Facility: **CPNPP Units 1 and 2**		Date of Examination: **July 2016**
Examination Level: RO ☒ SRO ☐		Operating Test Number: **NRC**
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations (RA1)	D,R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (4.3) JPM: Calculate BOL Boration for Long Term Use. (RO1307D)
Conduct of Operations (RA2)	M,R	2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant temperature, secondary plant, fuel depletion etc. (4.1) JPM: Determine Reactivity Effects When Starting Positive Displacement Charging Pump. (RO1310E)
Equipment Control (RA3)	D,R	2.2.1 Ability to perform pre-startup procedures including operating those controls associated with plant equipment that could affect reactivity. (4.5) JPM: Perform a 1/M Plot and Predict Critical Conditions. (RO1003A)
Radiation Control (RA4)	D,R	2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. (3.5) JPM: Determine Entry Conditions for Radiation Area Clearance. (RWT056B)
Emergency Procedures/Plan	–	–

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

RA1 The applicant will calculate BOL Boration for long term use per SOP-104A, Reactor Makeup and Chemical Control System, Attachment 2, BOL Boration for Long-Term Use. Critical steps include determining Reactor Coolant System corrected boron, gallons of Reactor Makeup Water to offset boron, and potentiometer settings for the Chemical and Volume Control System. This is a direct from bank JPM. (K/A 2.1.23 - IR 4.3)

RA2 The applicant is presented with information pertaining to the boron concentration in the suction piping to the Positive Displacement Charging Pump and the Reactor Coolant System. The applicant will use SOP-103A, Chemical and Volume Control System to determine the reactivity effects of the planned evolution. The critical steps will be to calculate the change in RCS boron concentration and RCS temperature. The JPM is modified from a previous version by changing the RCS boron concentration and the concentration in the PDP suction line. The prior version was a resulting boration. The modified version is a resulting dilution. This is a modified JPM. (K/A 2.1.43 - IR 4.1)

RA3 The applicant will perform a 1/M plot for a Reactor Startup per IPO-002A, Plant Startup From Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation The critical steps include the critical steps include calculating and plotting 1/M, predicting critical conditions, and identifying action for criticality above the power dependent insertion limit. This is a direct from bank JPM. (K/A 2.2.1 - IR 4.5)

RA4 The applicant will determine the radiological requirements for implementing a Clearance in a Radiological Controlled Area per STA-656, Radiation Work Control, RPI-602, Radiological Surveillance and Posting, and RPI-606, Radiation Work and General Access Permits. Critical tasks include identifying Dose Monitoring Requirements, Protective Clothing Requirements, highest contamination level, and highest dose rate. This is a direct from bank JPM. (K/A 2.2.37 - IR 3.5)

Facility: CPNPP JPM # NRC RA1 Task # RO1307 K/A # 2.1.23 4.3 / 4.4

Title: Calculate BOL Boration for Long Term Use

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 startup is in progress following a refueling outage
- Reactor Coolant System boron concentration is 1600 ppm
- Boric Acid Storage Tank boron concentration is 7249 ppm
- Boron-10 Weight Fraction is 0.173367

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- CALCULATE Beginning-Of-Life Boration values per SOP-104A, Reactor Make-up and Chemical Control System, Attachment 2, BOL Boration for Long-Term Use
- RECORD information on Attachment 2, BOL Boration for Long-Term Use page 1

Task Standard: Utilizing SOP-104A, Attachment 2 calculated Reactor Coolant System Corrected Boron, Gallons of Reactor Makeup Water To Offset Boron in Blender Pipe During Normal Volume Control Tank Makeup, Boron Gallons for a Manual Blend, Boric Acid Pot Setting for a Manual Blend, Boric Acid Pot Setting for AUTO Makeup, Gallons of Reactor Makeup Water to Offset Boron in Blender Pipe When Returning Makeup System to Automatic. (SEE KEY)

Ref. Materials: SOP-104A, Reactor Make-up and Chemical Control System, Rev. 15-2.

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handout:

PROVIDE the examinee with a copy of:

- **SOP-104A, Reactor Make-up and Chemical Control System**
  - **Attachment 2, BOL Boration for Long-Term Use Page 1** (labeled Procedure 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from SOP-104A, Attachment 2 page 1**
Examiner Note:	**Refer to answer key for calculated values**

NOTE: • This attachment assumes prior automatic operation.

Perform Step: 1 1.0	RECORD Reference Data as follows: • RCS Boron _____ • BAT Boron _____ • B10 WT Fraction _____
Performance Standard:	ENTERED data on Attachment 2 at Step 1.0
Comment:	**SAT ☐ UNSAT ☐**

A.	RCS Corrected Boron:	
	_____ RCS PPM X _____ / 0.1834 B-10 Wt Fraction =	_____ RCS (c) PPM BORON Corrected

Perform Step: 2√ 2.A	CALCULATE volumes in pot settings as follows: • RCS Corrected Boron:
Performance Standard:	CALCULATED **1512 to 1513**. [allowable error based on rounding after first calculation and then performing second calculation]
Comment:	**SAT ☐ UNSAT ☐**

B.	Gallons of RMUW to offset boron in Blender Pipe during normal VCT makeup:	
	$\frac{\text{BAT PPM}}{\text{RCS(c)}}$ X 35 GAL BORON - 35 GAL BORON =	_____ 1-FY-111B, RMUW Gallons to Offset Boron in Blender Pipe during normal VCT makeup

Perform Step: 3√ 2.B	CALCULATE volumes in pot settings as follows: • Gallons of RMUW to offset boron in Blender Pipe during normal VCT makeup:
Performance Standard:	CALCULATED **132 to 133 gallons.** [allowable error based on rounding carried from Step 2 and those performed in this step]
Comment:	**SAT ☐ UNSAT ☐**

C.	Boron gallons for a Manual Blend:	
	50 Total Gallons X $\frac{\text{RCS(c)}}{\text{BAT PPM}}$ =	_____ 1-FY-110B, Boron Gallons for Manual Blend

Perform Step: 4√ 2.C	CALCULATE volumes in pot settings as follows: • Boron gallons for a Manual Blend:
Performance Standard:	CALCULATED **10 to 11** gallons. [allowable error based on rounding]
Comment:	**SAT ☐ UNSAT ☐**

D.	Boric Acid Pot Setting for a Manual Blend:	
	$\frac{\text{90 Total Flowrate}}{4}$ X $\frac{\text{RCS(c)}}{\text{BAT PPM}}$ =	_____ 1-FK-110, BA Pot Setting for Manual Blend
E.	Boric Acid Pot Setting for AUTO Makeup:	

Perform Step: 5√ 2.D	CALCULATE volumes in pot settings as follows: • Boric Acid Pot Setting for a Manual Blend:
Performance Standard:	CALCULATED **4.69 ± 0.1.** [allowable error based on rounding and accuracy of Pot settings]
Comment:	**SAT ☐ UNSAT ☐**

E.	Boric Acid Pot Setting for AUTO Makeup:	
	$\frac{127 \text{ Total Flowrate}}{4}$ X $\frac{\text{RCS(c)}}{\text{BAT PPM}}$ =	_____ 1-FK-110, BA Pot Setting for Auto Makeup

Perform Step: 6√ 2.E	CALCULATE volumes in pot settings as follows: • Boric Acid Pot Setting for AUTO Makeup:
Performance Standard:	CALCULATED **6.62 ± 0.1.** [allowable error based on rounding and accuracy of Pot settings]
Comment:	**SAT ☐ UNSAT ☐**

F.	Gallons of RMUW to offset boron in Blender Pipe when returning Makeup System to Automatic:	
	$\frac{\text{BAT PPM}}{\text{RCS(c)}}$ X 22.8 GAL BORON - 22.8 GAL BORON =	_____ 1-FY-111B, RMUW Gallons to Offset Boron in Blender Pipe when returning to Automatic

Perform Step: 7√ 2.F	CALCULATE volumes in pot settings as follows: • Gallons of RMUW to offset boron in Blender Pipe when returning Makeup System to Automatic:
Performance Standard:	CALCULATED **86 to 87 gallons.** [allowable error based on rounding carried from Step 2 and those performed in this step]
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 startup is in progress following a refueling outage**
- **Reactor Coolant System boron concentration is 1600 ppm**
- **Boric Acid Storage Tank boron concentration is 7249 ppm**
- **Boron-10 Weight Fraction is 0.173367**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **CALCULATE Beginning-Of-Life Boration values per SOP-104A, Reactor Make-up and Chemical Control System, Attachment 2, BOL Boration for Long-Term Use**
- **RECORD information on Attachment 2, BOL Boration for Long-Term Use page 1**

CPNPP SYSTEM OPERATING PROCEDURE MANUAL	UNIT 1	PROCEDURE NO. SOP-104A
REACTOR MAKE-UP AND CHEMICAL CONTROL SYSTEM	REVISION NO. 15 CONTINUOUS USE	PAGE 75 OF 82

ATTACHMENT 2
PAGE 1 OF 7

BOL BORATION FOR LONG TERM USE

This attachment describes the steps to periodically add boron to the RCS at BOL while keeping the system aligned in the BORATE mode. Instructions are provided to address refilling the VCT due to normal losses as well as if an RCS leak were to occur.

NOTE: This attachment assumes prior automatic operation. Therefore, B-10 Corrected RCS Boron Concentration must be ≤ 1600 ppm to use this attachment.

1.0 RECORD Reference Data as follows:

☐ ● RCS Boron 1600 ● BAT Boron 7249 ● B10 Wt Fraction 0.173367

2.0 CALCULATE volumes and pot settings as follows:

A.	RCS Corrected Boron:	
	1600 RCS PPM X 0.173367 / 0.1834 B-10 Wt Fraction =	1512 to 1513 RCS (c) PPM BORON Corrected
B.	Gallons of RMUW to offset boron in Blender Pipe for Normal VCT Makeup:	
	7249 / 1512.5 BAT PPM / RCS(c) X 35 GAL BORON - 35 GAL BORON =	132 to 133 1-FY-111B, RMUW Gallons to Offset Boron in Blender Pipe
C.	Boron gallons for a Manual Blend:	
	50 Total Gallons X 1512.5 / 7249 RCS(c) / BAT PPM =	10 to 11 1-FY-110B, Boron Gallons for Manual Blend
D.	Boric Acid Pot Setting for a Manual Blend:	
	90 Total Flowrate / 4 X 1512.5 / 7249 RCS(c) / BAT PPM =	4.69 +/- 0.1 1-FK-110, BA Pot Setting for Manual Blend
E.	Boric Acid Pot Setting for AUTO Makeup:	
	127 Total Flowrate / 4 X 1512.5 / 7249 RCS(c) / BAT PPM =	6.62 +/- 0.1 1-FK-110, BA Pot Setting for Auto Makeup
F.	Gallons of RMUW to offset boron in Blender Pipe when returning Makeup System to Automatic:	
	7249 / 1512.5 BAT PPM / RCS(c) X 22.8 GAL BORON - 22.8 GAL BORON =	86 -87 1-FY-111B, RMUW Gallons to Offset Boron in Blender Pipe when returning to Automatic

Facility: CPNPP JPM # NRC RA2 Task # RO1310 K/A # 2.1.43 4.1 / 4.3

Title: Determine Reactivity Effects When Starting Positive Displacement Charging Pump

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is 100% power
- The Positive Displacement Charging Pump must be placed in service per SOP-103A, Chemical and Volume Control System
- The last time the Positive Displacement Charging Pump was run the Reactor Coolant System Boron concentration was 25 ppm
- Current Reactor Coolant System Boron concentration is 1222 ppm

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- CALCULATE a Reactivity Evaluation for starting the Positive Displacement Charging Pump per SOP-103A, Chemical and Volume Control System, Steps 5.3.1.C
- REPORT findings to the Unit Supervisor

Task Standard: Utilizing SOP-103A, calculated the change in boron concentration and resultant change in temperature when placing the Positive Displacement Pump in service.

Ref. Materials: SOP-103A, Chemical and Volume Control System, Rev. 18-15.
Reactivity Briefing Sheet for 1222 ppm Reactor Coolant System conditions.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ____ UNSAT ____

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handout:

PROVIDE the examinee with a copy of:

- **SOP-103A, Chemical and Volume Control System, Step 5.3.1.C.** (labeled Procedure 1)
- **90.4 EFPD Reactivity Briefing Sheet.** (labeled Handout 1 Rev. 0)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from SOP-103A, Step 5.3.1.**

NOTE: This formula was developed using data from Eval 2004-000944-04-00. It assumes 84 gallons for the PDP piping. All the factors that would not change were calculated to give a constant (0.00128) to simplify the formula(updated in EVAL-2009-000420-02). This formula does not take into account the diffusion effect. So, the boron concentration could be less than the PDP plaque indicates. The temperature change calculated below represents worst case. Operating experience has shown actual temperature change was less than results of the calculation below.

Perform Step: 1√ 5.3.1.C.1) + calculation	DETERMINE the change in RCS Boron concentration which will occur due to the PDP run: • ΔB = Change in RCS Boron Concentration due to PDP run
Performance Standard:	CALCULATED ΔB = Change in RCS Boron Concentration: ΔB = (25 ppm PDP - 1222 ppm RCS) x 0.00128 = **-1.53 to -1.54 ppm**
Comment:	**SAT UNSAT**

Perform Step: 2 5.3.1.C.2).a) + calculation	IF in MODE 1 or 2 THEN PERFOM the following: DETERMINE the impact of water in the PDP piping on reactivity by the performing the following calculation: ΔB = -1.53 ppm From the Reactivity Briefing Sheet, obtain the following information: ITC _____ pcm/ºF HFP Differential Boron Worth _____ pcm/ppm
Performance Standard:	DETERMINED the following from the Reactivity Briefing Sheet: ITC = **- 10.9 pcm/ºF** HFP Differential Boron Worth = **- 7.0 pcm/ppm**
Comment:	**SAT UNSAT**

Perform Step: 3 5.3.1.C.2).a) + calculation	Calculate: ITC / HFP Differential Boron Worth = ppm / ºF
Performance Standard:	CALCULATED change in ppm /ºF: - 10.9 pcm/ ºF / - 7.0 pcm/ppm = **1.5 to 1.6 ppm/ºF**
Comment:	**SAT UNSAT**

Examiner Note:	**Rounding off of Δ T_{AVE} may occur.**
Perform Step: 4√ 5.3.1.C.2).a) + calculation	Calculate: Δ T_{AVE} = (-1) Δ B ppm / ppm / ºF
Performance Standard:	CALCULATED change in T_{AVE} as follows: Δ T_{AVE} = (-1) Δ B ppm / ppm / ºF = (-1)(-1.53 ppm) / 1.56 ppm/ºF = **0.9 to 1.1 ºF**
Comment:	**SAT ☙ UNSAT ☙**

Perform Step: 5 5.3.1.C.2).b)	IF ΔT$_{AVE}$ calculated above is > 0.5 ºF, THEN NOTIFY the Unit Supervisor and discuss contingency actions.
Performance Standard:	DETERMINED ΔT$_{AVE}$ calculated is greater than 0.5 ºF and NOTIFIED Unit Supervisor.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☙ UNSAT ☙**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is 100% power**
- **The Positive Displacement Charging Pump must be placed in service per SOP-103A, Chemical and Volume Control System**
- **The last time the Positive Displacement Charging Pump was run the Reactor Coolant System Boron concentration was 25 ppm**
- **Current Reactor Coolant System Boron concentration is 1222 ppm**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **CALCULATE a Reactivity Evaluation for starting the Positive Displacement Charging Pump per SOP-103A, Chemical and Volume Control System, Steps 5.3.1.C**
- **REPORT findings to the Unit Supervisor**

CPNPP SYSTEM OPERATING PROCEDURE MANUAL	UNIT 1	PROCEDURE NO. SOP-103A
CHEMICAL AND VOLUME CONTROL SYSTEM	REVISION NO. 18 CONTINUOUS USE	PAGE 33 OF 164

5.3.1 C. IF RCS measured boron concentration has changed > 25 ppm since the PDP was last operated,
THEN
PERFORM the following:

NOTE: This formula was developed using data from Eval 2004-000944-04-00. It assumes 84 gallons for the PDP piping. All the factors that would not change were calculated to give a constant (0.00128) to simplify the formula (updated in EVAL-2009-000420-02). This formula does not take into account the diffusion effect. So, the boron concentration could be less than the PDP plaque indicates. The temperature change calculated below represents worst case. Operating experience has shown actual temperature change was less than results of the calculation below.

☐ 1) DETERMINE the change in RCS Boron Concentration which will occur due to the PDP run.

ΔB = Change in RCS Boron Concentration due to PDP run

ΔB = (25 ppm PDP - 1222 ppm RCS) x 0.00128

ΔB = -1.53 to -1.54 ppm

2) IF in MODE 1 or 2
THEN
PERFORM the following:

☐ a) DETERMINE the impact of water in the PDP piping on reactivity by performing the following calculation:

ΔB = -1.53 +/- .01 ppm (calculated previously)

From the Reactivity Briefing Sheet, obtain the following information:

ITC -10.9 pcm/°F HFP Differential Boron Worth -7.0 pcm/ppm

Calculate:

$$\frac{\text{ITC}}{\text{HFP Differential Boron Worth}} = \frac{-10.9}{-7.0}\ \frac{\text{pcm/°F}}{\text{pcm/ppm}} = 1.5 \text{ to } 1.6 \text{ ppm/°F}$$

$$\Delta T_{ave} = (-1)\frac{\Delta B \text{ ppm}}{\text{ppm/°F}} = (-1)\frac{-1.53}{1.56}\ \frac{\text{ppm}}{\text{ppm/°F}} = 0.9 \text{ to } 1.1\ ^\circ F$$

☐ b) IF ΔTave calculated above is > 0.5°F,
THEN
NOTIFY the Unit Supervisor
AND
DETERMINE contingency actions.

Reactivity Briefing Sheet for Stable Operation

BOL PROJECTIONS - SIMULATOR USE ONLY

Valid for approximately 7 days.

Calculations based on core design values, and assume:

Burnup =	**4000.0**	MWD/MTU
	90.4	EFPD
Power =	**100**	RTP
Boron =	**1222**	ppm
B10 Conc =	**0.183400**	w/o
Control Bank D =	**215**	steps

Burnup in the BOL range

NOTE: Re-create the Briefing Sheet if current values significantly differ from assumed inputs.

Reactivity affects of Control Bank D

HFP Diff Worth @ 215.0 steps = **-0.9** pcm / step

HFP Integral Rod Worth for CBD Step Positions:

Steps	pcm	Steps	pcm	Steps	pcm	Steps	pcm
225	0.0	218	-3.1	211	-9.6	200	-27.1
224	0.0	217	-3.8	210	-10.8	195	-37.4
223	-0.8	216	-4.5	209	-12.2	190	-48.9
222	-1.1	215	-5.4	208	-13.6	185	-61.4
221	-1.4	214	-6.3	207	-15.1	180	-74.7
220	-1.9	213	-7.3	206	-16.6	175	-88.6
219	-2.4	212	-8.4	205	-18.2	170	-103.1

Reactivity affects of Boron

HFP Diff Boron Worth @ 1222 ppm = **-7.0** pcm / ppm

1-FK-110 Pot Setting for Blended Flow @ 1222 ppm = **5.21**

(Assuming BAT concentration of 7447.0 ppm)

Reactivity affects of Power

Power Coefficient of Reactivity = **-11.8** pcm / % RTP

Dilution to equal 1% Power Increase = **95.2** gallons RMUW

Boration to equal 1% Power Decrease = **18.0** gallons boric acid

Reactivity affects of RCS Temperature

Temperature Coefficient of Reactivity (ITC) = **-10.9** pcm / ☜F

Boration to equal 1☜F Temperature Decrease = **16.6** gallons boric acid

Dilution to equal 1☜F Temperature Increase = **87.8** gallons RMUW

Load Reduction equal to 1☜F T_{ave} Increase = **11.0** MWe

Facility: CPNPP JPM # NRC RA3 Task # RO1003 K/A # 2.2.1 4.5 / 4.4

Title: Perform a 1/M Plot and Predict Critical Conditions

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 2 is performing a Reactor Startup per IPO-002B, Plant Startup from Hot Standby
- Boron is at the Estimated Critical Boron Concentration of 1220 ppm
- Shutdown Control Rod Banks are fully withdrawn
- Critical Rod Height is predicted to be CBD at 78 steps
- The Full Out Position (FOP) is 225 steps
- Control Rods have been withdrawn four times in increments of 50 steps
- The Unit Supervisor wants to re-perform the Inverse Count Rate Ratio Calculation and re-plot the points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- PERFORM the Inverse Count Rate Ratio (ICRR) Calculation per for each of the four rod withdrawal readings shown on IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.3.E and 3.3.F
- PLOT the points on the 1/M Data Sheet per IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Step 3.3.G
- DETERMINE the ECC (Predicted Critical Rod Height) for each of the four rod withdrawals and record on the 1/M Data Sheet per IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.4 and 3.5
- RECORD any required action(s) based on 1/M Data obtained below:
  - _____
  - _____
  - _____

Task Standard: Utilizing IPO-002B, calculated Inverse Count Rate Ratios, performed a 1/M Plot using data provided on Attachment 2, determined estimated critical rod position for each the four rod withdrawals, determined criticality predicted below Rod Insertion Limit and recorded insert all Control Banks to the CBO position.

Ref. Materials: IPO-002B, Plant Startup from Hot Standby, Rev. 10-37.
ERX-15-001, COLR for CPNPP Unit 2 Cycle 16, Figure 2, Rod Bank Insertion Limits Versus Thermal Power, Rev. 0.

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handouts:

PROVIDE the examinee with a copy of:

- **IPO-002B, Plant Startup from Hot Standby** (labeled Procedure 1)
  - **COMPLETE Attachment 2 through four sets of data**
- **IPO-002B, Plant Startup from Hot Standby Step 5.2.10** (labeled Procedure 2)
- **COLR for CPNPP Unit 2 Cycle 16 Figure 2 Rod Bank Insertion Limits Versus Thermal Power** (labeled Handout 1)

Required Materials:

- **Straight edge or ruler**
- **Calculator**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from IPO-002B, Attachment 2.**
Perform Step: 1√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 50 steps and plot on 1/M Data Sheet.
Performance Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank A at 50 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: • RECORD an average Count Rate of **55.** • CALCULATE ICRR = 1/M = 50/55 = 0.91 ± 0.01. • RECORD ICRR = **0.91 ± 0.01.** • PLOT points for CBA @ 0 steps and CBA @ 50 steps. • DRAW a line from 1.00 to 0.91 that INTERSECTS with CBD at 190 ± 100 steps. • LOG an Estimated Critical Condition **between CBD at 155 and 225 steps**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 100 steps and plot on 1/M Data Sheet.
Performance Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank A at 100 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: • RECORD an average Count Rate of **65.** • CALCULATE ICRR = 1/M = 50/65 = 0.77 ± 0.01. • RECORD ICRR = **0.77 ± 0.01.** • PLOT points for CBA @ 50 steps and CBA @ 100 steps. • DRAW a line from 0.91 to 0.77 that INTERSECTS with CBD at 10 ± 50 steps. • LOG an Estimated Critical Condition **between CBC at 100 and CBD at 35 steps**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Calculate Inverse Count Rate Ratio calculation for Control Bank B at 35 steps and plot on 1/M Data Sheet.
Performance Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank B at 35 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: • RECORD an average Count Rate of **88.** • CALCULATE ICRR = 1/M = 50/88 = 0.57 ± 0.01. • RECORD ICRR = **0.57 ± 0.01.** • PLOT points for CBA @ 100 steps and CBB @ 35 steps. • DRAW a line from 0.77 to 0.57 that INTERSECTS with CBC at 55 ± 30 steps. • LOG an Estimated Critical Condition **between CBC at 40 and 90 steps**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Calculate Inverse Count Rate Ratio calculation for Control Bank B at 85 steps and plot on 1/M Data Sheet.
Performance Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank B at 85 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: • RECORD an average Count Rate of **333.** • CALCULATE ICRR = 1/M = 50/333 = 0.15 ± 0.01. • RECORD ICRR = **0.15 ± 0.01.** • PLOT points for CBB @ 35 steps and CBB @ 85 steps. • DRAW a line from 0.57 to 0.15 that INTERSECTS with CBB at 95 ± 25 steps. • LOG an Estimated Critical Condition **between CBB at 80 and 110 steps**.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following Performance Standard is from IPO-002B, Step 5.2.10, 4th bullet.**
Perform Step: 5√	RECORD any required action based on 1/M Data obtained on Attachment 2, Page 3 of 4 **and/or** the JPM Cue Sheet.
Performance Standard:	DETERMINED Estimated Critical Condition occurs below the Rod Insertion Limit (CBC @ 49 steps) within the next reactivity addition and RECORDED the following on the JPM Cue Sheet: • **INSERT all Control Bank Rods to the CBO position (critical).**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 2 is performing a Reactor Startup per IPO-002B, Plant Startup from Hot Standby**
- **Boron is at the Estimated Critical Boron Concentration of 1220 ppm**
- **Shutdown Control Rod Banks are fully withdrawn**
- **Critical Rod Height is predicted to be CBD at 78 steps**
- **The Full Out Position (FOP) is 225 steps**
- **Control Rods have been withdrawn four times in increments of 50 steps**
- **The Unit Supervisor wants to re-perform the Inverse Count Rate Ratio Calculation and re-plot the points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **PERFORM the Inverse Count Rate Ratio (ICRR) Calculation per for each of the four rod withdrawal readings shown on IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.3.E and 3.3.F**
- **PLOT the points on the 1/M Data Sheet per IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Step 3.3.G**
- **DETERMINE the ECC (Predicted Critical Rod Height) for each of the four rod withdrawals and record on the 1/M Data Sheet per IPO-002B, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.4 and 3.5**
- **RECORD any required action(s) based on 1/M Data obtained below:**
  - **_____**
  - **_____**
  - **_____**

ATTACHMENT 2
PAGE 1 OF 4

INVERSE COUNT RATE RATIO CALCULATION

NOTE: This calculation is not required when Core Performance Engineering is performing ICRR calculations per NUC-111.

1.0 PREREQUISITES

- The scalar timer is available for use in the manual mode per SOP-703.

OR

- IF the scalar timer is out-of-service, THEN Nuclear Instrument indication shall be used.

2.0 LIMITATIONS

2.1 Rod withdrawal increments should be performed at approximately 50 steps. The Shift Manager may authorize withdrawal of rods at any other increment less than 50 steps as the Reactor approaches criticality.

3.0 INSTRUCTIONS

3.1 The following steps describe the method for determining the baseline reference count values.

NOTE: When count rate is greater than 50 counts/sec, a 10 second counting interval should be used. If count rate is less than or equal to 50 counts/sec, then a 30 second counting interval should be used. Once initiated, the same counting interval should be used throughout the ICRR.

A. Obtain ten separate reference counts for each Source Range channel and record values on the ICRR worksheet.

B For each Source Range channel, compute the average count from the 10 reference counts on the ICRR worksheet.

3.2 Mark the graph for the rod heights at + / - 500 pcm (if using OPT-308-1) or for the Expected Criticality Range (if using OPT-308-2).

ATTACHMENT 2
PAGE 2 OF 4

INVERSE COUNT RATE RATIO CALCULATION

3.3 The following steps describe the method used in determining the Inverse Count Rate Ratio (ICRR).

A. After obtaining the Shift Manager's permission, withdraw the Control Rods a maximum of 50 steps. The Shift Manager may authorize withdrawals of less than 50 steps.

B. Monitor Source Range indication on recorder 2-NR-0045 to determine when the Source Range channels have stabilized.

C. Obtain three separate integral count measurements for each Source Range channel using the counting interval determined in Step 3.1.

D. Ensure audible Source Range counts is returned to service after completion of counting measurements.

E. Calculate the average of these counts for each Source Range channel on the ICRR worksheet.

F. Perform the following calculation and record the result on the ICRR worksheet.

$$\text{ICRR} = \frac{\text{Source Range Channel Reference Counts}}{\text{Source Range Channel Average Counts}}$$

G. Plot the ICRR values at the appropriate rod position on graph paper similar to the one attached.

3.4 Perform a linear extrapolation of the ICRR plot, using the last two data points, to the point at which the extrapolation intersects the horizontal axis. This point defines the rod position at which criticality is estimated.

3.5 List rod position estimation on the ICRR worksheet.

3.6 Continue to perform Steps 3.3 thru 3.5 until either of the following occurs:

A. The Reactor is critical

OR

B. The Shift Manager terminates ICRR data collection.

ATTACHMENT 2
PAGE 3 OF 4

INVERSE COUNT RATE RATIO CALCULATION

INVERSE COUNT RATE RATIO

Estimated Critical Condition:

Bank CBD at 78 steps

Boron Concentration 1220 ppm

Completed by _____

Date _____ Time _____

REFERENCE N-31	COUNTS N-32
50	49
49	50
49	51
51	49
50	49
51	51
48	52
50	50
51	49
51	50
50	50
AVE	AVE

BANK CBA AT 50 STEPS

N-31	N-32
55	55
56	54
54	56
55	55
0.91 AVE	0.91 AVE
ICRR	ICRR
ECC BANK CBD STEP 190	ECC BANK CBD STEP 190

CBD 155 to 225

BANK CBA AT 100 STEPS

N-31	N-32
65	64
65	67
65	64
65	65
0.77 AVE	0.77 AVE
ICRR	ICRR
ECC BANK CBD STEP 10	ECC BANK CBD STEP 10

CBC 100 to CBD 35

BANK CBB AT 35 STEPS

N-31	N-32
87	89
88	88
89	87
88	88
0.57 AVE	0.57 AVE
ICRR	ICRR
ECC BANK CBC STEP 55	ECC BANK CBC STEP 55

CBC 40 to 90

BANK CBB AT 85 STEPS

N-31	N-32
335	333
333	329
331	337
333	333
0.15 AVE	0.15 AVE
ICRR	ICRR
ECC BANK CBB STEP 95	ECC BANK CBB STEP 95

CBB 80 to 110

BANK _____ AT _____ STEPS

N-31	N-32
AVE	AVE
ICRR	ICRR
ECC BANK _____ STEP _____	ECC BANK _____ STEP _____

ATTACHMENT 2
PAGE 4 OF 4

INVERSE COUNT RATE RATIO CALCULATION

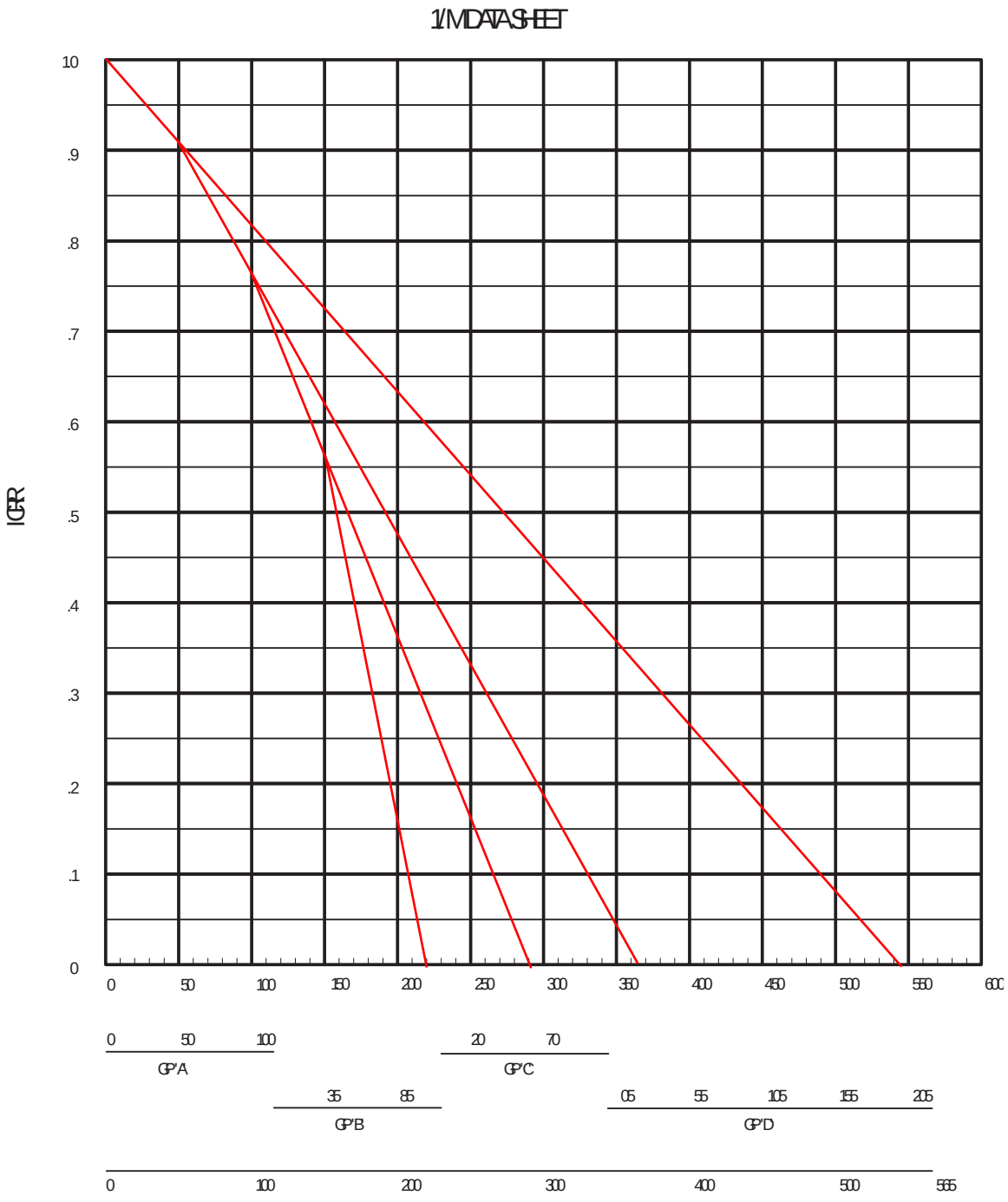
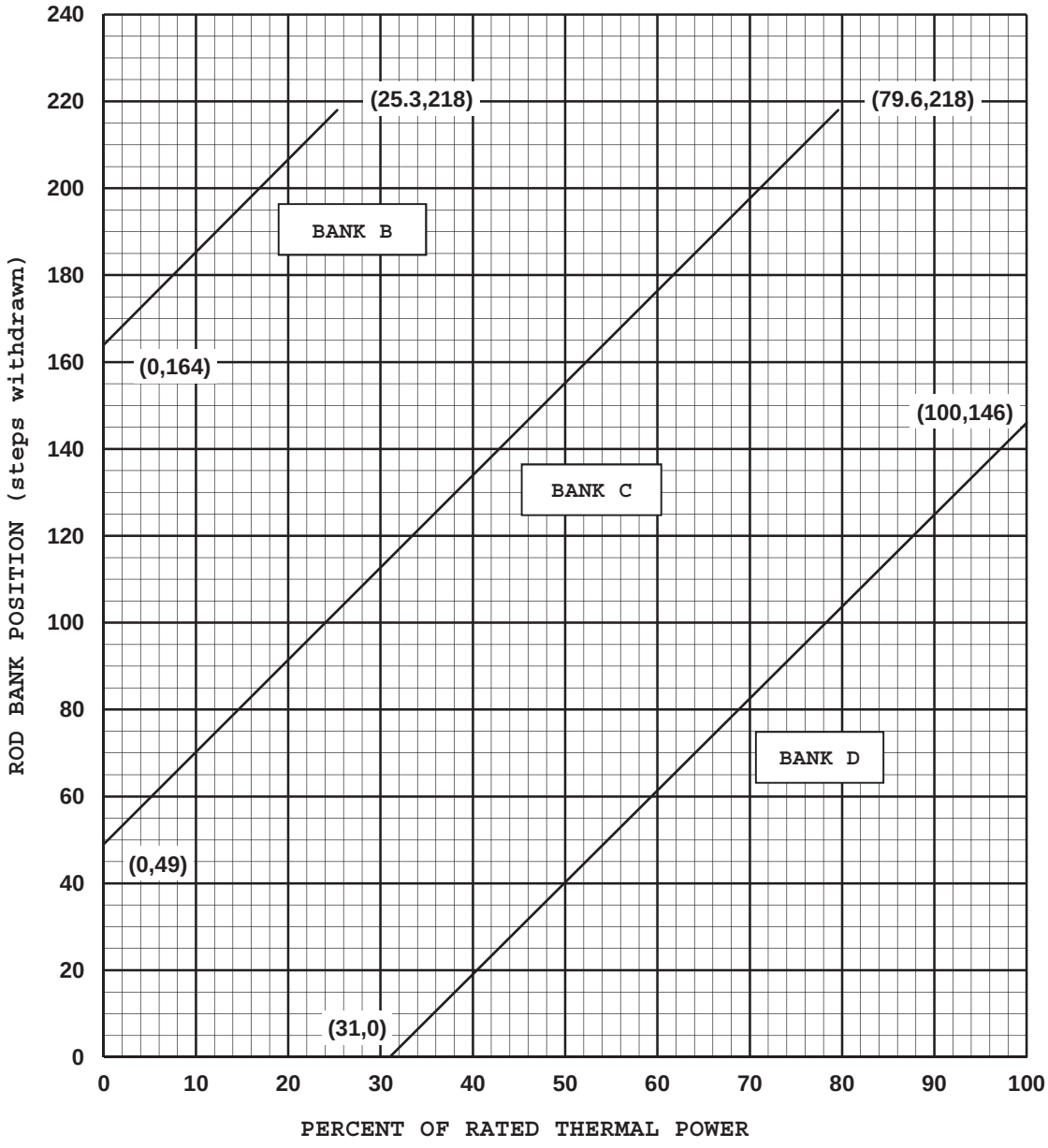


FIGURE 2

ROD BANK INSERTION LIMITS VERSUS THERMAL POWER



NOTES:
1. Fully withdrawn shall be the condition where control rods are at a position within the interval of 218 and 231 steps withdrawn, inclusive.
2. Control Bank A shall be fully withdrawn.

Facility: CPNPP JPM # NRC RA4 Task # RWT056B K/A # 2.3.7 3.5 / 3.6

Title: Determine Entry Conditions for Radiation Area Clearance

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service
- Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL
- The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)

Initiating Cue: The Work Control Supervisor directs you to PERFORM the following:

- DETERMINE the Dose Monitoring Requirements to enter the room
- DETERMINE the minimum Protective Clothing Requirements to enter the valve area
- IDENTIFY the highest contamination level in dpm/100 cm^2 for the room
- IDENTIFY the highest area dose rate in mR/hr for the room

Task Standard: Utilizing the General Access Permit, Survey Map, and Valve Locator Guide, determined the Dose Monitoring Requirements, Protective Clothing Requirements, highest contamination level and highest area dose rate where tagging is to be performed.

Ref. Materials: RPI-602, Radiological Surveillance and Posting, Rev. 57-1.
RPI-606, Radiation Work and General Access Permits, Rev. 35.
Valve Locator Map for Unit 1 Safeguards Building Elev. 810' Room 77A.
Survey Map for U-1 SG 810’ Pipe Penetration Area Train B Room 1-077A. 4/4/16
CPNPP General Area Permit 20160011, Routine Maintenance, Rev. 02.

Validation Time: 20 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handouts:

PROVIDE the examinee with a copy of:

- **Survey Map for U-1 SG 810′ Pipe Pen Area Train B Room 1-077A** (labeled Handout 1)
- **CPNPP General Area Permit 20160011, Tours and inspections for all groups Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates** (labeled Handout 2)
- **Valve Locator Map for Unit 1 Safeguards Building Elev. 810′ Room 77A** (labeled Handout 3)

MAKE the following references available in the classroom:

- **RPI-602, Radiological Surveillance and Posting** (labeled Procedure 1)
- **RPI-606, Radiation Work and General Access Permits** (labeled Procedure 2)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Provide the examinee with copy of JPM Cue Sheet.**
Perform Step: 1	Determine location of 1-7168 and 1-7167 with respect to Survey Map.
Performance Standard:	PERFORMED the following: • **LOCATED** 1-7168 and 1-7167 using Valve Locator Map for Unit 1 Safeguards Building Elev. 810' Room 77N (77A). • **COMPARED** the location to the Survey Map. • **DETERMINED** 1-7168 and 1-7167 are located inside a Radiation Area and the area is contaminated.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine the Dose Monitoring Requirements to enter the room.
Performance Standard:	DETERMINED the Dose Monitoring Requirements to enter the room per the General Access Permit: • **TLD.** • **Alarming Dosimeter**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine the minimum Protective Clothing Requirements to enter the valve area.
Performance Standard:	DETERMINED the minimum Protective Clothing Requirements to enter the valve area per the General Access Permit: • **Deluxe coveralls** • **Booties** • **Hood and hard hat cover** • **Cotton liners** • **Rubber gloves** • **Rubber Overshoes**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Identify the highest contamination level in dpm/100 cm^2 for the room.
Performance Standard:	IDENTIFIED the highest contamination level in dpm/100 cm^2 for the room is **< 1000 dpm/100 cm^2**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	Identify the highest area dose rate in mR/hr for the room.
Performance Standard:	IDENTIFIED the highest area dose rate at **8 mR/hr**.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service**
- **Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL**
- **The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)**

INITIATING CUE: **The Work Control Supervisor directs you to PERFORM the following:**

- **DETERMINE the Dose Monitoring Requirements to enter the room**
- **DETERMINE the Protective Clothing Requirements to enter the valve area**
- **IDENTIFY the highest contamination level in dpm/100 cm^2 for the room**
- **IDENTIFY the highest area dose rate in mR/hr for the room**

Dose Monitoring Requirements to enter the room:

_____

_____

_____

Minimum Protective Clothing Requirements to enter the valve area:

_____

_____

_____

Highest contamination level in dpm/100 cm^2 for the room:

_____

Highest area dose rate in mR/hr for the room:

_____

INITIAL CONDITIONS: **Given the following conditions:**

- **A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service**
- **Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL**
- **The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)**

INITIATING CUE: **The Work Control Supervisor directs you to PERFORM the following:**

- **DETERMINE the Dose Monitoring Requirements to enter the room**
- **DETERMINE the Protective Clothing Requirements to enter the valve area**
- **IDENTIFY the highest contamination level in dpm/100 cm^2 for the room**
- **IDENTIFY the highest area dose rate in mR/hr for the room**

Dose Monitoring Requirements to enter the room:

TLD, Alarming Dosimeter

Minimum Protective Clothing Requirements to enter the valve area:

Single PCs which include:

Deluxe coveralls, Booties, Hood, Hard Hat Cover, Cotton liners,

Rubber gloves & Rubber Overshoes

Highest contamination level in dpm/100 cm^2 for the room:

< 1000 dpm/cm^2

Highest area dose rate in mR/hr for the room:

8 mr/hr

U-1 SG 810' PIPE PEN AREA TRAIN B 1-077A

1-077A

SURVEY#	RWP / GAP#		RX. POWER
16-04-0026	2016-0011	[X] ROUTINE [ ] SPECIAL	1 100 % 2 N/A %

INSTRUMENT / ID# /CAL DUE

TELE 1908 7/28/16 RADEYE 3129 7/7/19 M-177 1212 5/17/16

SURVEYED BY: K Kirkpatrick C. Kelly DATE/TIME 4/04/16 0306 REVIEWED BY: DATE 4-4-16

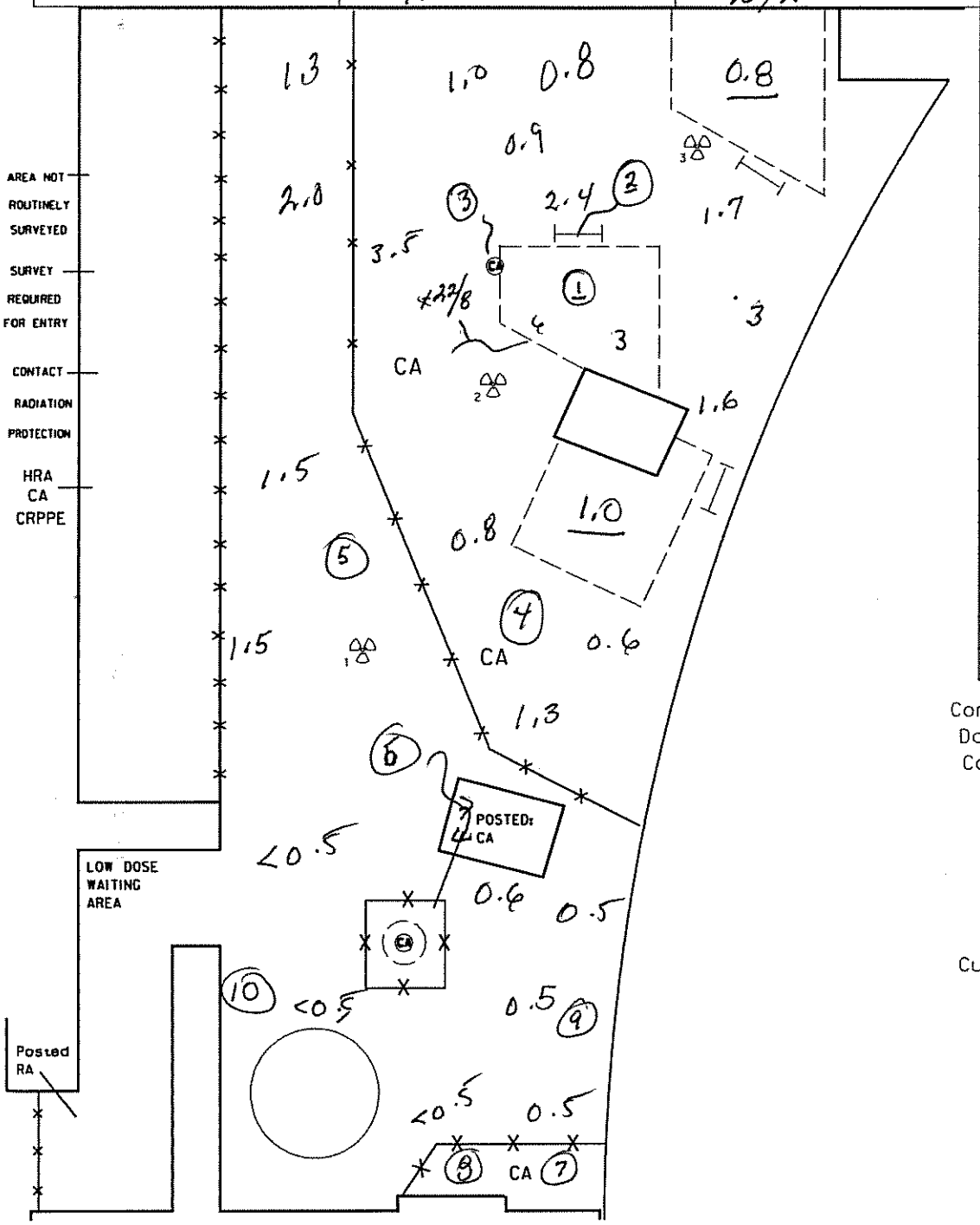
POSTING ABBREVIATIONS: RA-RADIATION AREA ARA-AIRBORNE AREA CRPPE-CONTACT RP PRIOR TO ENTRY UG-UNDER GRATING ANRS-AREA NOT ROUTINELY SURVEYED
HS-HOTSPOT HRA-HIGH RADIATION AREA HCA-HIGH CONTAMINATION AREA LAS-LARGE AREA WIPE SURVEY OH-OVERHEAD
HP-HOTPIPE LHRA-LOCKED HIGH RADIATION AREA CA-CONTAMINATION AREA RMA-RADIOACTIVE MATERIALS AREA SOP-STEP OFF PAD

REMARKS:

QUARTERLY COMPREHENSIVE

LAS ON FLOOR <100 ARPM # = DOSE RATES ON PLATFORMS

Posting Changes Y [ ] N [X] | Changes Performed By / Date N/A | Posting verified by / Date: N/A



sm	Beta-G dpm/100cm2
1-10	<1K

sm	Alpha dpm/100cm2

sm	Beta-G/Alpha Ratio
	:1
	:1
	:1

Comprehensive Survey Date 4/4/16

Comprehensive Trend Point
1 1.2
2 6.3
3 1.0

Current Trend Point
1
2 N/A
3

DOSE RECEIVED PERFORMING THIS SURVEY: 0.3 mR
REFERENCE USE

RPI-602-1
R-10

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02
REACTOR OPERATION + SURVEIL	*20160011*

Expected Radiological Conditions: Expected general area radiation levels are <1mr\hr to 131 mr\hr not normally to exceed 160mr\hr.
Expected general area contamination levels are <1Kdpm\100cm2 to 20Kdpm\100cm2 not to exceed 200Kdpm\100cm2.

GAP Type: JOB ROUTINE	**GAP Status:** ACTIVE	**Begin Date:** 2/29/2016	**Close On Date:**
Prepared By: BARTON, JOHN D	**Job Supervisor:** Bob Knapp		
Estimated Dose: 452.0 mrem	**Estimated Hours:** 1,991.00		

Alarm Settings

Gamma Dose (mrem)	20.00	**Gamma Rate** (mrem/hr)	120.00
Neutron Dose (mrem)		**Neutron Rate** (mrem/hr)	

Locations

Buildings	Elevations	Rooms
Various RCA Locations	ALL	VARIOUS - VARIOUS RCA LOCATIONS

Radiological Conditions

Contact Radiation Protection for current radiological conditions prior to performing work on this GAP.

Tasks

Task	Description	Status
N/A		

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02

Requirements	
Requirement Groups	**Requirement Descriptions**
CONTAMINATION CONTROL	Contaminated components should be wiped down/deconned as necessary to prevent the spread of contamination.
	Knee pads should be worn when kneeling in posted high contamination areas.
	Radioactive spills and leaks should be addressed and per RP direction.
	Frequent change out of outer/ disposable gloves should be performed.
	Faceshield is a minimum requirement for system breach.
	Use of a barrier material should be used in contamination areas when sitting, kneeling or laying.(ie. orex sheeting,visqueen,etc.)
COVERAGE	RP to determine job coverage requirements.
DOSIMETRY	TLD
	Alarming Dosimeter
DOSIMETRY	A SRPD (PIC) may be used in lieu of an Alarming Dosimeter for rapid response for Fire Brigade personnel.
	Vibrating Electronic Dosimeter required in high noise areas.
EXPOSURE CONTROL	Donning/Doffing of harnesses should be performed in a low dose area
	Utilize ALARA principles of time, distance and shielding
	Read your electronic alarming dosimeter (EPD) or PICs periodically when in Radiation Areas (e.g., once every 30 min) and frequently in High Radiation Areas (e.g., at 1/2 of the expected job entry time or every 15 min, whichever is shorter) and often enough to prevent an EPD Dose Alarm.
	Each individual should know and utilize their low dose waiting areas
	Each individual should know how much dose they are expected to receive this entry into the RCA.
PROTECTIVE CLOTHING	Additional Requirement: Operations personnel are required to wear Ultra PCs when handling hoses in contaminated areas.
	Reach-in to a HCA (ex. sink) is allowed with minimum double gloves and labcoat.
	Industrial Safety Protective Clothing may be worn in addition to RP Required Clothing.
	Lab Coat and Rubber PC Gloves are the minimum required to handle or unpack potentially contaminated equipment or material
	RP Approval required to modify protective clothing
	Ultra Orex PCs, double gloves and double shoe covers are the minimum required to enter a posted high contamination area.
	Latex Gloves can be SUBSTITUTED for Rubber Gloves with RP Approval.
	Single PCs consisting of Deluxe coveralls, booties, hood, hard hat cover, cotton liners, rubber gloves and rubber overshoes are the minimum PC requirement to enter a contaminated area.
RESPIRATORY	Respiratory Protection Not Required
WORKER INSTRUCTIONS	Contact RP PRIOR to removing any material from a posted contamination area.
	Contact RP PROR to altering or removing any shielding material.
	Contact RP PRIOR to accessing normally inaccessible areas (i.e. overhead areas >7 feet off floor or areas under grating).
	Contact RP PRIOR to accessing the RCA for specific work activities.
	An ALARA Briefing is required to enter a posted High Radiation Area (HRA).
	Contact RP PRIOR to entering a posted High Radiation Area.

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02

Additional Requirements

ADDITIONAL RADIATION WORKER INSTRUCTIONS

1. Operations personnel should notify RP PRIOR to venting or draining radioactive systems.
2. Notify RP PRIOR to transfer or movement of any radioactive material.
3. RP Approval is required prior to entering a HIGH CONTAMINATION AREA.
4, Notify RP prior to any system breach.

RADIATION WORKER STOP WORK LIMITS

1. Posted Locked High Radiation Areas & Very High Radiation Areas
2. Posted Airborne Radioactivity Areas (except Noble Gas areas)
3. Posted Discrete Radioactive Particle Control and associated Buffer Zones
4. Containment Buildings
5.] Posted Alpha Contamination Area.
6.] Failure of protective clothing.
7.] Any EPD dose alarm or unanticipated dose rate alarm.
8.] At the direction of Radiation Protection.

ADDITIONAL RP INSTRUCTIONS

RP should discuss the following information with the RadWorker(s) prior to allowing them entry into the RCA:

1. Work location and current radiological conditions.
2. Determine if they are entering a HRA or HCA.
3. RWP data to include dosimeter set points.
4. Contamination levels in the work location.
5. Verify that they have a RCA Entry Card and that it is filled out properly.

RP STOP WORK LIMITS

1. Greater than 3 unplanned personnel contaminations (internal or external) on a single job during a shift.
2. Any level 3 personnel contamination.
3. Unintended exposure to a single worker of > 10mr above an ED set-point.
4. Failure or degradation of radiological engineering controls which impact the radiological safety of the worker.
5. Changes in conditions that elevate the risk level.
6. Airborne Radioactivity > 0.25 DAC. (excluding Noble Gas)

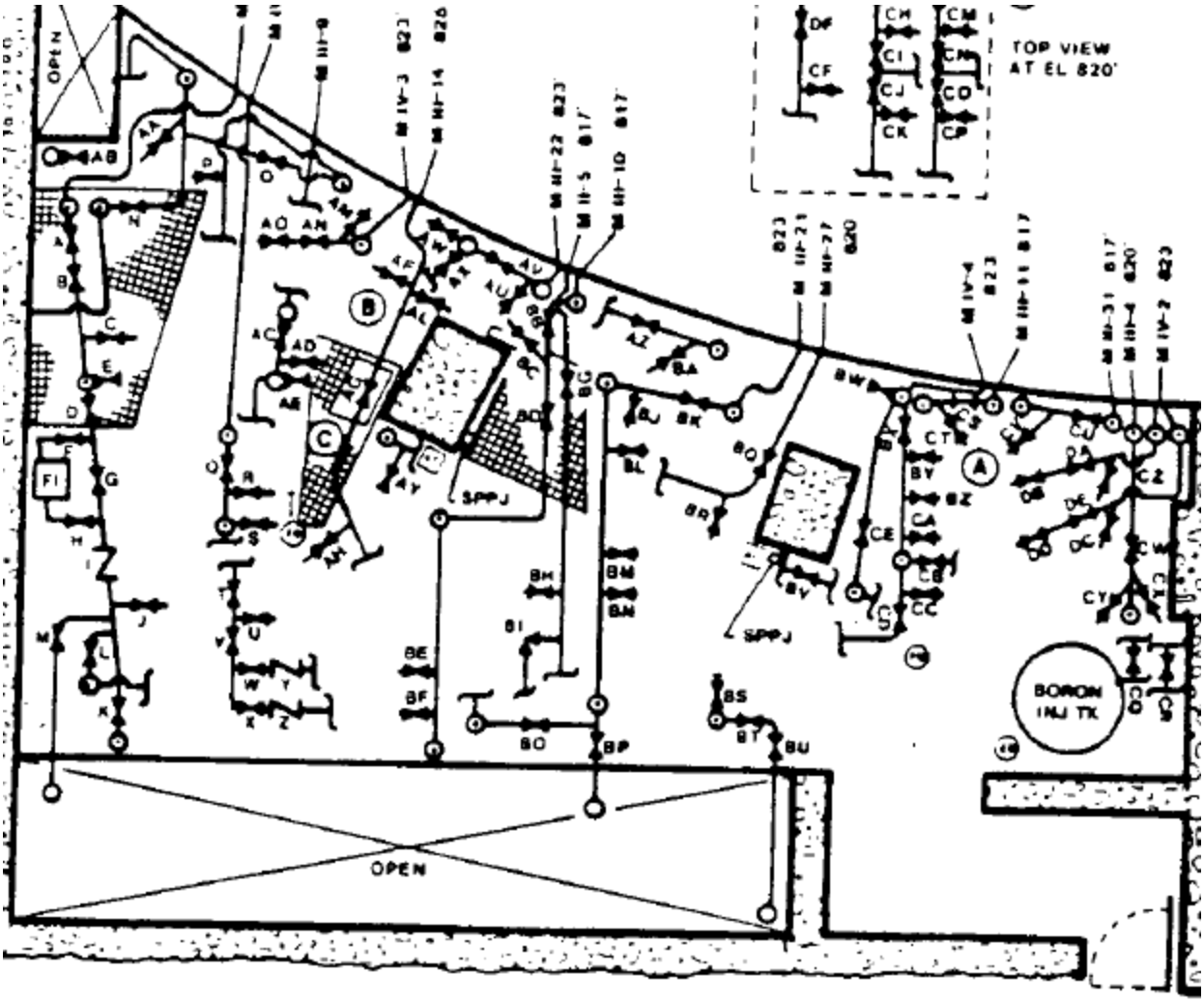
Hold Point- After system breach the Radworker(s) should be directed to a Low Dose Waiting Area while radiological conditions are being evaluated.

Approvals

Approver Title	Name	Date
MANAGER	KNAPP, ROBERT C	04/04/2016

Attachments

N/A



ROOM 77N

ROOM 77N

VALVE #s	EL	VALVE #s	EL	VALVE #s	EL	VALVE #s	EL
A 1-7168	811	AB 1FD-465	816	BC 1CS-0980	811	CD 1SI-8963B	812
B 1LCV-1003	811	AC 1-8351C	811	BD 1CS-83690	812	CE 1-8868	813
C 1WP-230	812	AD 1CS-098C	810	BE 1CS-83700	820	CF 1PS-048	822
D 1-7167	811	AE 1CS-8369C	813	BF 1CS-8371D	820	CG 1MS-156	821
E 1-7135	812	AF 1CT-002	820	BG 1-88098	820	CH 1MS-699	820
F 1WP-7172	813	AG 1HV-4777	820	BH 1SI-002	820	CI 1HV-2408	820
G 1-7170	811	AH 1CT-004	820	BI 1-88568	820	CJ 1MS-603	821
H 1WP-7171	813	AI 1CS-8221	821	BJ 1VD-866	811	CK 1CF-008	822
I 1-7174	811	AJ 1CS-8220	821	BK 1HV-8157	811	CL 1MS-158	822
J 1WP-027	810	AK 1CS-109	824	BL 1VD-617	812	CM 1MS-601	821
K 1-8551	811	AL 1CT-001	820	BM 1VD-606	817	CN 1VH-2406	822
L 1-7173	812	AM 1PS-033	811	BN 1VD-607	817	CO 1MS-605	822
M 1-7138	812	AN 1HV-4175	811	BO 1VD-601	811	CP 1CF-004	823
N 1DD-300	811	AO 1PS-022	813	BP 1VD-600	811	CQ 1CF-003	813
O 1DD-347	811	AP 1MS-159	820	BQ 1SF-022	818	CR 1CF-007	813
P 1DD-397	824	AQ 1MS-602	820	BR 1SF-049	819	CS 1-8100	812
Q 1-7150	811	AR 1HV-2407	820	BS 1PS-007	817	CT 1CS-004	811
R 1WP-013	810	AS 1MS-604	820	BT 1PS-006	811	CU 1SF-064	812
S 1WP-7159	813	AT 1CF-006	821	BU 1HV-4179	811	CV 1SF-047	811
T 1-8880	811	AU 1CI-033	810	BV 1CA-399	813	CW 1-88028	812
U 1SI-033	810	AV 1HV-3487	811	BW 1SI-8961	813	CX 1SI-011	812
V 1-8893	811	AW 1CI-043	813	BX 1-8964	812	CY 1SI-217	811
W 1SI-132	811	AX 1CI-041	314	BY 1SI-131	811	CZ 1PS-032	814
X 1SI-154	811	AY 1CF-005	813	BZ 1SI-8845B	812	DA 1HV-4187	817
Y 1SI-8966A	811	AZ 1HV-7311	810	CA 1SI-8845A	812	DB 1PS-028	818
Z 1SI-8966B	811	BA 1WP-235	810	CB 1SI-179	812	DC 1PS-031	814
AA 1DD-387	810	BB 1-8351D	812	CC 1SI-8962	812	DD 1PS-024	818
						DE 1HV-4176	817
						DF 1HV-5556	822

Facility: **CPNPP Units 1 and 2**		Date of Examination: **July 2016**
Examination Level: RO ☐ SRO ☒		Operating Test Number: **NRC**
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations (SA1)	N,R	2.1.26 Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperatures, high pressure, caustic, chlorine, oxygen and hydrogen). (3.6) JPM: Determine Electrical Safe Work Practices Requirements. (SO1028)
Conduct of Operations (SA2)	N,R	2.1.37 Knowledge of procedures, guidelines or limitations associated with reactivity management. (4.6) JPM: Determine Reactivity Management Severity and Notifications. (SO1017B)
Equipment Control (SA3)	D,R	2.2.14 Knowledge of the process for controlling equipment configuration or status. (4.3) JPM: Determine Fire Compensatory Measures for an Emergent Condition. (SO1048)
Radiation Control (SA4)	D,R	2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. (3.6) 2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (4.1) JPM: Determine Entry Conditions for Radiation Area Clearance and Reporting Requirements. (SO1112B)
Emergency Procedures/Plan (SA5)	D,R	2.4.41 Knowledge of emergency action level thresholds and classifications. (4.6) JPM: Classify an Emergency Plan Event. (SO1136I)

Task Summary

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

SA1 The applicant is presented with a task to determine as the Unit Supervisor, the Personnel Protective Equipment and Safety Boundaries for emergent work of racking the Rx trip breaker from disconnect to remove in accordance with STA-124, Electrical Safe Work Practices. The critical steps will be to identify the Hazard/Risk Category, Clothing requirements and Boundaries. In addition, the applicant will be required to determine if their position has approval authority for the task. This is a new JPM. (K/A 2.1.26 - IR 3.6)

SA2 The applicant is presented with a plant transient event and response. As Unit Supervisor, the applicant is required to take necessary actions for a reactivity management event in accordance with STA-102, Reactivity Management Program. The critical steps will be to make a determination of the Severity Level and determine the written and verbal notifications. This is a new JPM. (K/A 2.1.37 - IR 4.6)

SA3 The applicant will evaluate a Fire Protection Impairment per STA-738, Fire Protection Systems/Equipment Impairments. The critical steps are to determine Fire Watch Implementation and other Compensatory Measures. This is a direct from bank JPM. (K/A 2.2.14 - IR 4.3)

SA4 The applicant will determine the radiological requirements for implementing a Clearance in a Radiological Controlled Area per STA-656, Radiation Work Control, RPI-602, Radiological Surveillance and Posting, RPI-606, Radiation Work and General Access Permits and STA-501, Nonroutine Reporting. Critical steps include identifying Dose Monitoring Requirements, Protective Clothing Requirements, highest contamination level, highest dose rate and determination of proper oral and written notifications due to an overexposure event. This is a direct from bank JPM. (K/A 2.3.7 - IR 3.6 & K/A 2.4.30 - IR 4.1)

SA5 The applicant will determine the appropriate Emergency Plan Classification in accordance with EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation. The critical step will be the determination of the correct classification. This is a direct from bank JPM. (K/A 2.4.41 - IR 4.6)

Facility: CPNPP JPM # NRC SA1 Task # SO1028 K/A # 2.1.26 3.6

Title: Determine Electrical Safe Work Practices Requirements

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- TCX-ESPDTS-01TA, Unit 2 TRAIN A REACTOR TRIP BREAKER RTA is required to be racked from 'Disconnect' to 'Remove' in support of breaker removal.

Initiating Cue: The Shift Manager directs you to DETERMINE the following in accordance with STA-124, Electrical Safe Work Practices:

- Hazard Risk Category: _____
- Minimum ATPV in cal/cm^2 of FRC: _____
- Flash Boundary: _____
- Prohibited Boundary: _____
- Arc-rated face shield with balaclava or arc flash suit hood required:

  YES NO
- Ear canal hearing protection required:

  YES NO
- Insulated tools required:

  YES NO

Task Standard: Utilizing STA-124, determined the Hazard Risk Category, Minimum ATPV, Flash Boundary, Prohibited Boundary and face protection, ear canal and insulated tool requirements.

Ref. Materials: STA-124, Electrical Safe Work Practices, Rev. 2-12

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handout:

PROVIDE the examinee with a copy of:

- **STA-124, Electrical Safe Work Practices.** (labeled Procedure 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1√	DETERMINE Hazard Risk Category.
Performance Standard:	DETERMINED STA-124 Attachment 8.A, Hazard Risk Category - **2**. Attachment 8A Page 7 of 13 4th item, Task column number in parentheses is Hazard Risk Category.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	DETERMINE Minimum ATPV in cal/cm2 of FRC.
Performance Standard:	DETERMINED STA-124 Attachment 8A, Minimum ATPV in cal/cm2 of FRC - **8 cal/cm^2.** Attachment 8A Page 7 of 13 4th item, Clothing Minimum Requirements Column.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	DETERMINE Flash Boundary.
Performance Standard:	DETERMINED STA-124 Attachment 8.A, Flash Boundary - **4 ft.** Attachment 8A Page 7 of 13, Boundaries Section at top of page.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	DETERMINE Prohibited Boundary.
Performance Standard:	DETERMINED STA-124 Attachment 8.A, Prohibited Boundary - **1 in.** Attachment 8A Page 7 of 13, Boundaries Section at top of page.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	DETERMINE Arc-rated face shield with balaclava or arc flash suit hood required.
Performance Standard:	DETERMINED that an Arc-rated face shield with balaclava or arc flash suit hood required is Required. Attachment 8A Page 7 of 13 4th item, Clothing Minimum Requirements Column. Circled **YES.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√	DETERMINE Ear canal hearing protection required.
Performance Standard:	DETERMINED that Ear canal hearing protection is required. Attachment 8A Page 7 of 13 4th item, Task column Note 11, which is on Page 4 of 13. Circled **YES**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7√	DETERMINE Insulated tools required.
Performance Standard:	DETERMINED that Insulated tools are not required. Attachment 8A Page 7 of 13 4th item, Insulated Tools column. Circled **NO**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **TCX-ESPDTS-01TA, Unit 2 TRAIN A REACTOR TRIP BREAKER RTA is required to be racked from 'Disconnect' to 'Remove' in support of breaker removal.**

Initiating Cue: **The Shift Manager directs you to DETERMINE the following in accordance with STA-124, Electrical Safe Work Practices:**

1. **Hazard Risk Category: _____**
2. **Minimum ATPV in cal/cm^2 of FRC: _____**
3. **Flash Boundary: _____**
4. **Prohibited Boundary: _____**
5. **Arc-rated face shield with balaclava or arc flash suit hood required:**

   YES NO
6. **Ear canal hearing protection required:**

   YES NO
7. **Insulated tools required:**

   YES NO

Initial Conditions: **Given the following conditions:**

- **TCX-ESPDTS-01TA, Unit 2 TRAIN A REACTOR TRIP BREAKER RTA is required to be racked from 'Disconnect' to 'Remove' in support of breaker removal.**

Initiating Cue: **The Shift Manager directs you to DETERMINE the following in accordance with STA-124, Electrical Safe Work Practices:**

1. **Hazard Risk Category:** 2
2. **Minimum ATPV in cal/cm^2 of FRC:** 8 cal/cm^2
3. **Flash Boundary:** 4 ft.
4. **Prohibited Boundary:** 1 in.
5. **Arc-rated face shield with balaclava or arc flash suit hood required:**

   (YES) **NO**
6. **Ear canal hearing protection required:**

   (YES) **NO**
7. **Insulated tools required:**

   YES **(NO)**

Facility: CPNPP JPM # NRC SA2 Task # SO1017 K/A # 2.1.26 3.6

Title: Determine Reactivity Management Severity and Notifications

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A trip of Heater Drain Pump 1-01 occurred
- Control Rods stabilized below the Rod Insertion Limit
- Boration was initiated in accordance with ABN-302, Feedwater, Condensate, Heater Drain System Malfunction and the 10000.0 MWD/MTU Reactivity Briefing Sheet
- The Reactor Operator made an error when performing the boration and set 1-FY-110B, BA BATCH FLO to 17.5 gallons
- As a result of the error the Control Rods were not restored above the Rod Insertion Limit within 2 hours

Initiating Cue: The Shift Manager directs you to DETERMINE the following in accordance with STA-102, Reactivity Management Program:

1. Event Significance Level: _____
2. Required Notifications: _____
   _____
   _____
   _____
   _____
   _____
3. Is a PERC required:
   YES NO
4. Is a QERC required:
   YES NO

Task Standard: Utilizing STA-102, determined that a Significance Level 2 event has occurred, that the Shift Operations Manager, Director, Operations and the Reactivity Management Champion are required to be notified, that a PERC is required and that a QERC is not required.

Ref. Materials: STA-102, Reactivity Management Program, Rev. 6-2
ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Rev. 14-19

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handout:

PROVIDE the examinee with a copy of:

- **STA-102, Reactivity Management Program.** (labeled Procedure 1)
- **Reactivity Briefing Sheet for 10000.0 MWD/MTU.** (labeled Handout 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1√	DETERMINE Event Significance Level.
Performance Standard:	DETERMINED STA-102 Attachment 8.B, Significance Level - **2**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	DETERMINE Required Notifications.
Performance Standard:	DETERMINED STA-102 Attachment 8.A, Required Notifications - **Shift Operations Manager, Director, Operations and Reactivity Management Champion**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	DETERMINE PERC Required. PERC is a Plant Event Review Committee.
Performance Standard:	DETERMINED STA-102 Attachment 8.A, PERC - **Required**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	DETERMINE QERC Required. QERC is a Quick Event Review Checklist.
Performance Standard:	DETERMINED STA-102 Attachment 8.A, QERC - **NOT Required**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **A trip of Heater Drain Pump 1-01 occurred**
- **Control Rods stabilized below the Rod Insertion Limit**
- **Boration was initiated in accordance with ABN-302, Feedwater, Condensate, Heater Drain System Malfunction and the 10000.0 MWD/MTU Reactivity Briefing Sheet**
- **The Reactor Operator made an error when performing the boration and set 1-FY-110B, BA BATCH FLO to 17.5 gallons**
- **As a result of the error the Control Rods were not restored above the Rod Insertion Limit within 2 hours**

Initiating Cue: **The Shift Manager directs you to DETERMINE the following in accordance with STA-102, Reactivity Management Program:**

1. **Event Significance Level: _____**
2. **Required Notifications: _____**

   _____

   _____

   _____

   _____

   _____
3. **Is a PERC required:**

   YES **NO**
4. **Is a QERC required:**

   YES **NO**

Initial Conditions: **Given the following conditions:**

- **A trip of Heater Drain Pump 1-01 occurred**
- **Control Rods stabilized below the Rod Insertion Limit**
- **Boration was initiated in accordance with ABN-302, Feedwater, Condensate, Heater Drain System Malfunction and the 10000.0 MWD/MTU Reactivity Briefing Sheet**
- **The Reactor Operator made an error when performing the boration and set 1-FY-110B, BA BATCH FLO to 17.5 gallons**
- **As a result of the error the Control Rods were not restored above the Rod Insertion Limit within 2 hours**

Initiating Cue: **The Shift Manager directs you to DETERMINE the following in accordance with STA-102, Reactivity Management Program:**

1. **Event Significance Level:** 2
2. **Required Notifications:**
   - Shift Operations Manager
   - Director, Operations
   - Reactivity Management Champion
3. **Is a PERC required:**

   (YES) **NO**
4. **Is a QERC required:**

   YES **(NO)**

Reactivity Briefing Sheet for Stable Operation

MOL PROJECTIONS - SIMULATOR USE ONLY

Valid for approximately 7 days.

Calculations based on core design values, and assume:

Burnup =	**10000.0**	MWD/MTU
	225.9	EFPD
Power =	**100**	RTP
Boron =	**924**	ppm
B10 Conc =	**0.183400**	w/o
Control Bank D =	**215**	steps

Burnup in the MOL range

NOTE: Re-create the Briefing Sheet if current values significantly differ from assumed inputs.

Reactivity affects of Control Bank D

HFP Diff Worth @ 215.0 steps = **-1.4** pcm / step

HFP Integral Rod Worth for CBD Step Positions:

Steps	pcm	Steps	pcm	Steps	pcm	Steps	pcm
225	0.0	218	-4.9	211	-15.4	200	-42.8
224	0.0	217	-6.1	210	-17.4	195	-58.2
223	-1.2	216	-7.3	209	-19.5	190	-74.6
222	-1.7	215	-8.7	208	-21.8	185	-91.4
221	-2.3	214	-10.2	207	-24.1	180	-108.4
220	-3.1	213	-11.8	206	-26.6	175	-125.3
219	-3.9	212	-13.6	205	-29.1	170	-142.0

Reactivity affects of Boron

HFP Diff Boron Worth @ 924 ppm = **-7.4** pcm / ppm

1-FK-110 Pot Setting for Blended Flow @ 924 ppm = **3.94**

(Assuming BAT concentration of 7447.0 ppm)

Reactivity affects of Power

Power Coefficient of Reactivity = **-15.1** pcm / % RTP

Dilution to equal 1% Power Increase = **152.3** gallons RMUW

Boration to equal 1% Power Decrease = **20.7** gallons boric acid

Reactivity affects of RCS Temperature

Temperature Coefficient of Reactivity (ITC) = **-19.3** pcm / ☜F

Boration to equal 1☜F Temperature Decrease = **26.5** gallons boric acid

Dilution to equal 1☜F Temperature Increase = **194.5** gallons RMUW

Load Reduction equal to 1☜F T_{ave} Increase = **15.0** MWe

Load Reduction Calculation Worksheet

Note: Do not perform these calculations following a Runback. For a Runback, borate per the Reactivity Briefing Sheets as soon as possible.

This computer generated form may be substituted for Attachment 1 of NUC-117

Contact Core Performance (817-432-0134) if possible to discuss the plan.

Unit _____ **Date / Time:** _____

A.1 Boration Volume _____ **gallons**

Indicate source (listed in order of preference)

___ BEACON by Core Performance (obtain if time permits)

___ Reactivity Briefing Sheets from the Boration Matrix

___ CHORE output (under 'Tools' ->'Power Change Rx Calc IPO-003 ATT 3')

___ IPO-003A Attachment 3 Manual Calculation

A.2 Current Turbine Load Setpoint . . . . . _____ **MWe**

A.3 Final Turbine Load Setpoint . . . . . _____ **MWe**

(200 MWE if plant shutdown planned)

A.4 Total Turbine Ramp Time . . . . . _____ **minutes**

(Do not include calculation prep and Pre-Job Brief times)

Calculations:

B.1 Load Change . . . . . _____ **MWe**

= A.2 - A.3

B.2 Load Rate . . . . . _____ **MWe/min**

= B.1 / A.4

B.3 Total Boration Time . . . . . _____ **minutes**

Ideally, start time should be 5 minutes BEFORE load change is initiated.

If time does not allow, start time should be same as the load change start time.

Ideally, end time should be 15 minutes BEFORE load change is complete.

B.4 Boration Rate . . . . . _____ **gpm**

= A.1 / B.3

B.5 1-FK-110 Pot Setting . . . . . _____ **turns**

= B.4 / 4 (N/A for Batch Boration)

Reactivity Briefing Sheet for Runback to 900 MWe

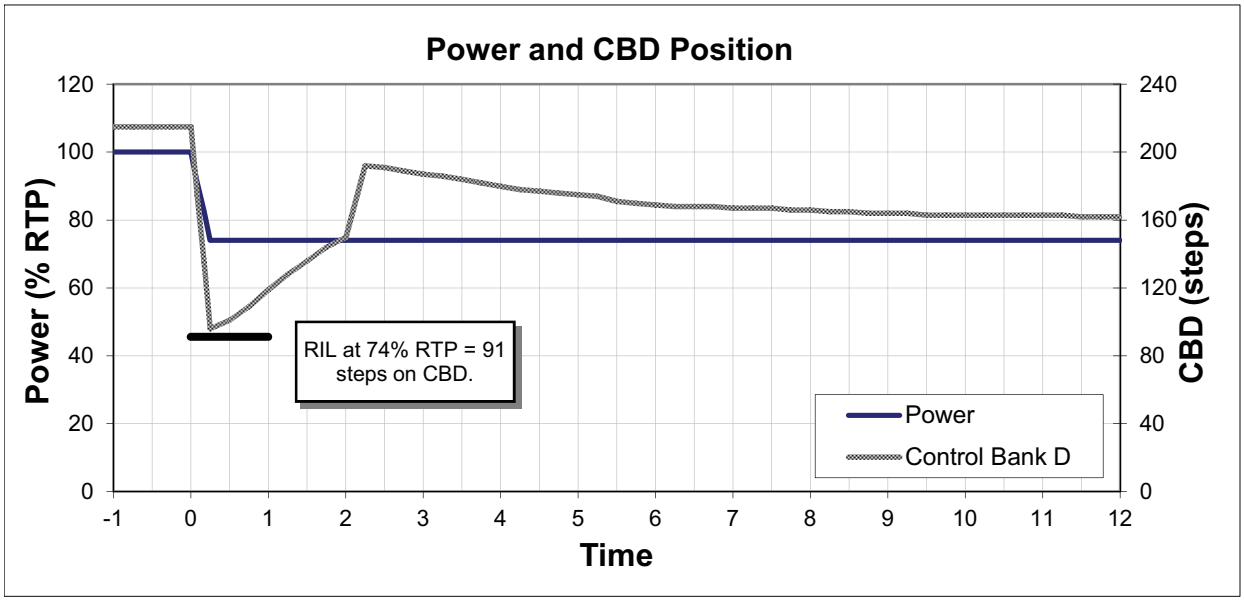
MOL PROJECTIONS - SIMULATOR USE ONLY

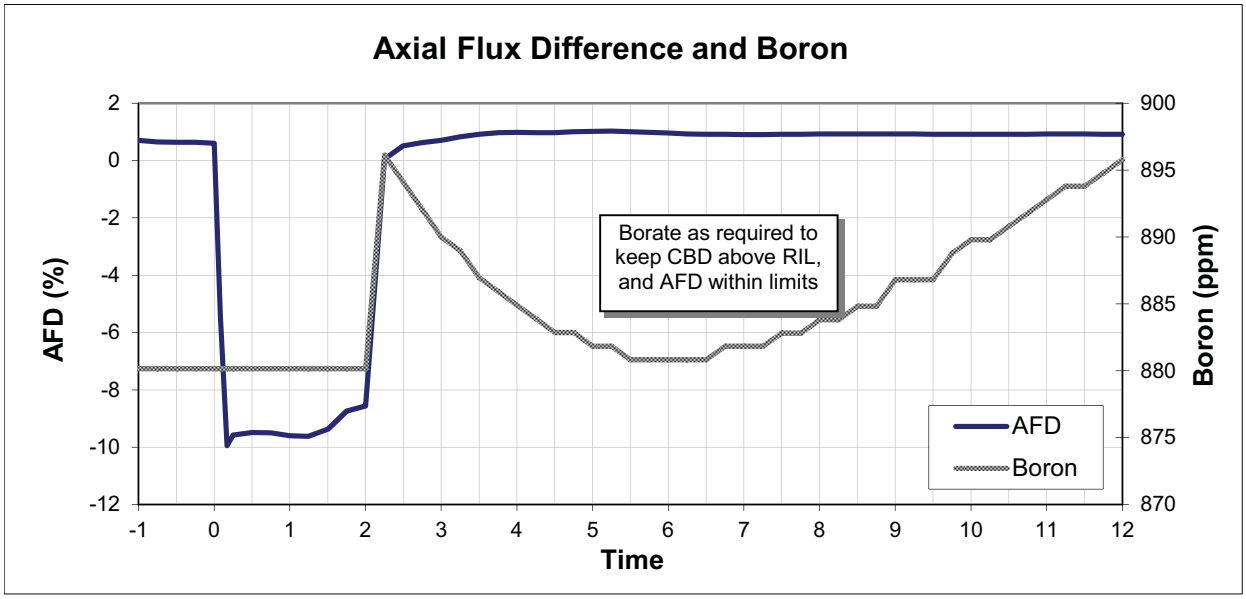
Basic Control Strategy:

A) A boration of 155 gallons should be initated soon after the runback. This will ensure rods are above RIL within 45 minutes and will likely be needed to restore Target AFD.

B) As rods are withdrawn due to boration, begin dilution when AFD reaches the Target value to maintain Target AFD. Total Dilution Estimate is 1200 gallons.

NOTE: Contact Core Performance Engineering following any Runback for additional support.





Reactivity Briefing Sheet for Runback to 800 MWe

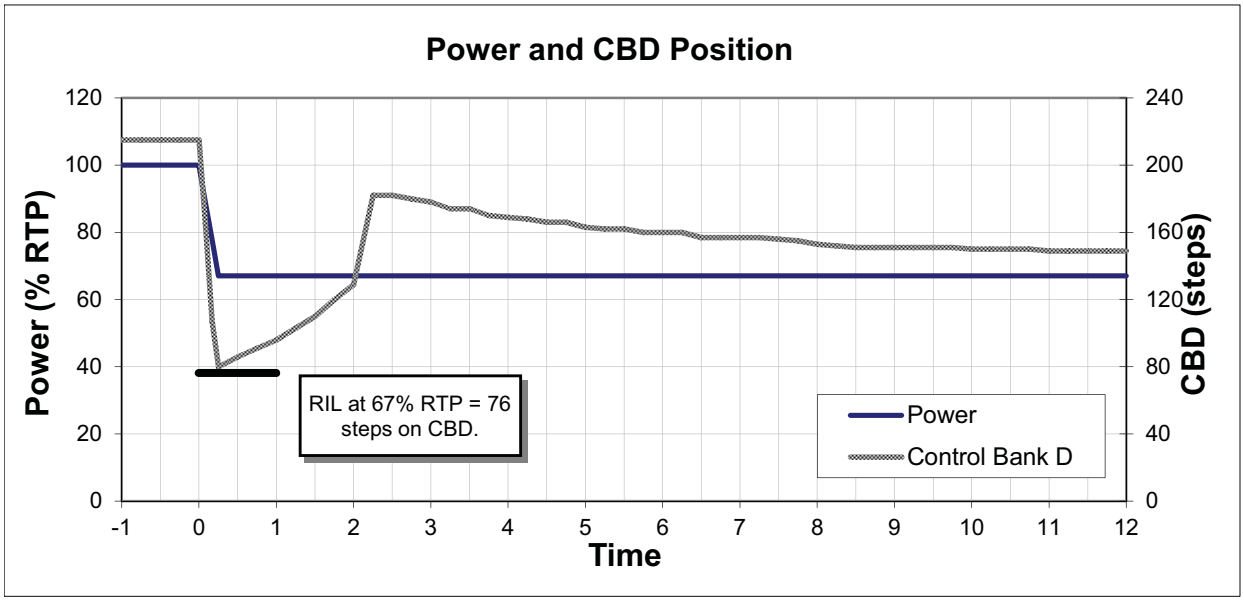
MOL PROJECTIONS - SIMULATOR USE ONLY

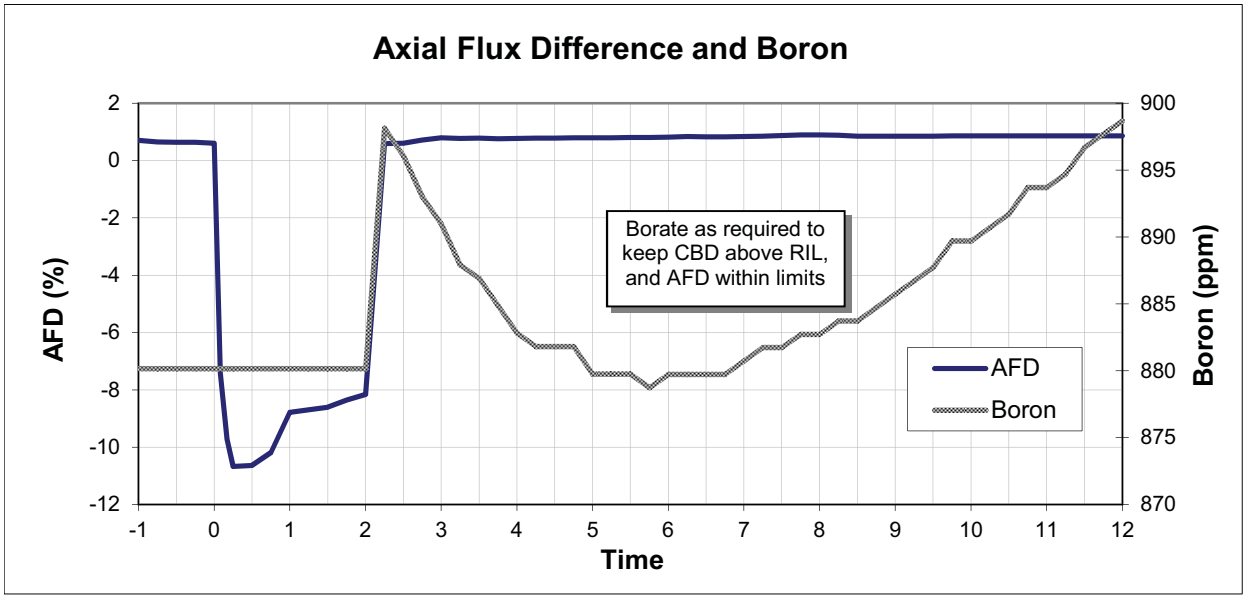
Basic Control Strategy:

A) A boration of 175 gallons should be initated soon after the runback. This will ensure rods are above RIL within 45 minutes and will likely be needed to restore Target AFD.

B) As rods are withdrawn due to boration, begin dilution when AFD reaches the Target value to maintain Target AFD. Total Dilution Estimate is 1500 gallons.

NOTE: Contact Core Performance Engineering following any Runback for additional support.





Reactivity Briefing Sheet for Runback to 700 MWe

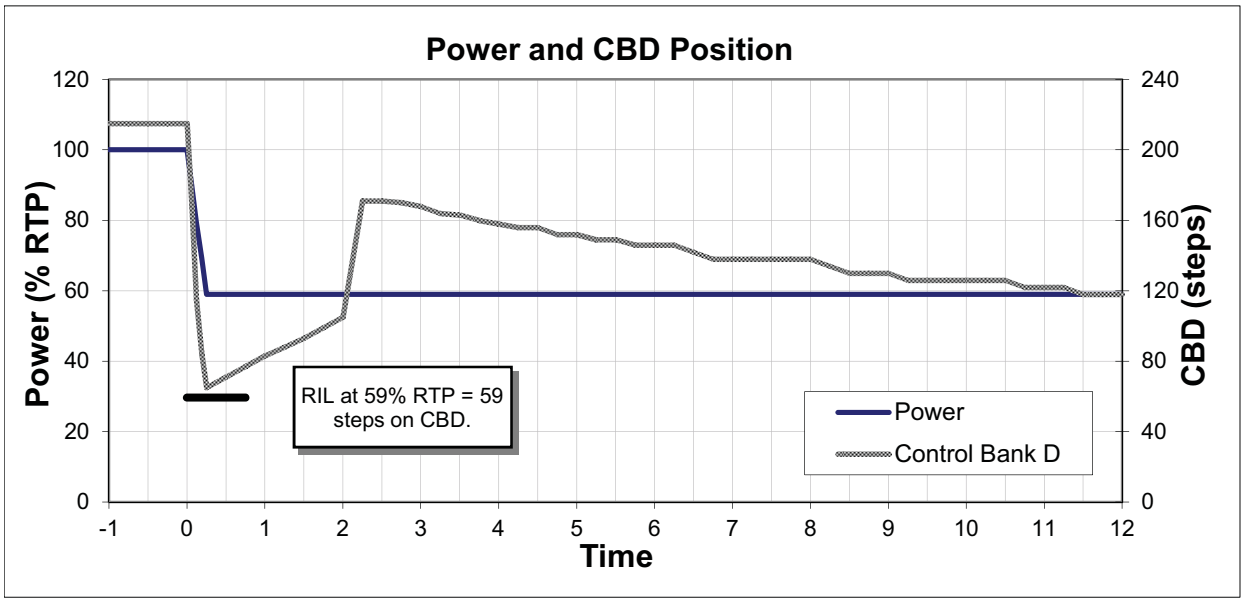
MOL PROJECTIONS - SIMULATOR USE ONLY

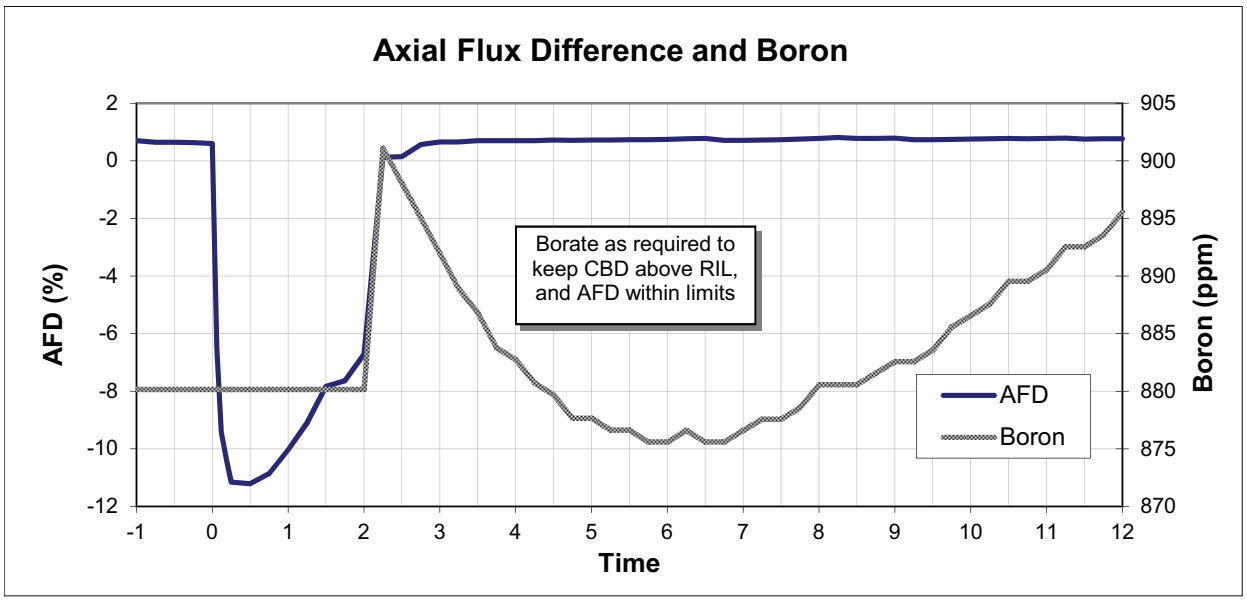
Basic Control Strategy:

A) A boration of 200 gallons should be initated soon after the runback. This will ensure rods are above RIL within 45 minutes and will likely be needed to restore Target AFD.

B) As rods are withdrawn due to boration, begin dilution when AFD reaches the Target value to maintain Target AFD. Total Dilution Estimate is 2000 gallons.

NOTE: Contact Core Performance Engineering following any Runback for additional support.





Reactivity Briefing Sheet for Downpower Boration Matrix

MOL PROJECTIONS - SIMULATOR USE ONLY

The boration/dilution estimates are based on BEACON predictions for maintaining Incore Axial Offset.

With deep rod insertion, it is expected AFD indications (based on Excore Detectors) will be less than the Incore value by ~2-4%. In this case, no immediate action is needed to restore AFD, but contact Core Performance.

Borate at a rate sufficient to allow ~15 minutes of mixing before the final power level is reached.

Contact Core Performance as soon as possible when planning ANY downpower for additional support.

Assumed Initial Conditions

Power	100	% RTP
CBD Position	215	steps
RCS Boron	864	ppm *(anticipated boron at middle of validity range)*

30 Minute Ramp Down Boration Estimates

	900 MWe	800 MWe	700 MWe	50% RTP
	(~74% RTP)	(~67% RTP)	(~59% RTP)	
Final CBD Position	*172 steps*	*161 steps*	*148 steps*	*123 steps*
Total Boration	*304 gal*	*384 gal*	*481 gal*	*561 gal*

Dilution in first hour to support maintaining reduced power, while holding Incore AFD on Target:

Followup Dilution (1st hour)	*1102 gal*	*1409 gal*	*1792 gal*	*2435 gal*
Ave Dilution Rate (1st hour)	*18.4 gpm*	*23.5 gpm*	*29.9 gpm*	*40.6 gpm*

Notes: Highlighted values: Max boration rate during downpower may be unable to maintain Target AFD. Restore and hold Target AFD as soon as possible following the Downpower.

2 Hour Ramp Down Boration Estimates

	900 MWe	800 MWe	700 MWe	50% RTP
	(~74% RTP)	(~67% RTP)	(~59% RTP)	
Final CBD Position	*172 steps*	*158 steps*	*142 steps*	*101 steps*
Total Boration	*191 gal*	*232 gal*	*286 gal*	*258 gal*

Dilution in first hour to support maintaining reduced power, while holding Incore AFD on Target:

Followup Dilution (1st hour)	*771 gal*	*1017 gal*	*1292 gal*	*1641 gal*
Ave Dilution Rate (1st hour)	*12.9 gpm*	*17 gpm*	*21.5 gpm*	*27.4 gpm*

1 Hour Rapid Shutdown (Ramp to 20% on Target AFD, 30 minute hold, trip)

	20% RTP
Final CBD Position	*79.2 steps*
Total Boration	*698 gal*

Notes:

After 30 minutes, no dilution (withdrawing rods to control power), holding at 20% RTP

CBD Position	*107.4 steps*	Incore AFD	*2.8 %*

Facility: CPNPP JPM # NRC SA3 Task # SO1048 K/A # 2.2.14 3.9 / 4.3

Title: Determine Fire Compensatory Measures for an Emergent Condition

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- FIR-303-1, Halon Fire Suppression System Inspection Sheet has been completed.
- Based on the FIR-303-1 a Fire Protection Impairment must be initiated using STA-738-2, Fire Protection System/Equipment Impairment Form.

Initiating Cue: The Shift Manager directs you to PERFORM the following:

- INITIATE the STA-738-2, Fire Protection System/Equipment Impairment Form in accordance with STA-738, Fire Protection Systems/Equipment Impairments and COMPLETE as follows:
  - RECORD the following information in the **IMPAIRED FIRE PROTECTION SYSTEM/EQUIPMENT** section:
    - AFFECTED LOCATION.
  - RECORD the following information in the **COMPENSATORY MEASURE REVIEW/AUTHORIZATION** section:
    - CONTINUOUS FIRE WATCH required. CHECK if required.
    - ROVING FIRE WATCH route change required. CHECK if required. Circle YES or NO.
    - ROVING FIRE WATCH with OPERABLE detection route change required. CHECK if required. Circle YES or NO.
    - NONE REQUIRED. CHECK if none required.
    - AFFECTS FIRE BRIGADE STRATEGY. CHECK if strategy affected. Circle YES or NO.
    - INSTRUCTIONS/ADDITIONAL INFORMATION. ENTER additional action and specific information if required.

Task Standard: Utilizing STA-738, determined Fire Impairment Compensatory Measures for a disabled Halon System and determined that Fire Brigade Strategy was affected in accordance with the Answer Key.

Ref. Materials: STA-738, Fire Protection Systems / Equipment Impairments, Rev. 7-1.

STA-738-2, Fire Protection System / Equipment Impairment Form, Rev. 7.

FIR-303-1, Halon Suppression System Inspection Sheet, Rev. 5.

FPI-505, Electrical & Control Building Unit 1 Cable Spread Room Elevation 807'-0", Rev. 3-1.

Validation Time: 25 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handouts:

PROVIDE the examinee with a copy of:

- **STA-738, Fire Protection Systems/Equipment Impairments.** (labeled Procedure 1)
- **STA-738-2, Fire Protection System / Equipment Impairment Form.** (labeled Form 1)
- **FPI-505, Electrical & Control building Unit 1 Cable Spread Room Elevation 807'-0".** (labeled Procedure 2)
- **Completed FIR-303-1, Halon Fire Suppression System Inspection Sheet.** (labeled Handout 1)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following information is from STA-728-2.**
Perform Step: 1	Enter information for AFFECTED LOCATION.
Performance Standard:	ENTERED the following; BLDG: **Electrical Control**, ELEV: **807**, ROOM/OTHER: **Unit 1 Cable Spreading Room** per FPI-505, Electrical & Control Building Unit 1 Cable Spread Room Elevation 807'-0"
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine if CONTINUOUS FIRE WATCH is required.
Performance Standard:	DETERMINED that a CONTINUOUS FIRE WATCH was **Required** and checked box per STA-738 Attachment 8.A Item (4).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Determine if ROVING FIRE WATCH route change is required.
Performance Standard:	DETERMINED that a ROVING FIRE WATCH route change was **NOT Required** and circles **NO** as a continuous fire watch and backup suppression equipment within one hour is required per STA-738 Attachment 8.A Item (4).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4	Determine if ROVING FIRE WATCH with operable detection route change is required.
Performance Standard:	DETERMINED that a ROVING FIRE WATCH with operable detection route change is **NOT Required** and circles **NO** as a continuous fire watch and backup suppression equipment within one hour is required per STA-738 Attachment 8.A Item (4).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Determine if NONE REQUIRED.
Performance Standard:	DETERMINED that None Required is not correct and left **Blank**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√	Determine if AFFECTS FIRE BRIGADE STRATEGY.
Performance Standard:	DETERMINED that Fire Brigade Strategy is affected and circled **YES** per review of FPI-505 automatic and manual actions for Halon deployment are affected.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7√	Determine if OTHER compensatory measure information is required.
Performance Standard:	DETERMINED that establishing a **continuous fire watch and backup suppression equipment within one hour is required** per STA-738 Attachment 8.A Item (4).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **FIR-303-1, Halon Fire Suppression System Inspection Sheet has been completed.**
- **Based on the FIR-303-1 a Fire Protection Impairment must be initiated using STA-738-2, Fire Protection System/Equipment Impairment Form.**

Initiating Cue: **The Shift Manager directs you to PERFORM the following:**

- **INITIATE the STA-738-2, Fire Protection System/Equipment Impairment Form in accordance with STA-738, Fire Protection Systems/Equipment Impairments and COMPLETE as follows:**
  - **RECORD the following information in the **IMPAIRED FIRE PROTECTION SYSTEM/EQUIPMENT** section:**
    - **AFFECTED LOCATION.**
  - **RECORD the following information in the **COMPENSATORY MEASURE REVIEW/AUTHORIZATION** section:**
    - **CONTINUOUS FIRE WATCH required. CHECK if required.**
    - **ROVING FIRE WATCH route change required. CHECK if required. Circle YES or NO.**
    - **ROVING FIRE WATCH with OPERABLE detection route change required. CHECK if required. Circle YES or NO.**
    - **NONE REQUIRED. CHECK if none required.**
    - **AFFECTS FIRE BRIGADE STRATEGY. CHECK if strategy affected. Circle YES or NO.**
    - **INSTRUCTIONS/ADDITIONAL INFORMATION. ENTER additional action and specific information if required.**

FIRE PROTECTION SYSTEM/EQUIPMENT IMPAIRMENT FORM

IMPAIRMENT # _____ **WORK DOCUMENT NUMBER (S)** _____

CLEARANCE/MTO# _____

Completed by Fire Protection

****IMPAIRED FIRE PROTECTION SYSTEM/EQUIPMENT****

SUPPRESSION SYSTEM ID Number (i.e., affected valves, system no., etc.) _____
ISOLATION POINT(S): _____
DETECTION SYSTEM ID Number (i.e., panel no., zone, detector) _____
FIRE PUMP: Electric, ☐ Diesel ☐ ID Number _____
FIRE PROTECTION WATER SUPPLY ☐ ID Number (i.e. tank, loop piv) _____
FIRE RATED ASSEMBLY ☐ Description/ID Number _____
(i.e. walls, floors, ceilings, penetrations seals, fire doors, fire dampers, radiant energy shield, thermolag, etc.)
OTHER SPECIFY: _____
AFFECTED LOCATION: BLDG. Electrical Control ELEV. 807 ROOM/OTHER Unit 1 Cable Spreading Room

PERMIT WORK DESCRIPTION: _____

REQUESTED BY: _____ EXT. _____ RWO: _____ DATE: _____

Completed by Fire Protection/Shift Operations (normally performed during the impact review process)

****COMPENSATORY MEASURE REVIEW/AUTHORIZATION****

SCHEDULED IMPAIRED DATE: _____ SCHEDULED COMPLETION DATE: _____

__X__ CONTINUOUS FIRE WATCH ROUTE NO.: _____
_____ ROVING FIRE WATCH (route change required) YES NO ROUTE NO. _____
_____ ROVING FIRE WATCH(with operable detection) (route change required) YES NO ROUTE NO. _____
_____ NONE REQUIRED
__X__ AFFECTS FIRE BRIGADE STRATEGY? YES NO
_____ OTHER _____

INSTRUCTIONS/ADDITIONAL INFORMATION Establish a continuous fire watch with back up fire suppression equipment within 1 hour

AUTHORIZED BY: _____ DATE: _____

Completed by Fire Protection/Shift Operations
(This section should be completed just prior to impairing any fire protection systems/equipment)

**** IMPAIRMENT/COMPENSATORY MEASURES INITIATION****

***** COMPENSATORY MEASURES INITIATED/VERIFIED: YES NO N/A (circle one) *****

BY: _____ DATE: _____ TIME: _____

Completed by FP/Shift Ops. ****RESTORATION****

FIRE PROTECTION SYSTEM/EQUIPMENT BACK IN-SERVICE YES NO (circle one)

BY: _____ DATE: _____ TIME: _____

FIRE PROTECTION SYSTEM/EQUIPMENT IMPAIRMENT FORM

IMPAIRMENT # _____ **WORK DOCUMENT NUMBER (S)** _____

CLEARANCE/MTO# _____

Completed by Fire Protection

****IMPAIRED FIRE PROTECTION SYSTEM/EQUIPMENT****

SUPPRESSION SYSTEM ID Number (i.e., affected valves, system no., etc.) _____
ISOLATION POINT(S): _____
DETECTION SYSTEM ID Number (i.e., panel no., zone, detector) _____
FIRE PUMP: Electric, ☐ Diesel ☐ ID Number _____
FIRE PROTECTION WATER SUPPLY ☐ ID Number (i.e. tank, loop piv) _____
FIRE RATED ASSEMBLY ☐ Description/ID Number _____
(i.e. walls, floors, ceilings, penetrations seals, fire doors, fire dampers, radiant energy shield, thermolag, etc.)
OTHER SPECIFY: _____
AFFECTED LOCATION: BLDG. _____ ELEV. _____ ROOM/OTHER _____

PERMIT WORK DESCRIPTION: _____
_____

REQUESTED BY: _____ EXT. _____ RWO: _____ DATE: _____

Completed by Fire Protection/Shift Operations (normally performed during the impact review process)

****COMPENSATORY MEASURE REVIEW/AUTHORIZATION****

SCHEDULED IMPAIRED DATE: _____ SCHEDULED COMPLETION DATE: _____

____ CONTINUOUS FIRE WATCH ROUTE NO.: _____
____ ROVING FIRE WATCH (route change required) YES NO ROUTE NO. _____
____ ROVING FIRE WATCH(with operable detection) (route change required) YES NO ROUTE NO. _____
____ NONE REQUIRED _____
____ AFFECTS FIRE BRIGADE STRATEGY? YES NO
____ OTHER _____
_____
INSTRUCTIONS/ADDITIONAL INFORMATION _____
_____
_____

AUTHORIZED BY: _____ DATE: _____

Completed by Fire Protection/Shift Operations
(This section should be completed just prior to impairing any fire protection systems/equipment)

**** IMPAIRMENT/COMPENSATORY MEASURES INITIATION****

***** COMPENSATORY MEASURES INITIATED/VERIFIED: YES NO N/A (circle one) *****

BY: _____ DATE: _____ TIME: _____

Completed by FP/Shift Ops. ****RESTORATION****

FIRE PROTECTION SYSTEM/EQUIPMENT BACK IN-SERVICE YES NO (circle one)

BY: _____ DATE: _____ TIME: _____

HALON FIRE SUPPRESSION SYSTEM INSPECTION SHEET

System	Location	Sat	Unsat
200	CAS Battery Room	✓	
300	Unit 1 Computer Room	✓	
400	Unit 2 Computer Room	✓	
500/600/700	Unit 1 Cable Spread Room		✓
800/900/1000	Unit 2 Cable Spread Room	✓	

****** UNSATISFACTORY CONDITIONS ******

1. PANEL UNLOCKED 2. INDICATOR LIGHTS 3. RING PIN 4. CORROSION DAMAGE 5. MECHANICAL DAMAGE 6. TANK PRESSURE 7. OTHER

Concerns/Comments: Tank pressure out of specification low on both main and reserve cylinders for Unit 1 Cable Spreding Room

Action Taken: Notified Unit Supervisor of condition

Inspection Performed by: Inspector

Date Completed: Today

Approved by: F. P. Supervisor
Fire Protection Supervisor

Date: Today

FIR-303-1
Page 1 of 1
R-5

Facility: CPNPP JPM # NRC SA4 Task # SO1112 K/A # 2.3.7 3.5 / 3.6

Title: Determine Entry Conditions for Radiation Area Clearance And Reporting Requirements

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: JPM Cue Sheet 1

Given the following conditions:

- A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service
- Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL
- The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)

Initiating Cue: JPM Cue Sheet 1

The Work Control Supervisor directs you to PERFORM the following:

- DETERMINE the Dose Monitoring Requirements to enter the room
- DETERMINE the minimum Protective Clothing Requirements to enter the valve area
- IDENTIFY the highest contamination level in dpm/100 cm^2 for the room
- IDENTIFY the highest area dose rate in mR/hr for the room

Initial Conditions: JPM Cue Sheet 2

Given the following conditions:

- The Shift Manager was notified by Radiation Protection that an individual performing maintenance received a Shallow Dose Equivalent (SE) of 275 rads to the skin

Initiating Cue: JPM Cue Sheet 2

The Shift Manager directs you to PERFORM the following:

- Determine Oral and Written Reportability Requirements
  - Oral Reporting Requirement _____
  - Written Reporting Requirement _____

Task Standard: Utilizing the General Access Permit, Survey Map, and Valve Locator Guide, determined the Dose Monitoring Requirements, Protective Clothing Requirements, highest contamination level and highest area dose rate where tagging is to be performed.

Utilizing STA-501, determined Oral and Written Reporting Requirements for an overexposure.

Ref. Materials: RPI-602, Radiological Surveillance and Posting, Rev. 57-1.
RPI-606, Radiation Work and General Access Permits, Rev. 35.
Valve Locator Map for Unit 1 Safeguards Building Elev. 810' Room 77A.
Survey Map for U-1 SG 810' Pipe Penetration Area Train B Room 1-077A. 4/14/16.
CPNPP General Area Permit 20160011, Routine Maintenance, Rev. 02.
STA-501, Nonroutine Reporting, Rev. 21.

Validation Time: 20 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handouts:

PROVIDE the examinee with a copy of:

- **Survey Map for U-1 SG 810′ Pipe Pen Area Train B Room 1-077A** (labeled Handout 1)
- **CPNPP General Area Permit 20160011, Tours and inspections for all groups Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates** (labeled Handout 2)
- **Valve Locator Map for Unit 1 Safeguards Building Elev. 810′ Room 77A** (labeled Handout 3)
- **STA-501, Nonroutine Reporting** (labeled Procedure 3)

MAKE the following references available in the classroom:

- **RPI-602, Radiological Surveillance and Posting** (labeled Procedure 1)
- **RPI-606, Radiation Work and General Access Permits** (labeled Procedure 2)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Provide the examinee with copy of JPM Cue Sheet 1.**
Perform Step: 1	Determine location of 1-7168 and 1-7167 with respect to Survey Map.
Performance Standard:	PERFORMED the following: • **LOCATED** 1-7168 and 1-7167 using Valve Locator Map for Unit 1 Safeguards Building Elev. 810' Room 77N (77A). • **COMPARED** the location to the Survey Map. • **DETERMINED** 1-7168 and 1-7167 are located inside a Radiation Area and the area is contaminated.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine the Dose Monitoring Requirements to enter the room.
Performance Standard:	DETERMINED the Dose Monitoring Requirements to enter the room per the General Access Permit: • **TLD.** • **Alarming Dosimeter**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine the minimum Protective Clothing Requirements to enter the valve area.
Performance Standard:	DETERMINED the minimum Protective Clothing Requirements to enter the valve area per the General Access Permit: • **Deluxe coveralls** • **Booties** • **Hood and hard hat cover** • **Cotton liners** • **Rubber gloves** • **Rubber Overshoes**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Identify the highest contamination level in dpm/100 cm^2 for the room.
Performance Standard:	IDENTIFIED the highest contamination level in dpm/100 cm^2 for the room is **< 1000 dpm/100 cm^2**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	Identify the highest area dose rate in mR/hr for the room.
Performance Standard:	IDENTIFIED the highest area dose rate at **8 mR/hr**.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Provide the examinee with copy of JPM Cue Sheet 2.**
Examiner Note:	**The following steps are from STA-501, Attachment 8.D/4.**
Perform Step: 6√ Attachment 8.D/4 Pages 1 of 12 or 7 of 12	Determine Oral Reporting Requirements per STA-501.
Performance Standard:	DETERMINED Oral Reporting Requirements per STA-501: "Event involving byproduct, source, or special nuclear material that may have caused or threatens to cause exposure to individual ≥ 250 rad (skin or any one extremity)." • DETERMINDED **Immediate notification** via Emergency Notification System.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7√ Attachment 8.D/4 Pages 1 of 12 or 7 of 12	Determine Written Reporting Requirements per STA-501.
Performance Standard:	DETERMINED Written Reporting Requirements per STA-501: "Any incident for which notification is required per 10 CFR 20.2202" • DETERMINDED **Written Report within 30 days (LER)**.
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service**
- **Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL**
- **The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)**

INITIATING CUE: **The Work Control Supervisor directs you to PERFORM the following:**

- **DETERMINE the Dose Monitoring Requirements to enter the room**
- **DETERMINE the Protective Clothing Requirements to enter the valve area**
- **IDENTIFY the highest contamination level in dpm/100 cm^2 for the room**
- **IDENTIFY the highest area dose rate in mR/hr for the room**

Dose Monitoring Requirements to enter the room:

_____

_____

_____

Minimum Protective Clothing Requirements to enter the valve area:

_____

_____

_____

Highest contamination level in dpm/100 cm^2 for the room:

_____

Highest area dose rate in mR/hr for the room:

_____

Initial Conditions:
JPM Cue Sheet 2

Given the following conditions:

- **The Shift Manager was notified by Radiation Protection that an individual performing maintenance received a Shallow Dose Equivalent (SE) of 275 rads to the skin**

Initiating Cue:
JPM Cue Sheet 2

The Shift Manager directs you to PERFORM the following:

- **Determine Oral and Written Reportability Requirements, if any.**
  - **Oral Reporting Requirement** _____
  - **Written Reporting Requirement** _____

INITIAL CONDITIONS: **Given the following conditions:**

- **A Clearance is required to remove 1-LCV-1003, LWPS RCDT 1-01 LVL CTRL VLV from service**
- **Tags need to be hung on 1-7168, LWPS RCDT 1-01 LVL CTRL VLV UPSTRM ISOL and 1-7167, LWPS RCDT 1-01 LVL CTRL VLV DNSTRM ISOL**
- **The valves are located in Safeguards Building Elev. 810' NORTH PENETRATION VLV RM / North Side (Room 77A)**

INITIATING CUE: **The Work Control Supervisor directs you to PERFORM the following:**

- **DETERMINE the Dose Monitoring Requirements to enter the room**
- **DETERMINE the Protective Clothing Requirements to enter the valve area**
- **IDENTIFY the highest contamination level in dpm/100 cm^2 for the room**
- **IDENTIFY the highest area dose rate in mR/hr for the room**

Dose Monitoring Requirements to enter the room:

TLD, Alarming Dosimeter

Minimum Protective Clothing Requirements to enter the valve area:

Single PCs which include:

Deluxe coveralls, Booties, Hood, Hard Hat Cover, Cotton liners,

Rubber gloves & Rubber Overshoes

Highest contamination level in dpm/100 cm^2 for the room:

< 1000 dpm/cm^2

Highest area dose rate in mR/hr for the room:

8 mr/hr

Initial Conditions:
JPM Cue Sheet 2

Given the following conditions:

- **The Shift Manager was notified by Radiation Protection that an individual performing maintenance received a Shallow Dose Equivalent (SE) of 275 rads to the skin**

Initiating Cue:
JPM Cue Sheet 2

The Shift Manager directs you to PERFORM the following:

- **Determine Oral and Written Reportability Requirements, if any.**
  - **Oral Reporting Requirement** Immediate per ENS
  - **Written Reporting Requirement** 30 day LER

U-1 SG 810' PIPE PEN AREA TRAIN B 1-077A

1-077A

SURVEY#	RWP / GAP#		RX. POWER
16-04-0026	2016-0011	[X] ROUTINE [ ] SPECIAL	1 100 % 2 N/A %

INSTRUMENT / ID# /CAL DUE

TELE 1908 7/28/16 RADEYE 3129 7/7/19 M-177 1212 5/17/16

SURVEYED BY: K Kirkpatrick C. Kelly DATE/TIME 4/04/16 0306 REVIEWED BY: DATE 4-4-16

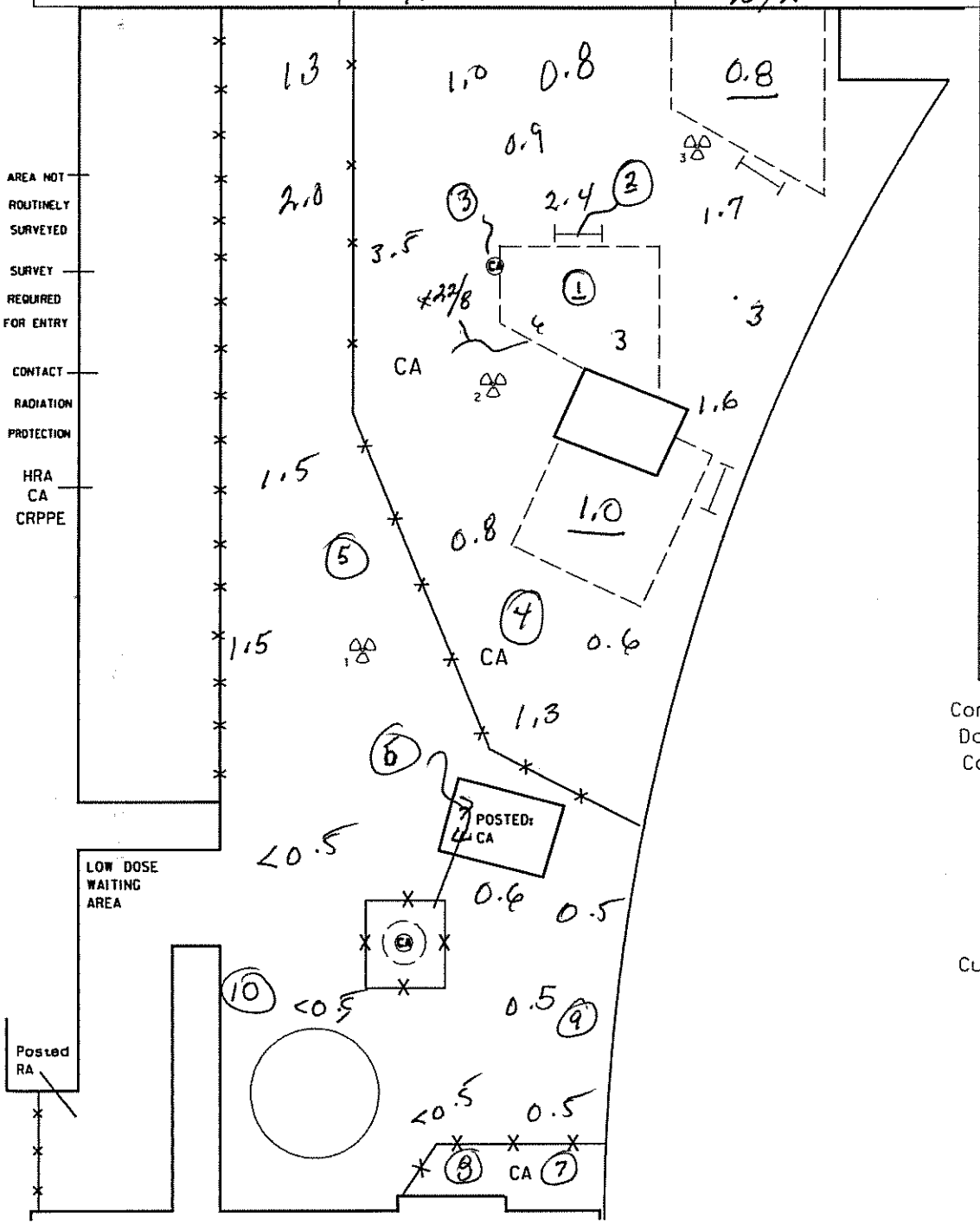
POSTING ABBREVIATIONS: RA-RADIATION AREA ARA-AIRBORNE AREA CRPPE-CONTACT RP PRIOR TO ENTRY UG-UNDER GRATING ANRS-AREA NOT ROUTINELY SURVEYED
HS-HOTSPOT HRA-HIGH RADIATION AREA HCA-HIGH CONTAMINATION AREA LAS-LARGE AREA WIPE SURVEY OH-OVERHEAD
HP-HOTPIPE LHRA-LOCKED HIGH RADIATION AREA CA-CONTAMINATION AREA RMA-RADIOACTIVE MATERIALS AREA SOP-STEP OFF PAD

REMARKS:

QUARTERLY COMPREHENSIVE

LAS ON FLOOR <100 ARPM # = DOSE RATES ON PLATFORMS

Posting Changes Y [ ] N [X] | Changes Performed By / Date N/A | Posting verified by / Date: N/A



sm	Beta-G dpm/100cm2
1-10	<1K

sm	Alpha dpm/100cm2

sm	Beta-G/Alpha Ratio
	:1
	:1
	:1

Comprehensive Survey Date 4/4/16

Comprehensive Trend Point
1 1.2
2 6.3
3 1.0

Current Trend Point
1
2 N/A
3

DOSE RECEIVED PERFORMING THIS SURVEY: 0.3 mR
REFERENCE USE

RPI-602-1
R-10

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02
REACTOR OPERATION + SURVEIL	*20160011*

Expected Radiological Conditions: Expected general area radiation levels are <1mr\hr to 131 mr\hr not normally to exceed 160mr\hr.
Expected general area contamination levels are <1Kdpm\100cm2 to 20Kdpm\100cm2 not to exceed 200Kdpm\100cm2.

GAP Type: JOB ROUTINE	**GAP Status:** ACTIVE	**Begin Date:** 2/29/2016	**Close On Date:**
Prepared By: BARTON, JOHN D	**Job Supervisor:** Bob Knapp		
Estimated Dose: 452.0 mrem	**Estimated Hours:** 1,991.00		

Alarm Settings

Gamma Dose (mrem)	20.00	**Gamma Rate** (mrem/hr)	120.00
Neutron Dose (mrem)		**Neutron Rate** (mrem/hr)	

Locations

Buildings	Elevations	Rooms
Various RCA Locations	ALL	VARIOUS - VARIOUS RCA LOCATIONS

Radiological Conditions

Contact Radiation Protection for current radiological conditions prior to performing work on this GAP.

Tasks

Task	Description	Status
N/A		

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02

Requirements	
Requirement Groups	**Requirement Descriptions**
CONTAMINATION CONTROL	Contaminated components should be wiped down/deconned as necessary to prevent the spread of contamination.
	Knee pads should be worn when kneeling in posted high contamination areas.
	Radioactive spills and leaks should be addressed and per RP direction.
	Frequent change out of outer/ disposable gloves should be performed.
	Faceshield is a minimum requirement for system breach.
	Use of a barrier material should be used in contamination areas when sitting, kneeling or laying.(ie. orex sheeting,visqueen,etc.)
COVERAGE	RP to determine job coverage requirements.
DOSIMETRY	TLD
	Alarming Dosimeter
DOSIMETRY	A SRPD (PIC) may be used in lieu of an Alarming Dosimeter for rapid response for Fire Brigade personnel.
	Vibrating Electronic Dosimeter required in high noise areas.
EXPOSURE CONTROL	Donning/Doffing of harnesses should be performed in a low dose area
	Utilize ALARA principles of time, distance and shielding
	Read your electronic alarming dosimeter (EPD) or PICs periodically when in Radiation Areas (e.g., once every 30 min) and frequently in High Radiation Areas (e.g., at 1/2 of the expected job entry time or every 15 min, whichever is shorter) and often enough to prevent an EPD Dose Alarm.
	Each individual should know and utilize their low dose waiting areas
	Each individual should know how much dose they are expected to receive this entry into the RCA.
PROTECTIVE CLOTHING	Additional Requirement: Operations personnel are required to wear Ultra PCs when handling hoses in contaminated areas.
	Reach-in to a HCA (ex. sink) is allowed with minimum double gloves and labcoat.
	Industrial Safety Protective Clothing may be worn in addition to RP Required Clothing.
	Lab Coat and Rubber PC Gloves are the minimum required to handle or unpack potentially contaminated equipment or material
	RP Approval required to modify protective clothing
	Ultra Orex PCs, double gloves and double shoe covers are the minimum required to enter a posted high contamination area.
	Latex Gloves can be SUBSTITUTED for Rubber Gloves with RP Approval.
	Single PCs consisting of Deluxe coveralls, booties, hood, hard hat cover, cotton liners, rubber gloves and rubber overshoes are the minimum PC requirement to enter a contaminated area.
RESPIRATORY	Respiratory Protection Not Required
WORKER INSTRUCTIONS	Contact RP PRIOR to removing any material from a posted contamination area.
	Contact RP PROR to altering or removing any shielding material.
	Contact RP PRIOR to accessing normally inaccessible areas (i.e. overhead areas >7 feet off floor or areas under grating).
	Contact RP PRIOR to accessing the RCA for specific work activities.
	An ALARA Briefing is required to enter a posted High Radiation Area (HRA).
	Contact RP PRIOR to entering a posted High Radiation Area.

GAP

GENERAL ACCESS PERMIT

GAP

GAP Title: Tours and Inspections for all groups. Activities for Operations, Chemistry, NOS, and RP. For entry into elevated dose rates.	**GAP #:** 20160011 Rev. 02

Additional Requirements

ADDITIONAL RADIATION WORKER INSTRUCTIONS

1. Operations personnel should notify RP PRIOR to venting or draining radioactive systems.
2. Notify RP PRIOR to transfer or movement of any radioactive material.
3. RP Approval is required prior to entering a HIGH CONTAMINATION AREA.
4, Notify RP prior to any system breach.

RADIATION WORKER STOP WORK LIMITS

1. Posted Locked High Radiation Areas & Very High Radiation Areas
2. Posted Airborne Radioactivity Areas (except Noble Gas areas)
3. Posted Discrete Radioactive Particle Control and associated Buffer Zones
4. Containment Buildings
5.] Posted Alpha Contamination Area.
6.] Failure of protective clothing.
7.] Any EPD dose alarm or unanticipated dose rate alarm.
8.] At the direction of Radiation Protection.

ADDITIONAL RP INSTRUCTIONS

RP should discuss the following information with the RadWorker(s) prior to allowing them entry into the RCA:

1. Work location and current radiological conditions.
2. Determine if they are entering a HRA or HCA.
3. RWP data to include dosimeter set points.
4. Contamination levels in the work location.
5. Verify that they have a RCA Entry Card and that it is filled out properly.

RP STOP WORK LIMITS

1. Greater than 3 unplanned personnel contaminations (internal or external) on a single job during a shift.
2. Any level 3 personnel contamination.
3. Unintended exposure to a single worker of > 10mr above an ED set-point.
4. Failure or degradation of radiological engineering controls which impact the radiological safety of the worker.
5. Changes in conditions that elevate the risk level.
6. Airborne Radioactivity > 0.25 DAC. (excluding Noble Gas)

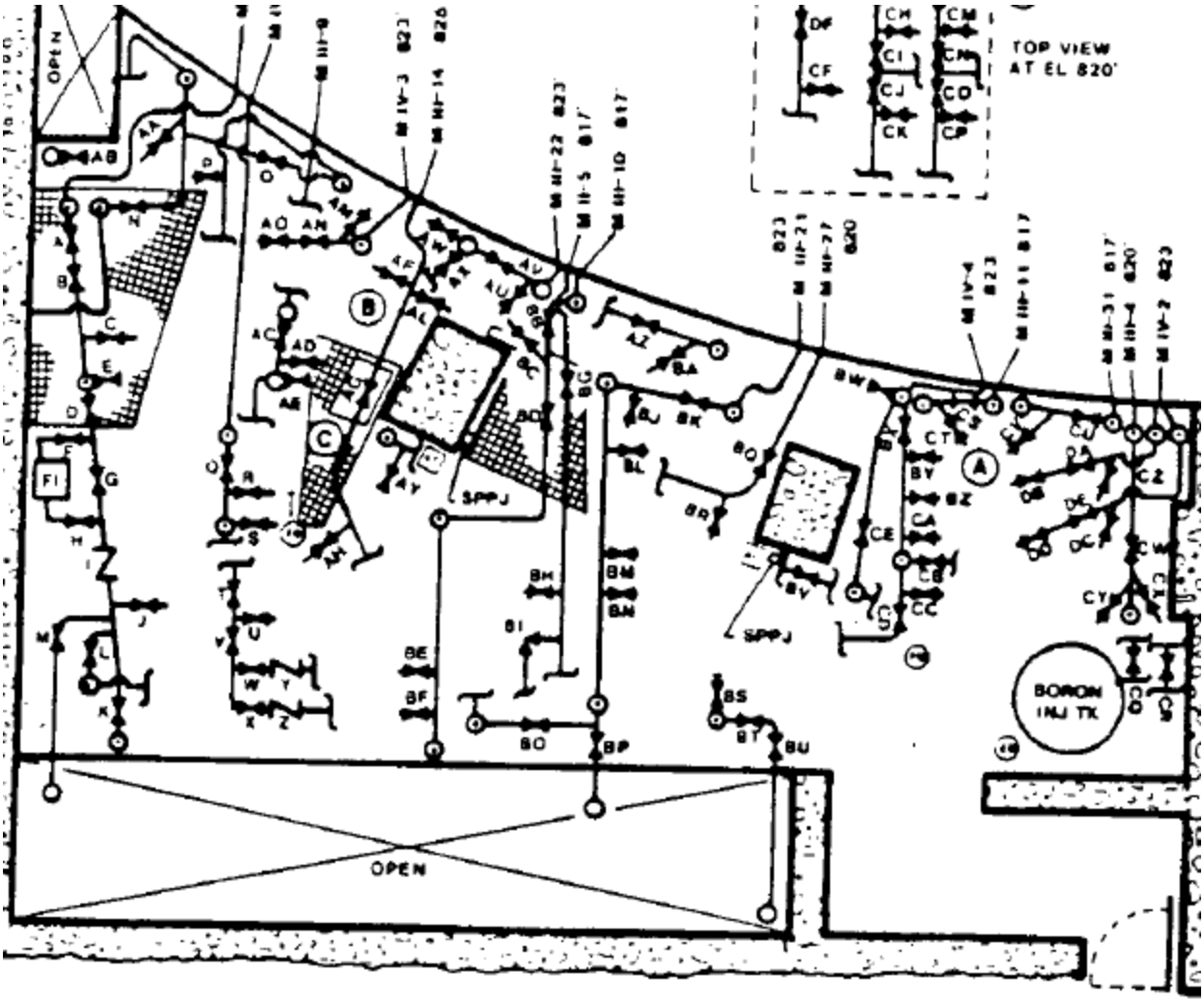
Hold Point- After system breach the Radworker(s) should be directed to a Low Dose Waiting Area while radiological conditions are being evaluated.

Approvals

Approver Title	Name	Date
MANAGER	KNAPP, ROBERT C	04/04/2016

Attachments

N/A



ROOM 77N

ROOM 77N

VALVE #s	EL
A 1-7168	811
B 1LCV-1003	811
C 1WP-230	812
D 1-7167	811
E 1-7136	812
F 1WP-7172	813
G 1-7170	811
H 1WP-7171	813
I 1-7174	811
J 1WP-027	810
K 1-8551	811
L 1-7173	812
M 1-7138	812
N 1DD-300	811
O 1DD-347	811
P 1DD-397	824
Q 1-7150	811
R 1WP-013	810
S 1WP-7159	813
T 1-8880	811
U 1SI-033	810
V 1-8893	811
W 1SI-132	811
X 1SI-154	811
Y 1SI-8956A	811
Z 1SI-8956B	811
AA 1DD-387	810
AB 1FD-465	816
AC 1-8351C	811
AD 1CS-098C	810
AE 1CS-8369C	813
AF 1CT-002	820
AG 1HV-4777	820
AH 1CT-004	820
AJ 1CS-8221	821
AJ 1CS-8220	821
AK 1CS-109	824
AL 1CT-001	820
AM 1PS-033	811
AN 1HV-4175	811
AO 1PS-022	813
AP 1MS-159	820
AQ 1MS-602	820
AR 1HV-2407	820
AS 1MS-606	820
AT 1CF-006	821
AU 1CI-033	810
AV 1HV-3487	811
AW 1CI-043	813
AX 1CI-041	814
AY 1CF-005	813
AZ 1HV-7311	810
BA 1WP-235	810
BB 1-8351D	812
BC 1CS-0980	811
BD 1CS-83690	812
BE 1CS-83700	820
BF 1CS-8371D	820
BG 1-8809B	820
BH 1SI-002	820
BI 1-8856B	820
BJ 1VD-866	811
BK 1HV-8157	811
BL 1VD-617	812
BM 1VD-606	817
BN 1VD-607	817
BO 1VD-601	811
BP 1VD-600	811
BQ 1SF-022	818
BR 1SF-049	819
BS 1PS-007	817
BT 1PS-006	811
BU 1HV-4179	811
BV 1CA-399	813
BW 1SI-8961	813
BX 1-8964	812
BY 1SI-131	811
BZ 1SI-8845B	812
CA 1SI-8845A	812
CB 1SI-179	812
CC 1SI-8962	812
CD 1SI-8963B	812
CE 1-8888	813
CF 1PS-048	822
CG 1MS-156	821
CH 1MS-699	820
CI 1HV-2408	820
CJ 1MS-603	821
CK 1CF-008	822
CL 1MS-158	822
CM 1MS-601	821
CN 1VH-2406	822
CO 1MS-605	822
CP 1CF-004	823
CQ 1CF-003	813
CR 1CF-007	813
CS 1-8100	812
CT 1CS-004	811
CU 1SF-064	812
CV 1SF-047	811
CW 1-8802B	812
CX 1SI-011	812
CY 1SI-217	811
CZ 1PS-032	814
DA 1HV-4187	817
DB 1PS-028	818
DC 1PS-031	814
DD 1PS-024	818
DE 1HV-4176	817
DF 1HV-5556	822

Facility: CPNPP JPM # NRC SA5 Task # SO1136 K/A # 2.4.41 2.9 / 4.6
Title: Classify an Emergency Plan Event

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	
Time Critical:	X		

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- EOS-1.1B, Safety Injection Termination is in progress following a Main Steam header break downstream of the Main Steam Isolation Valves
- The Unit Supervisor implemented ABN-740B, Control Room Annunciator System and Status Light Malfunction, Section 2.0, Loss of All Control Room Annunciators 10 minutes ago
- Electrical Maintenance is investigating the tripping of both Annunciator Logic Cabinet breakers
- ABN-906, Plant Process Computer System Malfunction was just entered due to loss of Plant Computer System alarm capability

Initiating Cue: The Shift Manager directs you to PERFORM the following:

- DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation

Task Standard: Utilizing EPP-201, determined the Emergency Action Level Event Classification as SS5.1 using the Emergency Action Level Hot, Common, and Cold Classification Charts within 15 minutes.

Ref. Materials: EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation, Rev. 12.

EPP-201, Emergency Action Level Technical Bases Document, Rev. 0-1.

CPNPP Emergency Action Level Hot, Common, and Cold Classification Charts, Rev. 12A.

Validation Time: 10 minutes Time Critical: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

Handout:

MAKE the following available in the classroom:

- **EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation** (labeled Procedure 1)
- **EPP-201, Emergency Action Level Technical Bases Document** (labeled Procedure 2)
- **CPNPP Emergency Action Level Hot, Common, & Cold Classification Charts** (labeled Handout 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from CPNPP Emergency Action Levels Hot.**
Perform Step: 1	DETERMINE the Event Category.
Performance Standard:	REFERRED to CPNPP Emergency Action Levels Hot, Common, and Cold and DETERMINED the following chart is applicable: • **CPNPP EAL HOT Conditions (RCS > 200°F)**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	MATCH plant conditions in the EAL Group / Category.
Performance Standard:	IDENTIFIED EAL Group / Category as **System Malfunction (S)**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	MATCH plant conditions in the selected EAL Subcategory.
Performance Standard:	IDENTIFIED EAL Subcategory as **Instrumentation (5)**.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Candidate should refer to \ EPP-201, Emergency Action Level Technical Bases document for clarification regarding the event classification. The following notes are from Page 235 of 323.**

SS5.1 Site Area Emergency

Loss of approximately 75% (or more) of annunciation or indication on CB-01 through CB-09 and CB-11 for ≥ 15 min. (Note 4)

AND

A significant transient is in progress, Table S-1

AND

Compensatory indications are unavailable

Note 4: The Emergency Coordinator should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time

Table S-1 Significant Transients

- Electrical load rejection > 25% full electrical load
- Reactor trip
- Runback > 25% reactor power
- ECCS injection
- Reactor power oscillations > 10%

EAL Identifier

XXX.X

Category (R, H, E, S, F, C) — Sequential number within subcategory/classification

Emergency classification (G, S, A, U) — Subcategory number (1 if no subcategory)

Perform Step: 4√	Classify the event.
Performance Standard:	CLASSIFIED the event as an **SITE AREA EMERGENCY (SS5.1) within 15 minutes.**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **EOS-1.1B, Safety Injection Termination is in progress following a Main Steam header break downstream of the Main Steam Isolation Valves**
- **The Unit Supervisor implemented ABN-740B, Control Room Annunciator System and Status Light Malfunction, Section 2.0, Loss of All Control Room Annunciators 10 minutes ago**
- **Electrical Maintenance is investigating the tripping of both Annunciator Logic Cabinet breakers**
- **ABN-906, Plant Process Computer System Malfunction was just entered due to loss of Plant Computer System alarm capability**

INITIATING CUE: **The Shift Manager directs you to PERFORM the following:**

- **DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation**

EAL Identifier:_____

THIS JPM IS TIME CRITICAL

INITIAL CONDITIONS: **Given the following conditions:**

- **EOS-1.1B, Safety Injection Termination is in progress following a Main Steam header break downstream of the Main Steam Isolation Valves**
- **The Unit Supervisor implemented ABN-740B, Control Room Annunciator System and Status Light Malfunction, Section 2.0, Loss of All Control Room Annunciators 10 minutes ago**
- **Electrical Maintenance is investigating the tripping of both Annunciator Logic Cabinet breakers**
- **ABN-906, Plant Process Computer System Malfunction was just entered due to loss of Plant Computer System alarm capability**

INITIATING CUE: **The Shift Manager directs you to PERFORM the following:**

- **DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation**

EAL Identifier: SS5.1

THIS JPM IS TIME CRITICAL

Control Copy #: _____

HOT CONDITIONS (RCS > 200°F)

Revision 12A
Effective Date 02/13/2015

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
S System Malfunct.	1 Loss of AC Power	Prolonged loss of **all** offsite and **all** onsite AC power to safeguard buses 1 2 3 4 **SG1.1 (Bases Page 211)** Loss of **all** offsite and **all** onsite AC power to 6.9 KV safeguard buses uEA1 and uEA2 **AND EITHER**: • Restoration of at least one safeguard bus within 4 hours is **not** likely • CSFST Core Cooling - RED or ORANGE path	Loss of **all** offsite and **all** onsite AC power to safeguard buses for greater than or equal to 15 min. 1 2 3 4 **SS1.1 (Bases Page 208)** Loss of **all** offsite and **all** onsite AC power to 6.9 KV safeguard buses uEA1 and uEA2 for greater than or equal to 15 min. (Note 4)	AC power capability to safeguard buses reduced to a single power source for greater than or equal to 15 min. such that **any** additional single failure would result in a loss of all AC power to safeguard buses 1 2 3 4 **SA1.1 (Bases Page 205)** AC power capability to 6.9 KV safeguard buses uEA1 and uEA2 reduced to a single power source for greater than or equal to 15 min. (Note 4) **AND** **Any** additional single power source failure will result in loss of **all** AC power to 6.9 KV safeguard buses uEA1 and uEA2 (Table S-3)	Loss of **all** offsite AC power to safeguard buses for greater than or equal to 15 min. 1 2 3 4 **SU1.1 (Bases Page 202)** Loss of **all** offsite AC power to 6.9 KV safeguard buses uEA1 and uEA2 for greater than or equal to 15 min. (Note 4)
	2 Loss of DC Power	**None**	Loss of **all** vital DC power for ≥ 15 min. 1 2 3 4 **SS2.1 (Bases Page 216)** Less than 105 VDC on **all** 125 VDC safeguard buses uED1, uED2, uED3 and uED4 for greater than 15 min. (Note 4)	**None**	**None**
	3 Criticality & RPS Failure	Automatic trip and **all** manual actions fail to shut down the reactor and indication of an extreme challenge to the ability to cool the core exists 1 2 **SG3.1 (Bases Page 226)** An automatic trip failed to shut down the reactor **AND** **All** manual actions do **not** shut down the reactor as indicated by reactor power greater than or equal to 5% **AND EITHER**: • CSFST Core Cooling - RED • CSFST Heat Sink - RED	Automatic trip fails to shut down the reactor and manual actions taken from the reactor control console are **not** successful in shutting down the reactor 1 2 **SS3.1 (Bases Page 224)** An automatic trip failed to shut down the reactor **AND** Manual actions taken at the reactor control console (Note 6) do **not** shut down the reactor as indicated by reactor power greater than or equal to 5%	Automatic trip fails to shut down the reactor and the manual actions taken from the reactor control console are successful in shutting down the reactor 1 2 **SA3.1 (Bases Page 220)** An automatic trip failed to shut down the reactor **AND** Manual actions taken at the reactor control console (Note 6) successfully shut down the reactor as indicated by reactor power less than 5%	Inadvertent criticality 3 4 **SU3.1 (Bases Page 219)** An ***unplanned sustained*** positive startup rate observed on nuclear instrumentation
	4 Inability to Reach or Maintain Shutdown Conditions	**None**	**None**	**None**	Inability to reach required shutdown within Technical Specification limits 1 2 3 4 **SU4.1 (Bases Page 230)** Plant is not brought to required operating mode within Technical Specifications LCO action statement time
	5 Instr.	**None**	Inability to monitor a ***significant transient*** in progress 1 2 3 4 **SS5.1 (Bases Page 235)** Loss of approximately 75% (or more) of annunciation or indication on CB-01 through CB-09 and CB-11 for greater than or equal to 15 min. (Note 4) **AND** A ***significant transient*** is in progress, Table S-1 **AND** Compensatory indications are unavailable	***Unplanned*** loss of safety system annunciation or indication in the Control Room with either (1) a ***significant transient*** in progress, or (2) compensatory indicators are unavailable 1 2 3 4 **SA5.1 (Bases Page 233)** ***Unplanned*** loss of approximately 75% (or more) of annunciation or indication on CB-01 through CB-09 and CB-11 for greater than or equal to 15 min. (Note 4) **AND EITHER:** • A ***significant transient*** is in progress, Table S-1 • Compensatory indications are unavailable	***Unplanned*** loss of safety system annunciation or indication in the Control Room for greater than or equal to 15 min. 1 2 3 4 **SU5.1 (Bases Page 231)** ***Unplanned*** loss of approximately 75% (or more) of annunciation or indication associated with safety systems on CB-01 through CB-09 and CB-11 for greater than or equal to 15 min. (Note 4)
	6 Comm.	**None**	**None**	**None**	Loss of **all** onsite or offsite communications capabilities 1 2 3 4 **SU6.1 (Bases Page 238)** Loss of **all** Table S-2 onsite (internal) communication methods affecting the ability to perform routine operations **OR** Loss of **all** Table S-2 offsite (external) communication methods affecting the ability to perform offsite notifications
	7 Fuel Clad Degradation	**None**	**None**	**None**	Fuel clad degradation 1 2 3 4 **SU7.1 (Bases Page 240)** Reactor coolant Dose Equivalent I-131 specific activity greater than 60 µCi/gm **OR** Reactor coolant Dose Equivalent XE-133 specific activity greater than 500 µCi/gm **SU7.2 (Bases Page 242)** Gross Failed Fuel Monitor, FFLu60 (u-RE-0406), High Alarm (RED)
	8 RCS Leakage	**None**	**None**	**None**	RCS leakage 1 2 3 4 **SU8.1 (Bases Page 244)** Unidentified or pressure boundary leakage greater than 10 gpm (Note 7) **OR** Identified leakage greater than 25 gpm
F Fission Product Barriers		1 2 3 4 **FG1.1 (Bases Page 256)** Loss of **any** two barriers **AND** Loss or potential loss of third barrier (Table F-1)	1 2 3 4 **FS1.1 (Bases Page 254)** Loss or potential loss of **any** two barriers (Table F-1)	1 2 3 4 **FA1.1 (Bases Page 253)** **Any** loss or **any** potential loss of either Fuel Clad or RCS (Table F-1)	1 2 3 4 **FU1.1 (Bases Page 252)** **Any** loss or **any** potential loss of Containment (Table F-1)

Table F-1 Fission Product Barrier Matrix

	Fuel Cladding Barrier		Reactor Coolant System Barrier		Containment Barrier	
	Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
A. CSFST	1. CSFST Core Cooling-RED entry conditions met **(Bases Page 260)**	1. CSFST Core Cooling-ORANGE entry conditions met **OR** CSFST Heat Sink-RED entry conditions met and heat sink required **(Bases Page 263)**	None	1. CSFST RCS Integrity - RED entry conditions met **OR** CSFST Heat Sink - RED entry conditions met and heat sink required **(Bases Page 280)**	None	1. CSFST Containment - RED entry conditions met **(Bases Page 298)**
B.Core Exit T/Cs	2. Core exit TCs greater than 1,200°F **(Bases Page 266)**	2.Core exit TCs greater than 750°F **(Bases Page 267)**	None	None	None	2. Core exit TCs greater than 1,200°F **AND** Restoration procedures **not** effective within 15 min. **(Bases Page 301)** 3. **All** of the following: • Core exit TCs greater than 750°F • RVLIS 11 in. above plate light **not** lit • Restoration procedures **not** effective within 15 min. **(Bases Page 303)**
C.Radiation	3. Containment radiation greater than 400 R/hr CTEu16 Containment HRRM (u-RE-6290A), or CTWu17 Containment HRRM (u-RE-6290B) **(Bases Page 268)** 4.Gross Failed Fuel Monitor, (FFLu60) u-RE-0406, radiation greater than 3.7E04 µCi/cc **(Bases Page 270)**	None	1. Containment radiation greater than 5 R/hr CTEu16 Containment HRRM (u-RE-6290A), or CTWu17 Containment HRRM (u-RE-6290B) **(Bases Page 285)**	None	None	4. Containment radiation greater than 4,000 R/hr CTEu16 Containment HRRM (u-RE-6290A), or CTWu17 Containment HRRM (u-RE-6290B) **(Bases Page 306)**
D.Inventory	None	3. RVLIS 11 in. above plate light **not** lit **(Bases Page 274)**	2. RCS leak rate greater than available makeup capacity as indicated by a loss of RCS subcooling (less than or equal to 25°F [55ºF]) **(Bases Page 288)** 3. Ruptured SG results in an ECCS (SI) actuation **(Bases Page 290)**	2. RCS leak rate greater than the capacity of one charging pump in the normal charging mode with letdown isolated: • Positive Displacement: 98 gpm • Centrifugal: 150 gpm **(Bases Page 291)**	1. Containment pressure rise followed by a rapid unexplained drop in Containment pressure **(Bases Page 308)** 2. Containment pressure or sump level response **not** consistent with LOCA conditions **(Bases Page 309)** 3. Ruptured SG is also faulted outside of Containment **(Bases Page 311)** 4. Primary-to-secondary leakrate greater than 10 gpm **AND** Unisolable steam release from affected SG to the environment **(Bases Page 313)**	5. Containment pressure 50 psig and rising **(Bases Page 315)** 6. Containment hydrogen concentration greater than 4% **(Bases Page 316)** 7. Containment pressure greater than 18 psig with **neither** Containment Spray system train operating **(Bases Page 318)**
E.Other	5. Coolant activity greater than 300 µCi/cc I-131 Dose Equivalent **(Bases Page 275)**	None	None	None	5. Failure of **all** valves in **any one** line to close **AND** Direct downstream pathway to the environment exists after Containment isolation signal **(Bases Page 320)**	None
F. Judgment	6. **Any** condition in the opinion of the Emergency Coordinator that indicates loss of the Fuel Clad barrier **(Bases Page 277)**	4. **Any** condition in the opinion of the Emergency Coordinator that indicates potential loss of the Fuel Clad barrier **(Bases Page 278)**	4. **Any** condition in the opinion of the Emergency Coordinator that indicates loss of the RCS barrier **(Bases Page 295)**	3. **Any** condition in the opinion of the Emergency Coordinator that indicates potential loss of the RCS barrier **(Bases Page 296)**	6. **Any** condition in the opinion of the Emergency Coordinator that indicates loss of the Containment barrier **(Bases Page 322)**	8. **Any** condition in the opinion of the Emergency Coordinator that indicates potential loss of the Containment barrier **(Bases Page 323)**

Note 4: The Emergency Coordinator should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time

Note 5: Applicable on Cold Condition Chart only.

Note 6: For manual trip, the MCB reactor trip switches and deenergizing uB3 and uB4 are the only methods applicable to EALs SA3.1 and SS3.1

Note 7: Use Category F EALs for escalation due to RCS leakage

Table S-1 *Significant Transients*

- Electrical load rejection greater than 25% full electrical load
- Reactor trip
- Runback greater than 25% reactor power
- ECCS injection
- Reactor power oscillations greater than 10%

Table S-2 Communications Systems

System	Onsite (internal)	Offsite (external)
Gai-Tronics Page/party system (Public Address System)	X	
Plant Radio System	X	
PABX (Private Automatic Branch Exchange System)	X	X
Public Telephone System	X	X
Federal Telephone System (FTS)		X

Table S-3 AC Power Sources

Offsite:
- 138 KV switchyard circuit
- 345 KV switchyard circuit

Onsite:
- uEG1
- uEG2

EAL Identifier

XXX.X

Category (R, H, E, S, F, C) — Sequential number within subcategory/classification

Emergency classification (G, S, A, U) — Subcategory number (1 if no subcategory)

Modes: 1 Power Operation | 2 Startup | 3 Hot Standby | 4 Hot Shutdown | 5 Cold Shutdown | 6 Refueling | DEF Defueled

Luminant

Comanche Peak Nuclear Power Plant
Emergency Action Level Matrix

Revision 12A — Effective Date 02/13/2015

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
R Abnorm. Rad Release / Rad Effluent	1 Offsite Rad Conditions	Offsite dose resulting from an actual or ***imminent*** release of gaseous radioactivity greater than 1000 mRem TEDE or 5000 mRem thyroid CDE for the actual or projected duration of the release using actual meteorology 1 2 3 4 5 6 DEF **RG1.1 (Bases Page 66)** ***Valid*** reading on any radiation monitors greater than Table R-1 column "GE" for greater than or equal to 15 min. (Note 1) Note 1: The Emergency Coordinator should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values (see EAL RS1.2). Do **not** delay declaration awaiting dose assessment **RG1.2 (Bases Page 69)** Dose assessment using actual meteorology indicates doses greater than 1,000 mRem TEDE or 5,000 mRem thyroid CDE at or beyond the ***Exclusion Area Boundary*** **RG1.3 (Bases Page 71)** Field survey results indicate closed window dose rates greater than 1,000 mRem/hr expected to continue for greater than or equal to 60 min. at or beyond the ***Exclusion Area Boundary*** (Note 1) **OR** Analyses of field survey samples indicate thyroid CDE greater than 5,000 mRem for 1 hr of inhalation at or beyond the ***Exclusion Area Boundary***	Offsite dose resulting from an actual or ***imminent*** release of gaseous radioactivity exceeds 100 mRem TEDE or 500 mRem thyroid CDE for the actual or projected duration of the release 1 2 3 4 5 6 DEF **RS1.1 (Bases Page 60)** ***Valid*** reading on **any** radiation monitors greater than Table R-1 column "SAE" for greater than or equal to 15 min. (Note 1) **RS1.2 (Bases Page 63)** Dose assessment using actual meteorology indicates doses greater than 100 mRem TEDE or 500 mRem thyroid CDE at or beyond the ***Exclusion Area Boundary*** **RS1.3 (Bases Page 64)** Field survey results indicate closed window dose rates greater than 100 mRem/hr expected to continue for greater than or equal to 60 min. at or beyond the ***Exclusion Area Boundary*** (Note 1) **OR** Analyses of field survey samples indicate thyroid CDE greater than 500 mRem for 1 hr of inhalation at or beyond the ***Exclusion Area Boundary***	**Any** release of gaseous or liquid radioactivity to the environment greater than 200 times the ODCM for 15 minutes or longer 1 2 3 4 5 6 DEF **RA1.1 (Bases Page 51)** ***Valid*** reading on **any** Gaseous monitors greater than Table R-1 column "Alert" for greater than or equal to 15 min. (Note 2) **RA1.2 (Bases Page 55)** ***Valid*** reading on **any** Liquid monitors greater than Table R-1 column "Alert" for greater than or equal to 15 min. (Note 2) **RA1.3 (Bases Page 58)** Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than 200 times ODCM limits for greater than or equal to 15 min. (Note 2) Note 2: The Emergency Coordinator should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.	**Any** release of gaseous or liquid radioactivity to the environment greater than 2 times the ODCM for 60 minutes or longer 1 2 3 4 5 6 DEF **RU1.1 (Bases Page 41)** ***Valid*** reading on **any** Gaseous monitors greater than Table R-1 column "UE" for greater than or equal to 60 min. (Note 2) **RU1.2 (Bases Page 45)** ***Valid*** reading on **any** Liquid monitors greater than Table R-1 column "UE" for greater than or equal to 60 min. (Note 2) **RU1.3 (Bases Page 49)** Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than 2 times ODCM limits for greater than or equal to 60 min. (Note 2)
	2 Onsite Rad Conditions & Spent Fuel Events	Table R-1 Effluent Monitor Classification Thresholds Gaseous: Plant Vent (PVG384 + PVG385) — Monitor: X-RE-5567 A + B — GE: ---------- — SAE: ---------- — Alert: 1.3E-1 µCi/cc — UE: 1.3E-3 µCi/cc Gaseous: Plant Vent (WRGM) (PVF684 + PVF685) — Monitor: X-RE-5570 A + B — GE: 1.7E+7 µCi/sec — SAE: 1.7E+6 µCi/sec — Alert: 8.0E+5µCi/sec — UE: 8.0E+4µCi/sec Gaseous: Main Steam (MSLu78, MSLu79, MSLu80, MSLu81) — Monitor: u-RE-2325, u-RE-2326, u-RE-2327, u-RE-2328 — GE: 27 µCi/cc — SAE: 2.7 µCi/cc — Alert: 10 x high alarm setpoint — UE: 2 x high alarm setpoint Liquid: Liquid Waste (LWE-076) — Monitor: X-RE-5253 — GE: -------- — SAE: -------- — Alert: 200 X high alarm setpoint* — UE: 2 X high alarm setpoint* Liquid: Service Water (SSWu65, SSWu66) — Monitor: u-RE-4269, u-RE-4270 — GE: -------- — SAE: -------- — Alert: 200 X high alarm setpoint — UE: 2 X high alarm setpoint * With effluent discharge **not** isolated		Damage to irradiated fuel or loss of water level that has resulted or will result in the uncovering of irradiated fuel outside the reactor vessel 1 2 3 4 5 6 DEF **RA2.1 (Bases Page 77)** Damage to irradiated fuel **OR** loss of water level **AND** A ***valid*** High alarm on **any** of the following: • RFCu10, LRAM W REFUEL CAV860 (u-RE-6251) • RFCu12, LRAM E REFUEL CAV 860 (u-RE-6253) • CAPu98, CNTMT AIR PIG PART (u-RE-5502) • CAIu99, CNTMT AIR PIG IODINE (u-RE-5566) • CAGu97, CNTMT AIR PIG GAS (u-RE-5503) • FBV088, FB VENT EXH (X-RE-5700) • SFP001, LRAM SFP 2 E WALL (X-RE-6272) • SFP002, LRAM SFP 2 N WALL (X-RE-6273) • SFP003, LRAM SFP 1 E WALL (X-RE-6274) • SFP004, LRAM SFP 1 S WALL (X-RE-6275) **RA2.2 (Bases Page 79)** A water level drop in the reactor refueling cavity, spent fuel pool or fuel transfer canal that will result in irradiated fuel becoming uncovered	***Unplanned*** rise in plant radiation levels 1 2 3 4 5 6 DEF **RU2.1 (Bases Page 73)** ***Unplanned*** water level drop in a reactor refueling pathway as indicated by **EITHER** of the following: • less than 857 ft. 3.5 in. in spent fuel pool or fuel transfer canal • less than 856 ft. 11 in. in refueling cavity (407 in. above core plate) **AND** ***Valid*** area radiation monitor reading rise on **any** of the following: • RFCu10, LRAM W REFUEL CAV860 (u-RE-6251) • RFCu12, LRAM E REFUEL CAV 860 (u-RE-6253) • SFP001, LRAM SFP 2 E WALL (X-RE-6272) • SFP002, LRAM SFP 2 N WALL (X-RE-6273) • SFP003, LRAM SFP 1 E WALL (X-RE-6274) • SFP004, LRAM SFP 1 S WALL (X-RE-6275) **RU2.2 (Bases Page 76)** ***Unplanned valid*** area radiation monitor reading rises by a factor of 1000 over normal levels* * Normal levels can be considered as the highest reading in the past 24 hours excluding the current peak value
	3 CR/CAS Rad	None	None	Rise in radiation levels within the facility that impedes operation of systems required to maintain plant safety functions 1 2 3 4 5 6 DEF **RA3.1 (Bases Page 81)** Dose rates greater than 15 mRem/hr in areas requiring continuous occupancy to maintain plant safety functions: Control Room (X-RE-6281 or X-RE-6282) **OR** CAS (by survey)	None
H Hazards	1 Natural or Destructive Phenomena	Note 8: Web address for National Earthquake Information Center is: http://earthquake.usgs.gov/earthquakes/dyfi/archives.php None	Table H-1 Structures Containing Systems Needed for *Safe Shutdown* - u-Containment - u-Safeguards Building - X-Auxiliary Building - X-Electrical & Control Building - X-Fuel Building - X-Service Water Intake Structure - u-Diesel Generator Building - u-Normal switchgear rooms - u-CST - u-RWST	Natural or destructive phenomena affecting ***Vital Areas*** 1 2 3 4 5 6 DEF **HA1.1 (Bases Page 154)** Seismic event greater than OBE as indicated by annunciator 2A-3.1, OBE EXCEEDED, or yellow OBE light on Seismic Monitoring system panel **AND** Earthquake confirmed by **any** of the following: • Earthquake felt in plant • National Earthquake Information Center (Note 8) • Control Room indication of degraded performance of systems required for the ***safe shutdown*** of the plant **HA1.2 (Bases Page 157)** Tornado striking or ***sustained*** high winds greater than 80 mph resulting in **EITHER**: • ***Visible damage*** to **any** Table H-1 structures • Control Room indication of degraded performance of systems required to establish or maintain ***safe shutdown*** **HA1.3 (Bases Page 160)** Internal flooding in the Safeguards Building or Turbine Building resulting in **EITHER**: • An electrical shock hazard that precludes access to operate or monitor systems required to establish or maintain ***safe shutdown*** • Control Room indication of degraded performance of systems required to establish or maintain ***safe shutdown*** **HA1.4 (Bases Page 162)** Turbine failure-generated projectiles resulting in **EITHER**: • ***Visible damage*** to or penetration of **any** Table H-1 structures • Control Room indication of degraded performance of systems required to establish or maintain ***safe shutdown*** **HA1.5 (Bases Page 165)** Safe Shutdown Impoundment level greater than 796.0 ft (lake) **OR** Safe Shutdown Impoundment level less than 761.5 ft (inside traveling screens) **HA1.6 (Bases Page 167)** Vehicle crash resulting in **EITHER**: • ***Visible damage*** to **any** Table H-1 structures • Control Room indication of degraded performance of systems required to establish or maintain ***safe shutdown***	Natural or destructive phenomena affecting the ***Protected Area*** 1 2 3 4 5 6 DEF **HU1.1 (Bases Page 143)** Seismic event identified by **any two** of the following: • Annunciator 2A- 2.1, SEISMIC MONITORING SYSTEM ACTIVATION, received • Earthquake felt in plant • National Earthquake Information Center (Note 8) **HU1.2 (Bases Page 145)** Tornado striking within the ***Protected Area*** boundary **OR** ***Sustained*** high winds greater than 80 mph **HU1.3 (Bases Page 147)** Internal flooding that has the potential to affect safety-related equipment required by Technical Specifications for the current operating mode in the Safeguards Building or Turbine Building **HU1.4 (Bases Page 149)** Turbine failure resulting in casing penetration or damage to turbine or generator seals **HU1.5 (Bases Page 151)** Safe Shutdown Impoundment level greater than 794.7 ft (lake) **OR** Safe Shutdown Impoundment level less than 769.5 ft (inside traveling screens)
	2 Fire or Explosion	Note 9: ***Explosion*** is defined as a rapid, violent, unconfined combustion, or catastrophic failure of pressurized/energized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components. A steam line break or steam explosion that damages surrounding permanent structures or equipment would be classified under this EAL.	None	***Fire*** or ***explosion*** affecting the operability of plant safety systems required to establish or maintain ***safe shutdown*** 1 2 3 4 5 6 DEF **HA2.1 (Bases Page 173)** ***Fire*** or ***explosion*** resulting in **EITHER**: • ***Visible damage*** to any Table H-1 structures • Control Room indication of degraded performance of systems required to establish or maintain ***safe shutdown*** (Note 9)	***Fire*** within the ***Protected Area*** not extinguished within 15 min. of detection or ***explosion*** within the ***Protected Area*** 1 2 3 4 5 6 DEF **HU2.1 (Bases Page 169)** **Fire not** extinguished within 15 min. of Control Room notification or verification of a Control Room fire alarm in **any** Table H-1 area (Note 4) **HU2.2 (Bases Page 171)** ***Explosion*** of sufficient force to damage permanent structures or equipment within the ***Protected Area*** (Note 9)
	3 Hazardous Gas	None	Note 3: If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then EAL HA3.1 should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shutdown beyond that already allowed by Technical Specifications at the time of the event.	Access to a ***Vital Area*** is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of operable equipment required to maintain safe operations or safely shutdown the reactor 1 2 3 4 5 6 DEF **HA3.1 (Bases Page 178)** Access to a ***Vital Area*** is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of systems required to maintain safe operations or safely shut down the reactor (Note 3)	Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal plant operations 1 2 3 4 5 6 DEF **HU3.1 (Bases Page 175)** Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect normal plant operations **HU3.2 (Bases Page 177)** Recommendation by local, county or state officials to evacuate or shelter site personnel based on offsite event
	4 Security	***Hostile action*** resulting in loss of physical control of the facility 1 2 3 4 5 6 DEF **HG4.1 (Bases Page 186)** A ***hostile action*** has occurred such that plant personnel are unable to operate equipment required to maintain **any** of the following safety functions: • Reactivity control • RCS inventory • Secondary heat removal **HG4.2 (Bases Page 187)** A ***hostile action*** has caused failure of Spent Fuel Cooling systems **AND** ***Imminent*** fuel damage is likely for a freshly off-loaded reactor core in pool	***Hostile action*** within the ***Protected Area*** 1 2 3 4 5 6 DEF **HS4.1 (Bases Page 184)** A ***hostile action*** is occurring or has occurred within the ***Protected Area*** as reported by the Security Shift Supervisor	***Hostile action*** within the ***Owner Controlled Area*** or airborne attack threat 1 2 3 4 5 6 DEF **HA4.1 (Bases Page 182)** A ***hostile action*** is occurring or has occurred within the ***Owner Controlled Area*** as reported by the Security Shift Supervisor **OR** A validated notification from NRC of an airliner attack threat within 30 min. of the site	Confirmed ***security condition*** or threat which indicates a potential degradation in the level of safety of the plant 1 2 3 4 5 6 DEF **HU4.1 (Bases Page 180)** A ***security condition*** that does **not** involve a ***hostile action*** as reported by the Security Shift Supervisor **OR** A credible site-specific security threat notification **OR** A validated notification from NRC providing information of an aircraft threat
	5 Control Room Evacuation	None	Control Room evacuation has been initiated and plant control **cannot** be established 1 2 3 4 5 6 DEF **HS5.1 (Bases Page 189)** Control Room evacuation has been initiated **AND** Control of the plant **cannot** be established within 15 min.	Control Room evacuation has been initiated 1 2 3 4 5 6 DEF **HA5.1 (Bases Page 188)** Control Room evacuation has been initiated	None
	6 Judgment	Other conditions existing that in the judgment of the Emergency Coordinator warrant declaration of ***General Emergency*** 1 2 3 4 5 6 DEF **HG6.1 (Bases Page 197)** Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve actual or ***imminent*** substantial core degradation or melting with potential for loss of containment integrity or ***hostile action*** that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed ***EPA Protective Action Guideline*** exposure levels (1 Rem TEDE and 5 Rem thyroid CDE) offsite for more than the immediate site area	Other conditions existing that in the judgment of the Emergency Coordinator warrant declaration of ***Site Area Emergency*** 1 2 3 4 5 6 DEF **HS6.1 (Bases Page 195)** Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or ***hostile action*** that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to equipment needed for the protection of the public. **Any** releases are **not** expected to result in exposure levels which exceed ***EPA Protective Action Guideline*** exposure levels (1 Rem TEDE and 5 Rem thyroid CDE) beyond the Exclusion Area Boundary	Other conditions existing that in the judgment of the Emergency Coordinator warrant declaration of an ***Alert*** 1 2 3 4 5 6 DEF **HA6.1 (Bases Page 193)** Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of ***hostile action***. **Any** releases are expected to be limited to small fractions of the ***EPA Protective Action Guideline*** exposure levels (1 Rem TEDE and 5 Rem thyroid CDE).	Other conditions existing that in the judgment of the Emergency Coordinator warrant declaration of a ***UE*** 1 2 3 4 5 6 DEF **HU6.1 (Bases Page 191)** Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. **No** releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs
E ISFSI		None	None	None	Damage to a loaded cask ***Confinement Boundary*** 1 2 3 4 5 6 DEF **EU1.1 (Bases Page 248)** Damage to a loaded cask ***Confinement Boundary***

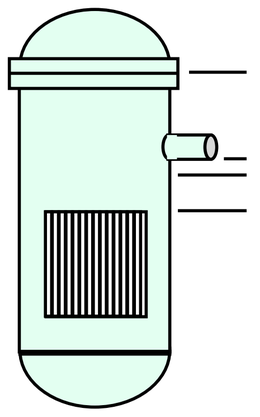
Control Copy #: _____

Revision 12A
Effective Date 02/13/2015

COLD CONDITIONS (RCS ≤ 200°F)

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
C Cold SD/ Refueling System Malfunct.	1 Loss of AC Power	None	None	Loss of **all** offsite and **all** onsite AC power to safeguard buses 5 6 DEF **CA1.1 (Bases Page 88)** Loss of **all** offsite and **all** onsite AC power to 6.9 KV safeguard buses uEA1 and uEA2 for greater than or equal to 15 min. (Note 4)	AC power capability to safeguard buses reduced to a single power source for greater than or equal to 15 min. such that **any** additional single failure would result in a loss of all AC power to safeguard buses 5 6 **CU1.1 (Bases Page 85)** AC power capability to 6.9 KV safeguard buses uEA1 and uEA2 reduced to a single power source for greater than or equal to 15 min. (Note 4) **AND** **Any** additional single power source failure will result in loss of **all** AC power to 6.9 KV safeguard buses uEA1 and uEA2 (Table C-5)
	2 Loss of DC Power	None	None	None	Loss of required DC power for ≥ 15 min. 5 6 **CU2.1 (Bases Page 91)** Less than 105 VDC on **required** 125 VDC safeguard buses (uED1, uED2, uED3, uED4) for greater than or equal to 15 min. (Note 4)
	3 RCS Level	Loss of RCS inventory affecting fuel clad integrity with Containment challenged 5 6 **CG3.1 (Bases Page 118)** RCS level less than 0 in. above upper core plate (top) for greater than or equal to 30 min. (Note 4) **AND** **Any** Containment challenge condition, Table C-4 **CG3.2 (Bases Page 122)** RCS level **cannot** be monitored for greater than or equal to 30 min. (Note 4) with a loss of RCS inventory indicated by **any** of the following: • greater than 20,000 R/hr on **any** of the following: - CTEu16, Containment HRRM (u-RE-6290A) - CTWu17, Containment HRRM (u-RE-6290B) • Erratic source range monitor indication • Unexplained level rise in **any** Table C-1 sump / tank level **AND** Any Containment challenge condition, Table C-4	Loss of RCS inventory affecting core decay heat removal capability 5 6 **CS3.1 (Bases Page 108)** With ***Containment closure*** **not** established, RCS level less than 27.25 in. above upper core plate (top) **CS3.2 (Bases Page 111)** With ***Containment closure*** established, RCS level less than 0 in. above upper core plate (top) **CS3.3 (Bases Page 114)** RCS level **cannot** be monitored for greater than or equal to 30 min. (Note 4) with a loss of RCS inventory indicated by **any** of the following: • greater than 20,000 R/hr on **any** of the following: - CTEu16, Containment HRRM (u-RE-6290A) - CTWu17, Containment HRRM (u-RE-6290B) • Erratic source range monitor indication • Unexplained level rise in **any** Table C-1 sump / tank level	Loss of RCS inventory 5 6 **CA3.1 (Bases Page 104)** RCS level less than 33.25 in. above upper core plate (top) **OR** RCS level **cannot** be monitored for greater than or equal to 15 min. (Note 4) with a loss of RCS inventory as indicated by an unexplained level rise in **any** Table C-1 sump / tank level	RCS leakage 5 **CU3.1 (Bases Page 94)** RCS leakage results in the inability to maintain or restore **EITHER** of the following for greater than or equal to 15 min. (Note 4): • Pressurizer level greater than 17% • Above the low end of the target level control band (If pressurizer level was intentionally lowered less than 17%) RCS leakage 6 **CU3.2 (Bases Page 96)** ***Unplanned*** RCS level drop below **EITHER** of the following for greater than or equal to 15 min. (Note 4): • Reactor Vessel flange (when the level band is established **above** the flange) • Target band (when the level band is established **below** the flange) **CU3.3 (Bases Page 100)** RCS level **cannot** be monitored **AND** Loss of RCS inventory as indicated by an unexplained level rise in **any** Table C-1 sump / tank level
	4 RCS Temp.	None	None	Inability to maintain plant in cold shutdown 5 6 **CA4.1 (Bases Page 134)** An ***unplanned*** event results in **EITHER**: • RCS temperature greater than 200°F (Note 5) for greater than Table C-3 duration • RCS pressure rise greater than 10 psig due to a loss of RCS cooling (this condition is not applicable in solid plant conditions)	***Unplanned*** loss of decay heat removal capability with irradiated fuel in the Reactor Vessel 5 6 **CU4.1 (Bases Page 129)** ***Unplanned*** event results in RCS temperature greater than 200°F (Note 5) **CU4.2 (Bases Page 131)** Loss of **all** RCS temperature and RCS level indication for greater than or equal to 15 min. (Note 4)
	5 Comm.	None	None	None	Loss of **all** onsite or offsite communications capabilities 5 6 DEF **CU5.1 (Bases Page 138)** Loss of **all** Table C-2 onsite (internal) communication methods affecting the ability to perform routine operations **OR** Loss of **all** Table C-2 offsite (external) communication methods affecting the ability to perform offsite notifications
	6 Inadvertent Criticality	None	None	None	Inadvertent criticality 5 6 **CU6.1 (Bases Page 140)** An ***unplanned***, ***sustained*** positive startup rate observed on nuclear instrumentation

Reactor Vessel Threshold Values



	EWR	Plant El.	EAL(s)
Reactor Vessel Flange	132.50 in.	834 ft. 0.50 in.	CU3.2
Bottom of Hotleg	33.25 in.	825 ft. 9.25 in.	CA3.1
6 in. < Bottom of Hotleg	27.25 in.	825 ft. 3.25 in.	CS3.1
Top of Core Plate	0.00 in.	823 ft. 0.00 in.	CS3.2 CG3.1

Note 4: The Emergency Coordinator should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time

Note 5: Begin monitoring hot condition EALs concurrently

Table C-1 Sumps / Tanks

- Containment Sump 1
- Containment Sump 2
- CCW Surge Tank A
- CCW Surge Tank B
- PRT
- RCDT

Table C-2 Communications Systems

System	Onsite (internal)	Offsite (external)
Gai-Tronics Page/party system (Public Address System)	X	
Plant Radio System	X	
PABX (Private Automatic Branch Exchange System)	X	X
Public Telephone System	X	X
Federal Telephone System (FTS)		X

Table C-3 RCS Reheat Duration Thresholds

* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is **not** applicable

RCS Status	*Containment Closure* Status	Duration
Intact (but **NOT** ***reduced inventory***)	N/A	60 min.*
Not intact **OR** ***reduced inventory***	Established	20 min.*
	NOT established	0 min.

Table C-4 Containment Challenge Conditions

- ***Containment closure*** **not** established
- Containment hydrogen concentration greater than 4%
- ***Unplanned*** pressure rise that can breach the Containment barrier

Table C-5 AC Power Sources

Offsite:
- 138 KV switchyard circuit
- 345 KV switchyard circuit

Onsite:
- uEG1
- uEG2

EAL Identifier

XXX.X

Category (R, H, E, S, F, C) — Sequential number within subcategory/classification

Emergency classification (G, S, A, U) — Subcategory number (1 if no subcategory)

Facility: **CPNPP Units 1 and 2**			Date of Examination: **July 2016**
Exam Level: RO SRO(I) **SRO (U)**			Operating Test Number: **NRC**
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
S-1	003 – Dropped Control Rod (RO1024A) Respond to Control Rod Misalignment	M,S	1
S-2	010 – Pressurizer Pressure Control System (RO1205) PORV Block Valve Operability Test	A,D,S	3
S-3	002 – Reactor Coolant System (RO1412C) Respond to a Shutdown Loss of Coolant	L,M,S	4P
S-4	**045 – Main Turbine Generator System (RO3113)** **Perform Pre-Startup Turbine Trip Checks**	**A,L,N,S**	**4S**
S-5	**026 – Containment Spray System (RO2002C)** **Transfer Containment Spray to Recirculation with Cavitation**	**A,D,EN,L,S**	**5**
S-6	064 – Emergency Diesel Generator System (RO4215B) Restore Safeguards Bus 1EA1 to Offsite Power	A,D,P,S	6
S-7	**015 – Nuclear Instrumentation System (RO1820)** **Respond to a Power Range Channel Malfunction**	**D,S**	**7**
S-8	067 – Plant Fire On-site (RO4405) Respond to Fire in the Safeguards Building	D,S	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
P-1	**004 – Chemical and Volume Control (AO5202A)** **Perform Local Actions to Restart the Positive Displacement Pump**	**A,D,E,R**	**2**
P-2	**055 – Loss of All AC Power (RO4217H)** **Perform Attachment 2A DC Load Shedding**	**N,E,L**	**6**
P-3	068 – Control Room Evacuation (AO5115B) Emergency Borate from the Remote Shutdown Panel	D,E,L,R	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	

NRC JPM Examination
Summary Description

S-1 Control Rod H-8 which is part of Control Bank D is misaligned from its bank. Control Rod H-8 is at 204 steps as indicated on DRPI and Control Bank D indicates 216 steps. The applicant is provided ABN-712, Rod Control System Malfunction and is required to realign Control Rod H-8 using the DRPI Method. The critical steps include selecting the proper bank, withdrawing the entire bank to a known position, deselecting the non-misaligned rods from moving, aligning Control Rod H-8, resetting the Rod Control Urgent Failure alarm, returning the entire bank to its pre-malfunction position and restoring the Control Rod system for continued operation. This is a modified from bank JPM as a recent procedural change added the directions which are to be used for clearing the Rod Control Urgent Failure alarm if present and which this JPM now exercises. This JPM is under the Control Rod Drive System – Reactivity Control Safety Function. (K/A 003.AA1.02 - IR 3.6 / 3.4)

S-2 The applicant will be provided with OPT-109A, PORV Block Valve Test and will be required to perform the Operability Test. This is an Alternate Path JPM because when PORV Block Valve 1/1-8000B is reopened as part of the test, the PORV partially opens requiring the applicant to take action to isolate the open PORV. The critical steps include closing each PORV Block Valve, performing the stroke test of each PORV and restoring the original configuration. An additional critical step of isolating the stuck open PORV follows the malfunction. PORV Block Valves are provided to isolate a PORV if excessive leakage develops and are discussed in FSAR 15.4.13.2. This is a direct from bank JPM under the Pressurizer Pressure Control System – Reactor Pressure Control Safety Function.
(K/A 010.A4.03 - IR 4.0 / 3.8)

S-3 The applicant will respond to a lowering Pressurizer level with the Residual Heat Removal System in service per ABN-108, Shutdown Loss of Coolant, Section 2.0, Shutdown Loss of Coolant. This is a modified JPM under the Residual Heat Removal System – Primary System Heat Removal from Reactor Core Safety Function. The modification consists of a different plant configuration as the Initial Conditions which do not require performance of an Alternate Path. (K/A 025.AA1.02- IR 3.8 / 3.9)

S-4 The applicant will use OPT-410A, Pre-Startup Turbine Trip Checks to perform the task. This is an Alternate Path JPM as the Turbine speed will increase above the allowable procedural guidance while the HP Stop Valves are opening. This speed increase requires that the turbine be tripped in accordance with OPT-410A. The critical steps will include resetting the turbine trip, latching the turbine, opening the HP Stop Valves and tripping the turbine when speed increases. This is a new JPM under the Main Turbine Generator System – Heat Removal from Reactor Core Secondary Systems Safety Function. (K/A 045.A4.01 - IR 3.1 / 2.9)

S-5 Following a LBLOCA, the applicant will transfer the Containment Spray System from the Injection mode to Recirculation in accordance with EOS-1.3A, Transfer to Cold Leg Recirculation. This is an Alternate Path JPM as the applicant will not be able to open the containment sump valves to the Train B Containment Spray Pumps. This will require the applicant to secure Train B. Critical steps will include transferring Train A suction to the containment sump and securing both Train B pumps when suction cannot be realigned. Transferring Containment Spray to Recirculation Mode is considered a Time Significant Action. STI-214.01, Control of Timed Operator Actions, TSA-2.8 requires Containment Spray transferred to Recirculation Mode within 70 seconds of RWST level reaching 6%. This Time Significant Action is performed to avoid the requirement to secure Containment Spray Pumps due to losing suction supply when RWST level reaches 0%. This is a direct from bank JPM under the Containment Spray System – Containment Integrity Safety Function. (K/A 026.A4.01 - IR 4.5 / 4.3)

S-6 The applicant will restore Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 in accordance with SOP-609A, Diesel Generator System, Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply. The alternate path occurs when a lowering frequency requires separating the Emergency Diesel Generator from the grid. This is a bank JPM, previously used on the 2014 NRC operating test, under the Emergency Diesel Generator System – Electrical Safety Function. (K/A 064.A4.07 - IR 3.4 / 3.4)

S-7 Following a Power Range Instrument failure. The applicant is required to perform the actions of ABN-703, Power Range Instrument Malfunction. Critical steps include several repositions on the NI Detector cabinets to defeat the failed instrument, defeating the N-16 Channel on CB-05 and the T_{AVE} channel on CB-07. This is a direct from bank JPM under the Nuclear Instrumentation System – Instrumentation Safety Function. (K/A 015.A2.01 - IR 3.5 / 3.9)

S-8 A fire has been identified in the Safeguards Building. The applicant is directed to respond to the fire in accordance with ABN-804A, Response to a Fire in the Safeguards Building. Critical steps include performing an emergency start of Diesel Generator 1-02, performing CVCS realignments and starting CCP 1-02. Comanche Peak has commitments within ABN-804A, Response to a Fire in the Safeguards Building, to maintain CCP suction due to possible Gas Intrusion as noted in SOER 97-01, Loss of HP Injection & Charging from Gas Intrusion. This is a direct from bank JPM under the Plant Fire On-site – Plant Service Systems Safety Function. (K/A 067.AA2.16 - IR 3.3 / 4.0)

P-1 Following a loss of instrument air, the applicant is required to reset control air to the Positive Displacement Charging Pump in accordance with ABN-301, Instrument Air System Malfunction and restore the PDP to operation in accordance with SOP-103A, Chemical and Volume Control System. This JPM is Alternate Path as the Stuffing Box Coolant Tank level is out of specification during the pump restart and requires filling. Critical steps include resetting the air to the hydraulic speed changer, repositioning the fill valve to the coolant tank and opening the pump discharge valve. This is a direct from bank JPM under the Chemical and Volume Control System – Reactivity Control System Inventory Control Safety Function. (K/A 004.A4.08 - IR 3.8 / 3.4)

P-2 During a complete loss of All AC Power, the applicant is required to perform ECA-0.0A, Loss of All AC Power Attachment 2A which is Initial DC Load Shed. Critical steps include performing several operations on Distribution Panels to properly align equipment from Unit 2 where possible and shed loads where required. This is a new JPM as DC Load Shedding has been redeveloped following BDBEE considerations. (K/A 055.EA1.04 3.5/3.9)

P-3 During a Control Room evacuation due to a security threat, the applicant is required to take action to place the plant in control of the operators from outside the control room. Actions will be performed using ABN-905B, Loss of Control Room Habitability. The critical steps include transferring control of equipment from the Control Room to the Hot Shutdown Panel, starting a Boric Acid Transfer Pump and opening the emergency borate valve. This is a direct from bank JPM under the Control Room Evacuation System – Plant Service Systems Safety Function. (K/A 068.AA1.11 - IR 3.9 / 4.1)

Facility: CPNPP JPM # NRC S-1 Task # RO1024 K/A # 003.AA1.02 3.6 / 3.4 SF-1
Title: Respond to Control Rod Misalignment

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	
Time Critical:			

CUE THE EXAMINEE

Provide the Initial Conditions and Initiating Cue to the Examinee. Any special conditions or instructions should be contained on this sheet

Initial Conditions: Given the following conditions:

- Unit 1 is operating at 100% power
- Control Rod H8 is at 204 steps as indicated on DRPI, all other rods in Control Bank D indicate 216 steps
- Demand counters for Control Bank D are indicating 215 steps
- All necessary verifications, repairs, and determinations have been made in accordance with ABN-712
- Technical Specifications have been referenced
- An NEO is standing by at the P/A Converter AUTO/MANUAL Selector Switch
- Control Rod H8 has been misaligned for 15 minutes

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- REALIGN Control Rod H8 with Control Bank D at the normal withdrawal rate per ABN-712, Rod Control System Malfunction, Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, STARTING at Step 14
- DESIRED DRPI light for Step 15 is 222 Steps

Task Standard: Realigned Control Rod H8 with Control Bank D, positioned Control Bank D to 216 Steps as indicated on DRPI, cleared the Control Rod Urgent Failure Alarm and returned Control Rod Bank Select to Manual.

Ref. Materials: ABN-712, Rod Control System Malfunction Rev. 10-16.

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

Simulator Operator:

INITIALIZE to IC-33

- **When contacted, EXECUTE remote function RDR03, P/A Converter to MANUAL.**

OR

INITIALIZE to IC-18 or any at power Initial Condition and PERFORM the following:

- EXECUTE the following malfunctions:
  - RD13H8, Control Bank D Rod H8 @ 202 Steps
- PLACE Simulator in RUN
- PLACE 1/1-RBSS, Control Rod Bank Select in MANUAL
- DELETE malfunction RD13H8, Control Bank D Rod H8 @ 202 steps
- PLACE Simulator in FREEZE
- When contacted, EXECUTE remote function RDR03, P/A Converter to MANUAL

Handouts:

PROVIDE the Applicant with a copy of:

- **ABN-712, Rod Control System Malfunction, Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, appropriately marked through Step 13** (Labeled Procedure 1)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from ABN-712, Section 3.3.**
Perform Step: 1√ 3.3.14	Transfer 1/u-RBSS, CONTROL ROD BANK SELECT to affected bank.
Performance Standard:	ROTATED 1/1-RBSS, CONTROL ROD BANK SELECT to Bank CBD position.
Comment:	**SAT UNSAT**

CAUTION:
- Affected rod withdrawal should only be performed after fuel conditioning requirements have been met unless approved by Engineering.
- Do NOT withdraw an RCCA that has been misaligned for greater than 6 hours during power operation without Engineering guidance.

Note:
- The last movement of affected rod should be in the SAME direction as the last movement of affected group.
- When recovering a dropped rod using the DRPI method the dropped rod should be moved outward to the next DRPI step up vice in so as not to drive the dropped rod further into the core. Positive reactivity will be added during recovery.

Perform Step: 2 3.3.15.a & 1st line	Record positions for affected Rod: • Affected Rod (DRPI) _____
Performance Standard:	RECORDED Rod H8 DRPI at 204 Steps.
Comment:	**SAT UNSAT**

Perform Step: 3 3.3.15.a & 2nd line	Record positions for affected Rod: • Bank (DRPI) _____
Performance Standard:	RECORDED Bank CBD DRPI at 216 Steps.
Comment:	**SAT UNSAT**

Perform Step: 4 3.3.15.a & 3rd line	Record positions for affected Rod: • Group 1 step counter _____
Performance Standard:	OBSERVED 1-SC-CBD1, CTRL BANK D GROUP 1 and RECORDED at 215 Steps.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 5 3.3.15.a & 4th line	Record positions for affected Rod: • Group 2 step counter _____
Performance Standard:	OBSERVED 1-SC-CBD2, CTRL BANK D GROUP 2 and RECORDED at 215 Steps.
Comment:	**SAT ⬙ UNSAT ⬙**

CAUTION: Do NOT allow P/A Converter Auto-Manual selector switch to spring return to automatic until directed by this procedure.

Perform Step: 6 3.3.15.b	If restoring a Control Bank rod, Then Locally POSITION and MAINTAIN P/A Converter Auto-Manual selector switch (SFGD 832 Rm 1-096) - MANUAL
Performance Standard:	CONTACTED NEO to place P/A Convertor in MANUAL
Simulator Operator:	**When contacted, Insert Malfunction RDR03**
Examiner Cue:	**Report as NEO that the P/A Converter is in Manual**
Comment:	**SAT ⬙ UNSAT ⬙**

Examiner Note:	**DRPI ROD DEV reflashes on each outward rod movement**
Perform Step: 7√ 3.3.15.c	Move affected group outward to the desired DRPI Light.
Performance Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in OUT position until DRPI lights for Bank D indicated 222 Steps.
Comment:	**SAT ⬙ UNSAT ⬙**

CAUTION: Do NOT make any changes in plant operations during realignment of the affected rod that would require a change in bank position.

Perform Step: 8√ 3.3.15.d	Place all lift coil disconnect switches for affected bank, groups 1 AND 2, EXCEPT for affected rod to the UP (disconnected) position.
Performance Standard:	At rear of Control Board, PLACED Lift Coil Disconnect Switches for Rods D4, M12, D12, and M4 in ROD DISCONNECTED (up) position.
Comment:	**SAT** ⬙ **UNSAT** ⬙

NOTE:
- When moving affected rod, a CONTROL ROD CTRL URGENT FAIL alarm will be received in control room and at power cabinet containing the other group of affected bank. This is normal and will prevent the other group's step counter from operating.
- At low RCS boron concentration, excessive boration may delay return to desired power level after rod recovery.

Examiner Cue:	**Inform applicant that other operators will adjust turbine load as required.**
Perform Step: 9 3.3.15.e.1) & all bullets	Maintain Tave within 2°F of Tref by controlling the following as necessary: • Turbine Power/Steam Dumps/Boration/Dilution
Performance Standard:	MONITORED T_{AVE}.
Comment:	**SAT** ⬙ **UNSAT** ⬙

Perform Step: 10 3.3.15.e.2)	Verify that only affected Rod is moving.
Performance Standard:	VERIFIED that only Rod H8 is moving.
Comment: Step	**SAT** ⬙ **UNSAT** ⬙

Perform Step: 11 3.3.15.e.3)	Ensure last movement of affected rod is in same direction as last movement of affected group.
Performance Standard:	ENSURED last movement of Control Rod H8 is in same direction as last movement of Control Bank CBD as entire bank was moved outward.
Comment:	**SAT** ⬙ **UNSAT** ⬙

Examiner Note:	**DRPI ROD DEV will clear when rod H-8 is withdrawn**
Perform Step: 12√ 3.3.15.f	WITHDRAW the affected rod in controlled increments until aligned with its group by DRPI indication.
Performance Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in OUT position until DRPI light for Rod H8 indicated 222 Steps.
Examiner Cue:	**If applicant begins withdrawing in small increments, Inform applicant the US direct withdrawing rods in one or more steps to desired position.**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 13√ 3.3.15.g	Place all lift coil disconnect switches to the DOWN (connected) position.
Performance Standard:	At rear of Control Board, PLACED Lift Coil Disconnect Switches for Rods D4, M12, D12, and M4 in ROD CONNECTED (down) position.
Comment:	**SAT ⬙ UNSAT ⬙**

Examiner Cue:	**If applicant questions if 'cause of alarm has been corrected' refer applicant to Initial Conditions.**

CAUTION: Resetting the Urgent Failure Alarm removes the reduced current applied to movable and stationary grippers. IF cause of alarm has NOT been corrected, THEN resetting alarm may result in dropping rod(s).

Perform Step: 14 3.3.15.h	VERIFY Rod Control Urgent Failure alarm - CLEAR.
Performance Standard:	OBSERVED 1-ALB-6D, Window 1.6, CONTROL ROD CTRL URGENT FAIL is LIT
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 15 3.3.15.h & RNO a	VERIFY Rod Control Urgent Failure alarm - CLEAR. Clear the Rod Control Urgent Failure alarm as follows: • Ensure only lift reg white light on designated circuit card in affected cabinet (See ALB-6D 1.6 logic diagram) - LIT
Performance Standard:	Contacted NEO to determine if the only white light LIT is the LIFT REG light.
Examiner Cue:	**Report as NEO that a single white LIFT REG light is LIT**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 16√ 3.3.15.h & RNO b	VERIFY Rod Control Urgent Failure alarm - CLEAR. Clear the Rod Control Urgent Failure alarm as follows: • DEPRESS 1/1-RCAR, CONTROL ROD CTRL ALARM RESET
Performance Standard:	DEPRESSED 1/1-RCAR, CONTROL ROD CTRL ALARM RESET
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 17 3.3.15.h & RNO c	VERIFY Rod Control Urgent Failure alarm - CLEAR. Clear the Rod Control Urgent Failure alarm as follows: • Ensure ALL white lights on designated circuit card in affected cabinet (See ALB-6D 1.6 logic diagram) - DARK
Performance Standard:	Contacted NEO to determine if all white lights are Dark
Examiner Cue:	**Report as NEO that All white lights are Dark**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 18√ 3.3.15.i	RESTORE affected bank to the DRPI position recorded in step 15a.
Performance Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in IN position until DRPI lights for Bank D indicated 216 Steps.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 19 3.3.15.j	RESET affected bank demand step counters to the values recorded in Step 15a.
Performance Standard:	ADJUSTED 1-SC-CBD1 and 1-SC-CBD2 to 215 steps.
Examiner Note:	**If applicant depresses Reset (RS) button, there is no adverse impact other than waiting to reset value to 215 steps.**
Comment:	**SAT ⬙ UNSAT ⬙**

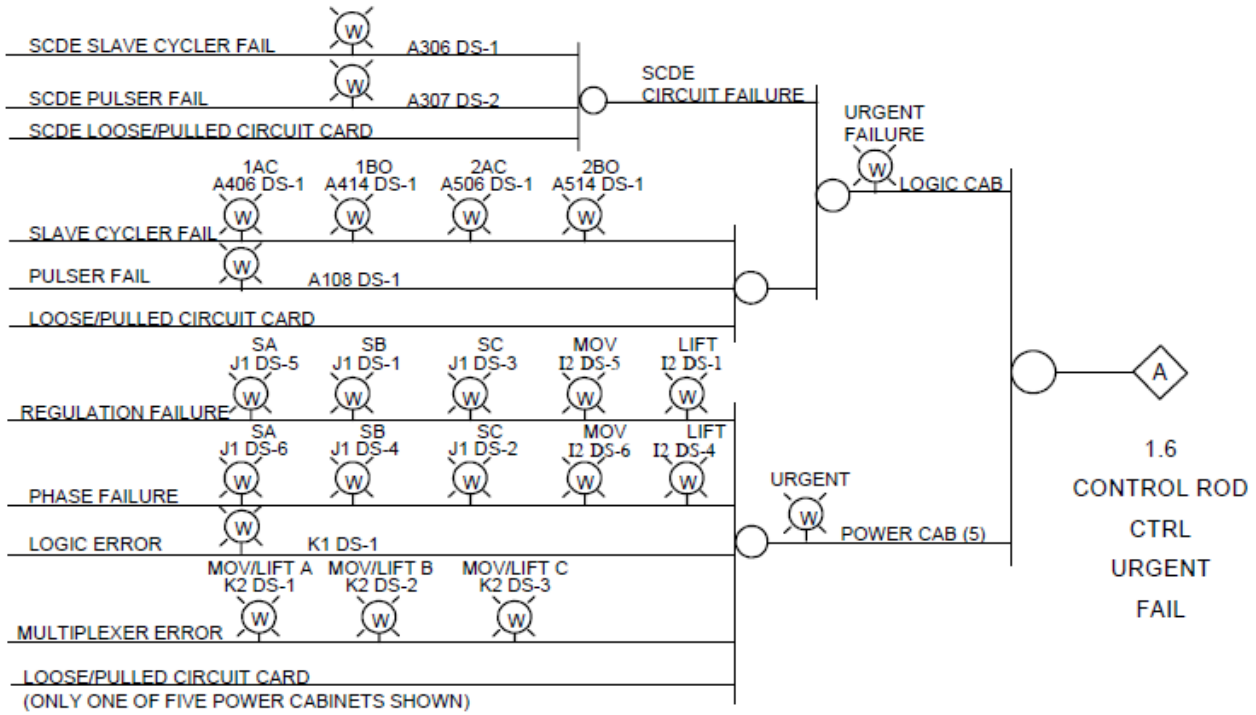
Perform Step: 20 3.3.15.k	If operated in step 15b, Then PLACE P/A Converter Auto-Manual selector switch - AUTO
Performance Standard:	CONTACTED NEO to place P/A Convertor in AUTO
Simulator Operator:	**When contacted, MODIFY RDR03, to AUTO**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 21√ 3.3.15.l	PLACE 1/u-RBSS, CONTROL ROD BANK SELECT to MANUAL.
Performance Standard:	ROTATED 1/1-RBSS, CONTROL ROD BANK SELECT to MANUAL position.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ⬙ UNSAT ⬙**

STOP TIME:	

ANNUNCIATOR NO.: **1.6**

LOGIC:



NOTE: The local cabinet URGENT or URGENT FAILURE light will indicate the affected cabinet. White lights located on the designated circuit card will aid in determining the cause of the failure. A diagram located on the inside door of each cabinet lists the card frame numbers and available light indication designators. These card frame lights illuminate when the door limit switch indicates the door is open.

SCDE	-	SHUTDOWN BANK C, D AND E
1AC/2AC	-	AFFECTED POWER CABINETS 1AC/2AC AS INDICATED
A306/A406	-	CARD FRAME NUMBERS CORRESPONDING TO THE AFFECTED CIRCUIT CARD WITHIN THE LOGIC CAB
J1/K1/I2	-	CARD FRAME NUMBERS CORRESPONDING TO THE CIRCUIT CARD WITHIN THE POWER CAB
DS1/DS2	-	LIGHT INDICATION DESIGNATORS LABELED ON THE AFFECTED CIRCUIT CARD
LIFT	-	LIFT COIL
MOV	-	MOVABLE GRIPPER
SA/B/C	-	STATIONARY GRIPPER A, B OR C

Initial Conditions: **Given the following conditions:**

- **Unit 1 is operating at 100% power**
- **Control Rod H8 is at 204 steps as indicated on DRPI, all other rods in Control Bank D indicate 216 steps**
- **Demand counters for Control Bank D are indicating 215 steps**
- **All necessary verifications, repairs, and determinations have been made in accordance with ABN-712**
- **Technical Specifications have been referenced**
- **An NEO is standing by at the P/A Converter AUTO/MANUAL Selector Switch**
- **Control Rod H8 has been misaligned for 15 minutes**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **REALIGN Control Rod H8 with Control Bank D at the normal withdrawal rate per ABN-712, Rod Control System Malfunction, Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, STARTING at Step 14**
- **DESIRED DRPI light for Step 15 is 222 Steps**

Facility: CPNPP JPM # NRC S-2 Task # RO1205 K/A # 010.A4.03 4.0 / 3.8 SF-3
Title: PORV Block Valve Operability Test

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 1 at 100% power
- Surveillance on the PORV Block Valves is required
- All Prerequisites have been met

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- PERFORM the PORV Block Valve Operability Test per OPT-109A, PORV Block Valve Test for both Block Valves
- RECORD data on OPT-109A-1, PORV Block Valve Data Sheet

Task Standard: Performed the PORV Block Valve Operability Test through Step 8.2.3 per OPT-109A and Closed the PORV Block Valve upon failure of PORV 1-PCV-456 prior to a reactor trip.

Ref. Materials: OPT-109A, PORV Block Valve Test, Rev. 11.
OPT-109A-1, PORV Block Valve Data Sheet, Rev. 13.
ALM-0053A, 1-ALB-5C, Window 1.4 - PORV 455A/456 NOT CLOSE, Rev. 7-2.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:
INITIALIZE to IC-34

OR
Load any at power IC
AND
PERFORM the following:

- VERIFY both PRZR Block Valves are OPEN
- ENSURE ALM-0053A, 1-ALB-5C, Window 1.4 - PORV 455A/456 NOT CLOSE is CLEAR
- EXECUTE malfunction RX16B, PRZR PORV 456 fails 30% open when 1/1-8000B, PRZR PORV Block Valve is reopened at Step 8.2.3. use the following conditional command to initiate the malfunction:
  {DIRCV8000B.Value=2} IMF RX16B f:30 d:13

Handouts:

INITIALLY PROVIDE the applicant with:

- **OPT-109A, PORV Block Valve Test** (Labeled Procedure 1)
- **OPT-109A-1, PORV Block Valve Data Sheet** (Labeled Form 1)

Provide a copy of ALM-0053A, 1-ALB-5C, Window 1.4 - PORV 455A/456 NOT CLOSE when the applicant references the ALM for the above listed annunciator. (Labeled Procedure 2)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from OPT-109A, Section 8.0.**
NOTE: Record all data on Form OPT-109A-1.	
Perform Step: 1 8.1.1	Stroke test of 1-8000A, PRZR PORV BLK VLV: ENSURE 1/1-8000A, PRZR PORV BLK VLV is OPEN.
Performance Standard:	DETERMINED 1/1-8000A, PRZR PORV BLK VLV is OPEN
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√ 8.1.2	Stroke test of 1-8000A, PRZR PORV BLK VLV: CLOSE 1/1-8000A, PRZR PORV BLK VLV (RECORD).
Performance Standard:	• PLACED 1/1-8000A, PRZR PORV BLK VLV in CLOSE **(critical)** • OBSERVED green CLOSE light LIT **(NOT critical)** • CIRCLED CLOSED on Form OPT-109A-1 at Step 8.1.2 **(NOT critical)**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√ 8.1.3	Stroke test of 1-8000A, PRZR PORV BLK VLV: OPEN 1/1-8000A, PRZR PORV BLK VLV (RECORD).
Performance Standard:	• PLACED 1/1-8000A, PRZR PORV BLK VLV in OPEN **(critical)** • OBSERVED red OPEN light LIT **(NOT critical)** • CIRCLED OPEN on Form OPT-109A-1 at Step 8.1.3 **(NOT critical)**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 8.2.1	Stroke test of 1-8000B, PRZR PORV BLK VLV: ENSURE 1/1-8000B, PRZR PORV BLK VLV is OPEN.
Performance Standard:	DETERMINED 1/1-8000B, PRZR PORV BLK VLV is OPEN
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√ 8.2.2	Stroke test of 1-8000B, PRZR PORV BLK VLV: CLOSE 1/1-8000B, PRZR PORV BLK VLV (RECORD).
Performance Standard:	• PLACED 1/1-8000B, PRZR PORV BLK VLV in CLOSE **(critical)** • OBSERVED green CLOSE light LIT **(NOT critical)** • CIRCLED CLOSED on Form OPT-109A-1 at Step 8.2.2 **(NOT critical)**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√ 8.2.3	Stroke test of 1-8000B, PRZR PORV BLK VLV: OPEN 1/1-8000B, PRZR PORV BLK VLV (RECORD).
Performance Standard:	• PLACED 1/1-8000B, PRZR PORV BLK VLV in OPEN **(critical)** • OBSERVED red OPEN light LIT **(NOT critical)** • CIRCLED OPEN on Form OPT-109A-1 at Step 8.2.3 **(NOT critical)**
Comment:	**SAT ☐ UNSAT ☐**

SIMULATOR OPERATOR NOTE:	**When 1/1-8000B is reopened, EXECUTE malfunction RX16B at 30%. Ensure the conditional inserted the malfunction. {DIRCV8000B.Value=2} IMF RX16B f:30 d:13**
Perform Step: 7	Acknowledge annunciator 1-ALB-5C, Window 1.4 - PORV 455A/456 NOT CLOSE.
Performance Standard:	ACKNOWLEDGED annunciator 5C, Window 1.4 - PORV 455A/456 NOT CLOSE and RECOGNIZED PORV 456 is OPEN
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Examiner Note:	**The applicant may recognize the failure and take action prior to referencing the ALM.**
Examiner Note:	**The following steps are from ALM-0053A, 1-ALB-5C, Window 1.4. Provide a copy to the examinee when they reach for the control board copy**

NOTE: 1/1-PCV-455A, PRZR PORV and 1/1-PCV-456, PRZR PORV will relieve at approximately 2335 psig. 1/1-PCV-455A, PRZR PORV is interlocked with 1-PI-458 to close at 2185 psig. 1/1-PCV-456, PRZR PORV is interlocked with 1-PI-457 to close at 2185 psig.

Perform Step: 8 1	Determine affected PORV.
Performance Standard:	DETERMINED affected PORV is 1/1-PCV-456
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 2 & 2.A	Monitor pressurizer pressure. • If one channel is indicating > 60 psig difference between the remaining operable channels, go to ABN-705.
Performance Standard:	DETERMINED all Pressurizer pressure indications are reading approximately the same value
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**1/1-PCV-456, PRZR PORV will be stuck in mid-position.**
Perform Step: 10 2, 2.B, & 2nd bullet	Monitor pressurizer pressure. • If reactor is in Mode 1, 2 or 3 with pressurizer pressure < 2335 psig, Then close affected PORV. • 1/1-PCV-456, PRZR PORV
Performance Standard:	PLACED 1/1-PCV-456, PRZR PORV in CLOSE and OBSERVED red OPEN and green CLOSE lights both LIT
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11 3	With reactor in Mode 4, 5 or 6, Then refer to TDM-301A to determine RCS pressure and temperature limits.
Performance Standard:	DETERMINED Reactor is in MODE 1
Examiner Note:	**Examinee determines step is N/A.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**As the applicant has already determined the leaking PORV it is not anticipated that this step will be performed but considered N/A by the applicant.**

Perform Step: 12
4, 4.A, & 1st bullet
	Verify pressurizer or RCS wide range pressure stabilizes.
	• IF pressure continues to decrease due to PORV leakage, THEN close both PORV block valves AND determine affected PORV.
	  • 1/1-8000A, PRZR PORV BLK VLV
	  • 1/1-8000B, PRZR PORV BLK VLV

Performance Standard:	• PLACED 1/1-8000A, PRZR PORV BLK VLV in CLOSE • OBSERVED green CLOSE light LIT
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**A Low Pressurizer Pressure automatic Reactor Trip is generated at 1880 psig. Procedural guidance contained in ALM-0052A is to manually trip the Reactor if pressure cannot be maintained above 2150 psig.**

Perform Step: 13√
4, 4.A, & 2nd bullet
	Verify pressurizer or RCS wide range pressure stabilizes.
	• IF pressure continues to decrease due to PORV leakage, THEN close both PORV block valves AND determine affected PORV.
	  • 1/1-8000A, PRZR PORV BLK VLV
	  • 1/1-8000B, PRZR PORV BLK VLV

Performance Standard:	• PLACED 1/1-8000B, PRZR PORV BLK VLV in CLOSE prior to a reactor trip (**critical**) • OBSERVED green CLOSE light LIT (**non-critical)**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is in MODE 1 at 100% power**
- **Surveillance on the PORV Block Valves is required**
- **All Prerequisites have been met**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **PERFORM the PORV Block Valve Operability Test per OPT-109A, PORV Block Valve Test for both Block Valves**
- **RECORD data on OPT-109A-1, PORV Block Valve Data Sheet**

PORV BLOCK VALVE DATA SHEET

NOTE: PORV Block valve operated through one complete cycle of full valve travel satisfies SR 3.4.11.1 requirements.

STEP		OBSERVED	ACCEPTANCE CRITERIA	INITIALS
6.0	PREREQUISITES MET	N/A	N/A	Q16
8.1.2	1/1-8000A CLOSED	CLOSED/OPEN	CLOSED	_____
8.1.3	1/1-8000A OPEN	OPEN/CLOSED	OPEN	_____
8.2.2	1/1-8000B CLOSED	CLOSED/OPEN	CLOSED	_____
8.2.3	1/1-8000B OPEN	OPEN/CLOSED	OPEN	_____
8.3	INDEPENDENT VERIFICATION			
	• 1/1-8000A OPEN	N/A	N/A	_____
	• 1/1-8000B OPEN	N/A	N/A	_____

COMMENTS/DISCREPANCIES: _____

_____

CORRECTIVE ACTIONS: _____

_____

PERFORMED BY: _____ DATE: _____
SIGNATURE

REVIEWED BY: _____ DATE: _____
OPERATIONS MANAGEMENT

CONTINUOUS USE

OPT-109A-1
Page 1 of 1
R-13

Facility: CPNPP JPM # NRC S-3 Task # RO1412 K/A # 025.AA1.02 3.8 / 3.9 SF-4-P

Title: Respond to a Shutdown Loss of Coolant

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Unit 1 is in MODE 4 with the following conditions:

- RHR Train B is in service
- RHR Train A is in ECCS standby with 1/1-8701A and 1/1-8702A, RHRP 1 HL RECIRC ISOL VLVs CLOSED and De-energized
- CCP 1-02, SIP 1-01 and SIP 1-02 breakers have been racked out to comply with LCO 3.4.12
- A Loss of Coolant Accident has occurred
- ABN-108, Shutdown Loss of Coolant is being implemented
- Positive Displacement Charging Pump has been started
- Pressurizer Level is still lowering

Initiating Cue: The Unit Supervisor directs you to PERFORM ABN-108, Shutdown Loss of Coolant, starting at Step 2.3.8.b, Check RCS Status, with the Pressurizer Level NOT stable or increasing

Task Standard: In accordance with ABN-108, opened 1/1-8835, placed 1/1-APRH2 in pull-out, closed 1/1-8702B and opened a CCP SI ISOL VLV to provide injection to the RCS from a CCP.

Ref. Materials: ABN-108, Shutdown Loss of Coolant, Rev. 4-5

Validation Time: 10 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ____ UNSAT ____

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:

INITIALIZE to IC-40

- **ENSURE "480V MCC BREAKER LOCKED OFF" Circles ON 1/1-8701A and 1/1-8702A**
- **ENSURE "480V MCC BREAKER LOCKED OFF" Circles OFF 1/1-8701B and 1/1-8702B**
- **START TREND GTGC MODE 4 for current plant condition**

or any MODE 4 Initial Condition and then PERFORM the following:

- ENSURE Train B RHR Systems in service
- ENSURE "480V MCC BREAKER LOCKED OFF" Circles ON 1/1-8701A and 1/1-8702A
- ENSURE "480V MCC BREAKER LOCKED OFF" Circles OFF 1/1-8701B and 1/1-8702B
- START TREND GTGC MODE 4 for current plant condition
- PERFORM the 1st seven steps of ABN-108
- Place PDP in service
- Place CCP 1-02 and SIP Breakers in Rackout
- INSERT malfunction RC17A at 600 gpm to lower RCS level and allow Cold Calibrated PRZR level to lower to 50% then FREEZE the Simulator

PERFORM the following after each JPM:

- **REMOVE the key from 1/1-8835, SI to CL 1-4 INJ ISOL VLV and RETURN to Key Locker**

Handout:

PROVIDE the examinee with a copy of:

- **ABN-108, Shutdown Loss of Coolant with initials as appropriate through Step 2.3.8.b**

√ - Check Mark Denotes Critical Step

START TIME:	

Simulator Operator:	**When examinee is ready, PLACE Simulator in RUN.**
Simulator Operator:	**INSERT remote function CVR17 for CCP 1-02 Breaker (Key 1); SIR01 for SI Pump 1-01 Breaker (Key 2); or SIR02 for SI Pump 1-02 Breaker (Key 3) as directed by the applicant**
Perform Step: 1 Step 8 RNO 1)	Dispatch operators to rack in the breaker to affected units non-operating CCP OR ONE safety injection pump.
Performance Standard:	DISPATCHED operator to rack in breaker for one pump
Examiner Cue:	**The [Whichever breaker was requested] is racked in.**
Comment:	**SAT UNSAT**

Examiner Note:	**Examinee will obtain key from Key Locker.**
Perform Step: 2 √ Step 8 RNO 2)	Ensure 1/u-8835, SI TO CL 1-4 INJ ISOL VLV, OPEN.
Performance Standard:	INSERTED key in switch and TURNED to ON position then PLACED 1/1-8835, SI TO CL 1-4 INJ ISOL VLV in OPEN **(Critical)** OBSERVED red OPEN light illuminated (NOT Critical)
Comment:	**SAT UNSAT**

Examiner Note:	**The next two steps may be performed in any order**
Perform Step: 3 Step 8 RNO 3)	Stop both RHR pumps AND place HSs in PULL-OUT: • 1/u-APRH1, RHRP 1
Performance Standard:	PLACED 1/1-APRH1, RHRP 1, in PULL-OUT and OBSERVED the green and red pump lights dark
Comment:	**SAT UNSAT**

Perform Step: 4 √ Step 8 RNO 3)	Stop both RHR pumps AND place HSs in PULL-OUT: • 1/u-APRH2, RHRP 2
Performance Standard:	PLACED 1/1-APRH2, RHRP 2, in PULL-OUT and OBSERVED the green and red pump lights dark
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 5 Step 8 RNO 4)	Close 1/u-8701A, RHRP 1 HL RECIRC ISOL VLV AND 1/u-8702B, RHRP 2 HL RECIRC ISOL VLV.
Performance Standard:	OBSERVED 1/1-8701A, RHRP 1 HL RECIRC ISOL VLV in CLOSE and DE-ENERGIZED
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 6 √ Step 8 RNO 4)	Close 1/u-8701A, RHRP 1 HL RECIRC ISOL VLV AND 1/u-8702B, RHRP 2 HL RECIRC ISOL VLV.
Performance Standard:	PLACED 1/1-8702B, RHRP 2 HL RECIRC ISOL VLV in CLOSE and OBSERVED green CLOSE light illuminated.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 7 Step 8 RNO 5)	Identify AND Isolate Leak per Attachment 7, while continuing this procedure.
Performance Standard:	IDENTIFY and ISOLATE Leak per Attachment 7, RCS Leak Identification and Isolation.
Examiner Cue:	**Another operator will perform Attachment 7, RCS Leak Identification and Isolation.**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 8 Step 8 RNO 6)	GO TO Step 11.
Performance Standard:	PLACEKEPT to Step 11.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 9 Step 11	Verify RWST level - GREATER THAN 33%: • u-LI-932, RWST LVL CHAN III • u-LI-933, RWST LVL CHAN IV
Performance Standard:	DETERMINED RWST level greater than 33% by OBSERVING 1-LI-932, RWST LVL CHAN III and 1-LI-933, RWST LVL CHAN IV.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 10 Step 12.a	Verify ONE CCP - RUNNING.
Performance Standard:	DETERMINED CCP 1-01 was RUNNING.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 11 Step 12.b	STOP 1/u-APPD, PDP.
Performance Standard:	PLACED 1/1-APPD, PDP handswitch in STOP and OBSERVED Green Pump light LIT
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 12 Step 12.c 1st bullet	Verify CCP suction aligned from RWST: • 1/u-LCV-112D RWST TO CHRG PMP SUCT VLV - OPEN
Performance Standard:	VERIFIED 1/1-LCV-112D RWST TO CHRG PMP SUCT VLV in OPEN and OBSERVED red OPEN light illuminated.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 13 Step 12.c 2nd bullet	Verify CCP suction aligned from RWST: • 1/u-LCV-112E RWST TO CHRG PMP SUCT VLV - OPEN
Performance Standard:	VERIFIED 1/1-LCV-112E RWST TO CHRG PMP SUCT VLV in OPEN and OBSERVED red OPEN light illuminated.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 14 Step 12.c 3rd bullet	Verify CCP suction aligned from RWST: • 1/u-LCV-112B, VCT TO CHRG PMP SUCT VLV - CLOSED
Performance Standard:	VERIFIED 1/1-LCV-112B, VCT TO CHRG PMP SUCT VLV in CLOSE and OBSERVED green CLOSE light illuminated.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 15 Step 12.c 4th bullet	Verify CCP suction aligned from RWST: • 1/u-LCV-112C, VCT TO CHRG PMP SUCT VLV - CLOSED
Performance Standard:	VERIFIED 1/1-LCV-112C, VCT TO CHRG PMP SUCT VLV in CLOSE and OBSERVED green CLOSE light illuminated.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 16 Step 12.d	Verify the following valves closed: • u-ZL-8220, CHRG PMP SUCT HI POINT VENT VLV – CLOSED • u-ZL-8221, CHRG PMP SUCT HI POINT VENT VLV – CLOSED • 1/u-8210A, H2/N2 SPLY VLV – CLOSED • 1/u-8210B, H2/N2 SPLY VLV – CLOSED • 1/u-8202A, VENT VLV – CLOSED • 1/u-8202B, VENT VLV – CLOSED
Performance Standard:	VERIFIED the following valves closed: • 1-ZL-8220, CHRG PMP SUCT HI POINT VENT VLV – Green light LIT • 1-ZL-8221, CHRG PMP SUCT HI POINT VENT VLV – Green light LIT • 1/1-8210A, H2/N2 SPLY VLV – Green light LIT • 1/1-8210B, H2/N2 SPLY VLV – Green light LIT • 1/1-8202A, VENT VLV – Green light LIT • 1/1-8202B, VENT VLV – Green light LIT
Comment:	**SAT ⬙ UNSAT ⬙**

Examiner Note:	**Performance of <u>either</u> Step 17 <u>or</u> Step 18 is critical to establish an injection path**
Examiner Note:	**The next two steps may be performed in any order**
Perform Step: 17 √ Step 12.e 1st bullet	Align CCP injection: • 1/<u>u</u>-8801A, CCP SI ISOL VLV - OPEN
Performance Standard:	PLACED 1/1-8801A, CCP SI ISOL VLV in OPEN and OBSERVED red OPEN light illuminated.
Comment:	**SAT UNSAT**

Perform Step: 18 √ Step 12.e 2nd bullet	Align CCP injection: • 1/<u>u</u>-8801B, CCP SI ISOL VLV - OPEN
Performance Standard:	PLACED 1/1-8801B, CCP SI ISOL VLV in OPEN and OBSERVED red OPEN light illuminated.
Comment:	**SAT UNSAT**

Perform Step: 19	Verify ECCS flow: • <u>u</u>-FI-917, CCP SI FLO
Performance Standard:	OBSERVED flow indication on 1-FI-917, CCP SI FLO.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT UNSAT**

STOP TIME:	

Initial Conditions: **Unit 1 is in MODE 4 with the following conditions:**

- **RHR Train B is in service**
- **RHR Train A is in ECCS standby with 1/1-8701A and 1/1-8702A, RHRP 1 HL RECIRC ISOL VLVs CLOSED and De-energized**
- **CCP 1-02, SIP 1-01 and SIP 1-02 breakers have been racked out to comply with LCO 3.4.12**
- **A Loss of Coolant Accident has occurred**
- **ABN-108, Shutdown Loss of Coolant is being implemented**
- **Positive Displacement Charging Pump has been started**
- **Pressurizer Level is still lowering**

Initiating Cue: **The Unit Supervisor directs you to PERFORM ABN-108, Shutdown Loss of Coolant, starting at Step 2.3.8.b, Check RCS Status, with the Pressurizer Level NOT stable or increasing**

Facility: CPNPP JPM # NRC S-4 Task # RO3113 K/A # 045.A4.01 3.1 / 2.9 SF-4P

Title: Perform Pre-Startup Turbine Trip Checks

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 3

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- Perform OPT-410A, Pre-Startup Turbine Trip Checks

Task Standard: In accordance with OPT-410A, latched the Turbine, commenced opening the HP and LP stop valves and then tripped the Turbine prior to the HP stop valves obtaining the full open position.

Ref. Materials: OPT-410A, Pre-Startup Turbine Trip Checks. Rev. 9 - 4.
OPT-410A-1, Pre-Startup Turbine Trip Checks Data Sheet. Rev. 0

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

Simulator OPERATOR:
INITIALIZE to IC-37

or
Initialize to IC-6 and insert the following:
;Insert HP Control Valve leakage

{LOTCZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT1 f:600 d:53 r:60
{LOTCZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT2 f:600 d:53 r:60
{LOTCZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT3 f:600 d:53 r:60

;Modify Control Valve Leakage when Turbine tripped

{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT1 f:194 r:60
{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT2 f:194 r:60
{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT3 f:194 r:60

Handout:
PROVIDE the examinee with a copy of:

- **OPT-410A, Pre-Startup Turbine Trip Checks** (Labeled Procedure 1)
- **OPT-410A-1, Pre-Startup Turbine Trip Checks Data Sheet** (Labeled Form 1)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from OPT-410A, Section 8.0.**
NOTE: • Record all data on Form OPT-410A-1. • Control Room indications may be used to verify component positions.	
Perform Step: 1 Step 8.1 & 8.1.1	Latch the turbine as follows: On the TG Control Display, ensure the turbine is tripped, "Turbine Trip" Bar Red.
Performance Standard:	DETERMINED that Turbine Trip bar was red.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 8.1 & 8.1.2	Latch the turbine as follows: Verify the following light indications on CB-04, 1-TSLB-3 are on: • 1.7 - TURB TRIP FLUID LO 1-63AST 1 • 2.7 - TURB TRIP FLUID LO 1-63AST 2 • 3.7 - TURB TRIP FLUID LO 1-63AST 3
Performance Standard:	VERIFIED on 1-TSLB-3 that windows 1.7, 2.7 and 3.7 are LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 8.1, 8.1.3 & 8.1.3A	Latch the turbine as follows: On the TG Control Display in the "Start-Up" Section, reset the Turbine Trip as follows. A. Click the Turbine Latch Subgroup Controller to bring up the "Osd"
Performance Standard:	OPENED the Turbine Latch Subgroup Controller Osd.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√ 8.1, 8.1.3 & 8.1.3B	Latch the turbine as follows: On the TG Control Display in the "Start-Up" Section, reset the Turbine Trip as follows. B. IF the Turbine Latch Subgroup Controller is OFF (green/grey), THEN Click "0/1" then Execute to turn ON (green/red) the Controller.
Performance Standard:	CLICKED the "0/1" and Execute. Subgroup Controller indicated ON (green/red).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5 8.1, 8.1.3 & 8.1.3C	Latch the turbine as follows: On the TG Control Display in the "Start-Up" Section, reset the Turbine Trip as follows. C. On the TG Control Display in the Speed Control Section, verify Speed Target Controller lower or equal to actual speed.
Performance Standard:	VERIFIED speed target (134 RPM) is lower than actual speed (194 RPM).
Comment:	**SAT ☐ UNSAT ☐**

NOTE: The Subgroup Controller should start to blink when the following step is complete. It will continue to blink until the Stop Valves are open.

Perform Step: 6√ 8.1, 8.1.3 & 8.1.3D	Latch the turbine as follows: On the TG Control Display in the "Start-Up" Section, reset the Turbine Trip as follows. D. In the "Osd" click "1" then Execute to start the Latching of the Turbine.
Performance Standard:	CLICKED the "1" and Execute. Subgroup controller indicated blinking red.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 8.1, 8.1.4 & 1st bullet	Latch the turbine as follows: Verify the following parameters: • On the TG Display, verify the turbine trip is reset, "Turbine Trip" Bar white.
Performance Standard:	VERIFIED Turbine Trip Bar white.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 8.1, 8.1.4 & 2nd bullet	Latch the turbine as follows: Verify the following parameters: • 1-PI-6559, TURB L/O PRESS - greater than 25 PSIG
Performance Standard:	VERIFIED Turbine Lube Oil Pressure is approximately 42 psig.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 8.1, 8.1.4 & 3rd bullet	Latch the turbine as follows: Verify the following parameters: • 1-PI-6561, EHC FLUID PRESS - greater than 114 PSIG
Performance Standard:	VERIFIED EHC Fluid Pressure is approximately 170 psig.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 8.1, 8.1.4 & 4th bullet	Latch the turbine as follows: Verify the following parameters: • 1-PI-6566, HP EHC FLUID PRESS - approximately 455 PSIG
Performance Standard:	VERIFIED HP EHC Fluid Pressure is approximately 525 psig.
Examiner Cue:	**If the applicant questions whether the HP EHC Fluid Pressure is close enough to 455 psig to continue; Provide the following cue:** **'The Unit Supervisor directs you to continue with the Turbine Trip Checks.'**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11 8.2	Verify the following light indications on CB-04, 1-TSLB-3 are on: • 1.6 - MSL 1 HP STOP VLV 4 CLOSE UV-2428A • 2.6 - MSL 2 HP STOP VLV 1 CLOSE UV-2429A • 3.6 - MSL 3 HP STOP VLV 3 CLOSE UV-2430A • 4.6 - MSL 4 HP STOP VLV 2 CLOSE UV-2431A
Performance Standard:	VERIFIED on 1-TSLB-3 that windows 1.6, 2.6, 3.6 and 4.6 are LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12 8.3	Verify HP stop valves are closed on CB-10: • 1-ZL-2429A, HPT STOP VLV 1 • 1-ZL-2431A, HPT STOP VLV 2 • 1-ZL-2430A, HPT STOP VLV 3 • 1-ZL-2428A, HPT STOP VLV 4
Performance Standard:	VERIFIED on CB-10 that Green light LIT and Red light DARK for each valve.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Examiner Note:	**The turbine speed will continue to increase to greater than 100 RPM above the original turning gear speed requiring a Turbine Trip.**

CAUTION: The normal turning gear speed for the turbine may increase when the turbine stop valves are open due to some leakage through the control valves. The turbine RPM should not be allowed to increase more than 100 RPM above the original turning gear speed. If the speed continues to increase, the turbine should be tripped and the conditions should be evaluated.

Perform Step: 13√ 8.4	On the TG Control Display in the “Start-Up” Section, turn ON the “Open Stop Valves” Subloop Controller to open the HP and LP stop valves.
Performance Standard:	CLICKED the “0/1” and Execute. Subgroup controller turned red.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√ 5.1 & Caution	The normal turning gear speed for the turbine may increase when the turbine stop valves are open due to some leakage through the control valves. The turbine RPM should not be allowed to increase more than 100 RPM above the original turning gear speed. If the speed continues to increase, the turbine should be tripped and the conditions should be evaluated.
Performance Standard:	DEPRESSED 1-TTSW Pushbutton on CB-10 prior to ALL HP Stop Valves obtaining Full Open status on CB-10, Red light LIT and Green light DARK.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is in MODE 3**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **Perform OPT-410A, Pre-Startup Turbine Trip Checks**

PRE-STARTUP TURBINE TRIP CHECKS DATA SHEET

STEP		OBSERVED	ACCEPTANCE CRITERIA	INITIALS
6.0	PREREQUISITES	N/A	N/A	QTB
8.6	VERIFY STATUS LIGHT INDICATIONS ARE OFF			
	• 1-TSLB-3/1.6	OFF / ON	OFF	_____
	• 1-TSLB-3/2.6	OFF / ON	OFF	_____
	• 1-TSLB-3/3.6	OFF / ON	OFF	_____
	• 1-TSLB-3/4.6	OFF / ON	OFF	_____
	• 1-TSLB-3/1.7	OFF / ON	OFF	_____
	• 1-TSLB-3/2.7	OFF / ON	OFF	_____
	• 1-TSLB-3/3.7	OFF / ON	OFF	_____
8.9	VERIFY STATUS LIGHT INDICATIONS ARE ON			
	• 1-TSLB-3/1.6	ON / OFF	ON	_____
	• 1-TSLB-3/2.6	ON / OFF	ON	_____
	• 1-TSLB-3/3.6	ON / OFF	ON	_____
	• 1-TSLB-3/4.6	ON / OFF	ON	_____
	• 1-TSLB-3/1.7	ON / OFF	ON	_____
	• 1-TSLB-3/2.7	ON / OFF	ON	_____
	• 1-TSLB-3/3.7	ON / OFF	ON	_____

COMMENTS/DISCREPANCIES:_____

_____

_____

CORRECTIVE ACTIONS:_____

_____

_____

PERFORMED BY: _____ DATE: _____
SIGNATURE

REVIEWED BY: _____ DATE: _____
OPERATIONS MANAGEMENT

OPT-410A-1
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Facility: CPNPP JPM # NRC S-5 Task # RO2002 K/A # 026.A4.01 4.5 / 4.3 SF-5

Title: Transfer Containment Spray From Injection to Recirculation

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	
Time Critical:	X		

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Large Break LOCA has occurred and Containment Spray has actuated
- The Emergency Core Cooling System has been aligned for Cold Leg Recirculation per EOS-1.3A, Transfer to Cold Leg Recirculation
- Refueling Water Storage Tank (RWST) level is 7% and lowering

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- When RWST level reaches 6%, Perform EOS-1.3A, Transfer to Cold Leg Recirculation Attachment 1.H, Containment Spray Switchover Criterion

Task Standard: Utilizing EOS-1.3A, transferred Containment Spray Train A from the Injection Mode to the Recirculation Mode from the Containment Sumps. Stopped Train B Containment Spray Pumps when alignment to the Containment Sump could not be performed. Closed RWST to Containment Spray Train A pumps within 70 seconds.

Ref. Materials: EOS-1.3A, Transfer to Cold Leg Recirculation, Rev. 9-0.
STI-214.01, Control of Timed Operator Actions, Rev. 0-5.

Validation Time:	3 minutes	Completion Time:	_____ minutes
Time Critical Time:	70 seconds	Completion Time:	_____ seconds

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:
INITIALIZE to IC #38

or any Post LOCA with RHR Swapover completed IC and PERFORM the following:

- INSERT Malfunction CS05B to fail 1-HS-4783 in CLOSE position.

If IC #38 is not available, RESET to any at power IC and PERFORM the following:

- INSERT malfunction RC08A2 (or equivalent Large Break LOCA).
- PLACE Simulator in RUN.
- REDUCE AFW Flow to all SGs.
- RESET SI, SIS, Containment and Isolation Phases A & B and Containment Spray.
- STOP both Emergency Diesel Generators.
- STOP all Reactor Coolant Pumps.
- When RWST level reaches LO-LO level, TRANSFER ECCS to Cold Leg Recirculation by performing Steps 1-3 of EOS-1.3A.
- INSERT MalfunctionCS05B to fail 1-HS-4783 in CLOSE position.
- FREEZE simulator when RWST level is 7%.

Handout:
PROVIDE the examinee with a copy of:

- **EOS-1.3A, Transfer to Cold Leg Recirculation.**
  - **Attachment 1.H, Containment Spray Switchover Criterion.** (labeled Procedure 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from EOS-1.3, Attachment 1.H.**
Examiner Note:	**CUE the Simulator Operator to PLACE the Simulator in RUN.**

> CAUTION: Any Containment Spray pump taking suction from the RWST should be stopped when RWST level reaches 0%

Perform Step: 1 4.a.	Check RWST level – LESS THAN 6%.
Performance Standard:	OBSERVED 1-LI-930, RWST LVL CHAN I or 1-LI-931, RWST LVL CHAN II and VERIFY level is less than 6%.
Comment:	**SAT ☐ UNSAT ☐**

Once RWST level less than 6%.

Time Critical START TIME:	

Examiner Note:	**Steps 2 and 3 may be performed in any order.**
Perform Step: 2√ 4.b.1) & 1st bullet	Realign Containment Spray System as follows: • Open CNTMT SMP TO CSP 1 & 3 SUCT ISOL VLVs: • 1-HS-4782
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4782, CNTMT SMP TO CSP 1 & 3 SUCT ISOL VLV to OPEN (**critical**). • OBSERVED red OPEN light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 4.b.1) & 2nd bullet	Realign Containment Spray System as follows: • Open CNTMT SMP TO CSP 2 & 4 SUCT ISOL VLVs: • 1-HS-4783
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4783, CNTMT SMP TO CSP 2 & 4 SUCT ISOL VLV to OPEN. • OBSERVED green CLOSE light LIT. (Fails to Open)
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following step represents the Alternate Path of this JPM.**
Perform Step: 4√ 4.b.1) RNO	IF CNTMT SMP TO CSP VLV(s) can NOT be opened, THEN Place affected CSPs in PULL-OUT.
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4766, CSP 2 in PULLOUT (**critical**). • OBSERVED red FAN light LIT (**NOT critical**). • PLACED 1-HS-4767, CSP 4 in PULLOUT (**critical**). • OBSERVED red FAN light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Perform Steps 5 and 6 may be performed in any order.**
Perform Step: 5√ 4.b.2) & 1st bullet	Close RWST TO CSP 1 & 3 SUCT VLVs: • 1-HS-4758
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4758, RWST TO CSP 1 & 3 SUCT VLV to CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Once 1-HV-4758 is Fully Closed.

Time Critical STOP TIME:	

Perform Step: 6 4.b.2) & 2nd bullet	Close RWST TO CSP 2 & 4 SUCT VLVs: • 1-HS-4759
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4759, RWST TO CSP 2 & 4 SUCT VLV to CLOSE. • OBSERVED green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 4.b.3)	Verify containment spray flows.
Performance Standard:	OBSERVED Containment Spray flows on: • 1-FI-4772-1, CSP 1 DISCH FLO at ~3600 GPM. • 1-FI-4772-2, CSP 3 DISCH FLO at ~3600 GPM. • 1-FI-4773-1, CSP 2 DISCH FLO at 0 GPM. • 1-FI-4773-2, CSP 4 DISCH FLO at 0 GPM.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 4.b.3) RNO 3) A)	IF containment spray train(s) NOT providing spray flow, THEN perform the following: Place affected CS HX OUT VLV(s) in PULL-OUT.
Performance Standard:	PERFORMED the following: • PLACED 1-HS-4777, CS HX 2 OUT VLV to PULLOUT • OBSERVED all lights OFF
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 4.b.3) RNO 3) B)	IF containment spray train(s) NOT providing spray flow, THEN perform the following: Notify Plant Staff of containment spray train(s) condition.
Performance Standard:	CONSULTED Plant Staff to determine contingency actions.
Examiner Cue:	**Another operator will consult with Plant Staff. The Unit Supervisor directs you to continue with the procedure.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 4.b.4)	**IF containment spray pumps have been stopped due to RWST level, THEN perform the following:**
Performance Standard:	DETERMINED Containment Spray Pumps were NOT stopped due to low RWST Level.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **A Large Break LOCA has occurred and Containment Spray has actuated**
- **The Emergency Core Cooling System has been aligned for Cold Leg Recirculation per EOS-1.3A, Transfer to Cold Leg Recirculation**
- **Refueling Water Storage Tank (RWST) level is 7% and lowering**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **When RWST level reaches 6%, Perform EOS-1.3A, Transfer to Cold Leg Recirculation Attachment 1.H, Containment Spray Switchover Criterion**

THIS IS A TIME CRITICAL JPM

Facility: CPNPP JPM # NRC S-6 Task # RO4215 K/A # 064.A4.07 3.4 / 3.4 SF-6
Title: Restore Safeguards Bus 1EA1 to Offsite Power

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 1
- Emergency Diesel Generator (EDG) 1-01 is supplying the 6.9 kV Safeguards Bus 1EA1 due to post-work testing of the EDG
- Power from Transformer XST1 is available to the 6.9 kV Safeguards Bus 1EA1
- Transformer XST2 is NOT available

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESTORE Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.

Task Standard: Utilizing SOP-609A, restored Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 and opened the Train A EDG Output Breaker prior to receiving 1-ALB-10B Window 2.8 DG 1 TRBL alarm.

Required Materials: SOP-609A, Diesel Generator System, Rev. 21-12.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:
INITIALIZE to IC #39

or any at power Initial Condition and PERFORM the following:

- LOAD the EDG per SOP-609A, Section 5.6, Supplying 6.9 KV SFGD Busses with DG Alone.
- EXECUTE remote function EDR13, 480 VAC MCC Undervoltage Load Shedding Fuses to REMOVE (if Step 5.7.I is reached, the fuses will be reinstalled).
- OPEN both Offsite Power Breakers CS-1EA1-1 and CS-1EA1-2 for Bus 1EA1.
- PLACE CS-1EA1-1, Incoming Breaker 1EA1 in PULLOUT and HANG a Red Tag.
- ENSURE EDG and Safeguards Bus voltages are NOT matched prior to SNAP of IC.
- When the 1EA1-2 Feeder Breaker is CLOSED at Step 5.7.E, EXECUTE malfunction ED09, Grid Frequency Disturbance at 57.9 Hertz and 120 second ramp {DIED1EA12.iivPanel=3} IMF ED09 f:57.9 r:120.

SIMULATOR OPERATOR NOTE:

- **After each JPM, VERIFY the Synchroscope Key Switch is moved to a different position.**

Handout:
PROVIDE the applicant with a copy of:

- **SOP-609A, Diesel Generator System.**
  - **Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.** (labeled Procedure 1)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from SOP-609A, Section 5.7.**
Perform Step: 1√ 5.7.A & 2nd bullet	TURN the synchroscope for the selected breaker ON. • SS-1EA1-2 BKR 1EA1-2 SYNCHROSCOPE
Performance Standard:	PLACED SS-1EA1-2, BKR 1EA1-2 SYNCHROSCOPE to ON and OBSERVED the synchroscope move approximately to the 12 o'clock position.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: DG VOLT should be maintained less than 7150V per Technical Specifications. With the AVR TRIP light ON (on at 7185V), the DG is to be considered inoperable until the AVR TRIP light is reset. REFERENCE Attachment 5 to reset AVR TRIP signal.

Perform Step: 2√ 5.7.B	Using the DG VOLT CTRL, ADJUST running voltage to match incoming voltage.
Performance Standard:	ADJUSTED 90-1EG1, DG 1 VOLT CTRL to RAISE or LOWER DG Output Voltage to MATCH Running Volts (V-RUN) with Incoming Volts (V-IN) and OBSERVED Running Volts MATCHED with Incoming Volts.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Synchroscope speed is not considered critical, however, it must be moving in the SLOW direction.**

NOTE: Adjusting DG speed so that the synchroscope is moving slowly in the slow direction (2 to 4 RPM) will ensure positive load on the Diesel when the feeder breaker is CLOSED.

Perform Step: 3√ 5.7.C	Using DG SPD CTRL, ADJUST the speed so that the synchroscope is moving 2 to 4 RPM in the SLOW direction.
Performance Standard:	ADJUSTED 65-1EG1, DG 1 SPD CTRL to RAISE or LOWER Diesel Generator speed so that synchroscope is moving 2 to 4 RPM in the SLOW direction.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: **"Continuous Action Step"** This step is a compensatory action for the possibility of excessive loading on the DG due to Offsite Power degradation. (SMF 2002-2566) The DG Output Breaker should be opened if,

- DG MW's exceed 7 MW in an unexpected manner.
- DG Frequency falls below 58.8 Hz due to grid instability.
- DG Voltage falls below 6480 Volts due to grid instability.

Perform Step: 4 5.7.D & 1st bullet	IF Grid induced load, voltage, OR frequency fluctuations occur while the DG is synchronized to the bus, THEN OPEN the DG Output Breaker: • CS-1EG1, DG 1 BKR 1EG1
Performance Standard:	OBSERVED Note before Step 5.7.D.
Comment:	**SAT** ☐ **UNSAT** ☐

CAUTION: IF DG load is less than 0.5 MW, THEN following Feeder Breaker closure, load should be raised promptly to prevent Reverse Power Trip. The DG will trip if the Generator is motorized with >34.5 KW in for greater than 8 seconds.

Perform Step: 5√ 5.7.E & 2nd bullet	CLOSE the feeder breaker when the synchroscope is slightly before the 12 o'clock position AND moving 2 to 4 RPM in the SLOW direction. • CS-1EA1-2 INCOMING BKR 1EA1-2
Performance Standard:	PERFORMED the following: • PLACED CS-1EA1-2, INCOMING BKR 1EA1-2, in CLOSE when synchroscope is at 12 o'clock (**critical**). • OBSERVED red CLOSE light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Simulator Operator:	**VERIFY malfunction ED09, Grid Frequency Fluctuation at 57.9 Hz over 120 seconds has initiated.**
Perform Step: 6	Acknowledge annunciator alarm 1-ALB-10B, Window 3.5 – 6.9 KV BUS 1EA1 / 1EA2 PARALLELED.
Performance Standard:	ACKNOWLEDGED annunciator alarm 1-ALB-10B, Window 3.5 – 6.9 KV BUS 1EA1 / 1EA2 PARALLELED.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 5.7.F	RAISE DG load to 0.5 MW as necessary, to prevent a reverse power trip using DG SPD CTRL handswitch.
Performance Standard:	OBSERVED load on W-1EG1, DG 1 MEGAWATTS at approximately 1 MWe.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 5.7.G	TURN OFF the synchroscope for the selected breaker.
Performance Standard:	PLACED SS-1EA1-2, BKR 1EA1-2 SYNCHROSCOPE in OFF.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This step may be performed if frequency degradation has not yet been identified.**
Perform Step: 9 5.7.H	MAINTAIN 0-500 KVAR out by adjusting the selected DG VOLT CTRL handswitch.
Performance Standard:	ADJUSTED 90-1EG1, DG 1 VOLT CTRL to RAISE or LOWER DG Output Voltage to MAINTAIN 0-500 KVAR.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This is Continuous Action Step 5.7.D to avoid excessive loading.**
Perform Step: 10√ 5.7.D NOTE	OBSERVE Emergency Diesel Generator 1-01 MWe frequency lowering uncontrollably and OPEN the output breaker.
Performance Standard:	PERFORMED the following: • OPENED CS-1EG1, DG 1 BKR 1EG1 prior to receiving 1-ALB-10B Window 2.8 DG 1 TRBL alarm (**critical**). • OBSERVED green TRIP light LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is in MODE 1**
- **Emergency Diesel Generator (EDG) 1-01 is supplying the 6.9 kV Safeguards Bus 1EA1 due to post-work testing of the EDG**
- **Power from Transformer XST1 is available to the 6.9 kV Safeguards Bus 1EA1**
- **Transformer XST2 is NOT available**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **RESTORE Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.**

Facility: CPNPP JPM # NRC S-7 Task # RO1820 K/A # 015.A2.01 3.5 / 3.9 SF-7

Title: Respond to a Power Range Channel Malfunction

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is at 100% power
- Power Range Instrument N-44 has failed low
- Rod control is in MANUAL

Initiating Cue: The Unit Supervisor directs you to continue performing ABN-703, Power Range Instrument Malfunction, START at Step 2.3.3

Task Standard: Defeated failed power range channel N44 utilizing ABN-703, Power Range Instrument Malfunction.

Ref. Materials: ABN-703, Power Range Instrumentation Malfunction. Rev. 9-0

Validation Time: 5 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:
INITIALIZE to IC-35.

OR
INITIALIZE to any at power Initial Condition and PERFORM the following:

- EXECUTE malfunction NI06E, PR N-44 Channel Failure to 0%
- ENSURE rod control is in MANUAL

SIMULATOR OPERATOR NOTE:
After each JPM, VERIFY the following:

- **1/1-JS-411E, N16 PWR CHAN DEFEAT (CB-05) is NOT in Loop 4 position**
- **1-TS-412T, Tave CHAN DEFEAT (CB-07) is NOT in Loop 4 position**
- **1/1-TS-411E, 1-TR-411 CHAN SELECT N16 Recorder IS in Loop 4 position**

Handout:
PROVIDE the examinee with a copy of ABN-703, Power Range Instrumentation Malfunction, appropriately marked through Step 2.3.2. (Labeled as Procedure 1)

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from ABN-703, Step 2.3.3.**
Perform Step: 1√ 2.3.3.a	Perform the following for failed channel: At DETECTOR CURRENT COMPARATOR drawer, select ROD STOP BYPASS switch to failed channel.
Performance Standard:	SELECTED Rod Stop Bypass switch to BYPASS PRN44.
Examiner Cue:	**Another operator will acknowledge alarms.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√ 2.3.3.b	Perform the following for failed channel: At COMPARATOR AND RATE drawer, select COMPARATOR CHANNEL DEFEAT switch to failed channel.
Performance Standard:	SELECTED Comparator Channel Defeat switch to N44.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√ 2.3.3.c	Perform the following for failed channel: At DETECTOR CURRENT COMPARATOR drawer, select UPPER SECTION switch to failed channel.
Performance Standard:	SELECTED Upper Section switch to PRN44.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√ 2.3.3.d	Perform the following for failed channel: At DETECTOR CURRENT COMPARATOR drawer, select LOWER SECTION switch to failed channel.
Performance Standard:	SELECTED Lower Section switch to PRN44.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√ 2.3.3.e	Perform the following for failed channel: At DETECTOR CURRENT COMPARATOR drawer, select POWER MISMATCH BYPASS switch to failed channel.
Performance Standard:	SELECTED Power Mismatch Bypass switch to BYPASS PRN44.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√ 2.3.3.f	Perform the following for failed channel: At POWER RANGE A drawer, select RATE MODE switch momentarily to RESET for failed channel.
Performance Standard:	SELECTED Rate Mode switch momentarily to RESET for N44.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7√ 2.3.3.g & 1st bullet	Perform the following for failed channel: Select the following switches to loop corresponding to failed channel: • 1/u-JS-411E, N16 PWR CHAN DEFEAT (CB-05)
Performance Standard:	PLACED 1/1-JS-411E, N16 PWR CHAN DEFEAT in Loop 4 position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8√ 2.3.3.g & 2nd bullet	Perform the following for failed channel: Select the following switches to loop corresponding to failed channel: • u-TS-412T, Tave CHAN DEFEAT (CB-07)
Performance Standard:	PLACED 1-TS-412T, Tave CHAN DEFEAT in Loop 4 position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 2.3.4 & bullet	Ensure N16 Recorder selected to - OPERABLE CHANNEL: • 1/u-TS-411E, u-TR-411 CHAN SELECT
Performance Standard:	SELECTED 1/1-TS-411E, 1-TR-411 CHAN SELECT N16 Recorder Loop 1, Loop 2, or Loop 3.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is at 100% power**
- **Power Range Instrument N-44 has failed low**
- **Rod control is in MANUAL**

Initiating Cue: **The Unit Supervisor directs you to continue performing ABN-703, Power Range Instrument Malfunction, START at Step 2.3.3**

Facility: CPNPP JPM # NRC S-8 Task # RO4405 K/A # 067.AA2.16 3.3 / 4.0 SF-8

Title: Respond to a Fire in the Safeguards Building

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	
Time Critical:			

READ TO THE EXAMINEE

Provide the Initial Conditions and Initiating Cue to the Examinee. Any special conditions or instructions should be contained on this sheet.

Initial Conditions: Given the following conditions:

- ABN-804A, Response to a Fire in the Safeguards Building, is in progress
- Other operators are performing ABN-804A, Attachments 5 and 6, which include isolation of Letdown flow

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESPOND to a fire in the Safeguards Building per ABN-804A, Response to a Fire in the Safeguards Building, Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD
- START at Step 5.3.6

Task Standard: Utilizing ABN-804A, responded to a fire in the Safeguards Building, started the Train B Emergency Diesel Generator, transferred Charging Pump suction to the RWST and started the Train B Centrifugal Charging Pump.

Ref. Materials: ABN-804A, Respond to a Fire in the Safeguards Building. Rev. 6-2

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:
INITIALIZE to IC-36

Or

Initialize to IC-18 and PERFORM the following:

- ALARM ON for these Safeguards Fire Protection Panel annunciators:
  - AFP09_16 for Window 4.2 – 810' SWGR RM TRN A
  - AFP09_17 for Window 5.2 – 810' SWGR RM TRN A WTR FLO
- 1/1-PCV-455A, PRZR PORV in CLOSE
- 1/1-PCV-456, PRZR PORV in CLOSE
- Place the following malfunctions on a conditional for CS-1DG2E in START with a 3 minute delay
  - EBR112, 1ED1-1/9/BKR [BOP ARR 1, 1-CR-03]
  - EBR113, 1ED1-1/10/BKR [1-TC-19,22,26]
  - EBR115, 1ED1-1/14/BKR [1-TC-07,10]
  - EBR116, 1ED1-1/17/BKR [1-TC-13,16]

Handout:
PROVIDE the examinee with a copy of:

- **ABN-804A, Response to a Fire in the Safeguards Building.**
  - **Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD appropriately marked through Step 5.3.5.** (labeled Procedure 1)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following is from ABN-804A, and Section 5.0, Step 5.3.6.**
Examiner Cue:	**If an automatic or manual reactor trip occurs during the performance of the procedure inform the examinee that another operator will perform the actions of EOP-0.0A and that they are to continue with ABN-804A.**
Perform Step: 1√ 5.3.6	Perform an emergency start on Trn B Diesel Generator: • CS-1DG2E, DG 2 EMER STOP/ START – START
Performance Standard:	PERFORMED the following: • PLACED CS-1DG2E, DG 2 EMER STOP/ START switch in START (**Critical**). • OBSERVED V-1EG2, DG 2 VOLTS at ~6900 Volts (NOT critical). • OBSERVED F-1EG2, DG 2 FREQ at 60 Hertz (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√ 5.3.7	Place 1/1-APRH 1, RHRP 1 – PULL OUT
Performance Standard:	PERFORMED the following: • PLACED 1/1-APRH 1, RHRP 1 in PULLOUT (**Critical**). • OBSERVED pump lights DARK (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√ 5.3.8	CLOSE 1/1-8812A, RWST TO RHRP 1 SUCT VLV
Performance Standard:	PERFORMED the following: • PLACED 1/1-8812A, RWST TO RHRP 1 SUCT VLV in CLOSE (**Critical**). • OBSERVED green CLOSE light LIT (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√ 5.3.9	CLOSE 1/1-8100, RCP SEAL WTR RET ISOL VLV
Performance Standard:	PERFORMED the following: • PLACED 1/1-8100, RCP SEAL WTR RET ISOL VLV in CLOSE (**Critical**). • OBSERVED green CLOSE light LIT (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5 5.3.10.a	Transfer Charging Pump suction to the RWST : • IF charging pump performance indicates possible cavitation, THEN stop charging pump until below valves manually repositioned.
Performance Standard:	OBSERVED 1-PI-120A, CHRG HDR PRESS and 1-FI-121A, CHRG FLO and DETERMINED that pump does not indicate cavitation and MARKED step as N/A.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**<u>Either</u> 1/1-LCV-112D <u>OR</u> 1/1-LCV-112E can be opened.**
Perform Step: 6√ 5.3.10.b	Transfer Charging Pump suction to the RWST : • Ensure 1/1-LCV-112D <u>OR</u> 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV – OPEN.
Performance Standard:	PERFORMED <u>ONE</u> of the following: • PLACED 1/1-LCV-112D, RWST TO CHRG PMP SUCT VLV in OPEN (**Critical**). • OBSERVED red OPEN light LIT (NOT critical). **<u>OR</u>** • PLACED 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV in OPEN (**Critical**). • OBSERVED red OPEN light LIT (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Both 1/1-LCV-112B AND 1/1-LCV-112C must be closed.**
Perform Step: 7√ 5.3.10.c	Transfer Charging Pump suction to the RWST : • Ensure 1/1-LCV-112B AND 1/1-LCV-112C, VCT TO CHRG PMP SUCT VLV - CLOSED.
Performance Standard:	PERFORMED BOTH of the following: • PLACED 1/1-LCV-112B, VCT TO CHRG PMP SUCT VLV in CLOSE (**Critical**). • OBSERVED green CLOSE light LIT (NOT critical). **AND** • PLACED 1/1-LCV-112C, VCT TO CHRG PMP SUCT VLV in CLOSE (**Critical**). • OBSERVED green CLOSE light LIT (NOT critical).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 5.3.10.d	Transfer Charging Pump suction to the RWST : • Verify 1-ZL-8220 AND 1-ZL-8221, CHRG PMP SUCT HI POINT VENT VLV - CLOSED.
Performance Standard:	OBSERVED 1-ZL-8220 **and** 1-ZL-8221, CHRG PMP SUCT HI POINT VENT VLVs green CLOSE lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 5.3.10.e	Transfer Charging Pump suction to the RWST : • Ensure 1/1-8202A AND 1/1-8202B, VENT VLV – CLOSED.
Performance Standard:	VERIFIED 1/1-8202A **and** 1/1-8202B, VENT VLVs in CLOSE and OBSERVED green CLOSE lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10√ 5.3.11	Ensure 1/1-APCH2, CCP 2 – RUNNING.
Performance Standard:	PERFORMED the following: • PLACED 1/1-APCH2, CCP 2 in START (**Critical**). • OBSERVED red PUMP and FAN lights LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **ABN-804A, Response to a Fire in the Safeguards Building, is in progress**
- **Other operators are performing ABN-804A, Attachments 5 and 6, which include isolation of Letdown flow**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **RESPOND to a fire in the Safeguards Building per ABN-804A, Response to a Fire in the Safeguards Building, Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD**
- **START at Step 5.3.6**

Facility: CPNPP JPM # NRC P-1 (U1) Task # AO5202 K/A # 004.A4.08 3.8 / 3.4 SF-2

Title: Perform Local Actions to Restart the Positive Displacement Pump

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:	X	Plant:	X
RCA:	X		

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions on Unit 1:

- The crew is performing ABN-301, Instrument Air System Malfunction
- Restart of the Positive Displacement Charging Pump (PDP) is required to establish Charging flow

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESET control air to the Unit 1 PDP Fluid Drive per ABN-301, Instrument Air System Malfunction, Step 3.3.4.n
- RESTORE the Unit 1 PDP to operation per SOP-103A, Chemical and Volume Control System, Section 5.3.1, Positive Displacement Pump Startup, Starting at Step 5.3.1.D

Task Standard: Reset the PDP hydraulic speed changer, filled the Unit 1 PDP stuffing Box coolant tank and opened the PDP discharge valve.

Ref. Materials: ABN-301, Instrument Air System Malfunction. Rev. 13-0
SOP-103A, Chemical and Volume Control System. Rev. 18-15

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

Handouts:

PROVIDE the examinee with a copy of:

- **ABN-301, Instrument Air System Malfunction, Completed through Step 3.3.4.n** (labeled Procedure 1)
- **SOP-103A, Chemical and Volume Control System, Sections 2.5 and 5.3.1; through Step 5.3.1.C** (labeled Procedure 2)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Remind examinee to simulate all actions. The following step is from ABN-301, Section 3.0.**
Perform Step: 1√ 3.3.4 n	Reset air to PDP hydraulic speed changer by pushing the brass button on the P/A Converter.
Performance Standard:	DEPRESSED the control air RESET button located atop the Positive Displacement Pump Fluid Drive in the PDP Room. (PDP Pump Speed Control Reset)
Examiner Cue:	**The 1-01 PDP Hydraulic Speed Changer is RESET.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from SOP-103A, Section 5.3.1.**

NOTE: If the Stuffing Box Coolant Tank is overfilled, the PDP Charging Pump Room will become contaminated.

Examiner Note:	**The following steps represent the Alternate Path when the Stuffing Box Coolant Tank is out of specification.**
Perform Step: 2 5.3.1 D	IF Stuffing Box Coolant Tank is low, THEN FILL per the following steps:
Performance Standard:	OBSERVED Stuffing Box Coolant Tank sight glass level.
Examiner Cue:	**The sight glass is EMPTY.** **If applicant enquires about the alarm status on the Boron Recycle System Panel, Inform applicant that Window 3.3 - POS DISPLACEMENT CHARGING PUMP COOLANT UNIT 1 LO LEVEL is in Alarm**
Examiner Cue:	*DO NOT provide this cue until operator demonstrates that the tank must be filled.* **Another operator will monitor sight glass level as the tank is filled.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	• **The Fill Valve is located in the Charging Pump Remote Operator Room (822') directly north of chemical mixing tank on east wall.** • **The operator should turn the valve in the counter clockwise direction, and there will be flow noise, stem nut should be raised from initial position after operator turns counter clockwise.**
Perform Step: 3√ 5.3.1 D 1)	IF Stuffing Box Coolant Tank is low, THEN fill per the following steps: • Slowly crack OPEN 1CS-0119, PD PMP 1-01 STUFFING BOX COOL TK MU ISOL VLV, until desired fill rate is achieved.
Examiner Cue:	**The valve is found with stem nut all the way down.**
Performance Standard:	Slowly turned 1CS-0119 in the counterclockwise (OPEN) direction until desired fill rate was achieved.
Examiner Cue:	**The valve is turning and flow noise is audible.** *After the operator has demonstrated that the valve is open, report* **The NEO at the PDP stuffing box sight glass reports, "The sight glass is at the desired level."**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√ 5.3.1 D 2)	WHEN the desired tank level has been established, THEN CLOSE 1CS-0119, PD PMP 1-01 STUFFING BOX COOL TK MU ISOL VLV.
Performance Standard:	Turned valve in the clockwise (CLOSED) direction, when level REPORTED in the Stuffing Box Coolant Tank, until stem nut is down and valve will not turn.
Examiner Cue:	**1CS-0119 stem nut is down and the valve will no longer turn in the clockwise direction, flow noise is no longer heard.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The remote operator is located in the Charging Pump Remote Operator Room (822'). Unit 1 covers are <u>blue</u> and Unit 2 covers are <u>yellow</u>. This valve is normally OPEN; down in the hole where the remote operator is inserted is a valve position indicator that will indicate OPEN.**
Examiner Note:	**The following steps represent the Alternate Path when the discharge valve is closed.**
Perform Step: 5√ 5.3.1 E	Ensure 1-8388-RO, PD CHRG PMP 1-01 DISCH VLV RMT OPER, is OPEN.
Examiner Cue:	**Once the operator has lifted the cover, report that the indicator indicates CLOSE.**
Performance Standard:	In the Charging Pump Remote Operator Room, PERFORMED the following: • REMOVED the blue cover for 1-8388-RO, PD CHRG PMP 1-01 DISCH VLV RMT OPER. • OBSERVED valve position indicator and DETERMINED valve CLOSE. • LOCATED a Remote Operator hand tool for 1-8388-RO. • PLACED hand tool on 1-8388-RO and TURNED in OPEN (counter clockwise) direction.
Examiner Cue:	*If the operator turns the valve (counter clockwise),* **Report the valve has rotated and will no longer move, the indicator indicates OPEN.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**These valves are operated from the control room.**
Perform Step: 6 5.3.1 F	OPEN the following valves: • 1/1-8202A, VENT VLV (MCB) • 1/1-8202B, VENT VLV (MCB)
Performance Standard:	CONTACTED the Control Room to ENSURE 1/1-8202A <u>and</u> 1/1-8202B, VENT VLVs are OPEN.
Terminating Cue:	**The vent valves are OPEN. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions on Unit 1:**

- **The crew is performing ABN-301, Instrument Air System Malfunction**
- **Restart of the Positive Displacement Charging Pump (PDP) is required to establish Charging flow**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **RESET control air to the Unit 1 PDP Fluid Drive per ABN-301, Instrument Air System Malfunction, Step 3.3.4.n**
- **RESTORE the Unit 1 PDP to operation per SOP-103A, Chemical and Volume Control System, Section 5.3.1, Positive Displacement Pump Startup, Starting at Step 5.3.1.D**

Facility: CPNPP JPM # NRC P-2 (U1) Task # RO4217 K/A # 055.EA1.04 3.5 / 3.9 SF-6
Title: Perform Attachment 2A DC Load Shedding

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:		Plant:	X
RCA:			

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 3 following a Loss of All AC Power
- Unit 2 is in MODE 3 with 2EA1 energized and 2EA2 de-energized

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- Perform Unit 1 Initial DC Load Shed in accordance with ECA-0.0A, Loss of All AC Power, Attachment 2A, Initial DC Load Shed

Task Standard: Completed Section 2 of Attachment 2A, Initial DC Load Shed in accordance with ECA-0.0A, Loss of All AC Power.

Ref. Materials: ECA-0.0A, Loss of All AC Power, Attachment 2A, Rev. 9-0

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

Handout:

PROVIDE the examinee with a copy of:

- **ECA-0.0A, Loss of All AC Power.**
  - **Attachment 2A, Initial DC Load Shed.** (labeled Procedure 1)

EXAMINER NOTE:

- **Simulate/Discuss actions to obtain and use Key #150.** (Key is located in the CPC - Clearance Processing Center)

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from ECA-0.0A, Attachment 2A**

NOTE: This load shed attachment is divided into 4 sections (based on UNIT 2 AC status):

- IF 2EA1 and 2EA2 are BOTH de-energized, perform Section 1.
- IF only 2EA1 is energized (requires Key #150), perform Section 2.
- IF only 2EA2 is energized (requires Key #150), perform Section 3.
- IF 2EA1 and 2EA2 are BOTH energized (requires Key #150), perform Section 4.

Perform Step: 1 Note	Determine appropriate section of Attachment 2A to perform.
Performance Standard:	Determined that Section 2 should be performed.
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 2√ 2a	IF 2EA1 is energized and 2EA2 is de-energized, THEN perform the following: ECB 792, U1 UPS Corridor South Wall Ensure transfer switch on CPX-ECDPED-01S, 125 VDC DISTRIBUTION PANEL XED1-1 AUTO TRANSFER SWITCH XED1-1S in Unit 2 (LOAD CONNECTED TO UNIT 2 LIGHT lit) (Key #150 from Key Locker required).
Examiner Cue:	**XED1-1S is in the Unit 1 position. LOAD CONNECTED TO UNIT 1 LIGHT is LIT.**
Performance Standard:	PLACED XED1-1S in Unit 2.
Examiner Cue:	**XED1-1S is in the Unit 2 position. LOAD CONNECTED TO UNIT 2 LIGHT is LIT.**
Comment:	**SAT ⬙ UNSAT ⬙**

Examiner Note:	**Perform Steps 3-25 are bulleted and may be performed in any order.**
Perform Step: 3√ 2b 1st bullet	Place the following breakers OFF: ECB 792, U1 UPS Corridor South Wall [125 VDC DISTRIBUTION PANEL XED2-1] CPX-ECDPED-02 • XED2-1/1/BKR, CABLE TERMINATION RACK 1-TC-02 SUPPLY BREAKER
Performance Standard:	PLACED XED2-1/1/BKR, Breaker in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 4√ 2b 2nd bullet	Place the following breakers OFF: ECB 792, U1 UPS Corridor South Wall • XED2-1/3/BKR, CABLE TERMINATION RACK 1-TC-08 SUPPLY BREAKER
Performance Standard:	PLACED XED2-1/3/BKR Breaker in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 5√ 2b 3rd bullet	Place the following breakers OFF: ECB 792, U1 UPS Corridor South Wall • XED2-1/7/BKR, HVAC CONTROL PANEL X-CV-01 TRAIN B SUPPLY BREAKER
Performance Standard:	PLACED XED2-1/7/BKR Breaker in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 6√ 2b 4th bullet	Place the following breakers OFF: ECB 792, U1 UPS Corridor South Wall • XED2-1/8/BKR , CABLE TERMINATION RACK X-TC-04 SUPPLY BREAKER
Performance Standard:	PLACED XED2-1/8/BKR Breaker in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬎ UNSAT ⬎**

Perform Step: 7√ 2b 5th bullet	Place the following breakers OFF: ECB 807, U1 CSR North Wall [125 VDC DISTRIBUTION PANEL 1ED1-1] CP1-ECDPED-01 • 1ED1-1/6/BKR, TRAIN A SOLID STATE PROTECTION SYSTEM CABINET 1-SP-01 SUPPLY BREAKER
Performance Standard:	PLACED 1ED1-1/6/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬎ UNSAT ⬎**

Perform Step: 8√ 2b 6th bullet	Place the following breakers OFF: ECB 807, U1 CSR North Wall • 1ED1-1/7/BKR, TRAIN A HVAC CONTROL PANEL X-CV-01 SUPPLY BREAKER
Performance Standard:	PLACED 1ED1-1/7/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ⬎ UNSAT ⬎**

Perform Step: 9√ 2b 7th bullet	Place the following breakers OFF: ECB 807, U1 CSR North Wall Northeast Corner [125 VDC DISTRIBUTION PANEL 1ED2-1] CP1-ECDPED-02 • 1ED2-1/6/BKR, TRAIN B SOLID STATE PROTECTION SYSTEM CABINET 1-SP-01 SUPPLY BREAKER
Performance Standard:	PLACED 1ED2-1/6/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 10√ 2b 8th bullet	Place the following breakers OFF: ECB 807, U1 CSR North Wall Northeast Corner • 1ED2-1/7/BKR, TRAIN B HVAC CONTROL PANEL X-CV-01 SUPPLY BREAKER
Performance Standard:	PLACED 1ED2-1/7/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 11√ 2b 9th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall [118 VAC INSTRUMENT DISTRIBUTION PANEL (CHAN IV) 1PC4] CP1-ECDPPC-04 • 1PC4/6/BKR, SAFEGUARD TEST CABINET (TRAIN B) 1-LTC-01 SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/6/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 12√ 2b 10th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/7/BKR, SSPS INPUT/LOGIC CABINET 1-SP-01A TRAIN A CHANNEL IV SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/7/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 13√ 2b 11th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/8/BKR, SSPS INPUT/LOGIC CABINET 1-SP-01B TRAIN B CHANNEL IV SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/8/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 14√ 2b 12th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/10/BKR, NSSS AUXILIARY RELAY RACK 2 1-LAR-01 SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/10/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 15√ 2b 13th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/11/BKR, 118 VAC INSTRUMENT FUSE PANEL 1PC4-1 (FU2) SUPPLY BREAKER
Examiner Cue:	**The breaker is OFF.**
Performance Standard:	PLACED 1PC4/11/BKR in OFF.
Comment:	**SAT UNSAT**

Perform Step: 16√ 2b 14th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/13/BKR, UPGRADE PROTECTION CABINET (CH IV) 1-50D SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/13/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 17√ 2b 15th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/14/BKR, PROTECTIVE RELAY RACK CHANNEL IV 1-CR-11 SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/14/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 18√ 2b 16th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC4/18/BKR, ERF TRANSDUCER PANEL 1-LV-17 TRANSDUCER V-XD/1PC4 INPUT SUPPLY BREAKER
Performance Standard:	PLACED 1PC4/18/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 19√ 2b 17th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall [118 VAC INSTRUMENT DISTRIBUTION PANEL (CHAN III) 1PC3] CP1-ECDPPC-03 • 1PC3/7/BKR, SSPS INPUT/LOGIC CABINET 1-SP-01A TRAIN A CHANNEL III SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/7/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 20√ 2b 18th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/8/BKR, SSPS INPUT/LOGIC CABINET 1-SP-01B TRAIN B CHANNEL III SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/8/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 21√ 2b 19th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/9/BKR, 118 VAC INSTRUMENT FUSE PANEL 1PC3-1 (FU4) SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/9/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 22√ 2b 20th bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/10/BKR, PROTECTIVE RELAY RACK CHANNEL III 1-CR-11 SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/10/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 23√ 2b 21st bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/11/BKR, 118 VAC INSTRUMENT FUSE PANEL 1PC3-1 (FU2) SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/14/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 24√ 2b 22nd bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/14/BKR, UPGRADE PROTECTION CABINET (CH III) 1-50C SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/14/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 25√ 2b 23rd bullet	Place the following breakers OFF: ECB 807, U1 CSR East Wall • 1PC3/18/BKR, ERF TRANSDUCER PANEL 1-LV-16 TRANSDUCER V-XD/1PC3 INPUT SUPPLY BREAKER
Performance Standard:	PLACED 1PC3/18/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 26 2c	ECB 807, U1 CSR South Wall IF XEC1-1/00/BKR-1, 1EC5 TO 118 VAC INSTRUMENT DISTR PANEL XEC1-1 PREFERRED FEEDER BREAKER is ON, THEN perform the following to transfer XEC1-1 supply to Unit 2.
Examiner Cue:	**XEC1-1/00/BKR-1 is OFF.**
Performance Standard:	Determined XEC1-1/00/BKR-1 is OFF.
Comment:	**SAT UNSAT**

Examiner Note:	Perform Steps 27 and 28 are bulleted and may be performed in any order.
Perform Step: 27√ 2d 1st bullet	Place the following breakers OFF: ECB 807, U1 CSR on South Side of Column, Near West Wall, South of Stairs [118 VAC INSTRUMENT DISTRIBUTION PANEL 1EC6] CP1-ECDPEC-12 • 1EC6/5/BKR, CNTMT RECIRCULATING SUMP 1-02 LEVEL XMTR 1-LT-4781 SUPPLY BREAKER
Performance Standard:	PLACED 1EC6/5/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 28√ 2d 2nd bullet	Place the following breakers OFF: ECB 807, U1 CSR West Wall, South of Stairs to Control Room [118 VAC INSTRUMENT DISTRIBUTION PANEL 1EC5] CP1-ECDPEC-11 • 1EC5/5/BKR, CNTMT RECIRCULATING SUMP 1-01 LEVEL XMTR 1-LT-4779 SUPPLY BREAKER
Performance Standard:	PLACED 1EC5/5/BKR in OFF.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT UNSAT**

Perform Step: 29 2e	Notify Unit Supervisor attachment instructions complete AND DC load shed status. Perform Attachment 2.B when informed by Unit Supervisor that Containment Isolation Phase A and Containment Ventilation Isolation are complete.
Performance Standard:	Notified Unit Supervisor that Attachment 2.A Section 2 is complete.
Examiner Cue:	**The JPM is complete.**
Comment:	**SAT UNSAT**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **Unit 1 is in MODE 3 following a Loss of All AC Power**
- **Unit 2 is in MODE 3 with 2EA1 energized and 2EA2 de-energized**

Initiating Cue: **The Unit Supervisor directs you to PERFORM the following:**

- **Perform Unit 1 Initial DC Load Shed in accordance with ECA-0.0A, Loss of All AC Power, Attachment 2A, Initial DC Load Shed**

Facility: CPNPP JPM # NRC P-3 (U2) Task #RO5115 K/A #068. AA1.11 3.9 / 4.1 SF-8

Title: Emergency Borate from the Remote Shutdown Panel

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:		Plant:	X
Time Critical:		RCA:	X

CUE THE EXAMINEE

Provide the Initial Conditions and Initiating Cue to the Examinee. Any special conditions or instructions should be contained on this sheet.

Initial Conditions: Given the following conditions with Unit 2 at 100% power:

- The Control Room was evacuated due to a Security threat
- Actions of ABN-905B, Loss of Control Room Habitability are in progress and have progressed to the point where Plant Cooldown is desired
- A Reactor Operator is standing by at the Shutdown Transfer Panel
- All security measures have been satisfied and operation in the area of the Remote Shutdown Panel is allowed

Initiating Cue: The Unit Supervisor DIRECTS you to commence emergency boration to the Unit 2 RCS using Attachment 12 of ABN-905B.

Task Standard: Established emergency boration flow from the Remote Shutdown Panel

Ref. Materials: ABN-905B, Loss of Control Room Habitability, Rev. 4, PCN-12.

Validation Time: 5 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☙ UNSAT ☙

Examiner (Print / Sign): _____ Date: _____

Handout:

PROVIDE the examinee with a copy of:

ABN-905B, Loss of Control Room Habitability, Attachment 12, Boration. (labeled Procedure 1)

All operations for this JPM will be in Unit 2 Safeguards Building, 832' elevation on the Remote Shutdown Panel, an ABA1 key is required to access the panel.

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner CUE:	**Shutdown Transfer Panel (STP) switches will be operated by the Extra Reactor Operator.** **Perform Steps 1-3 are bulleted and may be performed in any order.**

NOTE: Pressurizer heaters and spray may be used to enhance boric acid addition to the pressurizer when borating to CSD conditions.

Perform Step: 1 Step 1. 1st Bullet	Transfer the following from CR to HSP: • 43/2 - APBA1L, BA XFER PMP 1 CTRL XFER (STP)
Performance Standard:	CONTACTED Extra Reactor Operator at STP to have switch transferred.
Examiner Cue:	**REPORT 43/2 - APBA1L, BA XFER PMP 1 CTRL XFER switch is broke and cannot be transferred at this time.**
Comment:	**SAT ⬎ UNSAT ⬎**

Examiner Note:	**When pump is transferred green light on 1/2-APBA2L, BA XFER PMP 2 (RSP) will be on.**
Perform Step: 2 √ Step 1. 2nd Bullet	Transfer the following from CR to HSP: • 43/2 - APBA2L, BA XFER PMP 2 CTRL XFER (RSP)
Performance Standard:	TURNED the switch to HSP
Examiner Cue:	**INDICATE switch is in the HSP position and pump green light is ON**
Comment:	**SAT ⬎ UNSAT ⬎**

Examiner Note:	**When valve is transferred green light on 1/2-8104L, EMER BORATE VLV (RSP) will be on.**
Perform Step: 3 √ Step 1. 3rd Bullet	Transfer the following from CR to HSP: • 43/2 – 8104L, EMER BORATE VLV CTRL XFER (RSP)
Performance Standard:	TURNED the switch to HSP
Examiner Cue:	**INDICATE switch is in the HSP position and valve green light is ON**
Comment:	**SAT ⬎ UNSAT ⬎**

Perform Step: 4 √ Step 2.	Start one Boric Acid Transfer Pump: • 1/2 – APBA1L, BA XFER PMP 1 (RSP) • 1/2 – APBA2L, BA XFER PMP 2 (RSP)
Performance Standard:	TURNED 1/2-APBA2L Handswitch momentarily to START.
Examiner Cue:	**INDICATE red light ON, green light OFF for pump started**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 5√ Step 3.	Open 1/2-8104L, EMER BORATE VLV (RSP).
Performance Standard:	TURNED the switch to OPEN
Examiner Cue:	**INDICATE red light ON, green light OFF**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 6 Step 6.	Monitor 2-FI-183B, EMER BORATE FLO (RSP).
Performance Standard:	MONITORED flow on 2-FI-183B.
Examiner Cue:	**INDICATE flow is 95 gpm for one boric acid pump**
Comment:	**SAT ⬙ UNSAT ⬙**

Perform Step: 7	Notify the Unit 2 Unit Supervisor that emergency boration is in progress from the Remote Shutdown Panel.
Performance Standard:	NOTIFIED the Unit 2 Unit Supervisor that emergency boration is in progress from the Remote Shutdown Panel.
Examiner Cue:	**REPORT the Unit Supervisor acknowledges emergency boration in progress from the Remote Shutdown Panel.**
Comment:	**SAT ⬙ UNSAT ⬙**
Terminating Cue:	**This JPM is complete.**

STOP TIME:	

Initial Conditions: **Given the following conditions with Unit 2 at 100% power:**

- **The Control Room was evacuated due to a Security threat**
- **Actions of ABN-905B, Loss of Control Room Habitability are in progress and have progressed to the point where Plant Cooldown is desired**
- **A Reactor Operator is standing by at the Shutdown Transfer Panel**
- **All security measures have been satisfied and operation in the area of the Remote Shutdown Panel is allowed**

Initiating Cue: **The Unit Supervisor DIRECTS you to commence emergency boration to the Unit 2 RCS using Attachment 12 of ABN-905B.**

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	2	Op Test No.:	July 2016 NRC
Examiners:		Operators:			
Initial Conditions:	53% power MOL - RCS Boron is 1054 ppm				
Turnover:	600 MWe due to a B MFP trip. 1-02 MDAFWP in Pull Out (DANGER tagged) with breaker de-energized for scheduled maintenance. Restored B MFP following the trip but 1-PV-2286 was damaged and is DANGER tagged out for repairs. Hold power per load dispatch.				
Critical Tasks:	CT-1	Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI.			
	CT-2	Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.			

Event No.	Malf. No.	Event Type*	Event Description
1	RX05A	I (RO, SRO) TS (SRO)	PRZR level instrument LT-459 fails low
2	RX18	I (BOP, SRO)	Feed Header Pressure Transmitter (PT-508) Fails High
3	RX09A	I (RO, BOP, SRO) TS (SRO)	Main Turbine 1st Stage Pressure (PT-505A) Fails Low
4	CH03	C (BOP, SRO)	Neutron Detector Well Fan 9 trips on motor overload
5	FW06A	C (BOP, SRO)	Main Feed Pump A Recirc valve fails open
6	ED02	TS (SRO)	Loss of XST1 Transformer
7	ED01 EG06A	M (RO,BOP,SRO)	Loss of offsite power Failure of the DG 1-01 to start (air start failure)
8			Emergency Boration due to loss of DRPI
9	FW09A	M (RO,BOP,SRO)	Loss of all AFW TDAFWP Overspeed Trip

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
6	Abnormal events (2-4)
2	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

SCENARIO SUMMARY NRC 2

Turnover:
The plant is at 600 MW following a B MFP trip. Reactor power is being held stable per instruction of the Load Dispatcher. MDAFWP 1-02 is Danger tagged for planned maintenance. When the B MFP tripped it caused damage to 1-PV-2286, Low Pressure Feedwater Heater Bypass Valve. The MFP has been restored to operation but 1-PV-2286 is Danger tagged to complete repairs.

Event 1 (Key 1)
The first event will be a PRZR level channel (LT-459) failing low. Entry into ABN-706, PRZR Level Instrumentation Malfunction, section 2.0, will be required. Letdown will isolate, charging will be placed in manual to control PRZR level. Actions will include selecting an operable channel, restoring letdown, and then restoring PRZR level to program and placing controls back in automatic. The SRO will determine the loss of this channel is a TS entry for LCO 3.3.1, Reactor Trip System Instrumentation; function 9, Condition M.

Event 2 (Key 2)
The next event is Main Feedwater (MFW) Header Pressure Transmitter (PT-508) will fail high. Entry into ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction Section 5.0, is required. Section 5.0 is designated for Feed Header Pressure Malfunction. Actions include placing the MFW Pump Turbine Master Speed Controller in MANUAL. This controller will remain in MANUAL for the duration of the scenario and require monitoring/adjustment. If Pressurizer Pressure falls below 2220 psig, the DNB TS 3.4.1 should be entered.

Event 3 (Key 3)
Once the plant is stabilized, the next event is a Turbine 1st Stage Pressure Transmitter (PT-505) will fail low. Crew actions are per ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 4.0 is required. Section 4.0 is designated for Turbine 1st Stage Pressure Malfunction. Actions include placing Rod Control in Manual and bypassing the failed Turbine 1st Stage Pressure channel. The SRO will refer to Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation; Function 18f, Condition T.

Event 4 (Key 4)
The next event will be a trip of the running Neutron Detector Well Fan #9. This will alarm 2.1 CNTMT FN MASTER TRIP. The ALM will direct the crew to determine which fan has tripped and start the other fan as required using SOP-801A, Containment Ventilation System. The crew will place the tripped fan handswitch in Pull Out or Stop as applicable.

Event 5 (Key 5)
The next event is MFP 'A' Recirculation Valve, 1-FCV-2289, opening. ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, section 11.0 will be entered. Since earlier in this scenario the main feedwater header pressure transmitter failed MFP speed control is in manual. Manual speed control is required to restore S/G levels and stabilize the plant. The RO must ensure rods are in auto for this event. The crew will dispatch an operator to isolate the failed open recirculation valve. Once the failed valve is isolated, the BOP will adjust MFP speed again for the current plant configuration.

Event 6 (Key 6)
The next event is a loss of XST1 which is the alternate offsite power source for Unit 1. The ALM will have the crew enter ABN-601, Response to a 138/345 KV System Malfunction, as well as a TS entry for 3.8.1, Electrical Power Systems, AC Sources – Operating, Condition A.

Event 7 (Key 7)
The major event is a loss of all offsite power causing a reactor trip. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection. Coincident with the loss of offsite power DG 1-01 will fail to auto start and cannot be manually started due to an air start failure. This will cause a complete loss of all safeguards train 'A' power. The crew will transition to EOS-0.1A, Reactor Trip Response, to continue with recovery efforts.

Event 8 – CT-1 (Auto)
Due to the Loss of Offsite Power, DRPI is lost and per EOP-0.0A and EOS-0.1A, Reactor Trip Response, Attachments 1.A, an Emergency Boration will be required. The crew will then perform CT-1; Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response. This will be completed by entering ABN-107, Emergency Boration.

Event 9 (Auto Triggered when 1/1-8104 is placed in open per ABN-107)
After the crew has commenced the emergency boration the TDAFWP will trip on Overspeed. This combined with the loss of all Safeguards Train 'A' power as well as the inoperability of MDAFWP 1-02 will place the crew in a loss of heat sink event. The crew will enter FRH-0.1A, Response to Loss of Secondary Heat Sink, and actuate SI. The crew will then perform CT-2, Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.

Termination Criteria
This scenario is terminated after the crew establishes a bleed and feed path per FRH-0.1A. One CCP and one SI pump running with both PRZR PORVs open.

Risk Significance Determination

Risk Significance	Event	Guidance
Failure of risk important systems prior to Reactor Trip	Loss of Transformer XST1	FSAR 8.2.1.2.1 – Two independent power sources are available on an immediate basis following a DBA to ensure operation of the vital safety functions. The second offsite power source will no longer be available on loss of XST1.
Risk significant core damage sequence	FSAR 15.2.6.3 Loss of Non-emergency AC power to the station auxiliaries	EOS-0.2A, Natural Circulation Cooldown – For Units 1 and 2, the analysis of the natural circulation capability of the RCS has demonstrated that sufficient heat removal capability exists following reactor coolant pump coastdown to prevent fuel or clad damage.
	Loss of Secondary Heat Sink	CPNPP Accident Sequence Quantification, R&R-PN-022 – Loss of secondary heat removal, not related to ventilation failures, accounts for about 9% of CDF.
Risk significant operator actions	Initiation of Boration to Add Negative Reactivity to the Core (TSA 2.14)	STI 214.01; ABN-107, Emergency Boration; WCAP-1687 1-P, Section 6.3.5; TRM Bases 13.1.31 – Within 15 minutes, when local alignment is required to establish boration flow. Boration is initiated within the prescribed time. When local manual control credited, admin controls are utilized to ensure personnel are aware/designated to perform alignment to establish boration flow.

Critical Task Determination

Critical Task	Safety Significance	Cueing	Measurable Performance Indicators	Performance Feedback
Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI.	Shutdown Margin must be maintained. Since there are NO DRPI lights lit the bases states to borate at least 3600 gallons of 7000 ppm borated water to ensure shutdown margin is maintained. This gallon value corresponds to 2 of the most reactive rods stuck out.	After the loss of offsite power and the failure of the DG 1-01, DRPI will be dark and no CCP will be running. Per attachment 1.A of EOS-0.1A, ABN-107 will be performed.	Started CCP 1-02, started Boric Acid Transfer Pump 1-02, and opened 1/1-8104, EMER BORATE VLV.	Boration flow will be indicated on 1-FI-183A, EMER BORATE FLO.
Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.	Actuating SI will ensure a feed path of cool water to the RCS (core) and isolate the containment to confine any RCS releases from the bleed flow. The bleed flow through both PORVs will ensure that enough cool water will feed from the ECCS flow path to remove sufficient decay heat.	AFW flow will not be indicated on any AFW flow meter. Also no AFW pumps will be running. A RED path showing on CSFST for heat sink. The need for a heat sink as indicated by RCS temperature and pressure.	Actuated SI, ensured at least one CCP and SI pump is running with flow indicated providing a feed path for the RCS. Both PRZR PORVs open providing a bleed path for the RCS.	Flow indicated on both a CCP and an SI pump. PRZR PORVs open with block valves open. RCS pressure and temperature lowering.

Scenario Event Description
NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC-16 and 2016 NRC Scenario 2.					
EVENT	**TYPE**	**MALF #**	**DESCRIPTION**	**DEMAND VALUE**	**INITIATING PARAMETER**
SETUP	FWR021		1-02 MDAFWP in Pull Out	RACKOUT	K0
	FWR056		1-PV-2286 Isolated for repairs	CLOSED	K0 (NOTE)
NOTE: See Scenario file on last page for list of event overrides.					
7		EG06A	1-01 EDG air start failure	FAIL	K0
9	Condition	FW09A	TDAFWP trips on 1/1-8104 valve opening (60 second delay)	TRIP	8104 Open
1		RX05A	PRZR level channel LT-459 fails low	0 %	K1
2		RX18	Main Feedwater Header Pressure transmitter fails high	1500 psig	K2
3		RX09A	Main Turbine First Stage pressure PT-505A fails low	0 %	K3
4		CH03	Neutron Detector well fan 9 trip	TRIP	K4
5		FW06A	A MFP recirc valve fails open	OPEN	K5 (NOTE)
NOTE: See Scenario file on last page for list of event overrides.					
6		ED02	Loss of XST1 Transformer	FAIL	K6
7		ED01	Loss of offsite power	FAIL	K7
7		EG06A	1-01 EDG air start failure	FAIL	K0
8			Emergency Borate		
9			Loss of Secondary Heat Sink		
9	Cond.	FW09A	TDAFWP trips on 1/1-8104 valve opening (60 second delay)	TRIP	8104 Open
9	EDR74		Reset IAC 1-02 Breaker	CLOSE	K11

Scenario Event Description
NRC Scenario 2

Simulator Operator: **INITIALIZE to IC-16 and 2016 NRC Scenario 2 and place in RUN.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
ENSURE Operator Aid Tags reflect current boron conditions (1054 ppm).
ENSURE Rod Bank Update (RBU) is performed.
ENSURE Turbine Load Rate set at 10 MWe/minute.
ENSURE 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON at half volume.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
ENSURE procedures in progress are on SRO desk:
- IPO-003A, Power Operations

ENSURE TT06 on PWROPS and all points ON-SCALE
ENSURE Control Rods are in AUTO with Bank D at 167 steps.
ENSURE RED tag on MDAFWP 1-02 with handswitch in Pull Out
ENSURE RED tag on 1-PV-2286 with RED & GREEN Lights OFF
ENSURE GEM Box PLACED 1-HS-2450A for MDAFWP 1-01

Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.2 – IR TRN A RX TRIP BLK
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.6 – RX ≥ 10% PWR P-10
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.2 – IR TRN B RX TRIP BLK
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.2 – PR TRN A LO SETPT RX TRIP BLK
PCIP-4.2 – PR TRN B LO SETPT RX TRIP BLK
9A-3.2 – HDP1 DISCH PRESS HI
9A-7.2 – HDP2 DISCH PRESS HI

Operating Test :	NRC	Scenario #	2	Event #	1	Page	8	of	32
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 1 (Key 1). - **PRZR level channel LT-459 fails low**		
Indications Available: **PRZR LVL LO (5B-3.6)** **PRZR LVL DEV LO (5C-1.2)**		
	RO	RESPOND to Annunciator Alarm Procedures
	RO	RECOGNIZE PRZR level channel LT-459 has failed low
	US	**Direct the performance of ABN-706, Pressurizer Level Instrumentation Malfunction, Section 2.0**
CAUTION: To avoid thermal shock of the reactor coolant piping, the letdown flow should not be stopped without also stopping the charging flow when the reactor coolant temperature is greater than 350°F. NOTE: Channels 459 and 460 are normally the controlling channels.		
	RO	1. Manually CONTROL u-LK-459, PRZR LVL CTRL OR u-FK-121, CCP CHRG FLO CTRL to maintain level at program.
	RO	2. TRANSFER 1/u-LS-459D, PRZR LVL CTRL CHAN SELECT to an operable alternate controlling channel.
	RO	3. ENSURE 1/u-LS-459E, u-LR-459 PRZR LVL SELECT selected to a valid channel.
	RO	4. VERIFY normal letdown aligned - NO
	RO	4. RNO - WHEN pressurizer level is greater than 17%, THEN RESTORE letdown per Attachment 6 or Letdown Job Aid.

Operating Test :	NRC	Scenario #	2	Event #	1	Page	9	of	32
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**US Directs restoration of Letdown per Job Aid.**
	RO	1. OPEN OR VERIFY open both letdown isolation valves. • 1/u-LCV-459, LTDN ISOL VLV • 1/u-LCV-460, LTDN ISOL VLV
	RO	2. ENSURE u-PK-131, LTDN HX OUT PRESS CTRL in MANUAL AND 30% demand (50% if two orifice valves will be opened).
	RO	3. ENSURE u-TK-130, LTDN HX OUT TEMP CTRL in MANUAL AND 50% demand.
	RO	4. ADJUST charging to desired flow WHILE maintaining seal injection flow between 6 and 13 gpm.
	RO	5. OPEN the desired orifice isolation valves. • 1/u-8149A, LTDN ORIFICE ISOL VLV (45 GPM) • 1/u-8149B, LTDN ORIFICE ISOL VLV (75 GPM) • 1/u-8149C, LTDN ORIFICE ISOL VLV (75 GPM)
	RO	6. ADJUST u-PK-131, LTDN HX OUT PRESS CTRL to obtain approximately 310 psig on u-PI-131, LTDN HX OUT PRESS, THEN PLACE in automatic.
	RO	7. ADJUST u-TK-130, LTDN HX OUT TEMP CTRL to obtain approximately 95EF on u-TI-130, LTDN HX OUT TEMP, THEN PLACE in automatic.
Simulator Operator:		**If contacted as the prompt team, acknowledge the request to repair LT-459.**
	RO	5. If necessary, RECLOSE 1/u-PCPR, PRZR CTRL HTR GROUP C by placing the control switch in the "ON" position.
	RO	6. If desired, PLACE controller used in Step 1 in AUTO.
	RO	7. VERIFY instruments on common instrument line – NORMAL (see Attachment 1)

Operating Test :	NRC	Scenario #	2	Event #	1	Page	10	of	32
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
	RO	10. REFER to Technical Specifications per Attachment 5. 3.3.1-1 Function 9, Technical Specification 3.3.1 Condition M, 72 hours to place in trip
	RO	11. INITIATE a Condition Report per STA-421, as applicable.
When the Charging and Letdown flows are stable, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	2	Event #	2	Page	11	of	32
Event Description:	Feed Header Pressure Transmitter (PT-508) Fails High								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 2 (Key 2). - RX18, Feed Header Pressure Transmitter (PT-508) Fails High.
		Indications Available: **Plant Computer Alarm for high Feed Header pressure** **1-PI-508, FWP DISCH HDR PRESS indication fails high**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Feed Header Pressure 1-PT-508 transmitter failure.
		Examiner Note: Feed header pressure failing high will cause Feedwater Pump speed to lower. The Main Feedwater Pump Master Speed Controller will remain in MANUAL for the remainder of the scenario.
		Examiner Note: If Pressurizer Pressure falls below 2220 psig, the RO should recognize entry into TS 3.4.1 for DNB.
	US	**DIRECT performance of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 5.0.**
	BOP	1. PLACE 1-SK-509A, FWPT Master Speed Controller in MANUAL.
		NOTE: Computer point P5446A, FW STM FLOW SETPOINT may aid the operator.
	BOP	2. ADJUST 1-SK-509A, FWPT Master Speed Controller to MAINTAIN ΔP between FWP Discharge Pressure and Steam Line Pressure. • From 20% to 100% power, RAMP ΔP from 80 PSIG to 181 PSIG.
		Simulator Operator: If contacted as prompt team acknowledge request to repair PT-508.
	US	3. INITIATE a Condition Report per STA-421.

Operating Test :	NRC	Scenario #	2	Event #	2	Page	12	of	32
Event Description:	Feed Header Pressure Transmitter (PT-508) Fails High								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**Feed header pressure transmitter PT-508 will remain failed for the remainder of the scenario. The Main Feedwater Pump Master Speed Controller will remain in MANUAL for the remainder of the scenario. Step 5.3.4 will NOT be performed.**
	US	4. WHEN repairs are complete, THEN PLACE 1-SK-509A, FWP MASTER SPD CTRL in – AUTO as follows: a. ENSURE differential pressure appropriate for plant conditions. b. PLACE 1-SK-509A in – AUTO c. VERIFY correct differential pressure automatically maintained.
When control of Feedwater is restored, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	2	Event #	3	Page	13	of	32
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 3 (Key 3).** **- RX09A, Main Turbine 1st Stage Pressure Transmitter (PT-505) Fails Low.**
Indications Available:		**6D-1.10 – AVE T_{AVE} T_{REF} DEV** **PCIP-2.4 – LO TURB PWR ROD WITHDRW BLK C-5** **1-PI-505 – Turbine Impulse Pressure Channel I indication fails low** **1-TI-412A – Ave T_{AVE} T_{REF} Deviation indication to maximum**
	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE Control Rods INSERTING due to Turbine Impulse Pressure Instrument failure.
	RO/BOP	REPORT PT-505, Turbine Impulse Pressure Channel I has failed low.
	US	**DIRECT implementation of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 4.0.**
NOTE: TURB IMP PRESS CHAN SELECT u-PS-505Z should normally be in the "BOTH" position and input for control rod response will be from PT-505. With this switch in the PS-506 position, input for control rod response will be from PT-506.		
	RO	1. PLACE 1/1-RBSS Control Rod Bank Select Switch in MANUAL.
NOTE: The following step will prevent automatic steam dump actuation on an actual load rejection, if RNO step is applied.		
	BOP	2. VERIFY Steam Dumps - CLOSED WITH NO OPEN DEMAND.
		2. RNO - IF Steam Dump operation NOT required, THEN PLACE at least one Steam Dump Interlock Select Switch – OFF. • 43/1-SDA, STM DMP INTRLK SELECT. • 43/1-SDB, STM DMP INTRLK SELECT.

Operating Test :	NRC	Scenario #	2	Event #	3	Page	14	of	32
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
		CAUTION: A briefing should be conducted to evaluate steam dump response and contingency actions should a subsequent runback or trip occur. Reference Section 4.2.
		NOTE: • If transferring dumps to steam pressure mode, steam demand will be erroneously high if PT-505 is failed low. • The following step ensures steam dumps available for subsequent runbacks or trips. • Attachment 8 is available to aid in brief (L)
	BOP	3. RESTORE steam dump availability by placing Steam Dumps in STM PRESS Mode per Attachment 7.
Examiner Note: ABN-709 Attachment 7 steps are after the steps for section 4.0 (next page)		
	RO	4. TRANSFER 1-PS-505Z, TURB IMP PRESS CHAN SELECT to PS-506.
Examiner Note: The crew will conduct a Reactivity Brief and execute a Reactivity Plan to restore T_{AVE} to T_{REF}.		
	RO	5. ENSURE T_{AVE} within 1°F of T_{REF}.
	RO	6. PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO.
	US/RO	7. CHECK Reactor Plant in – MODE 1.
	US/BOP	8. CHECK Turbine Power – GREATER THAN 10% POWER.
		NOTE: The following step will prevent the automatic block of several reactor trips when Reactor power is below 10% power.
	US	9. Within 1 hour, VERIFY PCIP Window 4.6 – TURB ≤ 10% PWR P-13, IN PROPER STATE for existing plant conditions (DARK). - YES

Operating Test :	NRC	Scenario #	2	Event #	3	Page	15	of	32
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
	US	10. VERIFY PCIP Window 1.3 – AMSAC BLK TURB < 40% PWR C-20 – IN PROPER STATE (DARK) for actual Turbine power. - NO
	US/BOP	10. RNO - IF AMSAC actuation blocked AND turbine power >40%, THEN ENSURE Automatic Actions of ALB-9B 3.7, AMSAC ACT TURB TRIP as necessary.
	US	11. INITIATE a Condition Report per STA-421.
	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.T, Reactor Trip System Instrumentation. (Function 18.f, Turbine 1st Stage Pressure P-13)
		• CONDITION T - One or more required channels inoperable. • ACTION T.1 - Verify interlock is in required state for existing unit conditions within one (1) hour, OR • ACTION T.2 - Be in MODE 2 within 7 hours.
Examiner Note:		**The following six steps are from ABN-709, Attachment 7, Transferring Steam Dumps and may be performed using the Control Board Job Aid.**
	BOP	1. ENSURE 1-PK-507, STM DMP PRESS CTRL is in MANUAL.
	BOP	2. MATCH 1-PK-507, STM DUMP PRESS CTRL demand to current Steam Dump Valve position.
	BOP	3. VERIFY 1-PCIP, Window 1.4 – CNDSR AVAIL STM DMP ARMED C-9 is ON.
NOTE:		STM DMP VLV lights provide indication of proper system response during subsequent steps.
	BOP	4. PLACE 43/1-SD, STM DMP MODE SELECT in STM PRESS.
	BOP	5. ENSURE both STM DMP INTLK SELECT switches are ON.

Operating Test :	NRC	Scenario #	2	Event #	3	Page	16	of	32
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
	BOP	6. IF desired to control Steam Dumps in AUTO, THEN PERFORM the following: a. VERIFY 1-PI-507, MS HDR PRESS indicates current MSL pressure. b. ENSURE 1-PK-507, STM DMP PRESS CTRL set to control at 1092 psig for "no load" conditions (Pot setting 6.86). c. PLACE 1-PK-507, STM DMP PRESS CTRL in AUTO.
When TS are completed and Rod Control has been restored to Automatic or at Lead Examiner discretion, PROCEED to Event 4		

Operating Test :	NRC	Scenario #	2	Event #	4	Page	17	of	32
Event Description:	Neutron Detector Well Fan #9 trips on motor overload								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 4 (Key 4) - **Neutron Detector well fan #9 trips**
		Indications Available: **CB03-2.1 CNTMT FN MASTER TRIP**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Neutron Detector well fan #9 tripped
	BOP	**Performs actions of ALM-0031A Window 2.1**
		NOTE: IF the trip is due to the overcurrent trip switch (OTS) , THEN the handswitch white light will be illuminated. A phase overcurrent trip can be identified at breaker compartment by red buttons on affected relays.
		NOTE: IF the trip is due to a Motor Overload, THEN the handswitch white light will be illuminated. A blown control power fuse OR breaker trip will cause a loss of all handswitch light indication.
	BOP	1. DETERMINE affected fan from the associated handswitch light indication. • 1-HS-5435, NEUT DET WELL FN CLR FN 9 & DMPR
		Examiner Note: The steps of SOP-801A, Containment Ventilation System, Section 5.2.1, Neutron Detector Well Cooling System Startup are only to place the non-affected fan to start.
	BOP	2. START an alternate fan, as required per SOP-801A.
	BOP	3. PLACE affected fan handswitch in Pull Out OR Stop, as available.
		NOTE: The Control Rod Drive Mechanism Fan AND Containment Air Cooling AND Recirc Fan Overcurrent Trip Switch can be reset locally at the breaker compartment OR by placing the handswitch in Trip OR Pull Out. The Reactor Coolant Pipe Penetration Fan, Preaccess Filtration Fan OR Neutron Detector Well Fan motor overload must be reset at the breaker.

Operating Test :	NRC	Scenario #	2	Event #	4	Page	18	of	32
Event Description:	Neutron Detector Well Fan #9 trips on motor overload								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When contacted to investigate the fan trip wait 2 minutes and report back the breaker has tripped on motor overload.**
	RO/BOP	4. DISPATCH an operator to affected fan breaker to determine cause of trip.
	US	5. WHEN conditions permit, THEN PERFORM a Containment entry per STA-620 to check the fan for signs of damage (smoke, acrid odor, overheating).
	US	6. CORRECT the condition OR INITIATE a CR per STA-421, as applicable.
When the plant is stable or at Lead Examiner discretion, PROCEED to Event 5		

Operating Test :	NRC	Scenario #	2	Event #	5	Page	19	of	32
Event Description:	A MFP recirc valve opens								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 5 (Key 5). - A MFP Recirc valve opens
		Indications Available: **ALL S/G levels lowering** **FWP A/B RECIRC VLV NOT CLOSED (7B-4.8)** **SG 1 STM & FW FLO MISMATCH (8A-1.8)** **SG 2 STM & FW FLO MISMATCH (8A-2.8)** **SG 3 STM & FW FLO MISMATCH (8A-3.8)** **SG 4 STM & FW FLO MISMATCH (8A-4.8)** **SG 1 LVL DEV (8A-1.12)** **SG 2 LVL DEV (8A-2.12)** **SG 3 LVL DEV (8A-3.12)** **SG 4 LVL DEV (8A-4.12)**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE A MFP Recirc valve is open AND MFP speed control is in MANUAL. Raises MFP speed to restore S/G levels.
	US	**Direct entry into ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 11.0.**
		CAUTION: Using Load Target to reduce load without rods in AUTO can result in excessive TAVE-TREF mismatch before C-7 activates. This mismatch may cause an SI when steam dumps trip open.
	RO	1. Ensure 1/u-RBSS, CONTROL ROD BANK SELECT in AUTO
		Examiner Note: 1-PV-2286 is Red tagged and cannot be opened. The crew will skip this step.
	BOP	2. Ensure u-HS-2286, LP FW HTR BYP VLV – OPEN - NO
		Examiner Note: Turbine power is already 600 MW so the next step will not be performed
	BOP	3. Reduce Turbine Power to 700 MW

Operating Test :	NRC	Scenario #	2	Event #	5	Page	20	of	32
Event Description:	A MFP recirc valve opens								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When contacted to isolate the A MFP recirc valve after 2 minutes** **DELETE MALFUNCTION FW06A** **Report back that the valve has been manually isolated by closing FW-0023.**
	RO/BOP	4. Dispatch Operator to isolate affected recirc valve: • u-FV-2289, FWP A RECIRC VALVE • u-FV-2290, FWP B RECIRC VALVE
	BOP	5. Verify Main Feedwater pump suction pressure - GREATER THAN 200 PSIG • u-PI-2295, FWP A SUCT PRESS • u-PI-2297, FWP B SUCT PRESS
	RO/US	6. Verify the following: a. Rods - ABOVE ROD INSERTION LIMIT b. Δ Flux - (AFD) WITHIN LIMITS
	US	7. Verify Reactor Power change – LESS THAN 15% RTP WITHIN ONE HOUR.
Examiner Note:		**The following step will not be performed as power is unchanged for this event**
	US	8. Notify QSE Generation Controller and update GAPS to "Create Current Condition" for the down power.
Simulator Operator:		**When contacted as a member of plant management inform the crew that continued operation of the A MFP with its recirc flowpath isolated at the current power is desired.**
	US	9. Plant Management has determined continued operation of the Feedwater pump is required with recirc flowpath isolated.
	US	10. Restore power to level specified by Shift Manager.
	BOP	11. WHEN steam dumps have closed, THEN reset C-7, if armed. • 43/u-SD, STM DMP MODE SELECT
	US	12. Initiate equipment repairs per STA-606.

Operating Test : NRC	Scenario # 2	Event # 5	Page 21 of 32
Event Description: A MFP recirc valve opens			

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**1-PV-2286 is Red tagged and cannot be open/closed. The crew will not perform this step.**
	BOP	13. Close u-HS-2286, LP FW HTR BYP VLV by performing Section 7.0 of this procedure.
	US	14. Return to procedure and step in effect.
When the plant is stabilized or at Lead Examiner discretion, PROCEED to Event 6		

Operating Test :	NRC	Scenario #	2	Event #	6	Page	22	of	32
Event Description:	Loss of XST1								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 6 (Key 6).** **- Loss of XST1 transformer**
Indications Available:		**138 KV XFMR XST1 TRBL (CB14-1.1)** **138 KV XFMR XST1 LOR TRIP (CB14-3.1)** **138 KV XFMR XST1 VOLT LO (CB14-3.2)**
	BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE the loss of XST1 transformer and
	US	**Direct entry into ABN-601, RESPONSE TO A 138/345 KV SYSTEM MALFUNCTION, Section 2.0.**
Examiner Note:		**The alarms that are received will send the crew to the ABN however they may use the ALMs to start the recovery. The ALM will direct the US to the TS.**
	US/BOP	1. Determine AC Power Status: a. Check the Unit - IN MODES 1, 2, 3 OR 4 - YES b. Check 6.9 KV Safeguard Buses - AT LEAST ONE ENERGIZED - YES
		CAUTION: Loads shall not be placed on offsite power without the TGM Transmission Grid Controller's concurrence.
	US/BOP	c. Check Unit 6.9 KV Non-Safeguard Buses – ALL REMAINED ENERGIZED WITH LOADS CONNECTED TO THE BUS - YES d. GO TO Step 4
	BOP	4. Check Switchyard Bus Status - ALL ENERGIZED • V-E BUS, 345 KV E. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV • V-W BUS, 345 KV W. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV • V/ST1, INCOMING 138 KV XFMR FDR VOLT (CB-12) - BETWEEN 135 KV and 144 KV (DE-ENERGIZED)

Operating Test : NRC	Scenario # 2	Event # 6	Page 23 of 32
Event Description: Loss of XST1			

Time	Position	Applicant's Actions or Behavior
	BOP	5. Monitor Blackout Sequencer Status: a. Affected bus – ENERGIZED - YES b. Verify Blackout Sequencer – OPERATED • OUTPUT-STEP TIME lights - ALL LIT - NO • Automatic lockouts AL light – LIT - NO
	US	5. RNO - GO TO Step 6.
	BOP	6. Check Transformer XST1 Status: a. V/ST1, STARTUP XFMR XST1 138 KV FDR VOLT (CB-12) - BETWEEN 135 KV and 144 KV – NO
	US	**6. RNO - INITIATE Attachment 2, Restoration of XST1.**
Simulator Operator:		**When contacted as the Shift Manager or Switchyard Coordinator inform the US that the Shift Manager will coordinate the actions of Attachment 2, and that the US should continue with ABN-601, Section 2.0 actions.**
	US	1. Determine the origin for the loss of power by performing the following: • Contact the Switchyard Coordinator to provide assistance in determining the transformer status.
Examiner Note:		**ABN-601 Steps 7, 8 & 9 relate to unaffected transformers and may be N/A'd by the SRO or read and verified.**
	BOP	10. Verify Diesel Generators - NOT RUNNING
	BOP	11. Verify 6.9KV Bux XA1 - ENERGIZED
Simulator Operator:		**If contacted as the Shift Manager to have Unit 2 perform SR 3.8.1.1, state that the Extra RO will perform the SR.**
	US	12. Refer to the appropriate TS: • MODES 1, 2, 3, OR 4 - Section 3.8.1 AC Sources - Operating • Condition A is applicable • This is a 1 hour spec to perform SR 3.8.1.1 – Verification of offsite sources 72 hours to restore power
When the plant is stabilized or at Lead Examiner discretion, PROCEED to Event 7		

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	24	of	32
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 7 (Key 7).** **- Loss of offsite power**
Indications Available: **Reactor Trip** **Turbine Trip** **Multiple Annunciators**		
	CREW	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE the Reactor Trip and perform Immediate Actions
	US	**Direct entry into EOP-0.0A, Reactor Trip or Safety Injection**
	RO	1. VERIFY Reactor Trip:
		a. Verify the following:
		• VERIFY Reactor Trip Breakers – OPEN.
		• VERIFY Neutron flux – DECREASING.
		b. VERIFY all Control Rod Position Rod Bottom Lights – ON. - NO
Examiner Note:		**Emergency Boration is required since all DRPI lights are DARK. This is on Attachment 1.A of both EOP-0.0A and EOS-0.1A. The steps are listed as if this is going to be performed in EOS-0.1A since the transition to this procedure will take place very quickly from EOP-0.0A.** **Critical Task Start Time on Loss of DRPI: _____**
	BOP	2. VERIFY Turbine Trip:
		• VERIFY all HP Turbine Stop Valves – CLOSED.
Examiner Note:		**The EDG 1-01 will fail to start and cannot be started due to an air start failure**
Simulator Operator:		**If contacted to investigate the failure of the EDG 1-01, wait 2 minutes and report back that the diesel will not start and an air start failure alarm is locked in**
	BOP	3. VERIFY Power to AC Safeguards Buses:

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	25	of	32
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
		a. VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED.
		b. VERIFY both AC Safeguards Buses – ENERGIZED. - NO
		b. RNO - Restore power to de-energized AC safeguards bus per ABN-601, RESPONSE TO A 138/345 KV SYSTEM MALFUNCTION or ABN-602, RESPONSE TO A 6900/480 VOLT SYSTEM MALFUNCTION when time permits.
	RO	4. CHECK SI status:
		a. CHECK if SI is actuated.
		○ VERIFY SI indicated on the First Out Annunciator Panel 1-ALB-6C.
		○ VERIFY SI Actuated blue status light – ON. - NO
	RO	4. a. RNO - Check if SI is required:
		○ Steam Line Pressure less than 610 psig. - NO
		○ Pressurizer Pressure less than 1820 psig. - NO
		○ Containment Pressure greater than 3.0 psig. - NO
		○ IF SI is NOT required, THEN go to EOS-0.1A, REACTOR TRIP RESPONSE, Step 1.
	US	**Transitions to EOS-0.1A, Reactor Trip Response**
Examiner Note:		**RO initiates Emergency Boration for Loss of DRPI per Attachment 1.A of EOP-0.0A or EOS-0.1A. (Guidance is duplicated in both procedures)**
		CAUTION: CCP runout may occur with simultaneous flow through both charging and SI flowpaths.
		NOTE: Attachment 1 and Attachment 4 have been developed into Operator Aids for use during emergency boration and may be entered independently of this procedure.
CRITICAL TASK STATEMENT		**CT-1 Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI. Emergency Boration Initiated Time:_____**

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	26	of	32
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
	RO	1. Ensure a charging pump is running: • 1/u-APCH1, CCP 1 - NO • 1/u-APCH2, CCP 2 - YES • 1/u-APPD, PDP
CT-1	**RO**	**2. Start a boric acid transfer pump:** • 1/u-APBA1, BA XFER PMP 1 - AUTO (AFTER START) - NO • **1/u-APBA2, BA XFER PMP 2 - AUTO (AFTER START) - YES**
CT-1	**RO**	**3. Open 1/u-8104, EMER BORATE VLV**
Examiner Note:		**When the RO opens the emergency borate valve 1/1-8104 it will auto insert event 9 (60 second delay) for the loss of all AFW. This will give the crew a RED path on Heat Sink.**
	RO	4. Verify flow on u-FI-183A, EMER BORATE FLO
	RO	5. Verify flow on u-FI-121A, CHRG FLOW
	RO	6. IF EMER BORATE FLOW OR CHRG FLOW can NOT be verified, THEN initiate Emergency Boration Flow per another method of ABN-107.
	RO	7. WHEN desired to terminate emergency boration (Reference Attachment 7 of ABN-107), THEN GO TO Step 8 of ABN-107.
	US	**Transitions to FRH-0.1A, Response to Loss of Heat Sink on Red Path**

Operating Test :	NRC	Scenario #	2	Event #	9	Page	27	of	32
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
		CAUTION: If total feed flow is less than 460 gpm due to operator action as directed by the ERGs, this procedure need not be performed.
		CAUTION: Feed flow should not be re-established to any faulted SG if a non-faulted SG is available.
	US	1. Check If Secondary Heat Sink Is Required: a. RCS pressure - GREATER THAN ANY NON-FAULTED SG PRESSURE - YES b. RCS temperature - GREATER THAN 350°F - YES
	RO	2. Check CCP Status - BOTH AVAILABLE - NO
Examiner Note:		**There will be no power to the A train PORV block valve but since it was open when it lost power it will still be open when the crew opens the associated PORV**
	RO	2. RNO - Immediately perform the following: a. STOP ALL RCPs. b. Verify power to PRZR PORV block valves – AVAILABLE c. Go to Step 13. OBSERVE CAUTION PRIOR TO STEP 13.
		CAUTION: Steps 13 through 22 must be performed quickly in order to establish RCS heat removal by RCS bleed and feed.
CRITICAL TASK STATEMENT		**CT-2 Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.**
CT-2	**RO**	**13. Actuate SI**

Operating Test :	NRC	Scenario #	2	Event #	9	Page	28	of	32
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
	RO	14. Verify RCS Feed Path: a. Check CCP SI flow indicator - CHECK FOR FLOW b. Check SI pumps - BOTH RUNNING - NO
	RO	14. b. RNO - Perform the following: 1) Manually start pump(s) and align valves as necessary. 2) IF either of the following RCS feed paths exists, THEN go to Step 15. • CCPs - BOTH INJECTING - NO • AT LEAST ONE CCP INJECTING AND ONE SI PUMP RUNNING - YES
Examiner Note:		**Steps 15 - 20 will be performed via Attachment 1D and will not be directed individually by the US.**
	BOP	15. Check If Diesels Should Be Emergency Started: a. Check diesel generator(s) – RUNNING - DG 1-02 Only b. Place D/G EMER STOP/START handswitch(es) in START.
	BOP	16. Reset SI.
	BOP	17. Reset SI Sequencers.
	BOP	18. Reset Containment Isolation Phase A And Phase B.
	BOP	19. Reset Containment Spray Signal.
Simulator Operator:		**When requested to RESET Instrument Air Compressor 1-02 Breaker, wait 2 minutes and EXECUTE remote function EDR74 to CLOSE (Key 11). Provide Field Support report that IAC 1-02 Breaker is Closed.**
	BOP	20. Establish Instrument Air And Nitrogen To Containment: a. Establish instrument air: 1) Verify air compressor running. • Establish instrument air to containment.
		b. Establish nitrogen: 1) Verify ACCUM 1●4 VENT CTRL, 1-HC-943 – CLOSED 2) Open SI/PORV ACCUM N2 ISOL VLV, 1/1-8880.

Operating Test :	NRC	Scenario #	2	Event #	9	Page	29	of	32
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**There will be no power to the A train PORV block valve but since it was open when it lost power it will still be open when the crew opens the associated PORV**
CT-2	**RO**	21. Establish RCS Bleed Path: a. Verify power to PRZR PORV block valves – AVAILABLE b. Verify PRZR PORV block valves - BOTH OPEN **c. Open PRZR PORVs.**
	RO	22. Verify Adequate RCS Bleed Path: • PRZR PORVs - BOTH OPEN • PRZR PORV block valves- BOTH OPEN
After the bleed and feed is initiated, TERMINATE the scenario.		

;2016 NRC Scenario 2
;Rev. 1

;Initialize to IC-16

;Setup MDAFWP 1-02 in Pull-Out - Breaker Deenergized

IRF FWR021 f:0

;1-PV-2286 Isolated for Repairs
IOR LOFWHS2286_1 f:0
IOR LOFWHS2286_2 f:0
IRF FWR056 f:0

;Event 1 - PRZ LVL [LT-459] Fails Low

IMF RX05A f:0 k:1

;Event 2 - Main Feedwater Header Pressure [PT-508] Fails High

;PT-508 Fails High
IMF RX18 f:1500 k:2

;Event 3 - Main Turbine 1st Stage Pressure [PT-505A] Fails Low

;PT-505A Fails Low
IMF RX09A f:0 k:3

;Event 4 - Neutron Detector Well FN 9 Motor Overload

IMF CH03 f:1 k:4

;Event 5 - FWP A Recirc Valve Fails Open

IMF FW06A f:100 r:10 k:5

;Local Isolation of FV-2289 by FW-0023
;Delete Malfunction FW06A
IOR LOFWZL2289_1 f:0 k:5 d:120
IOR LOFWZL2289_2 f:1 k:5 d:120
IOR LOANAN7B_32 f:1 k:5 d:120

;Event 6 - Loss of XST1

IMF ED02 f:1 k:6

;Event 7 - Loss of Offsite Power/DG 1-01 Air Start Failure

;LOOP
IMF ED01 f:1 k:7

;Reset IAC 1-02 Breaker
IRF EDR74 f:2 k:11

;DG 1-01 Air Start Failure
IMF EG06A f:1

;Event 8 - Emergency Boration for Loss of DRPI

;Event 9 - TDAFWP Trip if Running (FRH Entry)

;TDAFWP Trip after emergency borate started

{DICVHS8104.Value=2} IMF FW09A f:1 d:60

GUARDED EQUIPMENT MANAGEMENT (GEM) SIGN POSTING LOG

REASON FOR POSTING MD AFWP 1-02 INOPERABLE

Component to be Posted	Nomenclature	Posting Installed Initial	Posting Checked Initial	Posting Removed Initial
1-HS-2450A	MD AFWP 1 => CB / 830 / X-135	JGR	RB	
1APMD1	AUXILIARY FEEDWATER PUMP 1-01 MOTOR BREAKER => SG / 810 / 1-083	JGR	RB	
S1-16	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP 1-01 ROOM => SG / 790 / 1-072	JGR	RB	

Authorized By Joe UnitSupervisor Date Today Posting Removal Authorized By _____ Date _____

Open Narrative Log Entry Entered ☑ Open Narrative Log Entry Closed ☐

Comments: This form is not maintained. Verify correct items Guarded per STI-600.01 prior to use.

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	2	Op Test No.:	July 2016 NRC
Examiners:		Operators:			

Initial Conditions: 53% power MOL - RCS Boron is 1054 ppm

Turnover: 600 MWe due to a B MFP trip. 1-02 MDAFWP in Pull Out (DANGER tagged) with breaker de-energized for scheduled maintenance. Restored B MFP following the trip but 1-PV-2286 was damaged and is DANGER tagged out for repairs. Hold power per load dispatch.

Critical Tasks:

~~CT-1 Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI.~~

CT-1 Manually control the Main Feedwater Master Speed Controller to prevent receiving an automatic reactor trip due to low steam generator levels, or a trip of Main Feed Pumps due to low suction pressure, and subsequent manual reactor trip.

CT-2 Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.

Event No.	Malf. No.	Event Type*	Event Description
1	RX05A	I (RO, SRO) TS (SRO)	PRZR level instrument LT-459 fails low
2	RX18	I (BOP, SRO)	Feed Header Pressure Transmitter (PT-508) Fails High
3	RX09A	I (RO, BOP, SRO) TS (SRO)	Main Turbine 1st Stage Pressure (PT-505A) Fails Low
4	CH03	C (BOP, SRO)	Neutron Detector Well Fan 9 trips on motor overload
5	FW06A	C (BOP, SRO)	Main Feed Pump A Recirc valve fails open
~~6~~	~~ED02~~	~~TS (SRO)~~	~~Loss of XST1 Transformer~~
7	ED01 EG06A	M (RO,BOP,SRO)	Loss of offsite power Failure of the DG 1-01 to start (air start failure)
~~8~~			~~Emergency Boration due to loss of DRPI~~
9	FW09A	M (RO,BOP,SRO)	Loss of all AFW TDAFWP Overspeed Trip

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications

Actual	Target Quantitative Attributes
~~8~~ 7	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
~~6~~ 5	Abnormal events (2-4)
2	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

Scenario Event Description
NRC Scenario 2

SCENARIO SUMMARY NRC 2

Turnover:
The plant is at 600 MW following a B MFP trip. Reactor power is being held stable per instruction of the Load Dispatcher. MDAFWP 1-02 is Danger tagged for planned maintenance. When the B MFP tripped it caused damage to 1-PV-2286, Low Pressure Feedwater Heater Bypass Valve. The MFP has been restored to operation but 1-PV-2286 is Danger tagged to complete repairs.

Event 1 (Key 1)
The first event will be a PRZR level channel (LT-459) failing low. Entry into ABN-706, PRZR Level Instrumentation Malfunction, section 2.0, will be required. Letdown will isolate, charging will be placed in manual to control PRZR level. Actions will include selecting an operable channel, restoring letdown, and then restoring PRZR level to program and placing controls back in automatic. The SRO will determine the loss of this channel is a TS entry for LCO 3.3.1, Reactor Trip System Instrumentation; function 9, Condition M.

Event 2 (Key 2)
The next event is Main Feedwater (MFW) Header Pressure Transmitter (PT-508) will fail high. Entry into ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction Section 5.0, is required. Section 5.0 is designated for Feed Header Pressure Malfunction. Actions include placing the MFW Pump Turbine Master Speed Controller in MANUAL. This controller will remain in MANUAL for the duration of the scenario and require monitoring/adjustment. If Pressurizer Pressure falls below 2220 psig, the DNB TS 3.4.1 should be entered.

Event 3 (Key 3)
Once the plant is stabilized, the next event is a Turbine 1st Stage Pressure Transmitter (PT-505) will fail low. Crew actions are per ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 4.0 is required. Section 4.0 is designated for Turbine 1st Stage Pressure Malfunction. Actions include placing Rod Control in Manual and bypassing the failed Turbine 1st Stage Pressure channel. The SRO will refer to Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation; Function 18f, Condition T.

Event 4 (Key 4)
The next event will be a trip of the running Neutron Detector Well Fan #9. This will alarm 2.1 CNTMT FN MASTER TRIP. The ALM will direct the crew to determine which fan has tripped and start the other fan as required using SOP-801A, Containment Ventilation System. The crew will place the tripped fan handswitch in Pull Out or Stop as applicable.

Event 5 (Key 5)
The next event is MFP 'A' Recirculation Valve, 1-FCV-2289, opening. ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, section 11.0 will be entered. Since earlier in this scenario the main feedwater header pressure transmitter failed MFP speed control is in manual. Manual speed control is required to restore S/G levels and stabilize the plant. The RO must ensure rods are in auto for this event. The crew will dispatch an operator to isolate the failed open recirculation valve. Once the failed valve is isolated, the BOP will adjust MFP speed again for the current plant configuration.

~~**Event 6 (Key 6)**~~
~~The next event is a loss of XST1 which is the alternate offsite power source for Unit 1. The ALM will have the crew enter ABN-601, Response to a 138/345 KV System Malfunction, as well as a TS entry for 3.8.1, Electrical Power Systems, AC Sources – Operating, Condition A.~~

Event 7 (Key 7)
The major event is a loss of all offsite power causing a reactor trip. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection. Coincident with the loss of offsite power DG 1-01 will fail to auto start and cannot be manually started due to an air start failure. This will cause a complete loss of all safeguards train 'A' power. The crew will transition to EOS-0.1A, Reactor Trip Response, to continue with recovery efforts.

~~**Event 8 – CT-1 (Auto)**~~
~~Due to the Loss of Offsite Power, DRPI is lost and per EOP-0.0A and EOS-0.1A, Reactor Trip Response, Attachments 1.A, an Emergency Boration will be required. The crew will then perform CT-1; Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response. This will be completed by entering ABN-107, Emergency Boration.~~

Event 9 (Auto Triggered when 1/1-8104 is placed in open per ABN-107)
After the crew has commenced the emergency boration the TDAFWP will trip on Overspeed. This combined with the loss of all Safeguards Train 'A' power as well as the inoperability of MDAFWP 1-02 will place the crew in a loss of heat sink event. The crew will enter FRH-0.1A, Response to Loss of Secondary Heat Sink, and actuate SI. The crew will then perform CT-2, Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.

Termination Criteria
This scenario is terminated after the crew establishes a bleed and feed path per FRH-0.1A. One CCP and one SI pump running with both PRZR PORVs open.

Risk Significance Determination

Risk Significance	Event	Guidance
Failure of risk important systems prior to Reactor Trip	Loss of Transformer XST1	FSAR 8.2.1.2.1 – Two independent power sources are available on an immediate basis following a DBA to ensure operation of the vital safety functions. The second offsite power source will no longer be available on loss of XST1.
Risk significant core damage sequence	FSAR 15.2.6.3 Loss of Non-emergency AC power to the station auxiliaries	EOS-0.2A, Natural Circulation Cooldown – For Units 1 and 2, the analysis of the natural circulation capability of the RCS has demonstrated that sufficient heat removal capability exists following reactor coolant pump coastdown to prevent fuel or clad damage.
	Loss of Secondary Heat Sink	CPNPP Accident Sequence Quantification, R&R-PN-022 – Loss of secondary heat removal, not related to ventilation failures, accounts for about 9% of CDF.
Risk significant operator actions	Initiation of Boration to Add Negative Reactivity to the Core (TSA 2.14)	STI 214.01; ABN-107, Emergency Boration; WCAP-1687 1-P, Section 6.3.5; TRM Bases 13.1.31 – Within 15 minutes, when local alignment is required to establish boration flow. Boration is initiated within the prescribed time. When local manual control credited, admin controls are utilized to ensure personnel are aware/designated to perform alignment to establish boration flow.

Critical Task Determination

Critical Task	Safety Significance	Cueing	Measurable Performance Indicators	Performance Feedback
~~Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI.~~	~~Shutdown Margin must be maintained. Since there are NO DRPI lights lit the bases states to borate at least 3600 gallons of 7000 ppm borated water to ensure shutdown margin is maintained. This gallon value corresponds to 2 of the most reactive rods stuck out.~~	~~After the loss of offsite power and the failure of the DG 1-01, DRPI will be dark and no CCP will be running. Per attachment 1.A of EOS-0.1A, ABN-107 will be performed.~~	~~Started CCP 1-02, started Boric Acid Transfer Pump 1-02, and opened 1/1-8104, EMER BORATE VLV.~~	~~Boration flow will be indicated on 1-FI-183A, EMER BORATE FLO.~~
Manually control the Main Feedwater Master Speed Controller to prevent receiving an automatic reactor trip due to low steam generator levels, or a trip of Main Feed Pumps due to low suction pressure, and subsequent manual reactor trip.	Result of improper operator action or inaction, i.e., such as an unintentional RPS or ESF actuation.	After the Main Feed Pump A recirc valve fails open, S/G levels will begin decreasing. Manual control of the feed pump speed will maintain S/G levels on program.	S/G levels maintained on program without tripping the reactor or tripping the Main Feed Pumps on low suction Pressure, followed by a manual reactor trip (ABN-302, immediate operator action).	Neither reactor nor Main Feed Pumps do not trip.
Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.	Actuating SI will ensure a feed path of cool water to the RCS (core) and isolate the containment to confine any RCS releases from the bleed flow.	AFW flow will not be indicated on any AFW flow meter. Also no AFW pumps will be running. A RED path showing on CSFST for heat sink. The need for a heat sink as indicated by RCS	Actuated SI, ensured at least one CCP and SI pump is running with flow indicated providing a feed path for the RCS. Both PRZR PORVs	Flow indicated on both a CCP and an SI pump. PRZR PORVs open with block valves open. RCS pressure and temperature lowering.

	The bleed flow through both PORVs will ensure that enough cool water will feed from the ECCS flow path to remove sufficient decay heat.	temperature and pressure.	open providing a bleed path for the RCS.	

Scenario Event Description
NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC-16 and 2016 NRC Scenario 2.					
EVENT	**TYPE**	**MALF #**	**DESCRIPTION**	**DEMAND VALUE**	**INITIATING PARAMETER**
SETUP	FWR021		1-02 MDAFWP in Pull Out	RACKOUT	K0
	FWR056		1-PV-2286 Isolated for repairs	CLOSED	K0 (NOTE)
NOTE: See Scenario file on last page for list of event overrides.					
7		EG06A	1-01 EDG air start failure	FAIL	K0
9	Condition	FW09A	TDAFWP trips on 1/1-8104 valve opening (60 second delay)	TRIP	8104 Open
1		RX05A	PRZR level channel LT-459 fails low	0 %	K1
2		RX18	Main Feedwater Header Pressure transmitter fails high	1500 psig	K2
3		RX09A	Main Turbine First Stage pressure PT-505A fails low	0 %	K3
4		CH03	Neutron Detector well fan 9 trip	TRIP	K4
5		FW06A	A MFP recirc valve fails open	OPEN	K5 (NOTE)
NOTE: See Scenario file on last page for list of event overrides.					
~~6~~		~~ED02~~	~~Loss of XST1 Transformer~~	~~FAIL~~	~~K6~~
7		ED01	Loss of offsite power	FAIL	K7
7		EG06A	1-01 EDG air start failure	FAIL	K0
~~8~~			~~Emergency Borate~~		
9			Loss of Secondary Heat Sink		
9	Cond.	FW09A	TDAFWP trips on 1/1-8104 valve opening (60 second delay)	TRIP	8104 Open
9	EDR74		Reset IAC 1-02 Breaker	CLOSE	K11

Scenario Event Description
NRC Scenario 2

Simulator Operator: **INITIALIZE to IC-16 and 2016 NRC Scenario 2 and place in RUN.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
ENSURE Operator Aid Tags reflect current boron conditions (1054 ppm).
ENSURE Rod Bank Update (RBU) is performed.
ENSURE Turbine Load Rate set at 10 MWe/minute.
ENSURE 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON at half volume.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
ENSURE procedures in progress are on SRO desk:
- IPO-003A, Power Operations

ENSURE TT06 on PWROPS and all points ON-SCALE
ENSURE Control Rods are in AUTO with Bank D at 167 steps.
ENSURE RED tag on MDAFWP 1-02 with handswitch in Pull Out
ENSURE RED tag on 1-PV-2286 with RED & GREEN Lights OFF
ENSURE GEM Box PLACED 1-HS-2450A for MDAFWP 1-01

Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.2 – IR TRN A RX TRIP BLK
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.6 – RX ≥ 10% PWR P-10
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.2 – IR TRN B RX TRIP BLK
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.2 – PR TRN A LO SETPT RX TRIP BLK
PCIP-4.2 – PR TRN B LO SETPT RX TRIP BLK
9A-3.2 – HDP1 DISCH PRESS HI
9A-7.2 – HDP2 DISCH PRESS HI

Operating Test :	NRC	Scenario #	2	Event #	1	Page	9	of	33
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 1 (Key 1). - **PRZR level channel LT-459 fails low**		
Indications Available: **PRZR LVL LO (5B-3.6)** **PRZR LVL DEV LO (5C-1.2)**		
	RO	RESPOND to Annunciator Alarm Procedures
	RO	RECOGNIZE PRZR level channel LT-459 has failed low
	US	**Direct the performance of ABN-706, Pressurizer Level Instrumentation Malfunction, Section 2.0**
CAUTION: To avoid thermal shock of the reactor coolant piping, the letdown flow should not be stopped without also stopping the charging flow when the reactor coolant temperature is greater than 350°F. NOTE: Channels 459 and 460 are normally the controlling channels.		
	RO	1. Manually CONTROL u-LK-459, PRZR LVL CTRL OR u-FK-121, CCP CHRG FLO CTRL to maintain level at program.
	RO	2. TRANSFER 1/u-LS-459D, PRZR LVL CTRL CHAN SELECT to an operable alternate controlling channel.
	RO	3. ENSURE 1/u-LS-459E, u-LR-459 PRZR LVL SELECT selected to a valid channel.
	RO	4. VERIFY normal letdown aligned - NO
	RO	4. RNO - WHEN pressurizer level is greater than 17%, THEN RESTORE letdown per Attachment 6 or Letdown Job Aid.

Operating Test :	NRC	Scenario #	2	Event #	1	Page	10	of	33
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**US Directs restoration of Letdown per Job Aid.**
	RO	1. OPEN OR VERIFY open both letdown isolation valves. • 1/u-LCV-459, LTDN ISOL VLV • 1/u-LCV-460, LTDN ISOL VLV
	RO	2. ENSURE u-PK-131, LTDN HX OUT PRESS CTRL in MANUAL AND 30% demand (50% if two orifice valves will be opened).
	RO	3. ENSURE u-TK-130, LTDN HX OUT TEMP CTRL in MANUAL AND 50% demand.
	RO	4. ADJUST charging to desired flow WHILE maintaining seal injection flow between 6 and 13 gpm.
	RO	5. OPEN the desired orifice isolation valves. • 1/u-8149A, LTDN ORIFICE ISOL VLV (45 GPM) • 1/u-8149B, LTDN ORIFICE ISOL VLV (75 GPM) • 1/u-8149C, LTDN ORIFICE ISOL VLV (75 GPM)
	RO	6. ADJUST u-PK-131, LTDN HX OUT PRESS CTRL to obtain approximately 310 psig on u-PI-131, LTDN HX OUT PRESS, THEN PLACE in automatic.
	RO	7. ADJUST u-TK-130, LTDN HX OUT TEMP CTRL to obtain approximately 95EF on u-TI-130, LTDN HX OUT TEMP, THEN PLACE in automatic.
Simulator Operator:		**If contacted as the prompt team, acknowledge the request to repair LT-459.**
	RO	5. If necessary, RECLOSE 1/u-PCPR, PRZR CTRL HTR GROUP C by placing the control switch in the "ON" position.
	RO	6. If desired, PLACE controller used in Step 1 in AUTO.
	RO	7. VERIFY instruments on common instrument line – NORMAL (see Attachment 1)

Operating Test :	NRC	Scenario #	2	Event #	1	Page	11	of	33
Event Description:	PRZR level channel LT-459 fails low								

Time	Position	Applicant's Actions or Behavior
	RO	10. REFER to Technical Specifications per Attachment 5. 3.3.1-1 Function 9, Technical Specification 3.3.1 Condition M, 72 hours to place in trip
	RO	11. INITIATE a Condition Report per STA-421, as applicable.
When the Charging and Letdown flows are stable, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	2	Event #	2	Page	12	of	33
Event Description:	Feed Header Pressure Transmitter (PT-508) Fails High								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 2 (Key 2). **- RX18, Feed Header Pressure Transmitter (PT-508) Fails High.**
		Indications Available: **Plant Computer Alarm for high Feed Header pressure** **1-PI-508, FWP DISCH HDR PRESS indication fails high**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Feed Header Pressure 1-PT-508 transmitter failure.
		Examiner Note: Feed header pressure failing high will cause Feedwater Pump speed to lower. The Main Feedwater Pump Master Speed Controller will remain in MANUAL for the remainder of the scenario.
		Examiner Note: If Pressurizer Pressure falls below 2220 psig, the RO should recognize entry into TS 3.4.1 for DNB.
	US	**DIRECT performance of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 5.0.**
	BOP	1. PLACE 1-SK-509A, FWPT Master Speed Controller in MANUAL.
		NOTE: Computer point P5446A, FW STM FLOW SETPOINT may aid the operator.
	BOP	2. ADJUST 1-SK-509A, FWPT Master Speed Controller to MAINTAIN ΔP between FWP Discharge Pressure and Steam Line Pressure. • From 20% to 100% power, RAMP ΔP from 80 PSIG to 181 PSIG.
		Simulator Operator: If contacted as prompt team acknowledge request to repair PT-508.
	US	3. INITIATE a Condition Report per STA-421.

Operating Test :	NRC	Scenario #	2	Event #	2	Page	13	of	33
Event Description:	Feed Header Pressure Transmitter (PT-508) Fails High								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**Feed header pressure transmitter PT-508 will remain failed for the remainder of the scenario. The Main Feedwater Pump Master Speed Controller will remain in MANUAL for the remainder of the scenario. Step 5.3.4 will NOT be performed.**
	US	4. WHEN repairs are complete, THEN PLACE 1-SK-509A, FWP MASTER SPD CTRL in – AUTO as follows: a. ENSURE differential pressure appropriate for plant conditions. b. PLACE 1-SK-509A in – AUTO c. VERIFY correct differential pressure automatically maintained.
When control of Feedwater is restored, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	2	Event #	3	Page	14	of	33
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 3 (Key 3). **- RX09A, Main Turbine 1st Stage Pressure Transmitter (PT-505) Fails Low.**
		Indications Available: **6D-1.10 – AVE T_{AVE} T_{REF} DEV** **PCIP-2.4 – LO TURB PWR ROD WITHDRW BLK C-5** **1-PI-505 – Turbine Impulse Pressure Channel I indication fails low** **1-TI-412A – Ave T_{AVE} T_{REF} Deviation indication to maximum**
	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE Control Rods INSERTING due to Turbine Impulse Pressure Instrument failure.
	RO/BOP	REPORT PT-505, Turbine Impulse Pressure Channel I has failed low.
	US	**DIRECT implementation of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 4.0.**
		NOTE: TURB IMP PRESS CHAN SELECT u-PS-505Z should normally be in the "BOTH" position and input for control rod response will be from PT-505. With this switch in the PS-506 position, input for control rod response will be from PT-506.
	RO	1. PLACE 1/1-RBSS Control Rod Bank Select Switch in MANUAL.
		NOTE: The following step will prevent automatic steam dump actuation on an actual load rejection, if RNO step is applied.
	BOP	2. VERIFY Steam Dumps - CLOSED WITH NO OPEN DEMAND.
		2. RNO - IF Steam Dump operation NOT required, THEN PLACE at least one Steam Dump Interlock Select Switch – OFF. • 43/1-SDA, STM DMP INTRLK SELECT. • 43/1-SDB, STM DMP INTRLK SELECT.

Operating Test :	NRC	Scenario #	2	Event #	3	Page	15	of	33
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
		CAUTION: A briefing should be conducted to evaluate steam dump response and contingency actions should a subsequent runback or trip occur. Reference Section 4.2.
		NOTE: • If transferring dumps to steam pressure mode, steam demand will be erroneously high if PT-505 is failed low. • The following step ensures steam dumps available for subsequent runbacks or trips. • Attachment 8 is available to aid in brief (L)
	BOP	3. RESTORE steam dump availability by placing Steam Dumps in STM PRESS Mode per Attachment 7.
Examiner Note:		**ABN-709 Attachment 7 steps are after the steps for section 4.0 (next page)**
	RO	4. TRANSFER 1-PS-505Z, TURB IMP PRESS CHAN SELECT to PS-506.
Examiner Note:		**The crew will conduct a Reactivity Brief and execute a Reactivity Plan to restore T_{AVE} to T_{REF}.**
	RO	5. ENSURE T_{AVE} within 1°F of T_{REF}.
	RO	6. PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO.
	US/RO	7. CHECK Reactor Plant in – MODE 1.
	US/BOP	8. CHECK Turbine Power – GREATER THAN 10% POWER.
		NOTE: The following step will prevent the automatic block of several reactor trips when Reactor power is below 10% power.
	US	9. Within 1 hour, VERIFY PCIP Window 4.6 – TURB ≤ 10% PWR P-13, IN PROPER STATE for existing plant conditions (DARK). - YES

Operating Test :	NRC	Scenario #	2	Event #	3	Page	16	of	33
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
	US	10. VERIFY PCIP Window 1.3 – AMSAC BLK TURB < 40% PWR C-20 – IN PROPER STATE (DARK) for actual Turbine power. - NO
	US/BOP	10. RNO - IF AMSAC actuation blocked AND turbine power >40%, THEN ENSURE Automatic Actions of ALB-9B 3.7, AMSAC ACT TURB TRIP as necessary.
	US	11. INITIATE a Condition Report per STA-421.
	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.T, Reactor Trip System Instrumentation. (Function 18.f, Turbine 1st Stage Pressure P-13)
		• CONDITION T - One or more required channels inoperable. • ACTION T.1 - Verify interlock is in required state for existing unit conditions within one (1) hour, OR • ACTION T.2 - Be in MODE 2 within 7 hours.
Examiner Note:		**The following six steps are from ABN-709, Attachment 7, Transferring Steam Dumps and may be performed using the Control Board Job Aid.**
	BOP	1. ENSURE 1-PK-507, STM DMP PRESS CTRL is in MANUAL.
	BOP	2. MATCH 1-PK-507, STM DUMP PRESS CTRL demand to current Steam Dump Valve position.
	BOP	3. VERIFY 1-PCIP, Window 1.4 – CNDSR AVAIL STM DMP ARMED C-9 is ON.
NOTE:		STM DMP VLV lights provide indication of proper system response during subsequent steps.
	BOP	4. PLACE 43/1-SD, STM DMP MODE SELECT in STM PRESS.
	BOP	5. ENSURE both STM DMP INTLK SELECT switches are ON.

Operating Test :	NRC	Scenario #	2	Event #	3	Page	17	of	33
Event Description:	Main Turbine 1st Stage Pressure (PT-505A) Fails Low								

Time	Position	Applicant's Actions or Behavior
	BOP	6. IF desired to control Steam Dumps in AUTO, THEN PERFORM the following: a. VERIFY 1-PI-507, MS HDR PRESS indicates current MSL pressure. b. ENSURE 1-PK-507, STM DMP PRESS CTRL set to control at 1092 psig for "no load" conditions (Pot setting 6.86). c. PLACE 1-PK-507, STM DMP PRESS CTRL in AUTO.
When TS are completed and Rod Control has been restored to Automatic or at Lead Examiner discretion, PROCEED to Event 4		

Operating Test :	NRC	Scenario #	2	Event #	4	Page	18	of	33
Event Description:	Neutron Detector Well Fan #9 trips on motor overload								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 4 (Key 4) - **Neutron Detector well fan #9 trips**		
Indications Available: **CB03-2.1 CNTMT FN MASTER TRIP**		
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Neutron Detector well fan #9 tripped
	BOP	**Performs actions of ALM-0031A Window 2.1**
NOTE: IF the trip is due to the overcurrent trip switch (OTS) , THEN the handswitch white light will be illuminated. A phase overcurrent trip can be identified at breaker compartment by red buttons on affected relays.		
NOTE: IF the trip is due to a Motor Overload, THEN the handswitch white light will be illuminated. A blown control power fuse OR breaker trip will cause a loss of all handswitch light indication.		
	BOP	1. DETERMINE affected fan from the associated handswitch light indication. • 1-HS-5435, NEUT DET WELL FN CLR FN 9 & DMPR
Examiner Note: The steps of SOP-801A, Containment Ventilation System, Section 5.2.1, Neutron Detector Well Cooling System Startup are only to place the non-affected fan to start.		
	BOP	2. START an alternate fan, as required per SOP-801A.
	BOP	3. PLACE affected fan handswitch in Pull Out OR Stop, as available.
NOTE: The Control Rod Drive Mechanism Fan AND Containment Air Cooling AND Recirc Fan Overcurrent Trip Switch can be reset locally at the breaker compartment OR by placing the handswitch in Trip OR Pull Out. The Reactor Coolant Pipe Penetration Fan, Preaccess Filtration Fan OR Neutron Detector Well Fan motor overload must be reset at the breaker.		

Operating Test :	NRC	Scenario #	2	Event #	4	Page	19	of	33
Event Description:	Neutron Detector Well Fan #9 trips on motor overload								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When contacted to investigate the fan trip wait 2 minutes and report back the breaker has tripped on motor overload.**
	RO/BOP	4. DISPATCH an operator to affected fan breaker to determine cause of trip.
	US	5. WHEN conditions permit, THEN PERFORM a Containment entry per STA-620 to check the fan for signs of damage (smoke, acrid odor, overheating).
	US	6. CORRECT the condition OR INITIATE a CR per STA-421, as applicable.
When the plant is stable or at Lead Examiner discretion, PROCEED to Event 5		

Operating Test :	NRC	Scenario #	2	Event #	5	Page	20	of	33
Event Description:	A MFP recirc valve opens								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 5 (Key 5). - A MFP Recirc valve opens
		Indications Available: **ALL S/G levels lowering** **FWP A/B RECIRC VLV NOT CLOSED (7B-4.8)** **SG 1 STM & FW FLO MISMATCH (8A-1.8)** **SG 2 STM & FW FLO MISMATCH (8A-2.8)** **SG 3 STM & FW FLO MISMATCH (8A-3.8)** **SG 4 STM & FW FLO MISMATCH (8A-4.8)** **SG 1 LVL DEV (8A-1.12)** **SG 2 LVL DEV (8A-2.12)** **SG 3 LVL DEV (8A-3.12)** **SG 4 LVL DEV (8A-4.12)**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE A MFP Recirc valve is open AND MFP speed control is in MANUAL. Raises MFP speed to restore S/G levels.
CRITICAL TASK STATEMENT	**CT-1**	**Manually control the Main Feedwater Master Speed Controller to prevent receiving an automatic reactor trip due to low steam generator levels, or a trip of Main Feed Pumps due to low suction pressure, and subsequent manual reactor trip.**
	US	**Direct entry into ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 11.0.**
		CAUTION: Using Load Target to reduce load without rods in AUTO can result in excessive TAVE-TREF mismatch before C-7 activates. This mismatch may cause an SI when steam dumps trip open.
	RO	1. Ensure 1/u-RBSS, CONTROL ROD BANK SELECT in AUTO
		Examiner Note: 1-PV-2286 is Red tagged and cannot be opened. The crew will skip this step.
	BOP	2. Ensure u-HS-2286, LP FW HTR BYP VLV – OPEN - NO
		Examiner Note: Turbine power is already 600 MW so the next step will not be performed

Operating Test :	NRC	Scenario #	2	Event #	5	Page	21	of	33
Event Description:	A MFP recirc valve opens								

Time	Position	Applicant's Actions or Behavior
	BOP	3. Reduce Turbine Power to 700 MW
Simulator Operator:		**When contacted to isolate the A MFP recirc valve after 2 minutes** **DELETE MALFUNCTION FW06A** **Report back that the valve has been manually isolated by closing FW-0023.**
	RO/BOP	4. Dispatch Operator to isolate affected recirc valve: • u-FV-2289, FWP A RECIRC VALVE • u-FV-2290, FWP B RECIRC VALVE
	BOP	5. Verify Main Feedwater pump suction pressure - GREATER THAN 200 PSIG • u-PI-2295, FWP A SUCT PRESS • u-PI-2297, FWP B SUCT PRESS
	RO/US	6. Verify the following: a. Rods - ABOVE ROD INSERTION LIMIT b. ∆ Flux - (AFD) WITHIN LIMITS
	US	7. Verify Reactor Power change – LESS THAN 15% RTP WITHIN ONE HOUR.
Examiner Note:		**The following step will not be performed as power is unchanged for this event**
	US	8. Notify QSE Generation Controller and update GAPS to "Create Current Condition" for the down power.
Simulator Operator:		**When contacted as a member of plant management inform the crew that continued operation of the A MFP with its recirc flowpath isolated at the current power is desired.**
	US	9. Plant Management has determined continued operation of the Feedwater pump is required with recirc flowpath isolated.
	US	10. Restore power to level specified by Shift Manager.
	BOP	11. WHEN steam dumps have closed, THEN reset C-7, if armed. • 43/u-SD, STM DMP MODE SELECT

Operating Test :	NRC	Scenario #	2	Event #	5	Page	22	of	33
Event Description:	A MFP recirc valve opens								

Time	Position	Applicant's Actions or Behavior
	US	12. Initiate equipment repairs per STA-606.
Examiner Note:		**1-PV-2286 is Red tagged and cannot be open/closed. The crew will not perform this step.**
	BOP	13. Close u-HS-2286, LP FW HTR BYP VLV by performing Section 7.0 of this procedure.
	US	14. Return to procedure and step in effect.
When the plant is stabilized or at Lead Examiner discretion, PROCEED to Event 6		

Operating Test :	NRC	Scenario #	2	Event #	6	Page	23	of	33
Event Description:	Loss of XST1								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 6 (Key 6). - Loss of XST1 transformer
		Indications Available: **138 KV XFMR XST1 TRBL (CB14-1.1)** **138 KV XFMR XST1 LOR TRIP (CB14-3.1)** **138 KV XFMR XST1 VOLT LO (CB14-3.2)**
	BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE the loss of XST1 transformer and
	US	**Direct entry into ABN-601, RESPONSE TO A 138/345 KV SYSTEM MALFUNCTION, Section 2.0.**
		Examiner Note: The alarms that are received will send the crew to the ABN however they may use the ALMs to start the recovery. The ALM will direct the US to the TS.
	US/BOP	1. Determine AC Power Status: a. Check the Unit - IN MODES 1, 2, 3 OR 4 - YES b. Check 6.9 KV Safeguard Buses - AT LEAST ONE ENERGIZED - YES
		CAUTION: Loads shall not be placed on offsite power without the TGM Transmission Grid Controller's concurrence.
	US/BOP	c. Check Unit 6.9 KV Non-Safeguard Buses – ALL REMAINED ENERGIZED WITH LOADS CONNECTED TO THE BUS - YES d. GO TO Step 4
	BOP	4. Check Switchyard Bus Status - ALL ENERGIZED • V-E BUS, 345 KV E. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV • V-W BUS, 345 KV W. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV • V/ST1, INCOMING 138 KV XFMR FDR VOLT (CB-12) - BETWEEN 135 KV and 144 KV (DE-ENERGIZED)

Operating Test :	NRC	Scenario #	2	Event #	6	Page	24	of	33
Event Description:	Loss of XST1								

Time	Position	Applicant's Actions or Behavior
	~~BOP~~	~~5. Monitor Blackout Sequencer Status:~~ ~~a. Affected bus – ENERGIZED - YES~~ ~~b. Verify Blackout Sequencer – OPERATED~~ ~~• OUTPUT STEP TIME lights - ALL LIT - NO~~ ~~• Automatic lockouts AL light – LIT - NO~~
	~~US~~	~~5. RNO - GO TO Step 6.~~
	~~BOP~~	~~6. Check Transformer XST1 Status:~~ ~~a. V/ST1, STARTUP XFMR XST1 138 KV FDR VOLT (CB-12) - BETWEEN 135 KV and 144 KV – NO~~
	~~US~~	~~6. RNO - INITIATE Attachment 2, Restoration of XST1.~~
~~Simulator Operator:~~		~~When contacted as the Shift Manager or Switchyard Coordinator inform the US that the Shift Manager will coordinate the actions of Attachment 2, and that the US should continue with ABN-601, Section 2.0 actions.~~
	~~US~~	~~1. Determine the origin for the loss of power by performing the following:~~ ~~• Contact the Switchyard Coordinator to provide assistance in determining the transformer status.~~
~~Examiner Note:~~		~~ABN-601 Steps 7, 8 & 9 relate to unaffected transformers and may be N/A'd by the SRO or read and verified.~~
	~~BOP~~	~~10. Verify Diesel Generators - NOT RUNNING~~
	~~BOP~~	~~11. Verify 6.9KV Bux XA1 - ENERGIZED~~
~~Simulator Operator:~~		~~If contacted as the Shift Manager to have Unit 2 perform SR 3.8.1.1, state that the Extra RO will perform the SR.~~
	~~US~~	~~12. Refer to the appropriate TS:~~ ~~• MODES 1, 2, 3, OR 4 - Section 3.8.1 AC Sources - Operating~~ ~~• Condition A is applicable~~ ~~• This is a 1 hour spec to perform SR 3.8.1.1 – Verification of offsite sources 72 hours to restore power~~
~~*When the plant is stabilized or at Lead Examiner discretion, PROCEED to Event 7*~~		

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	25	of	33
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 7 (Key 7).** **- Loss of offsite power**
Indications Available: **Reactor Trip** **Turbine Trip** **Multiple Annunciators**		
	CREW	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE the Reactor Trip and perform Immediate Actions
	US	**Direct entry into EOP-0.0A, Reactor Trip or Safety Injection**
	RO	1. VERIFY Reactor Trip:
		a. Verify the following:
		• VERIFY Reactor Trip Breakers – OPEN.
		• VERIFY Neutron flux – DECREASING.
		b. VERIFY all Control Rod Position Rod Bottom Lights – ON. - NO
~~**Examiner Note:**~~		~~**Emergency Boration is required since all DRPI lights are DARK. This is on Attachment 1.A of both EOP-0.0A and EOS-0.1A. The steps are listed as if this is going to be performed in EOS-0.1A since the transition to this procedure will take place very quickly from EOP-0.0A.**~~ ~~**Critical Task Start Time on Loss of DRPI: _____**~~
	BOP	2. VERIFY Turbine Trip:
		• VERIFY all HP Turbine Stop Valves – CLOSED.
Examiner Note:		**The EDG 1-01 will fail to start and cannot be started due to an air start failure**
Simulator Operator:		**If contacted to investigate the failure of the EDG 1-01, wait 2 minutes and report back that the diesel will not start and an air start failure alarm is locked in**
	BOP	3. VERIFY Power to AC Safeguards Buses:

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	26	of	33
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
		a. VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED.
		b. VERIFY both AC Safeguards Buses – ENERGIZED. - NO
		b. RNO - Restore power to de-energized AC safeguards bus per ABN-601, RESPONSE TO A 138/345 KV SYSTEM MALFUNCTION or ABN-602, RESPONSE TO A 6900/480 VOLT SYSTEM MALFUNCTION when time permits.
	RO	4. CHECK SI status:
		a. CHECK if SI is actuated.
		○ VERIFY SI indicated on the First Out Annunciator Panel 1-ALB-6C.
		○ VERIFY SI Actuated blue status light – ON. - NO
	RO	4. a. RNO - Check if SI is required:
		○ Steam Line Pressure less than 610 psig. - NO
		○ Pressurizer Pressure less than 1820 psig. - NO
		○ Containment Pressure greater than 3.0 psig. - NO
		○ IF SI is NOT required, THEN go to EOS-0.1A, REACTOR TRIP RESPONSE, Step 1.
	US	**Transitions to EOS-0.1A, Reactor Trip Response**
~~**Examiner Note:**~~		~~**RO initiates Emergency Boration for Loss of DRPI per Attachment 1.A of EOP-0.0A or EOS-0.1A. (Guidance is duplicated in both procedures)**~~
		CAUTION: CCP runout may occur with simultaneous flow through both charging and SI flowpaths.
		NOTE: Attachment 1 and Attachment 4 have been developed into Operator Aids for use during emergency boration and may be entered independently of this procedure.
~~**CRITICAL TASK STATEMENT**~~		~~**CT-1 Initiate Emergency Boration prior to exiting EOS-0.1A, Reactor Trip Response within a maximum of 15 minutes following the loss of DRPI. Emergency Boration Initiated Time:_____**~~

Operating Test :	NRC	Scenario #	2	Event #	7 & 8	Page	27	of	33
Event Description:	Loss of offsite power, failure of 1-01 EDG to start								

Time	Position	Applicant's Actions or Behavior
	~~RO~~	~~1. Ensure a charging pump is running:~~ ~~• 1/u-APCH1, CCP 1 - NO~~ ~~• 1/u-APCH2, CCP 2 - YES~~ ~~• 1/u-APPD, PDP~~
~~CT-1~~	~~RO~~	~~**2. Start a boric acid transfer pump:**~~ ~~• 1/u-APBA1, BA XFER PMP 1 - AUTO (AFTER START) - NO~~ ~~**• 1/u-APBA2, BA XFER PMP 2 - AUTO (AFTER START) - YES**~~
~~CT-1~~	~~RO~~	~~**3. Open 1/u-8104, EMER BORATE VLV**~~
Examiner Note:		**When the RO opens the emergency borate valve 1/1-8104 it will auto insert event 9 (60 second delay) for the loss of all AFW. This will give the crew a RED path on Heat Sink.**
	RO	4. Verify flow on u-FI-183A, EMER BORATE FLO
	RO	5. Verify flow on u-FI-121A, CHRG FLOW
	RO	6. IF EMER BORATE FLOW OR CHRG FLOW can NOT be verified, THEN initiate Emergency Boration Flow per another method of ABN-107.
	RO	7. WHEN desired to terminate emergency boration (Reference Attachment 7 of ABN-107), THEN GO TO Step 8 of ABN-107.
	US	**Transitions to FRH-0.1A, Response to Loss of Heat Sink on Red Path**

Operating Test :	NRC	Scenario #	2	Event #	9	Page	28	of	33
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
		CAUTION: If total feed flow is less than 460 gpm due to operator action as directed by the ERGs, this procedure need not be performed.
		CAUTION: Feed flow should not be re-established to any faulted SG if a non-faulted SG is available.
	US	1. Check If Secondary Heat Sink Is Required: a. RCS pressure - GREATER THAN ANY NON-FAULTED SG PRESSURE - YES b. RCS temperature - GREATER THAN 350°F - YES
	RO	2. Check CCP Status - BOTH AVAILABLE - NO
Examiner Note:		**There will be no power to the A train PORV block valve but since it was open when it lost power it will still be open when the crew opens the associated PORV**
	RO	2. RNO - Immediately perform the following: a. STOP ALL RCPs. b. Verify power to PRZR PORV block valves – AVAILABLE c. Go to Step 13. OBSERVE CAUTION PRIOR TO STEP 13.
		CAUTION: Steps 13 through 22 must be performed quickly in order to establish RCS heat removal by RCS bleed and feed.
CRITICAL TASK STATEMENT		**CT-2 Establish an RCS bleed and feed path prior to exiting FRH-0.1A, Response to a Loss of Secondary Heat Sink.**
CT-2	**RO**	**13. Actuate SI**

Operating Test :	NRC	Scenario #	2	Event #	9	Page	29	of	33
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
	RO	14. Verify RCS Feed Path: a. Check CCP SI flow indicator - CHECK FOR FLOW b. Check SI pumps - BOTH RUNNING - NO
	RO	14. b. RNO - Perform the following: 1) Manually start pump(s) and align valves as necessary. 2) IF either of the following RCS feed paths exists, THEN go to Step 15. • CCPs - BOTH INJECTING - NO • AT LEAST ONE CCP INJECTING AND ONE SI PUMP RUNNING - YES
Examiner Note:		**Steps 15 - 20 will be performed via Attachment 1D and will not be directed individually by the US.**
	BOP	15. Check If Diesels Should Be Emergency Started: a. Check diesel generator(s) – RUNNING - DG 1-02 Only b. Place D/G EMER STOP/START handswitch(es) in START.
	BOP	16. Reset SI.
	BOP	17. Reset SI Sequencers.
	BOP	18. Reset Containment Isolation Phase A And Phase B.
	BOP	19. Reset Containment Spray Signal.
Simulator Operator:		**When requested to RESET Instrument Air Compressor 1-02 Breaker, wait 2 minutes and EXECUTE remote function EDR74 to CLOSE (Key 11). Provide Field Support report that IAC 1-02 Breaker is Closed.**
	BOP	20. Establish Instrument Air And Nitrogen To Containment: a. Establish instrument air: 1) Verify air compressor running. • Establish instrument air to containment.
		b. Establish nitrogen: 1) Verify ACCUM 1●4 VENT CTRL, 1-HC-943 – CLOSED 2) Open SI/PORV ACCUM N2 ISOL VLV, 1/1-8880.

Operating Test :	NRC	Scenario #	2	Event #	9	Page	30	of	33
Event Description:	Loss of Heat Sink								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**There will be no power to the A train PORV block valve but since it was open when it lost power it will still be open when the crew opens the associated PORV**
CT-2	**RO**	21. Establish RCS Bleed Path: a. Verify power to PRZR PORV block valves – AVAILABLE b. Verify PRZR PORV block valves - BOTH OPEN **c. Open PRZR PORVs.**
	RO	22. Verify Adequate RCS Bleed Path: • PRZR PORVs - BOTH OPEN • PRZR PORV block valves- BOTH OPEN
After the bleed and feed is initiated, TERMINATE the scenario.		

;2016 NRC Scenario 2
;Rev. 1

;Initialize to IC-16

;Setup MDAFWP 1-02 in Pull-Out - Breaker Deenergized

IRF FWR021 f:0

;1-PV-2286 Isolated for Repairs
IOR LOFWHS2286_1 f:0
IOR LOFWHS2286_2 f:0
IRF FWR056 f:0

;Event 1 - PRZ LVL [LT-459] Fails Low

IMF RX05A f:0 k:1

;Event 2 - Main Feedwater Header Pressure [PT-508] Fails High

;PT-508 Fails High
IMF RX18 f:1500 k:2

;Event 3 - Main Turbine 1st Stage Pressure [PT-505A] Fails Low

;PT-505A Fails Low
IMF RX09A f:0 k:3

;Event 4 - Neutron Detector Well FN 9 Motor Overload

IMF CH03 f:1 k:4

;Event 5 - FWP A Recirc Valve Fails Open

IMF FW06A f:100 r:10 k:5

;Local Isolation of FV-2289 by FW-0023
;Delete Malfunction FW06A
IOR LOFWZL2289_1 f:0 k:5 d:120
IOR LOFWZL2289_2 f:1 k:5 d:120
IOR LOANAN7B_32 f:1 k:5 d:120

;Event 6 - Loss of XST1

IMF ED02 f:1 k:6

;Event 7 - Loss of Offsite Power/DG 1-01 Air Start Failure

;LOOP
IMF ED01 f:1 k:7

;Reset IAC 1-02 Breaker
IRF EDR74 f:2 k:11

;DG 1-01 Air Start Failure
IMF EG06A f:1

;Event 8 - Emergency Boration for Loss of DRPI

;Event 9 - TDAFWP Trip if Running (FRH Entry)

;TDAFWP Trip after emergency borate started

{DICVHS8104.Value=2} IMF FW09A f:1 d:60

GUARDED EQUIPMENT MANAGEMENT (GEM) SIGN POSTING LOG

REASON FOR POSTING MD AFWP 1-02 INOPERABLE

Component to be Posted	Nomenclature	Posting Installed Initial	Posting Checked Initial	Posting Removed Initial
1-HS-2450A	MD AFWP 1 => CB / 830 / X-135	JGR	RB	
1APMD1	AUXILIARY FEEDWATER PUMP 1-01 MOTOR BREAKER => SG / 810 / 1-083	JGR	RB	
S1-16	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP 1-01 ROOM => SG / 790 / 1-072	JGR	RB	

Authorized By Joe UnitSupervisor Date Today Posting Removal Authorized By _____ Date _____

Open Narrative Log Entry Entered ☑ Open Narrative Log Entry Closed ☐

Comments: This form is not maintained. Verify correct items Guarded per STI-600.01 prior to use.

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	3	Op Test No.:	July 2016 NRC
Examiners:		Operators:			

Initial Conditions: 100% power MOL - RCS Boron is 924 ppm

Turnover: Maintain steady-state power conditions.

Critical Tasks:
- CT-1 Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.
- CT-2 Identify and Isolate the Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture.

Event No.	Malf. No.	Event Type*	Event Description
1	RP05D	I (RO, SRO) TS (SRO)	Cold Leg Loop 4 NR Temperature Transmitter Failure (TE-441B) Fails High
2	RP03A	I (BOP, SRO) TS (SRO)	Steam Generator (1-01) Steam Line Pressure Instrument (PT-514) Fails Low.
3	Override	C (RO, SRO)	Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low
4	FW22	C (BOP, SRO) TS (SRO)	Station Service Water Pump 1-01 Trip
5	TC08C	C (BOP, SRO)	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed
6	SG02C	M (RO, BOP, SRO)	Steam Generator 1-03 Tube Rupture
7	RP15E	C (BOP, SRO)	Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4
8	MS08C	C (RO, SRO)	Steam Generator 1-03 MSIV Fails to Close

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
5	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

SCENARIO SUMMARY NRC 3

Event 1 (Key 1)
The crew will assume the watch at 100% power with no scheduled activities per IPO-003A, Power Operations. The first event is a failure high of a Reactor Coolant System Loop 4 Narrow Range Temperature (TE=441B) element. Crew actions are per ABN-704, T_c/N-16 Instrumentation Malfunction, Section 2.0. Section 2.0 is designated for T_c/N-16 Instrumentation Malfunction. Actions include placing the Control Rods in MANUAL and defeating the failed channel. Control Rods will be restored in Manual to their pre-failure position and remain in Manual until restored to Operable per ABN-704. The SRO will refer to Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation (Functions 6 & 7); Condition E, One channel inoperable.

Event 2 (Key 2)
The next event is a failure low of Main Steam Line 1 Pressure Instrument (PT-514). Crew actions are per ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st-Stage Pressure and Feed Header Pressure Instrument Malfunction, Section 2.0. Section 2.0 is designated for Steam Line Pressure Malfunction. The crew must manually control Steam Generator level, transfer to an Alternate Steam Flow Channel, and restore Steam Generator (SG) Feedwater Flow Control to AUTO. The SRO will refer to Technical Specification LCO 3.3.2, Engineered Safety Feature System (ESFAS) Instrumentation (Functions 1.e & 4.d); Condition D, One channel inoperable.

Event 3 (Key 3)
The next event is a failure of the Letdown Heat Exchanger Outlet Flow Controller, TK-130. The controller output will fail to zero demand and cause TCV-4646, LTDN HX OUT TEMP CTRL valve to close. This will result in Letdown Heat Exchanger High temperature alarms and Letdown flow to divert to the VCT on high temperature. The crew will respond per the ALM, take manual control of TK-130 and raise demand to establish Letdown Heat Exchanger Outlet temperature to approximately 95°F.

Event 4 (Key 4)
The next event is a trip of Station Service Water Pump 1-01. Crew actions are per ABN-501, Station Service Water System Malfunction, Section 2.0. Section 2.0 is designated for Station Service Water Pump Trip. Various equipment controls, as directed by ABN-501, are placed in PULL-OUT to prevent starting with no cooling water available. The SRO will refer to Technical Specification LCO 3.7.8, Station Service Water System; Condition B, One SSWS Train inoperable. The SRO will also refer to Technical Specification LCO 3.8.1, AC Sources – Operating; Condition B, One DG inoperable as DG 1-01 must be placed in PULL-OUT upon the loss of Train A Station Service Water.

Event 5 (Key 5)
The next event is High Pressure Turbine Stop Valve #3 fails closed. The crew will enter ABN-401, Main Turbine Malfunction, Section 9.0. Section 9.0 is designated for Inadvertent Closure of an HP or LP Stop or Control Valve. Actions include placing rod control in Auto to allow the rod control system to respond to the plant transient and reducing turbine load to allow all operable HP Control Valves to come off their full open seat.

Event 6 – (Key 6)
The major event is a Tube Rupture on SG 1-03. The Crew will diagnose the Tube Rupture due to multiple Radiation alarms and lowering Pressurizer Pressure and Level. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and transition to EOP-3.0A, Steam Generator Tube Rupture. A maximum rate RCS cooldown to a target CET temperature as determined in EOP-3.0A will be conducted.

Event 7 – CT-1 (Auto)
The Reactor will be manually tripped and Safety Injection manually initiated. The Reactor will fail to trip from both handswitches at CB-07 and CB-10. The crew will then perform CT-1, Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection. The Reactor must be manually tripped by momentarily de-energizing 480V Normal Switchgear 1B3 and 1B4 to de-energize the Rod Drive MG Sets. The critical task is considered not met if the crew is not successful in tripping the reactor during EOP-0.0A and transitions to FRS-0.1A.

Event 8 (Auto) CT-2

During performance of CT-2, Identify and Isolate the Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture. SG 1-03 MSIV will fail to close. The crew will close all remaining MSIVs, disable the Steam Dumps, and close the Main Steam to Auxiliary Steam Supply Valve. The RCS cooldown will then be conducted via the intact SG ARVs to atmosphere.

Termination Criteria

This scenario is terminated when the target CET Temperature is reached during the RCS cooldown in accordance with EOP-3.0A, Steam Generator Tube Rupture.

Risk Significance Determination

Risk Significance	Event	Guidance
Failure of risk important system prior to Reactor Trip	Event 4 – Station Service Water Pump Trip	ABN-501; DBD-ME-011 – Initial operator action to place the affected DG Emergency Stop/Start handswitch in PULL-OUT to remove the DG from service as it will ONLY operate for 1 minute under load, without service water cooling flow, before damage will occur.
Risk significant operator actions	Event 7 – Manually tripping the Reactor by momentarily de-energizing 1B3 and 1B4 Event 8 – Closing all intact SG MSIVs upon failure of the ruptured SG MSIV to close	FSAR 15.8 – The worst common mode failure which is postulated to occur is the failure to trip the reactor after an anticipated transient has occurred. FSAR 15.6.3.2 – The closing of all intact SG MSIVs falls in line with the conservative analysis of the postulated SGTR which assumes a loss of offsite power. Thus, a release of steam from the secondary system occurs due to the loss of steam dump capability and the subsequent venting to the atmosphere through the ARVs.
Risk significant core damage sequence	Events 5 – Steam Generator Tube Rupture	(1) STI-214.01 TCA-1.9 – Manual Actions to Mitigate Effects of a Steam Generator Tube Rupture: 1) TDAFWP flow stopped (excessive AFW flow) within 3 minutes of reactor trip. 2) Identify and Isolate ruptured SG within 13 minutes after initiation of SGTR. 3) Initiate maximum rate cooldown within 5 minutes after isolation of ruptured SG. 4) Initiate RCS depressurization with PORVs within 2 minutes after completion of RCS cooldown. 5) Secure ECCS within 2 minutes after completion of RCS depressurization.

(1) Crew manning for Initial License Examination less than Timed Operator Action validation constraints

Critical Task Determination

Critical Task	Safety Significance	Cueing	Measurable Performance Indicators	Performance Feedback
CT-1 – Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection	Recognize a failure or an incorrect automatic actuation of an ESF system or component. FSAR 7.1.2.1	Procedural direction at EOP-0.0A Step 1 to determine if a reactor trip has occurred. Position indication of the Reactor Trip breakers and Reactor Power, Annunciator First out alarms.	The operator will attempt to manually trip the Reactor with the handswitches on both CB-07 and CB-10; however, the Reactor will fail to trip. The operator will then momentarily deenergize the 480V normal switchgear 1B3 and 1B4 to secure power to the Rod Drive MG sets.	De-energizing the Rod Drive MG sets will result in a loss of power to the Rod Drive Mechanisms and the Control Rods will insert into the core. Reactor Trip Breakers will remain closed, neutron flux will lower and rod bottom lights will be lit.
CT-2 – Identify and Isolate the Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture.	Take one or more actions that would prevent a challenge to plant safety. STI-214.01, TCA-1.9; FSAR 15.6.3.1.1; WCAP-16871-P, Section 6.4; DBD-ME-027	Procedurally driven from EOP-3.0A, to identify and isolate a ruptured SG. Indications include MSL Radiation alarms and SG level.	The operator will attempt close the ruptured SG MSIV from the control room, however, the MSIV will fail to close and all other MSIVs must be closed. The MSIV will be locally closed in the field. The operator will stop feeding the SG once sufficient level to cover the tubes is available.	SG pressure increasing, AFW flow reduced to zero and valve position indications.

Scenario Event Description
NRC Scenario 3

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC-18 and 2016 NRC Scenario 3.					
EVENT	**TYPE**	**MALF #**	**DESCRIPTION**	**DEMAND VALUE**	**INITIATING PARAMETER**
7		RP15E	Reactor Trip Breakers Jammed Closed - All	FAIL	K0
8		MS08C	SG 1-03 MSIV Fails to Close	FAIL	K0
1		RP05D	Loop 4 Cold Leg Temperature (TE-441B) Failure	630°F	K1
2		RP03A	MSL 1 Steam Pressure (PT-514) Failure	0 PSIG	K2
3	Override		Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low	f:10	K3
<u>NOTE:</u> See Scenario file on last page for all event overrides.					
4		SW01A	SSW Pump 1-01 Trip	TRIP	K4
4	CVR06		CCP 1-02 Aux Lube Oil Pump to Auto	AUTO	K11
4	CVR05		CCP 1-01 Aux Lube Oil Pump to Off	OFF	K12
5		TC08C	High Pressure Stop Valve #3 Fails Closed	CLOSE	K5
6		SG02C	SG 1-03 Tube Rupture 1 Tube	1 Tube	K6
7		RP15E	Reactor Trip Breakers Jammed Closed - All	FAIL	K0
7	RPR112 RPR113		Reactor Trip Breakers Locally Opened	OPEN	K13
8		MS08C	SG 1-03 MSIV Fails to Close	OPEN	K0

Simulator Operator: **INITIALIZE to IC-18 and 2016 NRC Scenario 3.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
ENSURE Operator Aid Tags reflect current boron conditions (924 ppm).
ENSURE Rod Bank Update (RBU) is performed.
ENSURE Turbine Load Rate set at 10 MWe/minute.
ENSURE 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON to half volume.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
ENSURE procedures in progress are on SRO desk:
- **COPY of IPO-003A, Power Operations, Section 5.5, Operating at Constant Turbine Load.**

ENSURE Control Rods are in AUTO with Bank D at 215 steps.

Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.2 – IR TRN A RX TRIP BLK
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.6 – RX ≥ 10% PWR P-10
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.2 – IR TRN B RX TRIP BLK
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.2 – PR TRN A LO SETPT RX TRIP BLK
PCIP-4.2 – PR TRN B LO SETPT RX TRIP BLK

Operating Test :	NRC	Scenario #	3	Event #	1	Page	8	of	38
Event Description:	NR Cold Leg Loop 4 Temperature Instrument failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 1 (Key 1). - NR Cold Leg Loop 4 TI (TE-441B) fails high.		
Indications Available: **6D-1.10 – AVE T_{AVE} T_{REF} DEV** **6D-2.10 – AVE T_{AVE} HI** **6D-3.14 – 1 OF 4 OT N16 ROD STOP & TURB RUNBACK** **1-TI-441A, CL 4 TEMP (NR) CHAN IV indication failed high** **1-TI-442, RC LOOP 4 T_{AVE} CHAN IV indication failed high**		
	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE Control Rods inserting due to T_{COLD} failed high and Placed Control Rods in Manual.
	US	**DIRECT performance of ABN-704, Tc / N-16 Instrumentation Malfunction, Section 2.0.**
NOTE: • If the failed channel was reading lower than the substituted channel, then AVE Tave will increase when the failed channel is defeated due to another channel being substituted for the failed signal to maintain accurate averaging. • Rod Control should remain in MANUAL until all channels are operable. This does not preclude placing rods in AUTO during rapidly changing transient conditions such as runbacks, etc. as long as rod control is returned to MANUAL when the plant is stabilized.		
Examiner Note: The RO may place 1-FK-121, Charging Flow Controller, in MANUAL to maintain PZR level on setpoint.		
	RO	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in MANUAL. [Step 2.3.1]

Operating Test :	NRC	Scenario #	3	Event #	1	Page	9	of	38
Event Description:	NR Cold Leg Loop 4 Temperature Instrument failure								

Time	Position	Applicant's Actions or Behavior
	RO	SELECT LOOP 4 on 1-TS-412T, T_{AVE} Channel Defeat. [Step 2.3.2]
	RO/BOP	VERIFY Steam Dump System is NOT actuated and NOT armed. [Step 2.3.3]
Examiner Note: The crew will conduct a Reactivity Brief and execute a Reactivity Plan to restore T_{AVE} to T_{REF}.		
	US/RO	RESTORE T_{AVE} to within 1°F of T_{REF}. [Step 2.3.4]
	RO/BOP	SELECT LOOP 4 on 1/1-JS-411E, N16 Power Channel Defeat. [Step 2.3.5]
	RO/BOP	ENSURE a valid N16 channel supplying recorder on 1/1-TS-411E, 1 TR 411 CHAN SELECT. [Step 2.3.6]
	RO/BOP	VERIFY PCIP, Window 3.4 – TURB LOAD REJ STM DMP ARMED C-7, not ARMED (DARK). [Step 2.3.7]
	US/BOP	VERIFY Steam Dumps were NOT blocked. [Step 2.3.8]
	US	EVALUATE Technical Specifications. [Step 2.3.11]
		• LCO 3.3.1.E, Reactor Trip System Instrumentation (Functions 6 & 7).
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours, OR • ACTION E.2 - Be in MODE 3 within 78 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.12]
	US	INITIATE a Condition Report per STA-421. [Step 2.3.13]
When Technical Specifications are addressed, or at Lead Examiner discretion, proceed to Event 2.		

Operating Test :	NRC	Scenario #	3	Event #	2	Page	10	of	38
Event Description:	Steam Generator 1-01 Steam Line Pressure Instrument Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 2 (Key 2). - RP03A, SG 1-01 Steam Pressure Transmitter PT-514 fails low.		
Indications Available: **8A-1.7 - MSL 1 OF 3 PRESS LO** **8A-1.8 - SG1 STM & FW FLO MISMATCH** **8A-1.16 - SG 1 1 OF 3 PRESS RATE HI** **Feedwater flow lowering** **Feedwater pumps lowering in speed**		
	BOP	RESPOND to Annunciator Alarm Procedures.
	US	**DIRECT performance of ABN-709, STM LINE, STM HDR, & TURB 1st STAGE PRESS. & FEED HDR PRESS. INSTR MALFUNCTION, Section 2.0, Steam Line Pressure Instrument Malfunction.**
	BOP	CHECK ONE Main Steamline Pressure Channel indicating - GREATER THAN 60 psig difference between remaining channels. [Step 2.3.1]
		• DETERMINE 1-PI-514A indicating approximately 990 psig LOWER than remaining channels. [Step 2.3.1]
	BOP	VERIFY Steam Generator Atmospheric Relief Valves - CLOSED: [Step 2.3.2]
		• 1-ZL-2325, SG 1 ATMOS RLF VLV • 1-ZL-2326, SG 2 ATMOS RLF VLV • 1-ZL-2327, SG 3 ATMOS RLF VLV • 1-ZL-2328, SG 4 ATMOS RLF VLV
		AND The following channels are indicating - NORMAL: [Step 2.3.2]
		• 1-PI-2325, MSL 1 PRESS • 1-PI-2326, MSL 2 PRESS • 1-PI-2327, MSL 3 PRESS • 1-PI-2328, MSL 4 PRESS

Operating Test :	NRC	Scenario #	3	Event #	2	Page	11	of	38
Event Description:	Steam Generator 1-01 Steam Line Pressure Instrument Failure								

Time	Position	Applicant's Actions or Behavior
		NOTE: If a non-controlling channel has failed, steps 3 through 8 may not need to be performed. Refer to ABN-707, Attachment 1, STEAM FLOW WITH STEAM PRESSURE COMPENSATION TRANSMITTERS.
	BOP	PLACE 1-FK-510, SG 1 FW FLO CTRL in MANUAL AND CONTROL Steam Generator 1-01 level in normal operating range: [Step 2.3.3]
	BOP	Manually CONTROL 1-SK-509A, FWPT MASTER SPD CTRL as necessary. [Step 2.3.4]
	BOP	SELECT Alternate Steam Flow Channel: [Step 2.3.5]
		• Loop, 1-FS-512C, SG 1 STM FLO CHAN SELECT [Step 2.3.5.a]
		• Steam pressure/associated steam flow • 1-FY-512B (PT-514/FT-512) OR • 1-FY-513B (PT-515/FT-513)
	BOP	VERIFY Steam Generator 1-01 is stable at program level. [Step 2.3.6]
	BOP	PLACE 1-FK-510, SG 1 FW FLO CTRL in AUTO AND VERIFY SG 1-01 level - CONTROLLING NORMAL OPERATING RANGE [Step 2.3.7]
	US	Evaluate Technical Specifications. [Step 2.3.11]
		• LCO 3.3.2, Engineered Safety Feature System (ESFAS) Instrumentation, Table 3.3.2-1, Function 1.e, Steam Line Pressure - Low. • LCO 3.3.2, Table 3.3.2-1, Function 4d (1) - Steam Line Pressure Low and Negative Rate - High
		• CONDITION D - One channel inoperable • ACTION D.1 - Place channel in trip within 72 hours, OR • ACTION D.2.1 - Be in MODE 3 within 78 hours AND • ACTION D.2.2 - Be in MODE 4, within 84 hours

Operating Test :	NRC	Scenario #	3	Event #	2	Page	12	of	38
Event Description:	Steam Generator 1-01 Steam Line Pressure Instrument Failure								

Time	Position	Applicant's Actions or Behavior
	US	INITIATE a Condition Report per STA-421, as applicable. [Step 2.3.12]
When Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	3	Event #	3	Page	13	of	38
Event Description:	Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 3 (Key 3).** **- Override, LTDN HX Outlet Flow Controller Failure (TK-130) Fails Low.**
Indications Available:		**6A-1.3 – LTDN HX OUT TEMP HI** **6A-2.3 – LTDN HX NORM OUT FLO DIVERT** **1-TI-130, LTDN HX OUT TEMP Rising**
	RO	RESPOND to Annunciator Procedure Alarms.
	RO	RECOGNIZE 1-TK-130, LTDN HX OUT TEMP CTRL has failed to 0% output and 1-TI-130, LTDN HX OUT TEMP is rising.
Examiner Note:		**The operator can take manual control of 1-TK-130 and open TCV-4646 as an automatic control system has malfunctioned, per ODA-102.**
	RO	**Performs actions of ALM-0061A, Window 1.3**
		NOTE: 1/1-TCV-129, LTDN DIVERT VLV diverts flow to the VCT if letdown temperature is >135°F or BTRS demineralizer inlet temperature is >155°F.
	RO	MONITOR 1-TI-130, LTDN HX OUT TEMP. [Step 1]
		IF temperature increases to ≥ 135°F, ensure 1/1-TCV-129, LTDN DIVERT VLV is diverted to the VCT. [Step 1.A]
	RO	MONITOR 1-TI-381, BTRS DEMIN IN TEMP. [Step 2]
		The BTRS system is NOT in service. [Step 2.A]
	RO	VERIFY charging flow is 12 gpm greater than letdown flow. [Step 3]
	RO	VERIFY 1-TI-127, REGEN HX LTDN OUT TEMP is ≤ 350°F. [Step 4]
		1-TI-127, REGEN HX LTDN OUT TEMP is NOT > 350°F. [Step 4.A]
	BOP	VERIFY 1-ZL-4646, LTDN HX CCW RET VLV is OPEN. (1-CB-03) [Step 5]

Operating Test :	NRC	Scenario #	3	Event #	3	Page	14	of	38
Event Description:	Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low								

Time	Position	Applicant's Actions or Behavior
	RO	IF 1-ZL-4646 is CLOSED, place 1-TK-130, LTDN HX OUT TEMP CTRL in manual AND adjust letdown heat exchanger outlet temperature to 95°F. [Step 5.A]
		The controller will respond appropriately in MANUAL to control letdown heat exchanger outlet temperature at 95°F. [Step 5.B]
	RO	ENSURE 1-TI-130, LTDN HX OUT TEMP is maintained < 125°F. [Step 6]
		Letdown heat exchanger outlet temperature can be maintained < 125°F with 1-TK-130 in manual. [Step 6.A]
	US/RO	NOTIFY Chemistry and Radiation protection personnel that Letdown has diverted to the VCT. [Step 7]
	US	Correct the condition or initiate a work request per STA-606. [Step 8]
When Letdown Heat Exchanger Outlet Temperature is appropriately controlled, or at Lead Examiner discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	3	Event #	4	Page	15	of	38
Event Description:	Station Service Water Pump 1-01 Trip								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Event 4 (Key 4).** **- SW01A, Station Service Water Pump 1-01 Trip.**
Indications Available:		**01-1.8 – SSWP 1 / 2 OVRLOAD / TRIP** **01-1.11 – CCP 1 L/O CLR SSW RET FLO LO** **01-1.12 – SIP 1 L/O CLR SSW RET FLO LO** **01-3.8 – CSP 1 & 3 BRG CLR SSW RET FLO LO** **3B-4.5 – CCW HX 1 / 2 SPLY FLO LO**
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE 1-HS-4250A, Service Water Pump 1-01 amber MISMATCH and white TRIP lights illuminated.
	US	**DIRECT performance of ABN-501, Station Service Water System Malfunction, Section 2.0**
NOTE:		• The diesel generator can be operated, with load, for approximately one minute without SSW flow and not affect diesel performance. • When a fault exists on the 6.9KV safeguard bus, the SSW pump will not be running to supply cooling water to the DG. The time this condition exists should be minimized (approximately 15 minutes) to prevent damage to the DG. • Diamond step 1 denotes Initial Operator Actions.
Examiner Note:		**Diamond steps (◊) are Initial Operator Actions.**
	◊ BOP ◊	PLACE CS-1DG1E, Train A Diesel Generator Emergency Start/Stop handswitch in PULLOUT. [Step 2.3.1]
	BOP	VERIFY Train B SSW Pump – RUNNING. [Step 2.3.2]
	BOP	VERIFY Train B CCW Pump – RUNNING. [Step 2.3.3]

Operating Test :	NRC	Scenario #	3	Event #	4	Page	16	of	38
Event Description:	Station Service Water Pump 1-01 Trip								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When asked about status of SSW Pump breaker/motor, wait 2 minutes and REPORT that the SSW Pump 1-01 50/51 overcurrent relays on Phases B & C are tripped and the motor is hot.
		NOTE: The CCW pump on the affected train may be left operating at the discretion of the Shift Manager. However, with this pump operating, the affected SSW Pump will have an Auto Start Signal to it.
	RO/BOP	VERIFY equipment on Train A not required for operation: [Step 2.3.4]
		• Centrifugal Charging Pump 1-01 • Diesel Generator 1-01 • Component Cooling Water Pump 1-01 • Safety Injection Pump 1-01 • Containment Spray Pumps 1-01 & 1-03
		• Determines CCP 1-01 is running and CCP 1-02 must be started. [Step 2.3.4 RNO]
		CAUTION: Do not place pump handswitch in STOP if pump tripped (white TRIP light). This will reset 86M relay (white TRIP light) and may result in an automatic restart.
		Simulator Operator: When contacted, EXECUTE remote function CVR06 (Key 11) to START CCP 1-02 Auxiliary Oil Pump and CVR05 (Key 12) to STOP CCP 1-01 Auxiliary Lube Oil Pump.
	RO	START Centrifugal Charging Pump 1-02.
	RO/BOP	PLACE equipment on Train A in PULL OUT. [Step 2.3.5]
		• Centrifugal Charging Pump 1-01 • Station Service Water Pump 1-01 (may leave as is due to CAUTION) • Safety Injection Pump 1-01 • Containment Spray Pumps 1-01 & 1-03
	BOP	VERIFY CCW Pump 1-01 RUNNING. [Step 2.3.6 and 2.3.6.a]

Operating Test :	NRC	Scenario #	3	Event #	4	Page	17	of	38
Event Description:	Station Service Water Pump 1-01 Trip								

Time	Position	Applicant's Actions or Behavior
		NOTE: Step b. is a continuous action step.
	BOP	VERIFY CCW Heat Exchanger outlet temperature on Train A remains < 122ºF. [Step 2.3.6.b]
	US	Initiate a Work Request per STA-606. [Step 2.3.7]
	US	Refer to EPP-201. [Step 2.3.8]
	US	EVALUATE Technical Specifications. [Step 2.3.9]
		• LCO 3.7.8.B, Station Service Water System.
		• CONDITION B - One SSWS Train inoperable. • ACTION B.1 - Restore SSWS Train to OPERABLE status within 72 hours.
		• LCO 3.8.1.B, AC Sources - Operating.
		• CONDITION B - One DG inoperable. • ACTION B.1 - Perform SR 3.8.1.1 for the required offsite circuits within 1 hour AND once per 8 hours thereafter. • ACTION B.2 - Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable within four hours from discovery of Condition B concurrent within inoperability of redundant required feature(s). • ACTION B.3 - Determine OPERABLE DG(s) is not inoperable due to common cause failure within 24 hours.
Simulator Operator: If contacted, INFORM the Unit Supervisor that another operator will perform required Tech Spec Surveillance.		
	US	Complete OPT-215 verification within one hour. [Step 2.3.10]
	US	Submit a Condition Report per STA-421. [Step 2.3.11]
When Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 5.		

Operating Test :	NRC	Scenario #	3	Event #	5	Page	18	of	38
Event Description:	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 5 (Key 5). **- TC08C, High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed.**
		Indications Available: **6D-1.10 – AVE TAVE TREF DEV** **8A-3.6 – SG3 LVL LO** **8A-3.8 – SG3 STM & FW FLO MISMATCH** **8A-3.12 – SG3 LVL DEV** **Main Generator Load Decreasing on Turbine Digital Display** **Steam Dumps operating to control RCS Temperature** **Various Heater Drain Alarms**
	BOP	RESPOND to Annunciator Alarm Procedures
	BOP	RECOGNIZE High Pressure Turbine Stop Valve #3 has Failed Closed
	RO	Immediately PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO to allow the Rod Control System to Automatically respond to the plant transient.
		Examiner Note: If Control Rods are not placed in Auto expeditiously, 1-PV-2286, LP HTR BYPASS VLV may open. If 1-PV-2286 opens, the crew may address the actions of ABN-302, Section 7.0 prior to addressing ABN-401, Section 9.0. The ABN-302 response is included following the ABN-401 response and begins on page 21.
	US	**DIRECT performance of ABN-401, Main Turbine Malfunction, Section 9.0**
		NOTE: The turbine should be unloaded and a rapid controlled shutdown initiated within 2 hours if a closed LP stop or control valve can NOT be re-opened. The concern is a right/left thermal mismatch on the LP turbine casing which could initiate a rotor rub.
	BOP	VERIFY operable HP Control Valves are ≤ 98% open. [Step 9.3.1]

	RO/BOP	• PERFORM the following:
		  • ENSURE 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO. [Step 9.3.1 RNO a]
		  • Reduce Turbine power to 50 MW less than current load target at a rate of 100 MW per minute. [Step 9.3.1 RNO b]

Operating Test :	NRC	Scenario #	3	Event #	5	Page	19	of	38
Event Description:	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed								

Time	Position	Applicant's Actions or Behavior
	BOP	SET Turbine Load Rate Setpoint Controller to 100 MWe/min.
		• OPEN "Load Rate Setpoint" OSD.
		• SELECT blue bar and ENTER 100 MWe/min.
		• CLOSE "Load Rate Setpoint" OSD.
	BOP	SET Turbine Load Target to 50 MWe less than current load value.
		• OPEN "Load Target" OSD.
		• SELECT blue bar and ENTER appropriate MWe.
		• DEPRESS "Accept" then VERIFY value in blue bar is desired "Load Target" (magnitude and direction).
		• DEPRESS "Execute" then VERIFY "Load Target" changes to desired load.
		• CLOSE "Load Target" OSD.
NOTE: Indications listed in Step 2 are only those used as inputs to the steam generator level control system.		
	BOP	VERIFY Steam Generator levels at or trending to program. [Step 9.3.2]
	RO	VERIFY PR Delta Flux – (AFD) WITHIN LIMITS: [Step 9.3.3] • 1-NI-41C, PR DELTA FLUX CHAN I • 1-NI-42C, PR DELTA FLUX CHAN II • 1-NI-43C, PR DELTA FLUX CHAN III • 1-NI-44C, PR DELTA FLUX CHAN IV
	RO	VERIFY the Steam Dumps AND Rod Control System – RESPONDING TO MAINTAIN Tave to Tref. [Step 9.3.4] • 1-TI-412A, AVE Tave-Tref DEV
	RO	VERIFY Pressurizer Level – TRENDING TO PROGRAM LEVEL. [Step 9.3.5] • 1-LR-459, PRZR LVL/PRZR LVL STPT

Operating Test : NRC	Scenario # 3	Event # 5	Page 20 of 38
Event Description: High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed			

Time	Position	Applicant's Actions or Behavior
	RO	VERIFY Pressurizer Pressure – TRENDING TO PROGRAM PRESSURE. [Step 9.3.6] • 1PR-455, PRESS
	BOP	CHECK Steam Generator Feedwater Level AND Flow Control Valve status: [Step 9.3.7]

		• Steam Generator Levels – AT 67% [Step 9.3.7.a]
		  • 1-LI-551/519, SG 1 LVL (NR)
		  • 1-LI-552/529, SG 2 LVL (NR)
		  • 1-LI-553/539, SG 3 LVL (NR)
		  • 1-LI-554/549, SG 4 LVL (NR)

	BOP	• ALL Steam Generator Feedwater Flow Valves – IN AUTO [Step 9.3.7.b]
		  • 1-FK-510, SG 1 FW FLO CTRL
		  • 1-FK-520, SG 2 FW FLO CTRL
		  • 1-FK-530, SG 3 FW FLO CTRL
		  • 1-FK-540, SG 4 FW FLO CTRL

	BOP	RESET Steam Dump Valves [Step 9.3.8]
		• VERIFY ALL Steam Dumps – CLOSED [Step 9.3.8.a]
		• VERIFY 1-UI-500, STM DMP DEMAND – 0% [Step 9.3.8.b]
		• PLACE 43/1-SD, STM DMP MODE SELECT to RESET AND then TAVE position [Step 9.3.8.c]
	BOP	VERIFY Turbine Load – STABLE [Step 9.3.9] • GEN MEGAWATTS • GEN MEGAVARS
	BOP	VERIFY ALL operable HP Turbine Control Valves – INDICATE LESS THAN 100% OPEN: [Step 9.3.10] TG Control Display OR • 1-ZI-2429B, HPT CTRL VLV 1 POSN • 1-ZI-2431B, HPT CTRL VLV 2 POSN • 1-ZI-2430B, HPT CTRL VLV 3 POSN • 1-ZI-2428B, HPT CTRL VLV 4 POSN

Operating Test :	NRC	Scenario #	3	Event #	5	Page	21	of	38
Event Description:	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**Control Rods may insert below the LO-LO Limit on this transient, if this occurs the Unit Supervisor should refer to TS 3.1.6, Control Bank Insertion Limits.**
	US	REFER to TS/TR listed in Section 10.1 [Step 9.3.11]
	BOP	RESET Turbine Runback per Section 8.0, if necessary (NOT required) [Step 9.3.12]
	BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	OBSERVE rising Reactor Power and lowering Main Feedwater temperatures.
	US	**DIRECT performance of ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 7.0.**
Examiner Note:		**Diamond steps (◊) are Initial Operator Actions.**
		CAUTION: • LP FW HTR BYP VLV opening at power will cause reactor power to increase. • Using Load Target to reduce load without rods in AUTO can result in excessive TAVE-TREF mismatch before C-7 activates. This mismatch may cause an SI when steam dumps trip open.
		NOTE: Diamond step 1 denotes Initial Operator Actions.
	◊ US ◊	ENSURE Turbine Power– LESS THAN OR EQUAL TO 900 MWe. [Step 7.3.1 - YES]
	◊ RO ◊	• PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO.
	◊ BOP ◊	• MANUALLY RUNBACK Turbine Power to 900 MWe.
		• DEPRESS "900 MWe" Manual Runback button.
		• CLICK on "0/1" button.

Operating Test :	NRC	Scenario #	3	Event #	5	Page	22	of	38
Event Description:	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed								

Time	Position	Applicant's Actions or Behavior
		• CLICK on "EXECUTE" then VERIFY Runback in progress.
Simulator Operator: 3 minutes after being dispatched, REPORT no indication of piping or hanger damage.		
	US	Locally INSPECT Heater Drain System for signs of water hammer induced damage. [Step 7.3.2 - YES]
	BOP	ENSURE Feedwater Pump suction pressure > 250 PSIG. [Step 7.3.3 - YES]
		• 1-PI-2295, FWP A SUCT PRESS
		• 1-PI-2297, FWP B SUCT PRESS
	US/BOP	RESET Turbine Runback per ABN-401. [Step 7.3.4 - YES]
Examiner Note: The following steps are from ABN-401, Main Turbine Malfunction, Section 8.0, Turbine Reloading after Runback.		
		• VERIFY alarm 6D-1.9, ANY TURB RUNBACK EFFECTIVE – DARK. [Step 8.3.1 - YES]
		• In the Load Control Section, ENSURE Load Rate Setpoint Controller is SET to support reload or current plant conditions. [Step 8.3.2 - YES]
		• In the Load Control Section, ENSURE Load Target Setpoint Controller is set for actual MWe. [Step 8.3.3 - YES]
		• If Manual Runback was used, TURN OFF the appropriate Subloop Controller on the TG Control Display in the MANUAL RUNBACKS Section. [Step 8.3.4 - YES]
		• VERIFY Runback is RESET. [Step 8.3.5 - YES]
		• VERIFY Runback – GREATER THAN 15% WITHIN ONE HOUR and CONTACT Chemistry. [Step 8.3.6 - YES]
		• CONTROL Turbine Load as required per IPO-003A. [Step 8.3.7 - YES]
Examiner Note: Combination of events prior to / during this scenario will result in exceeding the Rod Insertion Limits (RIL). The RO should inform the SRO when ALB-6D, Window 2.7 – ANY CONTROL ROD BANK AT LO-LO LIMIT is LIT. Technical Specifications must be referenced.		

Operating Test :	NRC	Scenario #	3	Event #	5	Page	23	of	38
Event Description:	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed								

Time	Position	Applicant's Actions or Behavior
	US	EVALUATE Technical Specifications.
		• LCO 3.1.6.A, Control Bank Insertion Limits.
		• CONDITION A - Control bank insertion limits not met. • ACTION A.1.1 - Verify SDM to be within the limits provided in the COLR within one (1) hour, OR • ACTION A.1.2 - initiate Boration to restore SDM to within limit within one (1) hour, AND • ACTION A.2 - Restore control bank(s) to within limits within 2 hours.
	BOP	When Steam Dumps have closed - RESET C-7. [Step 7.3.5 - YES]
		• Momentarily PLACE 43/1-SD, STM DMP MODE SELECT in RESET.
		• VERIFY PCIP, Window 3.4 – TURB LOAD REJ STM DMP ARMED C-7 is DARK.
		NOTE: Isolating the LP FW HTR BYP VLV will cause RCS temperature to initially decrease and steam flow to increase as more extraction steam is drawn from the turbine. Subsequently, this will cause feedwater temperatures increase which will result in an increase in RCS temperature and a decrease in reactor power.
Examiner Note:		**Closing 1-PV-2286 is a significant plant reactivity event and requires a detailed reactivity brief. The crew will not be expected to perform additional actions in this section prior to proceeding with the next event.**
When the plant has been stabilized, or at Lead Examiner discretion, PROCEED to Events 6, 7 and 8.		

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	24	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
Simulator Operator:		**When directed, EXECUTE Events 6, 7 and 8 (Key 6).** **- SG02C, SG 1-03 Tube Rupture** **- RP15E, RX Trip Breakers Jammed Closed – ALL** **- MS08C, SG 1-03 MSIV Fails to Close**
Indications Available:		**6A-3.4 – CHRG FLO HI / LO** **5C-1.2 – PRZR LVL DEV LO** **5C-3.3 – PRZR PRESS LO BACKUP HTRS ON** **PC-11 – MSL-180 (1-RE-2327) is RED** **Main Steam Line Radiation level rising** **Pressurizer pressure lowering**
	RO/BOP	RECOGNIZE lowering RCS temperature and pressure.
	RO/BOP	DETERMINE Reactor Trip/Safety Injection initiation required. Attempt to manually trip the reactor and manually initiate Safety Injection.
	US	**DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.**
CRITICAL TASK STATEMENT		**CT-1 Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.**
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
		• VERIFY Neutron flux – DECREASING. [Step 1.a]
	RO/BOP	• Manually trip reactor from both trip switches [Step 1.a RNO]
	BOP	• IF reactor will not trip, THEN momentarily de-energize 480 V normal switchgear 1B3 and 1B4. [Step 1.a RNO]
CT-1	**BOP**	• **Momentarily places BOTH CS-1B3-1, INCOMING BKR 1B3-1 AND CS-1B4-1, INCOMING BKR 1B4-1 to TRIP** and then back to CLOSE.
	RO	• VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	25	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		• VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI status: [Step 4]
	RO	• CHECK if SI is actuated. [Step 4.a]
	RO	Manually INITIATE Train A and Train B Safety Injection Signal.
	RO	• PLACE 1/1-SIA2, SI MAN ACT Switch to ACT position at CB-07 and DETERMINE SI has actuated on both Trains. [Step 4.a]
	RO	• VERIFY Both Trains SI Actuated: [Step 4.b]
		• SI Actuated blue status light – ON NOT FLASHING.
Simulator Operator: If contacted to open the Reactor Trip Breakers, wait 2 minutes and Execute Key 13.		
CAUTION: A Safety Injection actuation will affect normal egress from the Containment Building. Attachment 9 of this procedure provides instructions to evacuate personnel from the Containment during a Safety Injection actuation.		
NOTE: Attachment 2 is required to be completed before FRGs are implemented unless directed by this procedure.		
Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP begin on Page 32 of the scenario guide.		

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	26	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2. [Step 5]
Examiner Note: The crew should stop AFW flow to SG 1-03 promptly after it has been identified as ruptured AND level is greater than 43% per EOP-0.0A, Attachment 1.A, Foldout for EOP-0.0A Reactor Trip or Safety Injection.		
	RO	VERIFY AFW Alignment: [Step *6]
		• VERIFY both MDAFW Pumps – RUNNING. [Step 6.a]
		• PLACE TDAFW Pump in PULLOUT per Foldout Page. [Step 6.b]
		• VERIFY AFW total flow – GREATER THAN 460 GPM. [Step 6.c]
		• VERIFY AFW valve alignment - PROPER ALIGNMENT. [Step 6.d]
	RO	VERIFY Containment Spray NOT Required: [Step *7]
		• VERIFY 1-ALB-2B, Window 1-8, CS ACT – NOT ILLUMINATED. [Step 7.a]
		• VERIFY 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – NOT ILLUMINATED. [Step 7.a]
		• VERIFY Containment pressure – LESS THAN 18.0 PSIG. [Step 7.a]
		• VERIFY Containment Spray Heat Exchanger Outlet Valves – CLOSED. [Step 7.b]
		• VERIFY Containment Spray Pumps 2 & 4 – RUNNING. [Step 7.c]
	RO	CHECK if Main Steam lines should be ISOLATED: [Step *8]
		• VERIFY Containment pressure – GREATER THAN 6.0 PSIG. [Step 8.a]
		• VERIFY Steam Line pressure – LESS THAN 610 PSIG. [Step 8.a]
		• Go to Step 9. [Step 8.a RNO a]
	RO	CHECK RCS Temperature: [Step *9]
		• VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F. [Step 9]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	27	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
	RO	CHECK PRZR Valve Status: [Step 10]
		• VERIFY PRZR Safeties – CLOSED. [Step 10.a]
		• VERIFY Normal PRZR Spray Valves – CLOSED. [Step 10.b]
		• VERIFY PORVs – CLOSED. [Step 10.c]
		• VERIFY Power to at least 1 Block Valve – AVAILABLE. [Step 10.d]
		• VERIFY Block Valves – AT LEAST ONE OPEN. [Step 10.e]
	RO	CHECK if RCPs Should Be Stopped: [Step 11]
		• VERIFY RCS subcooling – LESS THAN 25°F (55°F FOR ADVERSE CONTAINMENT). [Step 11.a]
		• GO to Step 12. [Step 11.a RNO a]
	US/RO	CHECK if any SG is Faulted: [Step 12]
		• VERIFY any Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER. [Step 12.a]
		• VERIFY Steam Generator 1-01 pressure – COMPLETELY DEPRESSURIZED. [Step 12.a]
		• Go to Step 13. [Step 12.a RNO a]
	US/RO	CHECK if SG Tubes Are Not Ruptured: [Step 13]
		• Condenser off gas radiation – NORMAL (COG-182, 1RE-2959)
		• Main steamline radiation – NORMAL (MSL-178 through 181, 1RE-2325 through 2328)
		• SG blowdown sample radiation monitor – NORMAL (SGS-164, 1RE-4200)
		• No Steam Generator level increasing in an uncontrolled manner
		• Go to EOP-3.0A, Steam Generator Tube Rupture, Step 1 based on indications that SG 1-03 is ruptured. [Step 13 RNO]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	28	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
	US	**Transitions to EOS-3.0A, Steam Generator Tube Rupture**
	US/RO	CHECK If RCPs Should Be Stopped: [Step *1]
		• VERIFY RCS subcooling – LESS THAN 25°F (55°F FOR ADVERSE CONTAINMENT). [Step 1.a]
		• GO to Step 2. [Step 1.a RNO].
	US/BOP	IDENTIFY Steam Generator 1-03 as ruptured. [Step *2]
		• OBSERVE high radiation from Steam Generator 1-03 Main Steam Line.
		• OBSERVE SG 1-03 level rising out of control.
		CAUTION: If the TDAFW pump is the only available source of feed flow, steam supply to the TDAFW pump must be maintained from at least one SG.
		CAUTION: At least two SG(s) must be maintained available for the initial RCS cooldown. At least one SG must be maintained available for the subsequent RCS cooldown to RHR system operating conditions.
		NOTE: If any SG atmospheric opens the Plant Staff should be notified.
CRITICAL TASK STATEMENT		**CT-2 Identify and Isolate the Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture.**
CT-2	**RO/BOP**	**ISOLATE flow from Ruptured Steam Generator 1-03**: [Step 3]
CT-2		• **ADJUST SG 1-03 Atmospheric Controller Setpoint to 1160 PSIG.** [Step 3.a]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	29	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
		• CHECK SG 1-03 Atmospheric Relief Valve – CLOSED. [Step 3.b]
		• CLOSE SG 1-03 Main Steam Line Isolation Valve. [Step 3.c]
		• CLOSE SG 1-03 Drip Pot Isolation Valves. [Step 3.c]
CT-2		• **RECOGNIZES SG 1-03 MSIV will NOT close and CLOSES all remaining SG MSIVs.** [Step 3.c RNO c.1)]
CT-2		• **PLACES STM DMP INTLK SELECT switches 43/1-SDA and 43/1-SDB in OFF to close the Steam Dump Valves.** [Step 3.c RNO c.2)]
CT-2		• **CLOSES 1-HS-3228, MS TO AUX STM SPLY VLV.** [Step 3.c RNO c.3)]
		• DISPATCHES operators to LOCALLY close SG 1-03 MSIV. [Step 3.c RNO c.4)]
Examiner Note: The intact SG ARVs (SGs 1, 2 and 4) should be set to control at 1092 psig, the steam pressure corresponding to the No load RCS average temperature of 557°F.		
Simulator Operator: When contacted to Close MSIV 1-03, wait 2 minutes and then DELETE Malfunction MS08C.		
		• USE SGs 1, 2 and 4 ARVs during subsequent RCS cooldown. [Step 3.c RNO c.6)]
		• PULL-OUT steam supply valve handswitch from ruptured SG(s) to TDAFWP. (NOT Applicable) [Step 3.d]
		• VERIFY blowdown isolation valves from SG 1-03 – CLOSED [Step 3.e]
CAUTION: If any ruptured SG is faulted, feed flow to that SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown.		
	US/RO	CHECK SG 1-03 Level: [Step *4]
		• Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT) [Step 4.a]
		• Stop AFW flow to SG 1-03. [Step 4.b]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	30	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
		CAUTION: Major steam flow paths from the ruptured SG(s) should be isolated before initiating RCS cooldown.
	BOP/RO	CHECK SG 1-03 Pressure – GREATER THAN 420 PSIG [Step 5]
		CAUTION: If RCPs are NOT running, the following steps may cause a false INTEGRITY STATUS TREE (FRP) indication for the ruptured loop. Disregard ruptured loop Cold Leg Wide Range Temperature indication until after performing Step 34.
		NOTE: After the low steamline pressure SI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded.
		Examiner Note: When ruptured Steam Generator pressure is between two values provided on the Table at Step 6.c, the correlating Core Exit Temperature for the lower pressure value is used. SG Pressure _____.
	BOP/RO	INITIATE RCS Cooldown: [Step *6]
		• CHECK PRZR pressure – LESS THAN 1960 PSIG [Step 6.a]
		• BLOCK low steamline pressure SI signal [Step 6.b]
		• DETERMINE required core exit temperature from Table 1. [Step 6.c]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	31	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
		Examiner Note: Required CET Temp _____.

TABLE 1

LOWEST -RUPTURED SG PRESSURE (PSIG)	CORE EXIT TEMPERATURE (°F)
1200	523°F (493°F for Adverse Containment)
1150	518°F (487°F for Adverse Containment)
1100	512°F (481°F for Adverse Containment)
1050	507°F (475°F for Adverse Containment)
1000	501°F (469°F for Adverse Containment)
950	495°F (462°F for Adverse Containment)
900	488°F (454°F for Adverse Containment)
850	482°F (447°F for Adverse Containment)
800	475°F (440°F for Adverse Containment)
750	467°F (431°F for Adverse Containment)
700	459°F (421°F for Adverse Containment)
650	450°F (412°F for Adverse Containment)
600	441°F (402°F for Adverse Containment)
550	431°F (391°F for Adverse Containment)
500	421°F (380°F for Adverse Containment)
450	409°F (366°F for Adverse Containment)
420	402°F (358°F for Adverse Containment)

	BOP/RO	• RECOGNIZES that condenser is unavailable due to shutting all intact SG MSIVs. [Step 6.d]
		• DUMP steam at maximum rate from SGs 1, 2 and 4 using ARVs. [Step 6.d RNO d]

Operating Test :	NRC	Scenario #	3	Event #	6, 7, & 8	Page	32	of	38
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 MSIV Fails to Close								

Time	Position	Applicant's Actions or Behavior
		• Make plant announcement and notify Plant Staff of steam release. [Step 6.d RNO d.1)]
		• PERFORM the following as necessary to release steam: [Step 6.d RNO d.2)] • PLACE SGs 1, 2 and 4 ARVs in manual and fully open valves.
		• PLACE all PRZR heater switches to OFF position. [Step 6.e]
		• Core exit TCs – LESS THAN REQUIRED TEMPERATURE [Step 6.f]
		• STOP RCS cooldown. [Step 6.g]
		• MAINTAIN core exit TCs – LESS THAN REQUIRED TEMPERATURE [Step 6.h]
When the target CET Temperature is reached during the RCS cooldown in accordance with EOP-3.0A, Steam Generator Tube Rupture, TERMINATE the Scenario.		

Operating Test :	NRC	Scenario #	3	Event #	Att. 2	Page	33	of	38
Event Description:	EOP-0.0A, Attachment 2								

Time	Position	Applicant's Actions or Behavior
Examiner Note: These steps are performed by the BOP per EOP-0.0A, Attachment 2.		
		CAUTION: If during performance of this procedure the SI sequencer fails to complete its sequence, Attachment 3 may be used to ensure proper equipment operation for major equipment.
	BOP	VERIFY SSW Alignment: [Step 1]
		• VERIFY SSW Pump 1-02 – RUNNING. [Step 1.a]
		• VERIFY EDG 1-02 Cooler SSW return flow. [Step 1.b]
	BOP	VERIFY Safety Injection Pump 1-02 – RUNNING. [Step 2]
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS). [Step 3]
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS). [Step 4]
	BOP	VERIFY CCW Pumps – RUNNING. [Step 5]
	BOP	VERIFY RHR Pumps – RUNNING. [Step 6]
	BOP	VERIFY Proper CVCS Alignment: [Step 7]
		• VERIFY CCP 1-02 – RUNNING. [Step 7.a]
		• VERIFY Letdown Relief Valve Isolation: [Step 7.b]
		• Letdown Orifice Isolation Valves – CLOSED. [Step 7.b.1)]
		• Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED. [Step 7.b.2)]
	BOP	VERIFY ECCS flow: [Step 8]
		• CCP SI flow indicator – CHECK FOR FLOW. [Step 8.a]

Time	Position	Applicant's Actions or Behavior
		• RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT). [Step 8.b]
		• GO to Step 9. [Step 8.b RNO b]
	BOP	VERIFY Feedwater Isolation Complete: [Step 9]
		• Feedwater Isolation Valves – CLOSED.
		• Feedwater Isolation Bypass Valves – CLOSED.
		• Feedwater Bypass Control Valves – CLOSED.
		• Feedwater Control Valves – CLOSED.
	BOP	VERIFY Diesel Generator 1-02 – RUNNING. [Step 10]
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB-10 – LIT. [Step 11]
		NOTE: The MLB indication for SI alignment includes components which may be in a different alignment to support unit conditions. MSIVs, MSLs BEF MSIV D/POT ISOL, TDAFWP STEAM SUPPLIES, TDAFWP RUN, MDAFWP FLO CTRL VLVs and TDAFWP FLO CTRL VLVs may be exceptions to the expected MLB indication.
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION. [Step 12]
		NOTE: Any previously removed missile shield(s) that affects the Control Room, Auxiliary, Safeguards or Fuel Building pressure boundary is required to be restored upon initiation of a Safety Injection Signal.
		NOTE: When the SI sequencer has timed out,the Reactor Makeup Water Pump with its handswitch in Auto will restart.
	BOP	VERIFY Components on Table 1 are Properly Aligned. [Step 13]

	Location	Equipment	Description	Condition
	CB-03	X-HS-5534	H2 PRG SPLY FN 4	STOPPED
	CB-03	X-HS-5532	H2 PRG SPLY FN 3	STOPPED
	CB-04	1/1-8716A	RHRP 1 XTIE VLV	OPEN
	CB-04	1/1-8716B	RHRP 2 XTIE VLV	OPEN
	CB-06	1/1-8153	XS LTDN ISOL VLV	CLOSED
	CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED
	CB-07	1/1-RTBAL	RX TRIP BKR	OPEN
	CB-07	1/1-RTBBL	RX TRIP BKR	OPEN
	CB-07	1/1-BBAL	RX TRIP BYP BKR	OPEN/DEENERGIZED
	CB-07	1/1-BBBL	RX TRIP BYP BKR	OPEN/DEENERGIZED
	CB-08	1-HS-2397A	SG 1 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2398A	SG 2 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2399A	SG 3 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2400A	SG 4 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2111C	FWPT A TRIP	TRIPPED
	CB-08	1-HS-2112C	FWPT B TRIP	TRIPPED
	CB-09	1-HS-2490	CNDS XFER PUMP	STOPPED (MCC deenergized on SI)
	CV-01	X-HS-6181	PRI PLT SPLY FN 17 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED

Time	Position	Applicant's Actions or Behavior

	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED
	CV-01	1-HS-5620	MS & FW PIPE AREA SPLY FN 18	STOPPED/DEENERGIZED
	CV-03	X-HS-5855	CR EXH FN 1	STOPPED/DEENERGIZED
	CV-03	X-HS-5856	CR EXH FN 2	STOPPED/DEENERGIZED
	CV-03	X-HS-5731	SFP EXH FN 33	STOPPED/DEENERGIZED
	CV-03	X-HS-5733	SFP EXH FN 34	STOPPED/DEENERGIZED
	CV-03	X-HS-5727	SFP EXH FN 35	STOPPED/DEENERGIZED
	CV-03	X-HS-5729	SFP EXH FN 36	STOPPED/DEENERGIZED

Time	Position	Applicant's Actions or Behavior

<u>Examiner Note</u>: The next four (4) steps would be performed on Unit 2.					
		CB-03	2-HS-5538	AIR PRG EXH ISOL DMPR	CLOSED
		CB-03	2-HS-5539	AIR PRG EXH ISOL DMPR	CLOSED
		CB-03	2-HS-5537	AIR PRG SPLY ISOL DMPR	CLOSED
		CB-03	2-HS-5536	AIR PRG SPLY ISOL DMPR	CLOSED
	BOP	NOTIFY Unit Supervisor attachment instructions complete <u>AND</u> to IMPLEMENT FRGs as required.			
EOP-0.0A, Attachment 2 steps are now complete.					

;2016 NRC Scenario 3
;Rev. 1

;Event 1 - Loop 4 Tcold Fails High

;TE-441B Failure High
IMF RP05D f:630 k:1

;Event 2 - Main Steam Line 1 Steam Pressure Fails Low

;PT-514 Failure Low
IMF RP03A f:0 k:2

;Event 3 - 1-TK-130 Fails to 0% Demand - Manual reopens valve

IOR AICVTK130 f:10 k:3
{AOCVTK130.Value=0}IMF CV05 f:0
{AOCVTK130.Value=0}IOR LOCVTK130_1 f:1
{AOCVTK130.Value=0}IOR LOCVTK130_2 f:0
{AOCVTK130.Value=0}IOR DICVTK130_2 f:1
{AOCVTK130.Value=0}IOR DICVTK130_4 f:1
{DICVTK130_2.Value=1}DMF CV05
{DICVTK130_2.Value=1}DOR LOCVTK130_1
{DICVTK130_2.Value=1}DOR LOCVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_4
{DICVTK130_1.Value=1}IMF CV05 f:0

;Event 4 - Station Service Water Pump 1-01 Trip

;SSWP 1-01 Trips
IMF SW01A f:1 k:4

;Event 5 - High Pressure Stop Valve Fails Closed

;HP Stop Valve 3 Failure
IMF TC08C f:1 k:5

;Event 6 - SGTR #3

;SGTR 1 Tube
IMF SG02C f:1 k:6

;Event 7 - ALL Automatic & Manual Rx Trip Failures

;Rx Trip Breakers Jammed Close - All

IMF RP15E f:1

;Event 8 - SG #3 MSIV Fails to Close in Manual

;1-HV-2335A Fails to Manually Close
IMF MS08C f:1

;KEY 11 CCP 1-02 Aux Lube Oil Pump to Auto

IRF CVR06 f:1 k:11

;KEY 12 CCP 1-01 Aux Lube Oil Pump to Off

IRF CVR05 f:0 k:12

;KEY 13 Rx Trip Breakers Open

IRF RPR112 f:2 k:13
IRF RPR113 f:2 k:13

Facility: CPNPP 1 and 2								Date of Exam: 07/11/16						Operating Test No.: July NRC			
APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		CPNPP #1			CPNPP #2			CPNPP #3									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SRO-U1	RX				-					-				**0**	**1**	**1**	**0**
	NOR				-					-				**0**	**1**	**1**	**1**
	I/C				1,2,3, 4,5					2,4,5, 7				**9**	**4**	**4**	**2**
	MAJ				7,9					6				**3**	**2**	**2**	**1**
	TS				1,3,6					-				**3**	**0**	**2**	**2**
SRO-U2	RX					-		-						**0**	1	1	0
	NOR					-		-						**0**	**1**	**1**	**1**
	I/C					1,3		1,2,3, 4,5,7, 8						**9**	**4**	**4**	**2**
	MAJ					7,9		6						**3**	**2**	**2**	**1**
	TS					-		1,2,4						**3**	**0**	**2**	**2**
SRO-U3	RX				-			-						**0**	**1**	**1**	**0**
	NOR				-			-						**0**	**1**	**1**	**1**
	I/C				1,2,3, 4,5			1,2,3, 4,5,7, 8						**12**	**4**	**4**	**2**
	MAJ				7,9			6						**3**	**2**	**2**	**1**
	TS				1,3,6			1,2,4						**6**	**0**	**2**	**2**

Facility: CPNPP 1 and 2		Date of Exam: 07/11/16															
APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		CPNPP #1			CPNPP #2			CPNPP #3									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO1	RX						-		-					**0**	**1**	**1**	**0**
	NOR						-		-					**0**	**1**	**1**	**1**
	I/C						2,3,4,5		1,3,8					**7**	**4**	**4**	**2**
	MAJ						7,9		6					**3**	**2**	**2**	**1**
	TS						-		-					**0**	**0**	**2**	**2**
RO2	RX						-		-					**0**	**1**	**1**	**0**
	NOR						-		-					**0**	**1**	**1**	**1**
	I/C						2,3,4,5		1,3,8					**7**	**4**	**4**	**2**
	MAJ						7,9		6					**3**	**2**	**2**	**1**
	TS						-		-					**0**	**0**	**2**	**2**
RO3	RX					-				-				**0**	**1**	**1**	**0**
	NOR					-				-				**0**	**1**	**1**	**1**
	I/C					1,3				2,4,5,7				**6**	**4**	**4**	**2**
	MAJ					7,9				6				**3**	**2**	**2**	**1**
	TS					-				-				**0**	**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.

Facility: CPNPP	Date of Examination: 07/11/16	Operating Test No. July NRC

Competencies	Applicants											
	SRO-U1				SRO-U2				SRO-U3			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3		1	2	3		1	2	3	
Interpret/Diag-nose Events and Conditions	-	1,2,3, 4,5,6, 7,8,9	2,4,5, 6,7		-	1,3,7, 8,9	1,2,3, 4,5,6, 7,8		-	1,2,3, 4,5,6, 7,8,9	1,2,3, 4,5,6, 7,8	
Comply With and Use Procedures (1)	-	1,2,3, 4,5,6, 7,8,9	2,4,5, 6,7		-	1,3,7, 8,9	1,2,3, 4,5,6, 7,8		-	1,2,3, 4,5,6, 7,8,9	1,2,3, 4,5,6, 7,8	
Operate Control Boards (2)	-	-	2,4,5, 6,7		-	1,3,7, 8,9	N/A		-	N/A	N/A	
Communicate and Interact	-	1,2,3, 4,5,6, 7,8,9	2,4,5, 6,7		-	1,3,7, 8,9	1,2,3, 4,5,6, 7,8		-	1,2,3, 4,5,6, 7,8,9	1,2,3, 4,5,6, 7,8	
Demonstrate Supervisory Ability (3)	-	1,2,3, 4,5,6, 7,8,9	N/A		-	N/A	1,2,3, 4,5,6, 7,8		-	1,2,3, 4,5,6, 7,8,9	1,2,3, 4,5,6, 7,8	
Comply With and Use Tech. Specs. (3)	-	1,3,6	N/A		-	N/A	1,2,4		-	1,3,6	1,2,4	

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: CPNPP	Date of Examination: 07/11/16	Operating Test No. July NRC

Competencies	Applicants											
	RO1				RO2				RO3			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3		1	2	3		1	2	3	
Interpret/Diag-nose Events and Conditions	-	2,4,5, 6,7,9	1,3,5, 6,7,8		-	2,4,5, 6,7,9	1,3,5, 6,7,8		-	1,3,7, 8,9	2,4,5, 6,7	
Comply With and Use Procedures (1)	-	2,3,4, 5,6,7, 9	1,3,4, 5,6,7, 8		-	2,3,4, 5,6,7, 9	1,3,4, 5,6,7, 8		-	1,3,7, 8,9	2,4,5, 6,7	
Operate Control Boards (2)	-	2,3,4, 5,7,9	1,3,4, 5,6,7, 8		-	2,3,4, 5,7,9	1,3,4, 5,6,7, 8		-	1,3,7, 8,9	2,4,5, 6,7	
Communicate and Interact	-	2,3,4, 5,6,7, 9	1,3,4, 5,6,7, 8		-	2,3,4, 5,6,7, 9	1,3,4, 5,6,7, 8		-	1,3,7, 8,9	2,4,5, 6,7	
Demonstrate Supervisory Ability (3)	-	N/A	N/A		-	N/A	N/A		-	N/A	N/A	
Comply With and Use Tech. Specs. (3)	-	N/A	N/ A		-	N/A	N/ A		-	N/A	N/A	

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.