

Facility:	CPSES	Scenario No.:	1	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
Initial Conditions:	<ul style="list-style-type: none"> 100% power - RCS Boron is 906 ppm by Chemistry Sample. Power Operated Relief Valve (PCV-456) closed and isolated due to seat leakage. 				
Turnover:	<ul style="list-style-type: none"> Power reduction required at 25%/hr (MWe/min). 				
Critical Tasks:	<ul style="list-style-type: none"> Determines Steam Generator #4 is ruptured and isolates the Steam Generator. Determines Safety Injection Pump fails to start and starts pump. Determines SGTR and SBLOCA and performs actions to minimize leak flow. 				
Event No.	Malf. No.	Event Type*	Event Description		
1 + 20 min		R (RO) N (BOP, SRO)	Power reduction required at 25% per hour.		
2 +30 min	RD08	I (RO, SRO)	Automatic Rod Control direction failure.		
3 +40 min	SW01B	C (BOP, SRO) TS (SRO)	Station Service Water Pump (1-02) trip.		
4 +50 min	RX08A	I (RO, SRO) TS (SRO)	Pressurizer Pressure Channel (PT-455) fails high.		
5 +60 min	SG01D	M (ALL)	Steam Generator #4 Tube Rupture @ 350 gpm (120 second ramp).		
6 +60 min	ED03B	M (ALL)	Loss of 345 kV Transformer 1ST (Loss of all RCPs).		
7 +60 min	SIR01A	C (BOP)	Train A Safety Injection Pump (1-01) fails to start.		
8 +100 min	RX16A	M (ALL)	Power Operated Relief Valve (PCV-455A) fails open during depressurization (SBLOCA).		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #1

The crew will assume the shift and commence a power reduction at 25% per hour for Main Turbine Valve Testing per Integrated Plant Operating (IPO) procedure IPO-003A, Power Operations, Attachment 6, OPT-217A Power Reduction.

Once the down power is underway, an automatic Rod Control direction failure will occur. The crew will enter Abnormal Conditions Procedure (ABN) ABN-712, Rod Control System Malfunction. The crew will secure the power reduction and perform actions to restore plant parameters to normal.

When control of the plant is restored, a Station Service Water Pump will trip. The crew will follow guidance contained in ABN-501, Station Service Water System Malfunction to restore Service Water flow. The SRO will evaluate Technical Specifications.

After the crew has stabilized the plant, a Pressurizer pressure instrument fails high and the crew responds per ABN-705, Pressurizer Pressure Malfunction. The SRO will evaluate Technical Specifications.

When the plant is stable, a Steam Generator Tube Rupture on Loop 4 (SGTR) will occur. Upon Reactor trip, a loss of 345 kV Transformer will occur removing power to the Reactor Coolant Pumps and all Non-1E Buses. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and then transition to EOP-3.0A, SGTR to isolate the affected Steam Generator.

Following the Reactor Trip the Train A Safety Injection Pump 1-01 fails to start. The pump is subsequently started during performance of EOP-0.0A, Attachment 2.

During the RCS depressurization, a Power Operated Relief Valve (PCV-455A) will fail open with its associated Block Valve failing to close and require entry into ECA-3.1A, SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired.

Event termination will occur when a RCS cooldown is in progress per ECA-3.1A.

Risk Significance:

- | | |
|---|--|
| • Risk important components out of service: | PORV isolated due to seat leakage |
| • Failure of risk important system prior to trip: | Station Service Water Pump trip |
| • Risk significant core damage sequence: | SGTR with SBLOCA |
| • Risk significant operator actions: | Failure to isolate ruptured SG
Failure to start SI Pump |

Facility:	CPSES	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> • 54% power - RCS Boron is 1032 ppm by Chemistry Sample. • Power Operated Relief Valve (PCV-456) closed and isolated due to seat leakage. 				
Turnover:	<ul style="list-style-type: none"> • Maintain steady-state operation. 				
Critical Tasks:	<ul style="list-style-type: none"> • Determines Steam Generator #2 is faulted and isolates the Steam Generator. • Determines Containment Isolation Signal fails to actuate and manually actuates. • Determines required conditions met for tripping RCPs. 				
Event No.	Malf. No.	Event Type*	Event Description		
1 +10 min	RX09A	I (ALL)	Main Turbine 1 st Stage Pressure Transmitter (PT-505) fails low.		
2 +20 min	RX15B	C (RO, SRO) TS (SRO)	Pressurizer Spray Valve (PCV-455C) fails 40% open.		
3 +30 min	EG01	C (BOP, SRO)	Main Generator Voltage Regulator fails high.		
4 +40 min	RX05A	I (RO, SRO) TS (SRO)	Pressurizer Level Channel (LT-459A) fails low.		
5 +50 min	MS01B	M (ALL)	Faulted Steam Generator #2 inside Containment.		
6 +55 min	RP09A/B RP18A	C (BOP)	Containment Isolation Valves fail to close.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #2

The crew will assume the shift with steady-state conditions per Integrated Plant Operating (IPO) procedure IPO-003A, Power Operations.

The first event is a Main Turbine 1st Stage Pressure Transmitter (PT-505) failure. The crew responds per Abnormal Conditions Procedure (ABN) ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st-Stage Pressure and Feed Header Pressure Instrument Malfunction. Several actions are required on the part of the RO and BOP to stabilize plant conditions.

When the plant is stable, a Pressurizer Spray Valve will fail open. The crew will enter ABN-705, Pressurizer Pressure Malfunction and take manual control of the Spray Valve. The SRO will be required to evaluate Technical Specifications.

The next event is a Main Generator Voltage Regulator failure. The crew will respond per ABN-402, Main Generator Malfunction. The BOP will take manual control of the voltage regulator to manage Main Generator VARs and voltage within specification.

When control of Main Generator is obtained, a Pressurizer level channel will fail low. The crew should respond to the channel failure in accordance with ABN-706, Pressurizer Level Instrumentation Malfunction. Actions include manual control of Charging by the RO. The SRO will evaluate Technical Specifications.

When the channel failure actions are complete, a Steam Line Break inside Containment on Steam Generator #2 will occur. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and then transition to EOP-2.0A, Faulted Steam Generator Isolation. Once the Steam Generator is isolated the crew will transition to EOS-1.1A, Safety Injection Termination.

An automatic failure of both Trains of Containment Isolation Valves will require actions on the part of the BOP.

Event termination will occur when the crew has completed actions for securing high head Safety Injection.

Risk Significance:

- Risk important components out of service: PORV isolated due to seat leakage
- Failure of risk important system prior to trip: Pressurizer Spray Valve fails open
- Risk significant core damage sequence: PTS due to faulted Steam Generator
- Risk significant operator actions: Manually initiate Containment Isolation
Stop all RCPs on loss of cooling

Facility:	CPSSES	Scenario No.:	3	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> • 1×10^{-8} amps - RCS Boron is 1806 ppm by Chemistry Sample. 				
Turnover:	<ul style="list-style-type: none"> • Rod withdrawal and power increase to ~2% power. 				
Critical Tasks:	<ul style="list-style-type: none"> • Determine Reactor Coolant Pump trip, manual Reactor Trip required. • Determine inadvertent SI and secures Charging prior to Pressurizer overflow. • Determine LOCA in progress and reinitiates Safety Injection. 				
Event No.	Malf. No.	Event Type*	Event Description		
1 +20 min		R (RO) N (BOP, SRO)	Rod withdrawal and power increase to ~2% power.		
2 +30 min	FW24A	C (BOP, SRO) TS (SRO)	Motor-driven Auxiliary Feedwater Pump (1-01) trip.		
3 +40 min	CV01B	C (RO, SRO) TS (SRO)	Centrifugal Charging Pump (1-01) trip.		
4 +45 min	RC15C	C (RO, SRO)	Reactor Coolant Pump (1-03) seized shaft, manual Reactor Trip required.		
5 +45 min	RP14B	M (ALL)	Spurious Train B Safety Injection actuation upon Reactor Trip.		
6 +50 min	CCR08	C (BOP)	Component Cooling Water Pump (1-02) fails to start.		
7 +65 min	RC17C	M (ALL)	Loss of Coolant Accident at 1700 gpm following isolation of high head injection.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #3

The crew will assume the shift with the Reactor critical at 1×10^{-8} amps and then raise power to approximately 2% per Integrated Plant Operating (IPO) procedure IPO-002A, Plant Startup from Hot Standby.

The first event is a trip of the running Auxiliary Feedwater Pump. The crew will refer to Abnormal Conditions Procedure (ABN) ABN-305, Auxiliary Feedwater System Malfunction and place the Turbine Driven AFW Pump in service. The SRO will evaluate Technical Specifications.

When the crew has evaluated Technical Specifications, a loss of the running Centrifugal Charging Pump will occur. The crew will enter ABN-105, Chemical and Volume Control System Malfunction and perform actions as required. The SRO will evaluate Technical Specifications.

The major event begins with a Reactor Coolant Pump seized shaft that requires a manual Reactor trip. When the Reactor is manually tripped a spurious Train B Safety Injection signal will actuate. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and perform immediate actions including actuation of both Trains of Safety Injection. When it is determined that a spurious actuation has occurred the crew will transition to EOS-1.1A, Safety Injection Termination. During the event a Component Cooling Water Pump will fail to start and require actions on the part of the BOP during Attachment 2 of EOP-0.0A.

When the high head injection alignment is secured in EOS-1.1A, a small break LOCA will occur and require re-initiation of Safety Injection flow per the Foldout Page Criteria of EOS-1.1A.

Event termination will occur when the crew has reinitiated Safety Injection and transitioned to EOP-1.0A, Loss of Reactor or Secondary Coolant.

Risk Significance:

- Failure of risk important system prior to trip: Auxiliary Feedwater Pump trip
Centrifugal Charging Pump trip
- Risk significant core damage sequence: SBLOCA following safety injection termination
- Risk significant operator actions: Restore AFW flow
Reinitiate Safety Injection

Facility: Comanche Peak		Date of Examination: 04/16/2007
Examination Level RO		Operating Test Number: NRC
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	2.1.12 Ability to apply technical specifications for a system (2.9). JPM: Verify required flowpath(s) OPERABLE per Technical Specifications (RO1319).
Conduct of Operations	M, R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation (3.9). JPM: Perform a calorimetric heat balance (RO1804A).
Equipment Control	M, R	2.2.12 Knowledge of surveillance procedures (3.0). JPM: Review completed surveillance for accuracy (RO8003).
Radiation Control	N, R	2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure (2.9). JPM: Determine stay time for work to be performed based on HP Surveys (New).
Emergency 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 (D)irect from bank (≤ 3 for ROs; \leq for 4 for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1 ; randomly selected) (S)imulator Class(R)oom		

Administrative Topics Outline
Task Summary

- A.1.a The candidate will be required to determine the Technical Specification required Boric Acid flowpaths while in MODE 3 per OPT-202, Boration System Operability Verification. The critical task will be to determine the available flowpaths given current plant alignment and OPERABLE equipment. This is a modified bank JPM.

- A.1.b The candidate will be given a set of plant information requiring calculation of a calorimetric heat balance per OPT-309, Unit Calorimetric. The critical tasks include correctly entering data and determining the thermal output of the reactor. This is a modified bank JPM.

- A.2 The candidate will review a completed surveillance procedure OPT-110A, Measurement of Seal Injection Flow for accuracy. The critical task is to determine which surveillance items are out-of-specification. This is a modified bank JPM.

- A.3 The candidate will determine stay time for work to be performed based on HP Surveys. The critical tasks include determination of method and number of individuals required to minimize exposure. This is a new JPM.

- A.4 N/A

Facility: Comanche Peak	Date of Examination: 04/16/2007	
Examination Level: SRO(I) & (U)	Operating Test Number: NRC	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	2.1.12 Ability to apply technical specifications for a system (4.0). JPM: Verify required flowpath(s) OPERABLE per Technical Specifications (RO1319).
Conduct of Operations	M, R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation (4.0). JPM: Perform a calorimetric heat balance (RO1804A).
Equipment Control	N, R	2.2.22 Knowledge of limiting conditions for operations and safety limits (4.1). JPM: Perform a Safety Function Determination (New).
Radiation Control	N, R	2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure (3.3). JPM: Determine stay time for work to be performed based on HP Surveys (New).
Emergency Plan	N, R	2.4.41 Knowledge of emergency action level thresholds and classifications (4.1). JPM: Classify an emergency event (New).
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 (D)irect from bank (≤ 3 for ROs; \leq for 4 for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1 ; randomly selected) (S)imulator Class(R)oom		

Administrative Topics Outline
Task Summary

- A.1.a The candidate will be required to determine the Technical Specification required Boric Acid flowpaths while in MODE 3 per OPT-202, Boration System Operability Verification. The critical task will be to determine the available flowpaths given current plant alignment and OPERABLE equipment. This is a modified bank JPM.

- A.1.b The candidate will be given a set of plant information requiring calculation of a calorimetric heat balance per OPT-309, Unit Calorimetric. The critical tasks include correctly entering data and determining the thermal output of the reactor. This is a modified bank JPM.

- A.2 The candidate will perform a Safety Function Determination Program evaluation for the Emergency Core Cooling System per ODA-308, LCO Tracking Program. The critical tasks include determine the Systems and Safety Functions affected. This is a new JPM.

- A.3 The candidate will determine stay time for work to be performed based on HP Surveys. The critical tasks include determination of method and number of individuals required to minimize exposure. This is a new JPM.

- A.4 A Security event is in progress. The candidate will perform an EPIP classification per EPP-201, Assessment of Emergency Action Levels Emergency Classification and Plan Activation. The critical task is to properly classify the event. This is a new JPM.