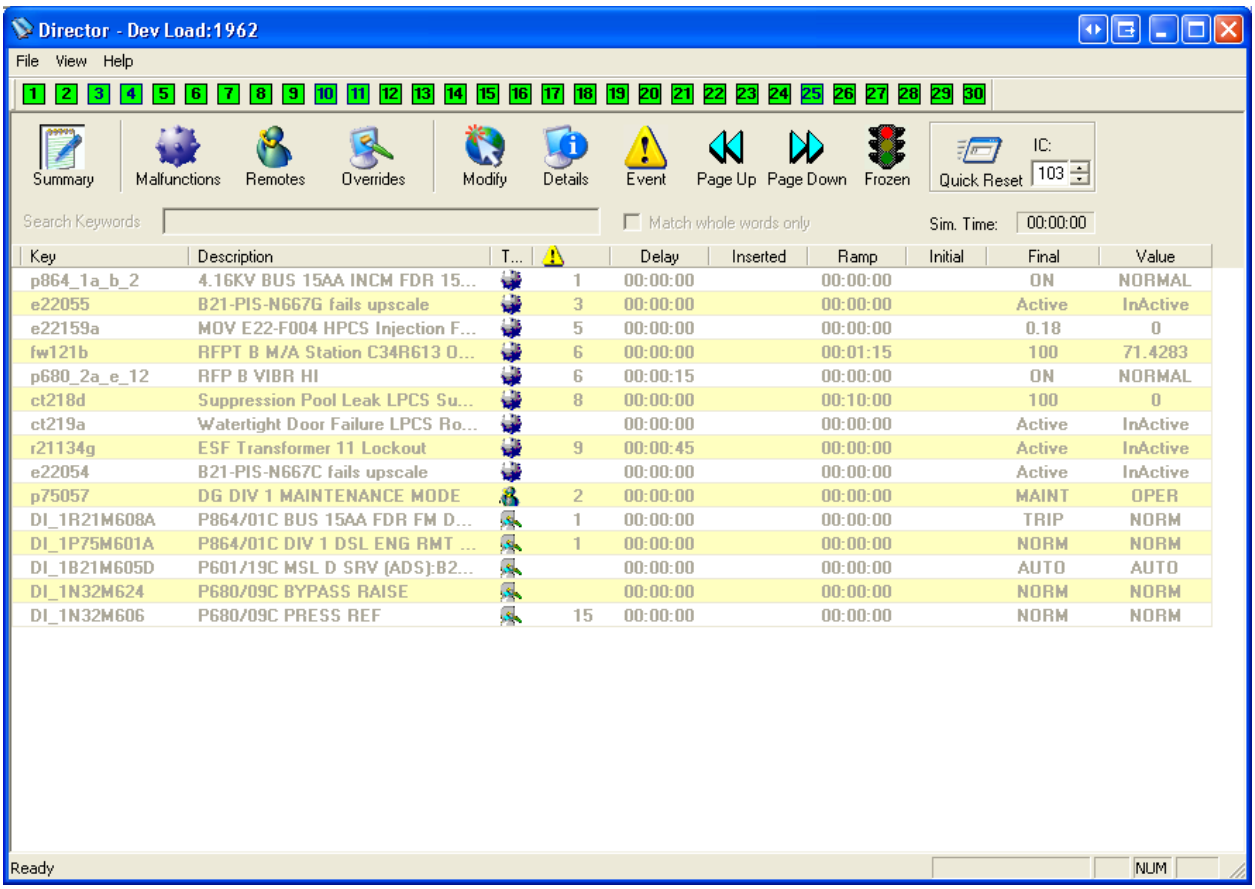
File Edit View Help

New Open Save Delete Running Export Frozen 00:00:00[00]

Insert	Pause	@Time	Event	Action	Description
				^NRC EXAM GGN 2012 Senario 3	
				=> DG11 Trip	Gen Trip w/ failure of sv-f541a
✓		00:00:00		create event 1 ioao2_eu(123) < 4.5	
✓		00:00:00		Insert override DI_1R21M608A to TRIP on event 1	P864/01C BUS 15AA FDR FM DG 11:152-1508
✓		00:00:00		Insert override DI_1P75M601A to NORM on event 1	P864/01C DIV 1 DSL ENG RMT STOP
✓		00:00:00		Insert malfunction p864_1a_b_2 to ON on event 1	4.16KV BUS 15AA INCM FDR 152-1508 TR
✓		00:00:00		Insert remote p75057 to MAINT on event 2	DG DIV 1 MAINTENANCE MODE
				=> HPCS event	
✓		00:00:00		create event 4 e22vfm(7) > 0.25	
✓		00:00:00		create event 5 et_array(4) == 1 & e22vfm(7) < 0.25	
✓		00:00:00		Insert malfunction e22055 on event 3	B21-PI5-N667G fails upscale
✓		00:00:00		Insert malfunction e22159a to 0.18 on event 5	MOV E22-F004 HPCS Injection Failure
				=> RFPT B Controller Fails increasing	
✓		00:00:00		Insert malfunction fw121b to 100 in 75 on event 6	RFPT B M/A Station C34R613 Output Failure
✓		00:00:00		Insert malfunction p680_2a_e_12 after 15 to ON on e	RFP B VIBR HI
			7	Delete malfunction p680_2a_e_12	RFP B VIBR HI
✓		00:00:00		create event 7 et_array(30) == 1 & fwl1rfpr6rad ==	
✓		00:00:00		create event 30 fwl1rfpr6rad == 1	
				=> Suppression Pool Leak	
✓		00:00:00		Insert malfunction ct218d in 600 on event 8	Suppression Pool Leak LPCS Suction line
✓		00:00:00		Insert malfunction ct219a	Watertight Door Failure LPCS Room
✓		00:00:00		=> Post Scram Activities	
✓		00:00:00		create event 9 xcr4n41r789_c88 < 100	ESF Transformer 11 Lockout
✓		00:00:00		Insert malfunction r21134g on event 9 after 45	ESF Transformer 11 Lockout
✓		00:00:00		Insert override DI_1B21M605D to AUTO	P601/19C MSL D SRV (ADS):B21-F041D
				=> Setup	
✓		00:00:00		Insert malfunction e22054	B21-PI5-N667C fails upscale
✓		00:00:00		Insert override DI_1N32M624 to NORM	P680/09C BYPASS RAISE
✓		00:00:00		create event 15 ioao2_eu(1) < 90	
✓		00:00:00		Insert override DI_1N32M606 to NORM on event 15	P680/09C PRESS REF

Execute: Insert override DI_1N32M606 to NORM on event 15
Execute: create event 15 ioao2_eu(1) < 90
Execute: Insert override DI_1N32M624 to NORM
Execute: Insert malfunction e22054
Execute: Insert override DI_1B21M605D to AUTO

Ready NUM



Key	Description	T...		Delay	Inserted	Ramp	Initial	Final	Value
p864_1a_b_2	4.16KV BUS 15AA INCM FDR 15...		1	00:00:00		00:00:00		ON	NORMAL
e22055	B21-PIS-N667G fails upscale		3	00:00:00		00:00:00		Active	InActive
e22159a	MOV E22-F004 HPCS Injection F...		5	00:00:00		00:00:00		0.18	0
fw121b	RFPT B M/A Station C34R613 O...		6	00:00:00		00:01:15		100	71.4283
p680_2a_e_12	RFP B VIBR HI		6	00:00:15		00:00:00		ON	NORMAL
ct218d	Suppression Pool Leak LPCS Su...		8	00:00:00		00:10:00		100	0
ct219a	Watertight Door Failure LPCS Ro...			00:00:00		00:00:00		Active	InActive
r21134g	ESF Transformer 11 Lockout		9	00:00:45		00:00:00		Active	InActive
e22054	B21-PIS-N667C fails upscale			00:00:00		00:00:00		Active	InActive
p75057	DG DIV 1 MAINTENANCE MODE		2	00:00:00		00:00:00		MAINT	OPER
DI_1R21M608A	P864/01C BUS 15AA FDR FM D...		1	00:00:00		00:00:00		TRIP	NORM
DI_1P75M601A	P864/01C DIV 1 DSL ENG RMT ...		1	00:00:00		00:00:00		NORM	NORM
DI_1B21M605D	P601/19C MSL D SRV (ADS):B2...			00:00:00		00:00:00		AUTO	AUTO
DI_1N32M624	P680/09C BYPASS RAISE			00:00:00		00:00:00		NORM	NORM
DI_1N32M606	P680/09C PRESS REF		15	00:00:00		00:00:00		NORM	NORM

Crew Turnover:

A. Assign the candidates crew positions.

B. Turnover the following conditions:

Power	95%
Pressure	1020 psig
BOC	
EOOS	GREEN
Work Week	Division 1

- B21-PIS-N667C is failed upscale (DW pressure sensor for HPCS). TS 3.3.5.1 Condition B was entered.
- The Division 1 DG is running tied to the grid.
- 06-OP-1P75-M-0001, Standby Diesel Generator (SDG) 11 Functional Test is in progress ready for step 5.2.25 (DG has run for 1.5hrs at full load and vibration data is complete)

Planned Evolutions this shift:

- Continue with the 06-OP-1P75-M-001 Surveillance at step 5.2.25 (Chemistry has requested that SSW 'A' remain in service until next shift).
- Raise reactor power to 1450 MWe (100% power) using IOI-2 attachment VIII, Temporary Downpower (all preconditioning requirements are met and all notifications have been made).
- Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.

C. Allow the crew to perform pre-shift brief and review procedures for planned evolutions.

D. Bring the crew into the Simulator, place the simulator is in RUN.

E. Allow the crew to walk down panels.

F. When the crew assumes the shift begin Scenario Activities.

SCENARIO ACTIVITIES:

A. Start SBT report and any other required recording devices (Video recording not allowed for NRC exams).

Secure the Division 1 Diesel Generator:

B. The crew will unload and shutdown the Div 1 diesel generator using 06-OP-1P75-M-0001, Standby Diesel Generator 11 Functional Test step 5.2.25.

1. The crew will establish phone communications with the local operator (Control Building Operator).
2. The crew will lower Div 1 DG's output to below 350KW.
   a. When Div 1 DG's output is below 450KW (4.5MW) the reverse power relay will pickup (Auto Event 1).
   b. Div 1 DG output breaker 152-1508 will trip open; however, the DG will not trip due to a failure of SV-F541A. This will also prevent the Remote Stop PB in the control room from operating (This is due to failure of SV-F541A, see E-1042).
3. When asked or 1 minute after breaker trip, report the following indications:
   a. Annunciator P400-1A-E4, TRIP GENERATOR FAULT
   b. Annunciator P400-1A-D10, LOSS OF EXCITATION OR REVERSE POWER
   c. Div 1 Diesel Generator is running
4. If asked to depress the LOCAL (EMERGENCY) STOP PB, modify the override DI_1P75M601A to "PB" (This will trip the DG).
5. If asked to place the Div 1 DG in Maintenance Mode, coordinate with the Control Room and when directed Trigger **Event 2** (Insert remote Fxn p75057 to "MAINT").
   a. Report that the diesel generator stopped when placed in MAINT.
6. When the CRS has entered LCO 3.8.1 Condition 'B' and any transient briefs are complete, at the Lead Evaluator's discretion, call the Control Room phone (2374) as the Shift Manager and prompt the crew to raise reactor power to 100%.

Raise reactor power to 100%:

C. The crew will raise reactor power to 1450 MWe (100% RTP) using FCVs.

1. No operations outside the control room are required.
2. At Lead Evaluators discretion, Trigger Event 3 to initiate HPCS due to a second DW Pressure Transmitter failing upscale, B21-PIS-N667G

HPCS Spurious Initiation:

D. When the crew shuts E22-F004, it will experience a loss of power (Auto Events 4 & 5).

E. If asked:

1. Indications on the HPCS back panel P625 are:
   a. B21-PIS-N667G and B21-PIS-N667C are tripped/pegged hi.
2. Indication for E22-F004 are:
   a. Breaker 52-170101 is tripped. Need a work order to investigate further.
   b. Valve is stuck and cannot be repositioned manually.
3. All other indications are normal.

F. When the CRS enters LCO 3.5.1 Condition 'B,' and any transient briefs are complete, at the Lead Evaluator's discretion, insert malfunction fw121b by triggering **Event 6** to cause RFPT 'B' M/A Controller to fail max demand.

RFPT 'B' Manual/Auto Controller Failure:

G. The crew will respond by placing the RFPT 'B' controller in MANUAL. The crew may, in the course of executing the FW Malf ONEP, trip RPFT 'B'. This is not required, but acceptable.

H. If sent to investigate/reset RFPT 'B' vibrations at P846:

1. Use Draw.exe Index Drawing C86-8 to view vibrations.
2. Pump vibration alarm occurs at 8 mils.
3. If feed pump flows have been matched or the RFPT 'B' was tripped, reset annunciators if asked, by inserting remote c86014 to RESET (click on C86 014 button on soft panel).

I. When the plant is stabilized and any transient briefs are complete, at the Lead Evaluator's discretion, insert malfunction ct218d by triggering **Event 8** to cause an unisolable suppression pool leak in the LPCS room.

Suppression Pool Leak and Reactor Scram:

J. When the crew scrams the reactor, ESF Transformer 11 will lockout 45 seconds later. This is not recoverable. The crew will have to manually realign power to the 15AA bus (Auto Trigger 9).

K. The crew will send an operator to investigate the status of the leak and LPCS room door. The first operator sent will not respond (He becomes injured and does not report back). In any

case, wait until the crew has initiated SPMU before reporting any status back to the Control Room.

L. When the crew blows down the reactor, ADS valve B21-F041D will not respond to P601 switch manipulations.

M. **(Install EP Attachments as directed).**

Termination:

N. Once the crew has emergency depressurized and established reactor level in band,

- Take the simulator to Freeze and turn horns off.
- Stop and save the SBT report and any other recording devices.
- Instruct the crew to not erase any markings or talk about the scenario until after follow-up questions are asked.

Critical Tasks:

* Crew manually scrams the reactor before SP level drops below 14.5'.

* When it is determined that Suppression Pool level cannot be maintained above 14.5', the crew opens 8 SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open at least seven SRVs prior to Suppression Pool level reaching 14.5' (In cases where Emergency Depressurization is anticipated, Rapid Depressurization with the BPVs satisfies this critical task).

Op-Test No: 12/12 Scenario No: 3 Event No: 1

Event Description: **Secure the Division 1 Diesel Generator**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs the BOP to continue surveillance 06-OP-1P75-M-0001 (Standby Diesel Generator 11 Functional Test) step 5.2.25. Note: Brief was performed prior to the crew assuming the watch.

	BOP	Stop the Division 1 DG as follows:
		• Adjust DG 11 GOV NAN CONT AND DG 11 VR AUTO SET PT CONT to lower SDG 11 load to less than 350 kW and reactive load to less than 0.25 MVAR.
		
		When the Division 1 DG output breaker trips (indicated by annunciator P864-1A-B2, 4.16KV BUS 15AA INCM FDR 152-1508):
		• Notify the CRS of the breaker trip/generator fault.
		• Determine that the Div 1 DG should have tripped but did not.
		  o This is indicated by the ARIs for P400-1A-E4, P400-1A-D10 and the diesel generator still running. Also, the Diesel Ready to Load status light indicates the DG is >200 rpm.
		• Attempt to trip Div 1 DG by depressing the DIV 1 DSL ENG RMT MAN STOP (this action will not trip the Div 1 DG)
		• Coordinate with the Control Building Operator to place the Div 1 DG in Maintenance Mode (ARI's 04-1-02-1H22-P400-1A-D10/E4).
		  o BOP depresses the DG 11 MAINT PERM pushbutton.
		  o Direct the Control Building Operator to depress and release the Maintenance Mode pushbutton locally at P400.
		  o BOP releases the DG 11 MAINT PERM pushbutton.
		
		Note: The Control Building Operator will report the following
		a. Annunciator P400-1A-E4, TRIP GENERATOR FAULT
		b. Annunciator P400-1A-D10, LOSS OF EXCITATION OR REVERSE POWER
		c. Div 1 Diesel Generator is running

	CRS	Direct the BOP to place the Division 1 DG in Maintenance Mode. Recognizes entry conditions and enters LCO 3.8.1 Condition B.

Op-Test No: 12/12 Scenario No: 3 Event No: 2

Event Description: **Raise reactor power to 1450 MWe (100% RTP)**

TIME	Position	Applicant's Actions or Behavior
	CRS	Conducts reactivity brief for the planned power change. (May be performed prior to taking the shift) Directs the ATC to raise reactor power to 100% using Recirc FCV's. *Note: Lead Evaluator to cue the next event when the team is satisfied with the crew's actions to raise reactor power.*
	ATC	Raises power by opening the Recirc FCVs A & B using loop flow controllers B33K603A & B in slow detent on P680-3B (Power Operations IOI-2 attachment VIII step 12.3).
	BOP	Raises Load Demand as power is raised by depressing EHC LOAD REF DEMAND RAISE pushbutton (P680-9C) to maintain generator actual load within +/- 25 MW of the load demand limited value during power ascension (Power Operations IOI-2 attachment VIII step 12.2).

Op-Test No: 12/12 Scenario No: 3 Event No: 3

Event Description: **HPCS spurious**

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognizes and reports spurious HPCS initiation as indicated by: ❖ Annunciator P601-16A-C3, HPCS INIT coupled with the Division 3 diesel generator starting and the HPCS pump starting and the HPCS INJ VLV (E22-F004) opening. ❖ Spurious initiation is identified in accordance with Operations Philosophy, 02-S-01-27 step 6.6.3a by "at least two independent means"
	CRS	Directs the BOP to verify the initiation was spurious and secure HPCS.
	BOP	Takes actions in accordance with Operations Philosophy, 02-S-01-27 step 6.6.3 • Trip HPCS pump. • Close E22-F004 *Note: When the E22-F004 is stroking closed, it will experience a loss of power.* Recognize and report that E22-F004 has failed as indicated by: ❖ Annunciator P601-16A-H5, HPCS SYS OOSVC with Status Light HPCS MOV OOFILE/PWR LOSS and E22-F004 indicating lights out. Dispatch an operator to breaker 52-170101 to determine the cause of the trip. Determines the cause of the initiation to be due to Drywell Pressure Trip Units. *Note: The operator has indication via annunciator P601-16A-B4, DRWL PRESS HI; however, the HPCS panel is not modeled in the simulator. The expectation is that the operator will come to the instructor booth side entrance and ask for indications on this panel. The operator will be informed that B21-N667C and B21-N667G are tripped and pegged high.*
	CRS	Recognizes entry conditions and enters LCO 3.5.1 condition B (The CRS may enter LCO 3.8.1 condition B.2 and start a 4 hour clock to enter LCO 3.5.1 condition H or conservatively chose to enter LCO 3.5.1 condition H. Both choices are acceptable (see note below) LCO 3.6.1.3 condition A is also applicable). *Note: The reason for entering LCO 3.5.1 condition B and not condition H (and by extension LCO 3.0.3) is based on the previous entry into LCO 3.8.1 condition B.2 which would require LPCS (supported feature of Division 1 DG) to be declared INOP when HPCS (the redundant system) is INOP; however, this is done 4 hours from discovery and not the normal "time zero." This is explained in the bases for LCO 3.8.1 condition B.2 discussion paragraph 2.* Direct the BOP operator to reset the HPCS initiation (not required).
	BOP	When directed to reset the HPCS initiation, depresses and releases the HPCS INIT RESET pushbutton.

Op-Test No: 12/12 Scenario No: 3 Event No: 4

Event Description: **RFPT 'B' Manual/Auto Controller Failure**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and reports the failure of RFPT 'B' M/A Controller ❖ Indicated by annunciator P680-2A-E12, RFP B VIBR HI and comparing the operation of the RFPT 'A' / 'B' SP CONT compared to the demand signal from the FW LVL MASTER CONT. Places the RFPT 'B' SP CONT in MANUAL per EN-OP-115, Conduct of Operations step 5.5[2] and Feedwater Systems Malfunctions ONEP, 05-1-02-V-7.
	CRS	Enter the Feedwater Systems Malfunctions ONEP, 05-1-02-V-7 Direct the ATC to place the RFPT 'B' SP CONT in MANUAL Direct the ATC to balance Feed Pump discharge pressures by lowering the output of RFPT 'B' to match the output of RFPT 'A'. *Note: the CRS may choose to trip RFPT 'B' per step 3.2 of the Feedwater Systems Malfunctions ONEP. This is unnecessary as the controller is still operational in manual. If this action is taken, then the CRS will enter the Reduction in Recirc Flow ONEP, 05-1-02-III-3; however, no actions are required.*
	ATC	When directed, balance Feed Pump discharge pressures by lowering the output of RFPT 'B' to match the output of RFPT 'A'. If directed to trip RFPT 'B' then depress and release the red TRIP pushbutton for RFPT 'B' and observe that a recirc valve runback occurs.

Op-Test No: 12/12 Scenario No: 3 Event No: 5

Event Description: **Suppression Pool Leak**

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognizes and reports a suppression pool leak in the LPCS pump room as indicated by: ❖ Annunciator P680-8A1-A4, LPCS RM SMP LVL HI-HI ❖ Annunciator P870-4A(10A)-C3, SUPP POOL LVL HI-LO ❖ Annunciator P870-2A-F1, LPCS PMP RM FLOODED ❖ Lowering SP water level.
	CRS	Enter EP-4, Auxiliary Building Control, when the LPCS RM SMP LVL HI-HI is announced. Direct the BOP to attempt to isolate the suppression pool leak by closing E21-F001, LPCS Suction from SP valve. Send an operator to look for the location of the suppression pool leak. Establish suppression pool level as a critical parameter and have the BOP give periodic updates. Enter EP-3, Containment Control, when SP level is below 18.34 ft. Direct the BOP to manually initiate suppression pool makeup. When it is determined that suppression pool level cannot be maintained above 14.5': • Direct the ATC to place the MODE SW in SHUTDOWN. • Enter EP-2 RPV Control, Scram 05-1-02-I-1 and Turbine Trip 05-1-02-I-2 ONEP's. • Establish reactor level band of 11.4 – 53.5". • Establish reactor pressure band of 800 – 1060 psig. • Verify Suppression Pool Level is above 10.5 ft. • Direct the ATC or BOP to Emergency Depressurize the reactor. * **Crew manually scrams the reactor before SP level drops below 14.5'.**

Op-Test No: 12/12 Scenario No: 3 Event No: 5 cont.

Event Description: **Suppression Pool Leak**

TIME	Position	Applicant's Actions or Behavior
	BOP	Attempt to isolate the suppression pool leak by closing E21-F001, LPCS Suction from SP valve (02-S-01-27, Operations Philosophy, section 6.1.1 states that operators should take actions to assure overall plant/personnel safety or to protect plant equipment). Report updates to the CRS as directed (CRS specifies frequency). Manually initiate suppression pool makeup by (04-1-01-E30-1, Suppression Pool Makeup System SOI attachment V, Manual Initiation of SPMU 'hard card'): • Place the SPMU MODE SEL handswitch to AUTO • Place the SPMU DUMP TEST switch to TEST • Depress both SPMU MAN INIT pushbuttons (simultaneously) • Verify suppression pool level rising.
	ATC	Place the MODE SW to SHUTDOWN when directed Provides a scram report: • Reactor Mode SW in SHUTDOWN. • All Rods are IN. • Reactor power is 0%. • Reactor water level and trend. • Reactor pressure and trend. • Feedwater is AVAILABLE. • Bypass valves are AVAILABLE

Op-Test No: 12/12 Scenario No: 3 Event No: 5 cont.

Event Description: **Suppression Pool Leak**

TIME	Position	Applicant's Actions or Behavior
	ATC	Transfer to startup level control (04-1-01-N21-1, Feedwater System attachment VII, Transferring to Startup Level Control 'hard card'): • If two RFPTs are in operation, then trip one by depressing the red TRIP pushbutton. • For the running RFPT, select SPEED AUTO or SPEED MANUAL and adjust RFPT speed as required to control reactor level. • CLOSE o N21-F009A, FW HTR 6A OUTL VLV o N21-F009B, FW HTR 6B OUTL VLV • OPEN o N21-F001, SU FCV OUTL ISOL VLV o N21-F010A, HP FW HTR STRNG A SU OUTL VLV o N21-F010B, HP FW HTR STRNG B SU OUTL VLV • VERIFY CLOSED o N21-F513, X WTR LVL SU CONTR Valve (1C34-LK-R602) o N21-F510, FW CU RECIRC VLV o N21-F040, FW SU BYP VLV • Ensure the running RFPT is running in SPEED AUTO with a discharge pressure approximately 250 psig above reactor pressure. • Verify OPEN N21-F014A(B), RFP DISCH VLV, for at least one pump. • Adjust N21-F513, RX WTR LVL SU CONT valve, as necessary in MANUAL or AUTO to maintain desired reactor level. N21-040 and/or N21-F009A(B) may also be used as necessary to maintain level. Maintain the reactor water level within the band of 11.4 – 53.5".

Op-Test No: 12/12 Scenario No: 3 Event No: 6

Event Description: **Loss of ESF 11 Transformer**

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognize and Report a loss of ESF 11 Transformer as indicated by: ❖ Annunciator P864-1A-A3, 4.16KV BUS 15AA UNDERVOLTAGE ❖ Annunciator P864-1A-H1, DIV 1 LSS SYS FAIL ❖ Multiple 15 Bus LCC Under Voltage annunciators ❖ Control Room lighting loss (partial) ❖ Multiple annunciators resulting from loss of power Reenergize the 15AA Bus by closing an alternate feeder breaker (05-1-02-I-4, Loss of AC Power ONEP Immediate Operator Actions)
	CRS	Enter Loss of AC Power ONEP, 05-1-02-I-4 Enter Automatic Isolations ONEP, 05-1-02-III-5 Direct an operator to reenergize the 15AA bus from an alternate feeder breaker Direct an operator to RESTORE THE AUX BUILDING

	CREW	Reenergize 15AA using alternate feeder breaker.
		
		When directed to RESTORE THE AUX BUILDING (05-1-02-III-5, Automatic Isolations attachment II, P53/P72 Auxiliary Building Restoration 'hard card'):
		
		• OPEN
		  o P53-F001 (After 30 sec TD)
		  o P53-F007 (After 30 sec TD)
		• If all drywell temperatures are < 200 F, and Drywell Chillers are available
		  o If required, reenergize 15B42 and 16B42 on P864
		• OPEN
		  o P72-F121, P72-F122, P72-125, P72-123, P72-126, P72-124 (After 30 sec TD)
		• Ensure at least one Drywell Chiller Water pump is running
		• Ensure Drywell Coolers are in operation.

Op-Test No: 12/12	Scenario No: 3	Event No: 5 cont.
Event Description: **Suppression Pool Leak**		

TIME	Position	Applicant's Actions or Behavior
	CRS	When the CRS determines that suppression pool level cannot be maintained above 14.5': • Enter EMERGENCY DEPRESSURIZATION in EP-2, RPV Control • Verify suppression pool level is above 10.5' • Direct an operator to OPEN 8 ADS/SRV's *Note: the CRS may have an operator open the Manual Bypass Valve Jack prior to Emergency Depressurizing the reactor. A malfunction has been inserted to prevent this operator action to ensure that the crew enters the Emergency Depressurization in a timely manner. For the same reason, Turb Stm Press Demand has been disabled.*
	CREW	When directed to OPEN 8 ADS/SRV's: • OPEN 8 ADS/SRV's Restore reactor water level to within band (Startup Level Control should still be in AUTO).

Op-Test No: 12/12 Scenario No: 3 Event No: 7

Event Description: **ADS Valve Fails to Open**

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognize and report that ADS valve B21-F041D failed to OPEN as indicated by the valve status lights remaining green ON and red OFF. OPEN an alternate SRV. * **When it is determined that Suppression Pool level cannot be maintained above 14.5', the crew opens 8 SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open at least seven SRVs prior to Suppression Pool level reaching 14.5' (In cases where Emergency Depressurization is anticipated, Rapid Depressurization with the BPVs satisfies this critical task).**
	CRS	Ensure that an operator opens a total of 8 ADS/SRV's.

Give this page to the CRS

Turnover the following conditions:

Power	95%
Pressure	1020 psig
BOC	
EOOS	GREEN
Work Week	Division 1

- B21-PIS-N667C is failed upscale (DW pressure sensor for HPCS). TS 3.3.5.1 Condition B was entered.
- The Division 1 DG is running tied to the grid.
- 06-OP-1P75-M-0001, Standby Diesel Generator (SDG) 11 Functional Test is in progress ready for step 5.2.25 (DG has run for 1.5hrs at full load and vibration data is complete)

Planned Evolutions this shift:

- Continue with the 06-OP-1P75-M-001 Surveillance at step 5.2.25 (Chemistry has requested that SSW 'A' remain in service until next shift).
- Raise reactor power to 1450 MWe (100% power) using IOI-2 attachment VIII, Temporary Downpower (all preconditioning requirements are met and all notifications have been made).
- <u>Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.</u>

Facility: Grand Gulf Nuclear Station Scenario No.: 4 Op-Test No.: 12/12

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Place RHR 'A' in Standby Mode
2. Heater Drain Pump 'A' high vibration
3. High Pressure Heater 6A tube leak
4. Spurious Division 1 ECCS initiation
5. Single Control Rod Drift
6. Multiple Control Rod Drifts / ATWS
7. Failure of RCIC to initiate
8. Failure of EHC Pressure Control Systems

Initial Conditions: 86% power

Inoperable Equipment: B21-PT-N094E , Drywell Pressure, is failed high (TS 3.3.5.1 Conditions B and F, 3.3.6.1 Condition A, 3.3.6.3 Condition B, and 3.3.6.4 Condition B were entered)

Turnover:

- B21-PT-N094E has failed last shift.
  - o Annunciators P601-21A-E7 (DRWL PRESS HI) and P601-18A-B2 (ADS A HI DRWL PRESS SEALED IN)
  - o TS 3.3.5.1 Conditions B and F, 3.3.6.1 Condition A, 3.3.6.3 Condition B, and 3.3.6.4 Condition B were entered (no other actions are required at this time).
- RHR 'A' is lined up for Suppression Pool Cooling.
  - o TS 3.5.1 Condition A was entered.

Scenario Notes:

This is a new scenario. The Condenser is a power conversion system (PCS) important to events leading to core damage of the GGNS PRA analysis. This scenario takes the Condenser away as a heat sink early in a high power ATWS. This event will challenge the crew to maintain the containment within the limits of HCTL.

Validation Time (60-90 min): 75 min

Event No.	Malf. No.	Event Type †	Event Description
1		N (BOP) TS (CRS)	Place RHR 'A' in Standby Mode (04-1-01-E12-1, Residual Heat Removal System section 5.2.2, TR 6.8.2 condition A)
2	fw126c	I (BOP) R (ATC)	Heater Drain Pump 'A' high vibration (Alarm Response Instruction 04-1-02-1H13-P680-1A-E7)
3	fw129c	C (ATC/BOP) A (Crew)	High Pressure Heater 6A tube leak (05-1-02-V-5, Loss of Feedwater Heating)
4	ptb21n094e_a ltb21n091a_b	I (BOP) TS (CRS)	Spurious Division 1 ECCS initiation (04-1-01-E12-1, Attachment IX; TS 3.5.1 Condition C) * **When Division 1 ECCS spuriously initiates, the crew secures the Division 1 Drywell Purge Compressor prior to the Drywell reaching 1.23 psig (causing a reactor scram).**
5	z021021_20_21	I (ATC) A (CREW)	Single Control Rod Drift (05-1-02-IV-1, Control Rod/Drive Malfunctions)
6	z021021_40_53 c11164 c11027 c41263	M (Crew)	Multiple Control Rod Drifts (05-1-02-IV-1, Control Rod/Drive Malfunctions) ATWS (EP-2A, ATWS RPV Control) * **Entry into EP2A step L8. Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to terminate and prevent all injection except boron, CRD, and RCIC until reaching criteria specified in EP2A step L8.** * **Criteria specified in EP2A step L-9 are satisfied. Crew restores injection using Condensate/Feedwater as evidenced by feedwater flow to RPV or RPV level trend. Criterion is to give the highest priority to reinitiate injection flow and establish the appropriate level band.** IF Emergency Depressurization is Entered: * **When EP-2A requires Emergency Depressurization, Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to prevent all injection except boron, CRD, and RCIC until reaching MSCP.** * **Reactor pressure decreases to MSCP. Crew commences and slowly raises injection utilizing available EP-2A Table 4 and/or Table 5 systems with RPV level restored and maintained to greater than -191". Criterion is to give the highest priority to restore RPV level greater than -191".**

Event No.	Malf. No.	Event Type †	Event Description
7	e51043 DI_1E51M625	C (CREW)	Failure of RCIC to initiate (04-1-01-E51-1, Reactor Core Isolation Cooling System Attachment VI)
8	tc079 DI_1N32M624	C (CREW)	Failure of EHC Pressure Control Systems (EP-3,Containment Control) * **When it is determined that Suppression Pool temperature and RPV pressure cannot be maintained below HTCL, the crew opens 8 SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open a sufficient number of SRV's to active lower reactor pressure to prevent exceeding HCTL and opens at least 8 SRV's prior to exceeding HCTL.**

† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

* **Critical Task** (As defined in NUREG 1021 Appendix D)

Quantitative Attributes Table

Normal Events	1	Abnormal Events	2
Reactivity Manipulations	1	Total Malfunctions	7
Instrument/Component Failures	6	EP Entries (Requiring substantive action)	2
Major Transients	1	EP Contingencies	1 - 2
Tech Spec Calls	2	Critical Tasks	4 - 6

Simulator Setup:

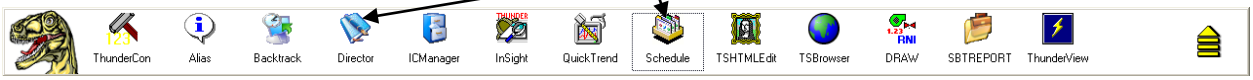
A. Initialization

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 6.3.

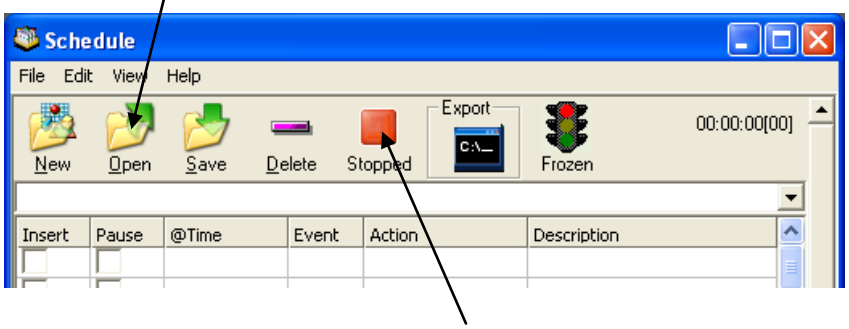
> *Note:*
> ***Prior to running the Schedule File, ensure no Event Files are Open.*** *If an existing Event File is Open prior to running the Schedule File, then any associated Event Files will not automatically load.*

3. Open Schedule.exe and Director.exe by clicking on the Icon in the Thunder Bar.



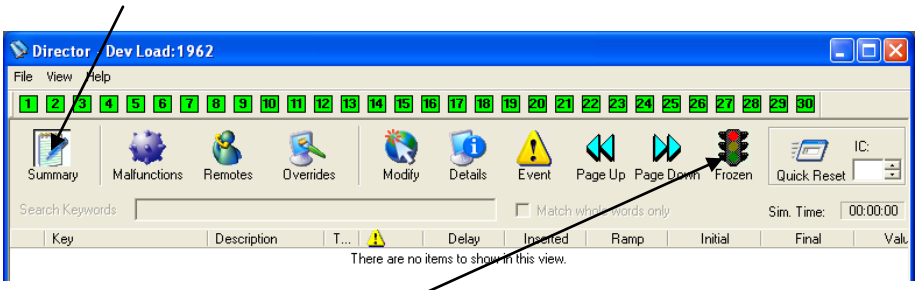
4. Set the Simulator to **IC-104** and perform switch check (Using Quick Reset in Director).

5. Click on "**Open"** in the Schedule window and Open Schedule File "**2012 NRC 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-104
    - RHR 'A' is lined up for Suppression Pool Cooling.
    - Ensure the correct rod movement sequence available at the P680.
    - Advance all chart recorders and ensure all pens inking properly.
    - Clear any graphs and trends off of 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.

B. File loaded verification:

Schedule - 2012 NRC Scenario 4.sch

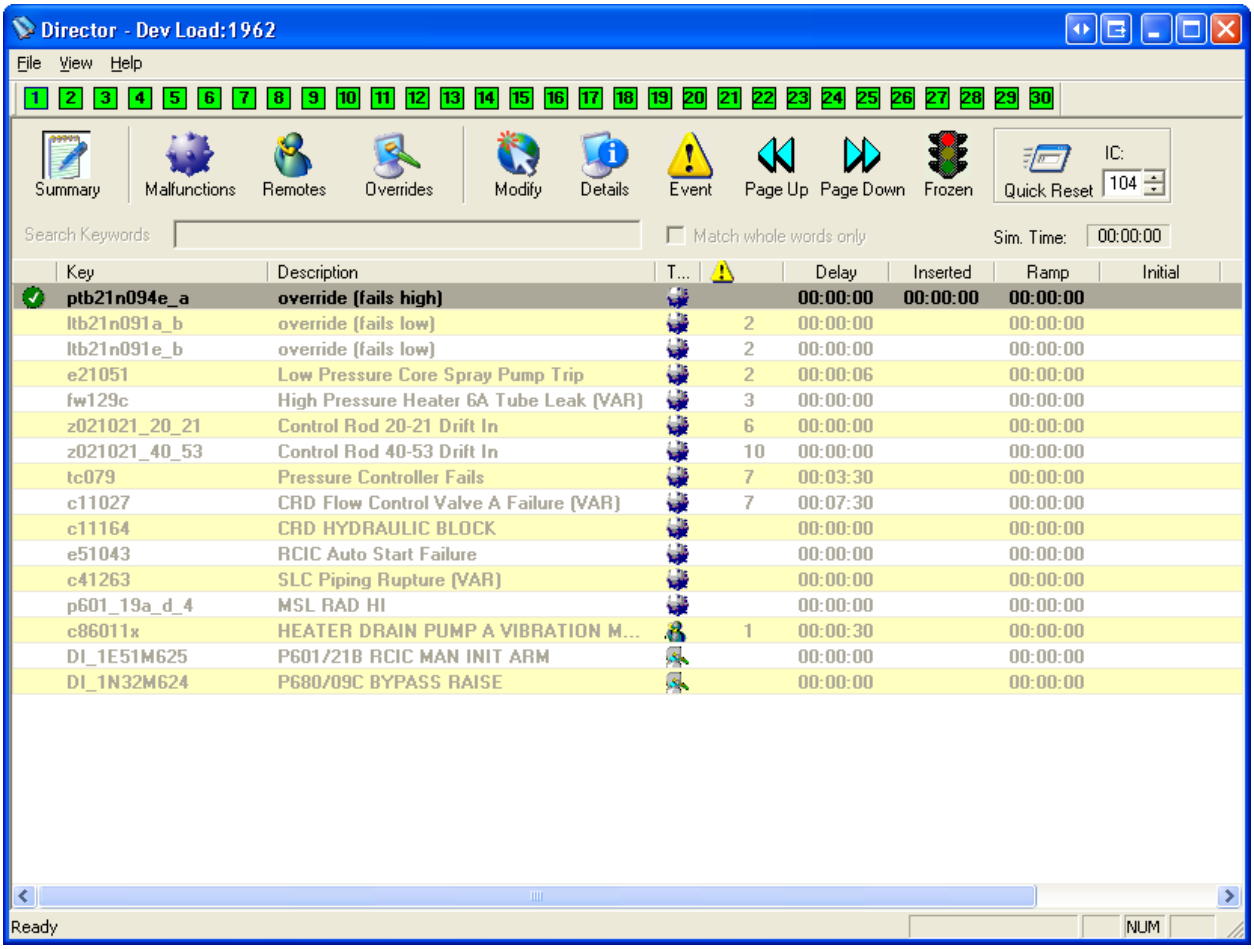
File Edit View Help

New Open Save Delete Running Export Frozen 00:00:00[00]

Insert	Pause	@Time	Event	Action	Description
				^NRC EXAM GGN 2012 Senario 4	
				=>Heater Drain Pump 'A' Vibration Hi	
✔		00:00:00		create event 1 zlo4(750) ==1	
✔		00:00:00		Insert remote c86011x after 30 to 5.00000 on event 1	HEATER DRAIN PUMP A VIBRATION MULTIPLIER
				=>Spurious ECCS init	
✔		00:00:00		Insert malfunction ltb21n091a_b on event 2 delete in 1	override (fails low)
✔		00:00:00		Insert malfunction ltb21n091e_b on event 2 delete in 1	override (fails low)
✔		00:00:00		Insert malfunction e21051 after 6 on event 2	Low Pressure Core Spray Pump Trip
				=>Loss of FW Heating	
✔		00:00:00		Insert malfunction fw129c to 20.00099 on event 3	High Pressure Heater 6A Tube Leak (VAR)
✔		00:00:00		create event 4 et_array(3) == 1 & xmmvfw129c < 0.201	
			4	modify malfunction fw129c after 210 from 30 to 20 in 30 o	
✔		00:00:00		create event 5 et_array(4) == 1 & xmmvfw129c < 0.2000	
			5	modify malfunction fw129c after 60 from 30 to 18 in 45 on	
				=>Control Rod Drift	
✔		00:00:00		Insert malfunction z021021_20_21 on event 6	Control Rod 20-21 Drift In
✔		00:00:00		Insert malfunction z021021_40_53 on event 10	Control Rod 40-53 Drift In
				=>Post Scram activities	
✔		00:00:00		create event 7 zdi1(645) == 1	CRD Flow Control Valve A Failure (VAR)
✔		00:00:00		Insert malfunction tc079 after 210 to 0 on event 7	Pressure Controller Fails
✔		00:00:00		Insert malfunction c11027 after 450 to 0 on event 7	CRD Flow Control Valve A Failure (VAR)
			7	Modify malfunction c11164 to 99.5 after 20 on event 7	CRD HYDRAULIC BLOCK made bad after scram
				=>Setup	
✔		00:00:00		Insert malfunction c11164 to 28.5	CRD HYDRAULIC BLOCK
✔		00:00:00		Insert override DI_1E51M625 to NORM	P601/21B RCIC MAN INIT ARM
✔		00:00:00		Insert malfunction e51043	RCIC Auto Start Failure
✔		00:00:00		Insert override DI_1N32M624 to NORM	P680/09C BYPASS RAISE
✔		00:00:00		Insert malfunction c41263	SLC Piping Rupture (VAR)
✔		00:00:00		set xmmvfw129c = 1	MSL RAD HI
✔		00:00:00		Insert malfunction p601_19a_d_4 to OFF	MSL RAD HI
		00:00:01		Set xal1ismbutton = 5	

Execute: Insert malfunction p601_19a_d_4 to OFF
Execute: set xmmvfw129c = 1
Execute: Insert malfunction c41263
Execute: Insert override DI_1N32M624 to NORM
Execute: Insert malfunction e51043

Ready NUM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Details
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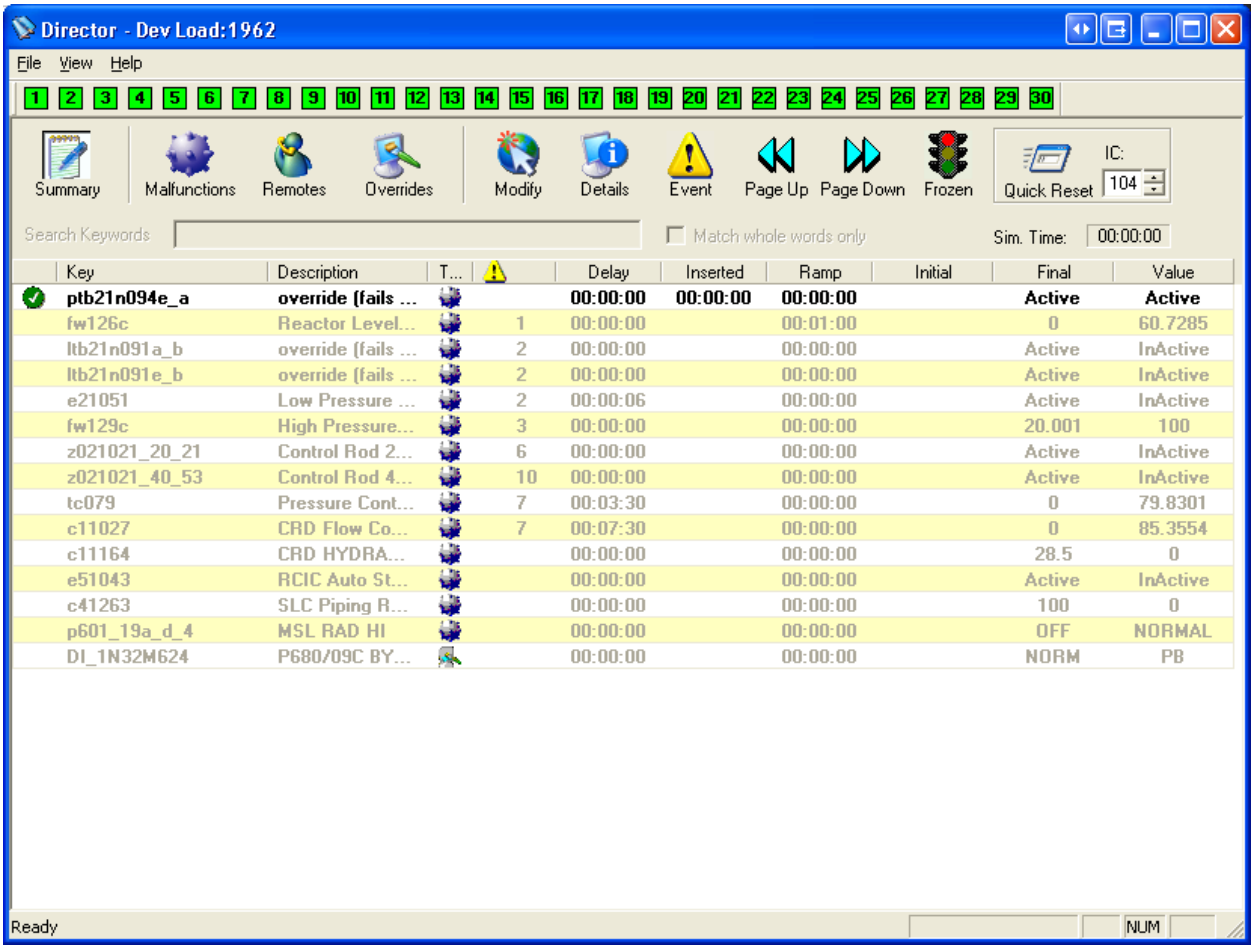
Page Down
Frozen
Quick Reset
IC:
104
Search Keywords
Match whole words only
Sim. Time:
00:00:00
Key | Description | T... | Delay | Inserted | Ramp | Initial
ptb21n094e_a override (fails high) 00:00:00 00:00:00 00:00:00
ltb21n091a_b override (fails low) 2 00:00:00 00:00:00
ltb21n091e_b override (fails low) 2 00:00:00 00:00:00
e21051 Low Pressure Core Spray Pump Trip 2 00:00:06 00:00:00
fw129c High Pressure Heater 6A Tube Leak (VAR) 3 00:00:00 00:00:00
z021021_20_21 Control Rod 20-21 Drift In 6 00:00:00 00:00:00
z021021_40_53 Control Rod 40-53 Drift In 10 00:00:00 00:00:00
tc079 Pressure Controller Fails 7 00:03:30 00:00:00
c11027 CRD Flow Control Valve A Failure (VAR) 7 00:07:30 00:00:00
c11164 CRD HYDRAULIC BLOCK 00:00:00 00:00:00
e51043 RCIC Auto Start Failure 00:00:00 00:00:00
c41263 SLC Piping Rupture (VAR) 00:00:00 00:00:00
p601_19a_d_4 MSL RAD HI 00:00:00 00:00:00
c86011x HEATER DRAIN PUMP A VIBRATION M... 1 00:00:30 00:00:00
DI_1E51M625 P601/21B RCIC MAN INIT ARM 00:00:00 00:00:00
DI_1N32M624 P680/09C BYPASS RAISE 00:00:00 00:00:00
Ready
NUM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File View Help
Summary
Malfunctions
Remotes
Overrides
Modify
Details
Event
Page Up
Page Down
Frozen
Quick Reset
IC:
104
Search Keywords
Match whole words only
Sim. Time:
00:00:00
Key | Description | T... | Delay | Inserted | Ramp | Initial | Final | Value
ptb21n094e_a | override (fails ... | | 00:00:00 | 00:00:00 | 00:00:00 | | Active | Active
fw126c | Reactor Level... | 1 | 00:00:00 | | 00:01:00 | | 0 | 60.7285
ltb21n091a_b | override (fails ... | 2 | 00:00:00 | | 00:00:00 | | Active | InActive
ltb21n091e_b | override (fails ... | 2 | 00:00:00 | | 00:00:00 | | Active | InActive
e21051 | Low Pressure ... | 2 | 00:00:06 | | 00:00:00 | | Active | InActive
fw129c | High Pressure... | 3 | 00:00:00 | | 00:00:00 | | 20.001 | 100
z021021_20_21 | Control Rod 2... | 6 | 00:00:00 | | 00:00:00 | | Active | InActive
z021021_40_53 | Control Rod 4... | 10 | 00:00:00 | | 00:00:00 | | Active | InActive
tc079 | Pressure Cont... | 7 | 00:03:30 | | 00:00:00 | | 0 | 79.8301
c11027 | CRD Flow Co... | 7 | 00:07:30 | | 00:00:00 | | 0 | 85.3554
c11164 | CRD HYDRA... | | 00:00:00 | | 00:00:00 | | 28.5 | 0
e51043 | RCIC Auto St... | | 00:00:00 | | 00:00:00 | | Active | InActive
c41263 | SLC Piping R... | | 00:00:00 | | 00:00:00 | | 100 | 0
p601_19a_d_4 | MSL RAD HI | | 00:00:00 | | 00:00:00 | | OFF | NORMAL
DI_1N32M624 | P680/09C BY... | | 00:00:00 | | 00:00:00 | | NORM | PB
Ready
NUM

Crew Turnover:

B. Assign the candidates crew positions.

C. Turnover the following conditions:

Power	86%
Pressure	1007 psig
BOC	
EOOS	GREEN
Work Week	Division 1

- B21-PT-N094E has failed last shift.
  - Annunciators P601-21A-E7 (DRWL PRESS HI) and P601-18A-B2 (ADS A HI DRWL PRESS SEALED IN)
  - TS 3.3.5.1 Conditions B and F, 3.3.6.1 Condition A, 3.3.6.3 Condition B, and 3.3.6.4 Condition B were entered (no other actions are required at this time).
- RHR 'A' is lined up for Suppression Pool Cooling.
  - TS 3.5.1 Condition A was entered.

Planned Evolutions this shift:

- Place RHR 'A' in standby mode.
- Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.

D. Allow the crew to perform pre-shift brief and review procedures for planned evolutions.

E. Bring the crew into the Simulator, place the simulator is in RUN.

F. Allow the crew to walk down panels.

G. When the crew assumes the shift begin Scenario Activities.

SCENARIO ACTIVITIES:

A. Start SBT report and any other required recording devices (Video recording not allowed for NRC exams).

Place RHR 'A' in Standby Mode:

B. The crew will place RHR 'A' in standby using 04-1-01-E12-1 section 5.2.2.c (Shutdown of Suppression Pool Cooling 'A').

1. 30 seconds after the RHR 'A' pump is secured, Heater Drain Pump 'A' high vibration will occur (Auto Event 1).

Heater Drain Pump 'A' High Vibration

A. The crew will respond using ARI P680-1A-E7.

1. When sent to look at the vibration panel (P846) open Index Drawing C86-6, wait 2 minutes and report the following for HTR DR PMP A:

   - Motor-Axial vibration is 8.6 mils and stable.
   - All other motor and pump vibrations are trending up slowly (only observable by trending logs) but not in alarm.

2. If asked to determine if the vibration probe is defective, report that the vibration is valid.

B. The crew will reduce reactor power to below 84% and then secure Heater Drain Pump 'A'.

C. When Heater Drain Pump 'A' is secured, and any transient briefs are complete, at the Lead Evaluator's discretion, insert malfunction fw129c by triggering **Event 3** to a Feedwater Tube Leak in HP Heater 6A.

High Pressure Heater 6A Tube Leak:

D. The crew will respond using the ARI for FW HTR 6A LVL HI.

1. If sent as the building operator to P171 to check N23-LK-R051A, open Drawing P171-3 (the dump valve controller is the bottom middle controller R051A)
2. After 3 ½ minutes, the leak will get worse (Auto Events 4 & 5). This will cause the FW HTR 6A LVL HI-HI annunicator. This will cause extraction steam to the heater to isolate. The crew will enter the Loss of FW Heating ONEP.

3. If reactor power exceeds 100%, the CRS should reduce power with recirc to get below 4408 MWt.
4. The crew will reduce core flow to 70 mlbm/hr.
5. The crew will determine that Rod Line is above 105% and insert cram rods to reduce reactor power below 105% Rod Line.
6. The crew will take action per 04-1-01-N23-1 section 6.1 to isolate HP Heater 6A.
   a. If directed as a local operator to close N35-F008A, use Remote fxn ms020 to close valve.

E. When the crew has lowered core flow to 70 mlbm/hr and lowered power to < 105% Rod Line and the crew has determined a course of action to isolate the affected heater string, at the Lead Evaluator's discretion, insert malfunctions ltb21n091a_b and ltb21n091e_b by triggering **Event 2** to cause reactor WR 'A' and 'E' level instruments (B21-LT-N091A/E) to experience a current transient (common power source) causing Division 1 ECCS to initiate.

Division 1 ECCS Spurious Initiation:

F. The Crew will use 04-1-01-E12-1 attachment IX (Recovery form a Division 1ECCS Initiation Signal) to recover from the initiation.

G. If contacted by the control room to investigate a cause, say that it sounds like someone may have keyed a radio in the area where the transmitters are and that you will ask the Aux Building Operator if he was in the area. Wait 3 minutes and call the control room to confirm that the Aux Building Operator bumped his radio on something while taking rounds in a "no radio transmission" area.

H. The LPCS pump will trip upon initiation. If asked, wait 2 minutes and report that the breaker is tripped on overcurrent.

I. If sent to verify that ESF PWR light and BOP PWR light is on at Division 1 LSS panel, wait 2 minutes and report that the lights are on.

J. The When the CRS enters LCO 3.5.1 Condition A, and any transient briefs are complete, at the Lead Evaluator's discretion, insert malfunction z021021_20_21 by triggering **Event 6** to cause a control rod 20-21EE to drift in.

Single/Multiple Control Rod Drifts:

K. The crew will enter the CRD Malfunctions ONEP and fully insert the drifting control rod (20-21EE).

L. At the Lead Evaluator's discretion, trigger **Event 10** to begin control rod 40-53KN drift in.

M. The crew will manually scram the reactor.

ATWS:

N. The crew will respond to a high power ATWS and loss of EHC pressure controls (Auto Event 7).

1. The crew will have to take actions to avoid exceeding HCTL (Heat Capacity Temperature Limit).
2. RCIC will not auto start. It must be manually lined up using the hard card.
3. C11-F002 (Flow Control Valve) will fail closed preventing the crew from inserting control rods. Also, the ATWS will increase in severity. This is to ensure the crew is required to take actions to avoid HCTL.

O. **(Install EP Attachments as directed).**

Termination:

P. Once the crew has emergency depressurized or is actively taking action to avoid exceeding HCTL and maintaining the reactor within established level and pressure bands,

- Take the simulator to Freeze and turn horns off.
- Stop and save the SBT report and any other recording devices.
- Instruct the crew to not erase any markings or talk about the scenario until after follow-up questions are asked.

Critical Tasks:

* When Division 1 ECCS spuriously initiates, the crew secures the Division 1 Drywell Purge Compressor prior to the Drywell reaching 1.23 psig (causing a reactor scram).
* Entry into EP2A step L8. Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to terminate and prevent all injection except boron, CRD, and RCIC until reaching criteria specified in EP2A step L8.
* Criteria specified in EP2A step L-9 are satisfied. Crew restores injection using Condensate/Feedwater as evidenced by feedwater flow to RPV or RPV level trend. Criterion is to give the highest priority to reinitiate injection flow and establish the appropriate level band.
* When it is determined that HCTL will be exceeded, the crew opens 8 SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open a sufficient number of SRV's to actively lower reactor pressure to prevent exceeding HCTL and to open at least 8 SRV's prior to exceeding HCTL.

If the crew enters Emergency Depressurization

* When EP-2A requires Emergency Depressurization, Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to prevent all injection except boron, CRD, and RCIC until reaching MSCP.
* Reactor pressure decreases to MSCP. Crew commences and slowly raises injection utilizing available EP-2A Table 4 and/or Table 5 systems with RPV level restored and maintained to greater than -191". Criterion is to give the highest priority to restore RPV level greater than -191".

Op-Test No: 12/12 Scenario No: 4 Event No: 1

Event Description: **Place RHR 'A' in Standby Mode**

TIME	Position	Applicant's Actions or Behavior
	CRS	Directs the BOP to place RHR 'A' in Standby Mode using 04-1-01-E12-1, Residual Heat Removal System section 5.2.2.c (Shutdown of Suppression Pool Cooling A) Note: Brief was performed prior to the crew assuming the watch. When RHR 'A' MOV Test Switch is placed in TEST, enter TR 6.8.2 condition A.
	BOP	Place RHR 'A' in standby as follows: • Place RHR 'A' MOV Test Switch to TEST (This requirement is found in the precautions and limitations of Residual Heat Removal System 04-1-01-E12-1 precautions and limitations. TRM 6.8.2 condition A should be entered anytime an MOV TEST SW is placed in TEST.). • Close E12-F024A, RHR A TEST RTN TO SUPP POOL • When flow decreases below 1154 gpm, Verify that E12-F064A, RHR A MIN FLO VLV opens (8 second delay) • Stop RHR PMP 'A' • Place RHR 'A' MOV Test Switch to NORM *Note: When RHR PMP 'A' is stopped, the next event will automatically begin. The remaining steps of the procedure would be performed outside the control room.*

Op-Test No: 12/12 Scenario No: 4 Event No: 2

Event Description: **Heater Drain Pump 'A' high vibration**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report annunciator P680-1A-E7, HTR DR PMP A VIBR HI.
	BOP	Use Alarm Response Instruction 04-1-02-1H13-P680-1A-E7 and: • Dispatch an operator to the Lower Cable Spreading Room P846 to check which point is in alarm.
	CRS	When the local operator reports vibration status, use Alarm Response Instruction 04-1-02-1H13-P680-1A-E7 to determine a controlled shutdown of the Heater Drain Pump 'A' is required. Refer to 04-1-01-N23-1, Heater Vents and Drains N23/Extraction Steam N36 section 4.6, Heater Drain Pump Shutdown. Conducts reactivity brief for the planned power change. (May be performed prior to taking the shift) Directs the ATC to lower reactor power below 84% using Recirc FCV's.
	ATC	Lowers power by closing the Recirc FCVs A & B using loop flow controllers B33K603A & B in slow detent on P680-3B (03-1-01-1, Power Operations attachment VIII step 12.3).
	BOP	Lowers Load Demand as power is lowered by depressing EHC LOAD REF DEMAND LOWER pushbutton (P680-9C) to maintain generator actual load within +/- 25 MW of the load demand limited value during power change (03-1-01-1, Power Operations attachment VIII step 12.2).
	CRS	Direct the BOP to secure Heater Drain Pump 'A'
	BOP	Close N23-F051A, HTR DR PMP 'A' DISCH VLV on P680. Stop HRT DR PMP 'A' on P680.

Op-Test No: 12/12 Scenario No: 4 Event No: 3

Event Description: **High Pressure Heater 6A Tube Leak**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and reports a High Pressure Heater 6A Tube Leak as indicated by: ❖ Annunciator P680-2A-A9, FW HTR 6A LVL HI ❖ The leak is verified by (1) Observing on the N23 (Heaters and Drain) PDS process diagram that the HP FW HTR 6A DRN valve is open and the HP FW HTR 6A DUMP valve is controlling level.(*This is also part of the ARI response*) (2) Calculating the difference in RFPT suction flow and Feedwater flow to the vessel. Refer to the ARI for annunciator P680-2A-A9 and verify that heater 6A dump valve N23-LV-F515A is controlling level using a listed computer point or process diagram.
	BOP	Report when annunciator P870-6A-A4, FW HTR 6A LVL HI-HI comes in. Verify that: • N36-BTV-F012A closes • N36-F011A closes • N36-F008A opens • N35-LV-F505A closes • N23-F053A opens (PDS process diagram or local operator at P171)
	CRS	If the CRS directs the operator to lower reactor power below 100% prior to entering Loss of Feedwater Heating, 05-1-02-V-5: Conducts reactivity brief for the planned power change. (Power change is using 03-1-01-1, Power Operations attachment VIII, Temporary Downpower) Directs the ATC to lower reactor power using Recirc FCV's.
	ATC	Lowers power by closing the Recirc FCVs A & B using loop flow controllers B33K603A & B in slow detent on P680-3B (03-1-01-1, Power Operations attachment VIII step 12.3).
	BOP	Lowers Load Demand as power is lowered by depressing EHC LOAD REF DEMAND LOWER pushbutton (P680-9C) to maintain generator actual load within +/- 25 MW of the load demand limited value during power change (03-1-01-1, Power Operations attachment VIII step 12.2).

Op-Test No: 12/12	Scenario No: 4	Event No: 3 cont.
Event Description: **High Pressure Heater 6A Tube Leak**		
	CRS	Direct operators actions per the appropriate ARI's. Enter Loss of Feedwater Heating, 05-1-02-V-5 Direct the ATC to lower core flow to 70 mlbm/hr and enter Reduction in Recirculation System Flow Rate, 05-1-02-III-3. Direct the ATC to verify 3 OPRM channels are not bypassed. Direct the ATC to establish THI (Thermal Hydraulic Instabilities) watch without concurrent duties (concurrent duties are allowed when feedwater temperatures have stabilized).
	ATC	When Loss of Feedwater Heating is entered lower core flow to 70 mlbm/hr in fast detent. Verify 3 OPRM channels are not bypassed by checking OPRM computer points on a PDS computer (this screen is normally open at all times. This is an administrative action only). Set THI watch and monitor for THI by observing for symptoms of THI: (05-1-02-III-3, Reduction in Recirculation System Flow Rate ONEP section 6.9) • Any unexplained and sustained rise in actual level or noise level in APRMs, LPRMs, or SRM Period meters, or a sustained increase in noise level reaching two or more times its initial level when the region was entered (OPRM Enabled, Controlled Entry, Scram Region). • Oscillations of APRM readings peak-to-peak of greater than 10% rated power. • Oscillations of LPRM readings peak-to-peak of greater than 10% watts/cm^2 • Indications of periodic LPRM upscale or downscale alarms in conjunction with the above APRM/LPRM swings.

Op-Test No: 12/12 Scenario No: 4 Event No: 3 cont.

Event Description: **High Pressure Heater 6A Tube Leak**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report when Rod Line is determined to be above 105%. This is determined by plotting power and flow on the power-to-flow map or when indicated on the CYCLOPS computer. Plot power and flow on the power-to-flow map and report entry into the OPRM Trip Enabled Region.
	CRS	Direct the ATC and BOP to insert Control Rods to lower power to below the 105% Rod Line per the approved Rod Sequence Sheets (CRAM RODS).
	ATC	Act as peer checker for Control Rod movements.
	BOP	Sequentially insert Control Rods using the approved Rod Sequence Sheets (CRAM RODS) to lower reactor power as directed by the CRS. CRAM RODS to be used: Step 1A: 24-09, 40-57, 56-25, 08-41 Step 1B: 40-06, 24-57, 08-25, 56-41 Step 2: 16-17, 48-49, 48-17, 16-49
	CRS	Direct the BOP to isolate FW Heater 6A using 04-1-01-N23-1, Heater Vents and Drains N23/Extraction Steam N36 section 6.1 (Isolation/Restoration of 1 HP Heater String) *Note: If it is not desired to observe the isolation of FW Heater 6A, the lead examiner may cue the next event anytime after the first Control Rod movement.*
	BOP	When directed to isolate FW Heater 6A, • Close N21-F012A on P870 • Check Closed N21-F010A on P870 • Close N21-F009A on P680 • Close N36-F010A and N36-F011A on P870 • Direct the local operator to Close N35-F008A on P177

Op-Test No: 12/12	Scenario No: 4	Event No: 4
Event Description: **Spurious Division 1 ECCS initiation**		

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognizes and reports spurious Division 1 ECCS initiation as indicated by: ❖ Annunciator P601-21A-E8, RX LVL 1 (-150) LO ❖ Spurious initiation is identified in accordance with Operations Philosophy, 02-S-01-27 step 6.6.3a by "at least two independent means." In this case, only the Division 1 ECCS system indicates low level. All level indications are still indicating normal water level.
	CRS	Directs the BOP to verify the initiation was spurious. Direct the BOP to recover from Division 1 ECCS initiation using 04-1-01-E12-1, Residual Heat Removal System attachment IX, Recovery from a Division 1 ECCS Initiation Signal 'hard card'. OR Direct the BOP to secure the 'A' DW purge compressor using 04-1-01-E61-1, Combustible Gas Control System section 5.2.2 step 'a'. (*Note that if this path is taken, the CRS should enter TS 3.6.3.3* condition A.) ∗ **When Division 1 ECCS spuriously initiates, the crew secures the Division 1 Drywell Purge Compressor prior to the Drywell reaching 1.23 psig causing a reactor scram.**
	BOP	Complete actions of 04-1-01-E12-1, Residual Heat Removal System attachment IX, Recovery from a Division 1 ECCS Initiation Signal 'hard card'. • Press the LPCS/RHR 'A' INIT RESET pushbutton (on P601-21B). • Press the DIV 1 LSS PNL RESET pushbutton (on P864-1C). • Reset the Division 1 CGCS logic using the keylock switch (on P870-4B). • Stop the Drywell Purge Compressor 'A' (on P870-4C). • Close E61-F003A (on P870-4C). **OR** Complete actions of 04-1-01-E61-1, Combustible Gas Control System section 5.2.2 step 'a' • Direct the local plant operator to manually trip the 52-15105 'A' DW purge compressor breaker and pull the lockout tab.

Op-Test No: 12/12 Scenario No: 4 Event No: 4 cont.

Event Description: **Spurious Division 1 ECCS initiation**

TIME	Position	Applicant's Actions or Behavior
	CRS	Develops a plan of action to restore affected systems to standby lineup. • Refers to 04-1-01-P41-1, Standby Service Water System to place SSW 'A' in standby. • Refers to 04-1-01-E12-1, Residual Heat Removal System to place RHR 'A' in standby. *Note: The CRS will not have time to implement these actions prior to the next event, but the CRS should pursue these actions.*
	BOP	Recognizes and reports that the LPCS pump tripped when Division 1 ECCS initiated. ❖ As indicated by the amber pump trouble light above the LPCS hand switch being illuminated (indicates pump trip when an auto start signal is present). ❖ LPCS PMP AUTO TRIP status light is lit. ❖ Annunciators P601-21A-A-7, LPCS PMP OVERLD, and P601-21A-H-8, LPCS SYS OOSVC will be in also. If directed to place RHR 'A' in standby: Stop RHR A pump. (all other actions should be verification with no actual manipulations)
	CRS	Recognizes entry conditions and enters TS 3.5.1 Condition A.

Op-Test No: 12/12 Scenario No: 4 Event No: 5

Event Description: **Single Control Rod Drift**

TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and report Control Rod 20-21EE is drifting in as indicated by: ❖ Annunciator P680-4A2-E4, CONT ROD DRIFT ❖ Determine Control Rod(s) that have drifted by depressing the ROD DRIFT pushbutton and observe the red LEDs of the drifted Control Rod(s) on the Control Rod Display Module. (from annunciator ARI) Apply continuous insert signal until Control Rod reaches zero. Reset drift alarms using the RESET DRIFT pushbutton on P680 RC&IS (from annunciator ARI)
	CRS	Enter Control Rod/Drive Malfunctions, 05-1-02-IV-1 Direct the ATC to apply continuous insert signal until Control Rod reaches zero. Direct the ATC to reset the ROD DRIFT in accordance with the ARI (P680-4A2-E4) *Note: The CRS may use conservative bias and direct the crew to place the Mode Switch in SHUTDOWN when the first Control Rod drift begins.* *Note: Do NOT cue 2nd rod drift before the "rod drift" annunciator is reset.*

Op-Test No: 12/12	Scenario No: 4	Event No: 6
Event Description: **Multiple Control Rod Drifts / ATWS**		

TIME	Position	Applicant's Actions or Behavior
	CRS	When the second Control Rod begins to drift in, direct the ATC to place the Mode Switch in SHUTDOWN (This is an Immediate Operator Action of Control Rod/Drive Malfunctions, 05-1-02-IV-1).
	ATC	When the second Control Rod (40-53KN) begins to drift in, report the rod drift and place the Mode Switch in SHUTDOWN. (Indication is the same as before). Provides a scram report: • Reactor Mode SW in SHUTDOWN. • All Rods are NOT Inserted (Hyd Block ATWS). • Reactor power is above 4% *(Value depends when data taken).* • Reactor water level and trend. • Reactor pressure and trend. • Feedwater is available • Bypass valves are available.

Op-Test No: 12/12 Scenario No: 4 Event No: 6

Event Description: **Multiple Control Rod Drifts / ATWS**

TIME	Position	Applicant's Actions or Behavior
	CRS	Enter SCRAM ONEP and EP-2A, ATWS RPV CONTROL Direct actions of EP-2A, ATWS RPV CONTROL steps 1 - 4: • Directs ATC to Verify Recirc Pumps transferred to LFMG. • Directs ATC to Verify ARI/RPT initiation. • Directs BOP to inhibit ADS. • Directs BOP to Override HPCS injection.
	ATC	Verify Recirc Pumps transferred to LFMG. Verify/Initiate ARI/RPT.
	BOP	Inhibits ADS. • Place ADS "A" and ADS "B" keylock switches to "INHIBIT" Override HPCS injection. • Place the HPCS pump handswitch to the "STOP" position. • Place the E22-F004, HPCS injection valve, handswitch to the "CLOSE" position.
	CRS	Enter EP-2A step L-7 and direct the ATC to establish level band -70 to -130" on Startup Level Control. Enter EP-2A step Q-4. *(SLC will not inject, Attachment 28 is required)* Enter EP-2A step P-4 and direct the BOP to establish a pressure band 800 – 1060 psig using IPC and BCV Manual Jack. Call for EP Attachments 8, 12, 18, 19, 20, and 28.

Op-Test No: 12/12 Scenario No: 4 Event No: 6 Cont.

Event Description: **Multiple Control Rod Drifts / ATWS**

TIME	Position	Applicant's Actions or Behavior
	ATC	Line up Feed and Condensate systems for Startup Level Control using 04-1-01-N21-1, Feedwater System attachment VII, Transferring to Startup Level Control 'hard card'. • If two Feed pumps are running, trip one. • Close N21-F009A and N21-F009B. • Open N21-F001 and N21-F010B. *Note: N21-F010A will be left closed due to the Feedwater Heater leak even though the procedure calls for it to be opened.* • Verify Closed N21-F513, N21-F510, N21-F040. • If no Feed pumps are in operation, start one. o Ensure RFPT A(B) controls "Manual" pushbutton is backlit. o Verify AC lube oil pump is running o Open N21-F014A(B) o Depress the TRIP RESET pushbutton o Depress the RAISE pushbutton to establish Feed pump discharge pressure above reactor pressure by approx. 250 psig. • Open/Verify Open N21-F014A or N21-F014B • Maintain reactor level in Auto or Manual using the Startup level controller or Manually using N21-F040 or N21-F009A(B). Feed the reactor using the Startup Level Controller to maintain reactor level within the set level band (-70 to -130").

Op-Test No: 12/12 Scenario No: 4 Event No: 8

Event Description: **Failure of EHC Pressure Control Systems**

Note: ATWS actions are continued in this event since it becomes the main driver of crew actions.

TIME	Position	Applicant's Actions or Behavior
	CREW	Recognize and report that EHC Pressure Control has failed as indicated by: ❖ Annunciator P680-9A-D2, TURB IPC CAB FAIL ❖ Annunciator P601-19A(18A)-B6, LO-LO SET PT SEALED IN ❖ Rising reactor pressure ❖ Open SRVs *Note: The ability to open the manual jack has also been removed.*
	CRS	Direct the BOP to manually control reactor pressure in the band of 800 to 1060 psig using SRVs. Direct the BOP to lineup RHR 'A' and 'B' for Suppression Pool Cooling using 04-1-01-E12-1, Residual Heat Removal System attachment VI, Maximizing Suppression Pool Cooling 'hard card'.
	BOP	Open and Close SRVs as required to maintain reactor pressure within the established band. *(This will be a continuing action for the remainder of the scenario)* When directed to lineup RHR 'A' and 'B' for Suppression Pool Cooling: • Ensure SSW is in service by observing the following: o SSW A(B) Pump running o P41-F001A(B), SSW PMP A(B) DISCH VLV is Open o P41-F005A(B), SSW LOOP A(B) RTN TO CLG TWR is Open o P41-F014A(B), SSW INL TO RHR HX A(B) OUTL VLV is Open o P41-F006A(B), SSW PMP RECIRC VLV is closed • Verify Open E12-F003A(B), RHR HX OUTL VLV • Start RHR PMP A(B) • Open E12-F024A(B), RHR TEST RTN TO SUPP POOL

Op-Test No: 12/12 Scenario No: 4 Event No: 8 Cont.

Event Description: **Failure of EHC Pressure Control Systems**

TIME	Position	Applicant's Actions or Behavior
	CRS	When Suppression Pool Temperature reaches 110F Enter EP-2A step L-8 and direct the following: ATC: Terminate and prevent Feedwater by Closing the Startup Level Control valve, N21-F040, N21-F009A, and N21-F009B. BOP: Terminate and prevent high pressure and low pressure ECCS injection by ensuring ECCS is initiated and overriding LPCS, RHR A/B/C, HPCS pump off and injection valve shut. Allow level to lower until: • Power is below 4% OR • Level drops to -167" (Compensated Fuel Zone) OR • All SRVs stay closed and DW pressure stays below 1.23 psig Establish a new level band of -191" to level lowered from above * **Entry into EP2A step L8. Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to terminate and prevent all injection except boron, CRD, and RCIC until reaching criteria specified in EP2A step L8.** * **Criteria specified in EP2A step L-9 are satisfied. Crew restores injection using Condensate/Feedwater as evidenced by feedwater flow to RPV or RPV level trend. Criterion is to give the highest priority to reinitiate injection flow and establish the appropriate level band.**
	ATC	Reestablish Feedwater to maintain level within the new level band.

Op-Test No: 12/12	Scenario No: 4	Event No: 8 Cont.

Event Description: **Failure of EHC Pressure Control Systems**

	CRS	Take action to avoid exceeding HCTL (EP-1, EP/SAP Figure 1) by one or both of the following methods: 1. Per EP-2A step P1: a. SP temperature cannot be maintained in the Safe zone of the HCTL, maintain RPV pressure in the Safe zone of HCTL (OK to exceed 100F/hr) b. This is accomplished by establishing progressively lower pressure bands for the BOP to maintain; however, there is no specific procedural guidance on what pressure bands to use in this case. 2. Per EP-3 step SPT-5: a. SP temperature and RPV pressure cannot be maintained within the Safe zone of the HCTL, Enter Emergency Depressurization. b. Direct the ATC and BOP to Terminate and Prevent Feedwater, High Pressure and Low Pressure ECCS injection systems. c. Direct BOP to Open 8 ADS/SRVs d. Direct ATC to reestablish Feedwater in accordance with 02-S-01-27, Operations Philosophy step 6.2.11 when RPV pressure is below MSCP (206 psig). o Feedwater is reestablished by raising flow initially to ~ 2 mlbm/hr and then in ~ 0.5 mlbm/hr increments until RPV level begins to turn. This is controlled by the CRS. o The level band should be the same as prior to ED. * **When it is determined that HCTL will be exceeded, the crew opens SRVs and observes lowering pressure trend and valve position indications (tailpipe pressure indication lamps or solenoid valve energized). Criterion is to open a sufficient number of SRV's to actively lower reactor pressure to prevent exceeding HCTL and to open at least 8 SRV's prior to exceeding HCTL.** *Note: HCTL is defined by EP Figure 1 and is a function of SP Temperature, RPV Pressure, and SP Level. The graph will automatically display on the SPDS computer prior to exceeding. This screen may also be placed on a computer screen visible only to the evaluator prior to the scenario if desired.* If Emergency Depressurization * **When EP-2A requires Emergency Depressurization, Crew terminates and prevents all injection except boron, CRD, and RCIC per 02-S-01-27 Operations Philosophy. Feedwater and ECCS system alignments prevent injection into the RPV as evidenced by available instrumentation. Criterion is to give the highest priority to prevent all injection except boron, CRD, and RCIC until reaching MSCP.** * **Reactor pressure decreases to MSCP. Crew commences and slowly raises injection utilizing available EP-2A Table 4 and/or Table 5 systems with RPV level restored and maintained to greater than -191". Criterion is to give the highest priority to restore RPV level greater than -191".**

Op-Test No: 12/12 Scenario No: 4 Event No: 8 Cont.

Event Description: **Failure of EHC Pressure Control Systems**

TIME	Position	Applicant's Actions or Behavior
	BOP	Control RPV pressure to avoid exceeding HCTL as directed by the CRS by: • Open SRVs as required to maintain the given pressure band OR • When directed, verify high pressure and low pressure ECCS systems are overridden. • When directed, Open 8 ADS/SRVs
	ATC	If Emergency Depressurization is entered, • When directed, Terminate and Prevent Feedwater injection, o Terminate and prevent Feedwater by Closing the Startup Level Control valve, N21-F040, N21-F009A, and N21-F009B. • When directed, reestablish feed o Feedwater is reestablished by raising flow initially to ~ 2 mlbm/hr and then in ~ 0.5 mlbm/hr increments until RPV level begins to turn. This is controlled by the CRS. o Maintain level within the established level band

Op-Test No: 12/12 Scenario No: 4 Event No: 7

Event Description: **Failure of RCIC to initiate**

TIME	Position	Applicant's Actions or Behavior
	BOP	When RCIC does not automatically initiate at -41.6" reactor water level or when directed, Manually align RCIC as follows using 04-1-01-E51-1, Reactor Core Isolation Cooling System attachment VI, RCIC Manual Start 'hard card': • Arm and Depress RCIC MAN INIT pushbutton. • Verify SSW 'A' is running with adequate flow path.

Give this page to the CRS

Turnover the following conditions:

Power	86%
Pressure	1007 psig
BOC	
EOOS	GREEN
Work Week	Division 1

- B21-PT-N094E has failed last shift.
  - Annunciators P601-21A-E7 (DRWL PRESS HI) and P601-18A-B2 (ADS A HI DRWL PRESS SEALED IN)
  - TS 3.3.5.1 Conditions B and F, 3.3.6.1 Condition A, 3.3.6.3 Condition B, and 3.3.6.4 Condition B were entered (no other actions are required at this time).
- RHR 'A' is lined up for Suppression Pool Cooling.
  - TS 3.5.1 Condition A was entered.

Planned Evolutions this shift:

- Place RHR 'A' in standby mode.
- <u>Note that an independent Reactivity Management SRO per Operations Philosophy 6.8.1 will not be provided for this scenario.</u>

Facility: GGNS Date of Exam: 12/10/12 Operating Test No.: LOT-2012

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		2			4			3			1						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
U1	RX	0			0									0	1	1	0
	NOR	1			1									2	1	1	1
	I/C	4			4									8	4	4	2
	MAJ	1			2									3	2	2	1
	TS	2			2									4	0	2	2
U2	RX				0									0	1	1	0
	NOR				1									1	1	1	1
	I/C				4									4	4	4	2
	MAJ				2									2	2	2	1
	TS				2									2	0	2	2
I1	RX		1		0					0				1	1	1	0
	NOR		0		1					1				2	1	1	1
	I/C		2†		4					2				8	4	4	2
	MAJ		1		2					1				4	2	2	1
	TS				2									2	0	2	2
I2	RX	0				1		0						1	1	1	0
	NOR	1				0		1						2	1	1	1
	I/C	4				2†		3						9	4	4	2
	MAJ	1				2		1						4	2	2	1
	TS	2						2						4	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 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 Instant SRO *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 instrument or component malfunctions on a 1-for-1 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.

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		2			4			3			1						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
I3	RX	0				1		0						1	1	1	0
	NOR	1				0		1						2	1	1	1
	I/C	4				2†		3						9	4	4	2
	MAJ	1				2		1						4	2	2	1
	TS	2						2						4	0	2	2
I4	RX		1		0					0				1	1	1	0
	NOR		0		1					1				2	1	1	1
	I/C		2†		4					2				8	4	4	2
	MAJ		1		2					1				4	2	2	1
	TS				2									2	0	2	2
I5	RX	0				1		0						1	1	1	0
	NOR	1				0		1						2	1	1	1
	I/C	4				2†		3						9	4	4	2
	MAJ	1				2		1						4	2	2	1
	TS	2						2						4	0	2	2
R1	RX		1				0							1	1	1	0
	NOR		0				1							1	1	1	1
	I/C		2				3							5	4	4	2
	MAJ		1				2							3	2	2	1
	TS													0	0	2	2
R2	RX			0		1								1	1	1	0
	NOR			1		0								1	1	1	1
	I/C			3		2								5	4	4	2
	MAJ			1		2								3	2	2	1
	TS													0	0	2	2
R3	RX			0			0		1					1	1	1	0
	NOR			1			1		0					2	1	1	1
	I/C			3			3		1					7	4	4	2
	MAJ			1			2		1					4	2	2	1
	TS													0	0	2	2
R4	RX			0			0		1					1	1	1	0
	NOR			1			1		0					2	1	1	1
	I/C			3			3		1					7	4	4	2
	MAJ			1			2		1					4	2	2	1
	TS													0	0	2	2

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
R5	RX			0					1					1	1	1	0
	NOR			1					0					1	1	1	1
	I/C			3					1					4	4	4	2
	MAJ			1					1					2	2	2	1
	TS														0	2	2
R6	RX		1				0			0				1	1	1	0
	NOR		0				1			1				2	1	1	1
	I/C		2				3			2				7	4	4	2
	MAJ		1				2			1				4	2	2	1
	TS														0	2	2

Facility: GGNS Date of Examination: 12/10/12 Operating Test No.: LOT-2012

Competencies	APPLICANTS															
	U1				U2				I1				I2			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		3,4 5,6 7,8 9 10		2,3 4,5 6,7 8				2,3 4,5 6,7 8		3,5 6,7 8,9 10	1,3 4,5 6,7	2,3 4,5 6,7 8		3,4 5,6 7,8 9 10	1,3 4,5 6,7	2,3 4,5 6,7 8
Comply With and Use Procedures (1)		1,2 3,4 5,6 7,9 10		1,2 3,4 5,6 7,8				1,2 3,4 5,6 7,8		2,3 5,7 8 10	1,2 3,5 7	1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,9 10	1,2 3,4 5,7	3,5 6,7 8
Operate Control Boards (2)										2,3 8 10	1,2 3,5 6,7					3,5 6,7
Communicate and Interact		1,2 3,4 5,6 7,8 9 10		1,2 3,4 5,6 7,8				1,2 3,4 5,6 7,8		1,2 3,5 6,7 8,9 10	1,2 3,4 5,6 7	1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	2,3 4,5 6,7 8
Demonstrate Supervisory Ability (3)		1,2 3,4 5,6 7,8 9 10		1,2 3,4 5,6 7,8				1,2 3,4 5,6 7,8				1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	
Comply With and Use Tech. Specs. (3)		4,5		2,4				2,4				2,4		4,5	1,3	

Notes:
(1) Includes Technical Specification 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.

Competencies	APPLICANTS															
	I3				I4				I5				I6			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		3,4 5,6 7,8 9 10	1,3 4,5 6,7	2,3 4,5 6,7 8		3,5 6,7 8,9 10	1,3 4,5 6,7	2,3 4,5 6,7 8		3,4 5,6 7,8 9 10	1,3 4,5 6,7	2,3 4,5 6,7 8				
Comply With and Use Procedures (1)		1,2 3,4 5,6 7,9 10	1,2 3,4 5,7	3,5 6,7 8		2,3 5,7 8 10	1,2 3,5 7	1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,9 10	1,2 3,4 5,7	3,5 6,7 8				
Operate Control Boards (2)				3,5 6,7		2,3 8 10	1,2 3,5 6,7					3,5 6,7				
Communicate and Interact		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	2,3 4,5 6,7 8		1,2 3,5 6,7 8,9 10	1,2 3,4 5,6 7	1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	2,3 4,5 6,7 8				
Demonstrate Supervisory Ability (3)		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7					1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7					
Comply With and Use Tech. Specs. (3)		4,5	1,3					2,4		4,5	1,3					

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Competencies	APPLICANTS															
	I7				R1				R2				R3			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions						3,5 6,7 8,9 10		2,3 4,5 6,7 8		3,5 6,7 8,9 10		2,3 4,5 6,7 8		3,5 6,7 8,9 10	3,4 5,6 7	2,3 4,5 6,7 8
Comply With and Use Procedures (1)						2,3 5,7 8 10		1,3 4,6 7,8		1,2 3,6 7,8 10		3,5 6,7 8		1,2 3,6 7,8 10	2,4 5,7	1,3 4,6 7,8
Operate Control Boards (2)						2,3 8 10		1,3 4,6 7,8		1,3 6,8 10		3,5 6,7		1,3 6,8 10	2,4 5,7	1,3 4,6 7,8
Communicate and Interact						1,2 3,5 6,7 8,9 10		1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10		2,3 4,5 6,7 8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	1,2 3,4 5,6 7,8
Demonstrate Supervisory Ability (3)																
Comply With and Use Tech. Specs. (3)																

Notes:
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(2) Optional for an SRO-U.
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Competencies	APPLICANTS															
	R4				R5				R6							
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		3,5 6,7 8,9 10	3,4 5,6 7	2,3 4,5 6,7 8		3,5 6,7 8,9 10	3,4 5,6 7			3,5 6,7 8,9 10	1,3 4,5 6,7	2,3 4,5 6,7 8				
Comply With and Use Procedures (1)		1,2 3,6 7,8 10	2,4 5,7	1,3 4,6 7,8		1,2 3,6 7,8 10	2,4 5,7			2,3 5,7 8 10	1,2 3,5 7	1,3 4,6 7,8				
Operate Control Boards (2)		1,3 6,8 10	2,4 5,7	1,3 4,6 7,8		1,3 6,8 10	2,4 5,7			2,3 8 10	1,2 3,5 6,7	1,3 4,6 7,8				
Communicate and Interact		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7	1,2 3,4 5,6 7,8		1,2 3,4 5,6 7,8 9 10	1,2 3,4 5,6 7			1,2 3,5 6,7 8,9 10	1,2 3,4 5,6 7	1,2 3,4 5,6 7,8				
Demonstrate Supervisory Ability (3)																
Comply With and Use Tech. Specs. (3)																

Notes:
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(2) Optional for an SRO-U.
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Competencies	APPLICANTS														
	SRO					ATC					BOP				
	SCENARIO					SCENARIO					SCENARIO				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Interpret/Diagnose Events and Conditions	2,3,4,5,6,7,8,9	3,4,5,6,7,8,9,10	1,3,4,5,6,7	2,3,4,5,6,7,8	1,3,4,5,6,7,8	3,4,5,6,7,8,9	3,5,6,7,8,9,10	3,4,5,6,7	2,3,4,5,6,7,8	3,4,6,7,8	2,3,4,5,6,7,8,9	3,5,6,7,8,9,10	1,3,4,5,6,7	2,3,4,5,6,7,8	1,4,5,6,7,8
Comply With and Use Procedures (1)	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,9,10	1,2,3,4,5,7	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,3,4,5,6,7,8,9	2,3,5,7,8,10	2,4,5,7	3,5,6,7,8	2,6,7,8	1,2,3,6,7,8,9	1,2,3,6,7,8,10	1,2,3,5,7	1,3,4,6,7,8	1,2,3,4,5,6,7,8
Operate Control Boards (2)						1,3,4,6,7,8,9	2,3,8,10	2,4,5,7	3,5,6,7	2,6,7,8	1,2,3,7,9	1,3,6,8,10	1,2,3,5,6,7	1,3,4,6,7,8	1,2,4,7,8
Communicate and Interact	1,2,3,4,5,6,7,8,9	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8,9	1,2,3,5,6,7,8,9,10	1,2,3,4,5,6,7	2,3,4,5,6,7,8	2,3,4,5,6,7,8	1,2,3,4,5,6,7,8,9	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
Demonstrate Supervisory Ability (3)	1,2,3,4,5,6,7,8,9	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8										
Comply With and Use Tech. Specs. (3)	2,5	4,5	1,3	2,4	3,5										

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
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