Facility: PVNGS Unit-1 **Scenario No.:** 1 **Op-Test No:** 1

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions: IC-18, 75% power, MOC

High Pressure Safety Injection pump 'B' is Out of Service

Plant Cooling Water pump 'B' is Out of Service

Turnover:

See Attached

Scenario Overview:

1. The crew will repressurize 1B SIT due to a small nitrogen leak.
2. Then the crew will experience a failure of a SG #1 Differential pressure (RCS flow) indicator. This will require the crew to bypass appropriate Reactor Protection System (RPS) bistables and refer to Technical Specifications.
3. Then the crew will respond to a degradation of condenser vacuum. This will require the crew to reduce power and stabilize the plant when source of air in-leakage is terminated.
4. Then the crew will respond to a failed Volume Control Tank (VCT) level transmitter. This will require the crew to return charging pump suction back to the VCT.
5. Then the crew will respond to a Loss of Coolant Accident (LOCA). During this event the crew will be required to manually start Auxiliary Feedwater pumps to supply feedwater to the Steam Generators.
6. Then the crew will respond to a loss of Containment Spray (CS). This will require the crew to implement the Functional Recovery Procedure (FRP) due to a failed Train 'B' valve and a loss of the running CS pump.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No.	Malf. No.	Event Type*	Event Description
		N (PO)	Re-pressurize Safety Injection Tank (SIT) 1B (CRS to direct and PO to perform)
1 T=10	TR04:RCDP DT115D	I (SO)	Channel D SG #1 Differential Pressure (RCS Flow) transmitter fails low. (CRS to refer to Technical Specifications and direct bypassing RPS bistable for RCS low flow trip)
2 T=20	MC01A	R (ALL)	Slow loss of condenser vacuum. Crew to reduce power by boration and/or Control Element Assembly (CEA) insertion. (PO/SO coordinate power reduction, CRS direct power reduction and dispatch AO to investigate)
3 T=35	TR04:CHNL T227	I (PO)	Failure of Volume Control Tank (VCT) level instrument (PO to identify and implement corrective actions to stop boration, CRS to direct plant stabilization following boration addition)
4 T=45	THO1A	M (ALL) C (SO)	Loss of Coolant Accident (LOCA) (Crew recognizes, CRS directs trip) (Critical Task to initiate Auxiliary feedwater) (Critical Task to close RCP seal bleedoff valves)
5 T=55	CP06: SIAP03	C (PO)	A Train Containment Spray (CS) pump trips (PO diagnose) CRS to transition to Functional Recovery Procedure (FRP) and direct actions to restore Containment Spray flow. (Critical Task to restore Train A Containment Spray flow using the A LPSI pump)
T~65			End point = Crew establishes Train B Containment Spray flow

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

LOIT NRC EXAM SCENARIO SUPPLEMENTAL TURNOVER INFORMATION

Scenario # 1

Turnover

Plant conditions:

The unit is at 75% power and has been for the last five days. Time in core life is 225 EFPD.

Equipment Out of Service:

SG Safety Valves

The unit is limited to ~ 76% power due to three SG # 1 Safety Valves being declared inoperable, (due to engineering input). . SGE-PSV-575, 576, and 578 are the affected MSSVs. Technical Specification 3.7.1 Condition A required reduction in power and lowering of VOPT trip setpoints. These actions have been completed

HPSI 'B'

High Pressure Safety Injection (HPSI) pump 'B' is out of service for emergent work to replace a pump bearing that failed during its scheduled Surveillance Test 6 hours ago. Maintenance workers expect to finish pump repairs in 14 hours from now. T.S. 3.5.3 Condition B was entered 6 hours ago.

SIT 1B

Safety Injection Tank (SIT) 1B pressure is low due to a small nitrogen leak. T.S. 3.5.1 Condition B was entered one hour ago. No actions have been taken.

PW 'B'

The 'B' Plant Cooling Water pump was removed from service 20 hours ago for scheduled maintenance on the pump motor. Maintenance workers expect to finish pump repairs in 24 hours total time.

The normal, shiftly surveillances are complete

Planned Shift Activities:

- Operations management directs re-pressurizing SIT 1B prior to continuation of other maintenance activities.
- Following shift turnover, you are directed to re-pressurize SIT 1B to the normal pressure band.
- The crew is in 40OP-9ZZ05, Section 6.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: PVNGS Unit-1 **Scenario No.:** 2 **Op-Test No:** 2

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions: IC-20, 100% power, MOC

High Pressure Safety Injection pump 'B' is Out of Service

Plant Cooling Water pump 'B' is Out of Service

Turnover:

See Attached

Scenario Overview:

1. The crew will shift charging pumps to 'B' and 'E' running.
2. Then the crew will experience a loss of the running TC pump with the standby pump failing to automatically start. This will require the crew to manually start the standby pump.
3. Then the crew will experience a failure of RCS-LT-110X (Pressurizer level). This will require the crew to select RCS-LT-110Y as controlling channel and refer to Technical Specifications.
4. Then the crew will experience a small SG Tube Leak. This will require the crew to quantify leakage, start a unit shutdown, and refer to Technical Specifications.
5. Then the crew will experience high vibrations on 'B' Main Feed pump causing the crew to manually trip the pump. This will result in a Reactor Power Cutback (Plant Event). This will require the crew to stabilize the unit, continue the downpower, and refer to Technical Specifications.
6. Then the crew will experience a SG Tube Rupture (degradation of SGTL). This will require the crew to initiate a unit trip and enter the EOP network.
7. Then the crew will experience a loss of HPSI injection. This will require the crew to implement the Functional Recovery Procedure (FRP) to restore HPSI flow.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No.	Malf. No.	Event Type*	Event Description
		N (PO)	Shift charging pumps to 'B' and 'E' running.
1 T = 5	CP06:TCNP01A CP05:TCNP01B	C (SO)	'A' TC pump trips with a failure of the 'B' TC pump to automatically start (SO to diagnose and manually start 'B' TC pump and CRS to direct actions)
2 T = 10	TR04:RCALT110X	I (PO)	RCA-LT-110X fails low. (PO to diagnose and select RCA-LT-110Y as controlling channel and CRS to refer to Technical Specifications)
3 T = 15	TH06A	R (ALL)	Small #1 SG Tube leak. Crew to quantify leakage and reduce power by boration and/or Control Element Assembly (CEA) insertion. (PO/SO diagnose leakage and quantify, then coordinate power reduction, CRS direct power reduction and refer to Technical Specifications)
4 T = 35	FW15B	C (SO)	High Vibrations of 'B' Main Feed pump requiring a manual trip of the pump resulting in a Reactor Power Cutback. (SO to identify, PO to stop boration if requested, CRS to direct plant stabilization and refer to Technical Specifications)
5 T = 40	THO6A	M (ALL)	Steam Generator Tube Rupture (SGTR) (Crew recognizes, CRS directs Reactor Trip)
6 T = 57	ED10A CP06:SPAP01	C (PO)	Loss of 'A' train HPSI due to Loss of power supply (PBS-S03) (PO diagnose) (CRS to transition to Functional Recovery Procedure (FRP) and direct actions to restore HPSI flow) (Critical Task to restore power to PBA-S03 using MVAC-1) (Critical Task to restore Train A HPSI flow) (Critical Task to start a cooldown)
T~70			End point = Crew restores HPSI flow and starts a cooldown.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

LOIT NRC EXAM SCENARIO SUPPLEMENTAL TURNOVER INFORMATION

Scenario # 2

Turnover

Plant conditions:

The unit is at 100% power, steady state conditions at 225 EFPD.

Equipment Out of Service:

HPSI 'B'

High Pressure Safety Injection (HPSI) pump 'B' is out of service for emergent work to replace a pump bearing that failed during its scheduled Surveillance Test 6 hours ago. Maintenance workers expect to finish pump repairs in 14 hours from now. T.S. 3.5.3 Condition B was entered 6 hours ago.

PW 'B'

The 'B' Plant Cooling Water pump was removed from service 20 hours ago for scheduled maintenance on the pump motor. Maintenance workers expect to finish pump repairs in 24 hours total time.

Planned Shift Activities:

Remove the 'A' Charging pump from service for planned maintenance. Operations Management has agreed to this request.

Following turnover, shift charging pumps to 'B' and 'E' running to support removing 'A' Charging pump from service.

'E' Charging pump Pre-Start checklist has been completed and an AO is standing by for pump start.

The normal, shiftly surveillances are complete.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: PVNGS Unit-1 **Scenario No.:** 3 **Op-Test No:** 3

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions: IC-16, 50% power, MOC

High Pressure Safety Injection pump 'B' is Out of Service

Plant Cooling Water pump 'B' is Out of Service

Turnover:

See Attached

Scenario Overview:

1. The crew will complete the startup of 'B' MFP and then commence a power increase.
2. Then the crew will experience a failure of a SG #1 Wide Range level transmitter. This will require the crew to refer to Technical Specifications and bypass appropriate Reactor Protection System (RPS) bistables
3. Then the crew will experience a failure of the inservice Letdown Control valve causing a loss of letdown. This will require the crew to stabilize CVCS system and refer to Technical Specifications.
4. Then the crew will experience an unrecoverable loss of feedwater to #2 SG when the Economizer valve fails closed. The crew is expected to attempt to manually trip the unit.
5. Then the crew will experience an ATWS condition and a Main Steam Safety Valve failing open on the unit trip. The crew is expected to open supply breakers for L03 and L10 in response to the ATWS. In response to the Safety valve failure, the crew is expected to isolate feed to #2 SG and stabilize the plant following SG dryout.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Event No.	Malf. No.	Event Type*	Event Description
		N (SO)	Place 'B' MFP in service (CRS to direct and SO to perform)
		R (ALL)	Power Increase (CRS to direct and SO/PO to coordinate and perform)
1 T = 20	TR04:SGDL T1113D	I (SO)	SG Wide Range level instrument fails low (SO to diagnose and perform actions and CRS direct and refer to Technical Specifications)
2 T = 30	IMF CV03A	C (PO)	CHN-UV-110P Flow Control valve fails closed causes a loss of Letdown (PO to diagnose and perform actions and CRS to direct recovery)
3 T = 42	AV02:SGNF V1122	C (ALL)	#2 SG Feedwater Economizer valve fails closed (SO/CRS to diagnose and CRS to direct unit trip)
4 T = 43	ATWS	M (ALL)	Reactor Protection system failure to open Reactor Trip Switchgear breakers (Crew to diagnose and take action) (Critical Task to trip reactor by opening L03 and L10)
5 T = 44	RV02:SGEPS V554	C (ALL)	Main Steam Safety Valve on #2 SG fails open (Crew recognizes and CRS diagnose Excess Steam Demand and direct stabilization activities) (Critical Task to stop feeding and steaming #2 SG) (Critical Task to control RCS parameters using #1 SG to prevent lifting Pressurizer Safeties)
T~60			End point = Crew stabilizes heat removal on #1 SG

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

LOIT NRC EXAM SCENARIO SUPPLEMENTAL TURNOVER INFORMATION

Scenario # 3

Turnover

Plant conditions:

The unit is at 50% power, steady state conditions at 225 EFPD.

Equipment Out of Service:

HPSI 'B'

High Pressure Safety Injection (HPSI) pump 'B' is out of service for emergent work to replace a pump bearing that failed during its scheduled Surveillance Test 6 hours ago. Maintenance workers expect to finish pump repairs in 14 hours from now. T.S. 3.5.3 Condition B was entered 6 hours ago.

PW 'B'

The 'B' Plant Cooling Water pump was removed from service 20 hours ago for scheduled maintenance on the pump motor. Maintenance workers expect to finish pump repairs in 24 hours total time.

Planned Shift Activities:

The plant has been started up after an electrical grid disturbance caused a reactor/plant trip 4 days ago.

After startup, power was held at 50% for DFWCS testing and Adjustment of nuclear instrumentation (NIs). All tests were satisfactory.

Extended warm weather and the outages of several non-nuclear stations has caused a Power Shortage situation. Station management directs the crew to **immediately** begin a power ascension following turnover. ECC has been notified.

Procedure 40OP-9ZZ05 has been performed through Step 5.3.38.1

Procedure 41OP-1FT02, Feedwater Pump Turbine, has been completed up to step 4.3.31. Main Feed Pump 'B' is currently at ~1000 rpm. Continue the MFP startup with step 4.3.31.

Following completion of the B Main Feed Pump startup, the crew is to recommence the power ascension to 100% power over the next 6 hours.

The required dilution has been calculated and verified by an STA to be 5804 gallons of Reactor Makeup Water. A dilution rate of 16 gpm will support the 8% per hour power ascension rate allowed by 40OP-9ZZ05 fuel preconditioning guidelines.

The normal, shiftly surveillances are complete.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

PVNGS License Examination
Administrative Topics Outline

PVNGS Form ES-301-1

Facility: ***Palo Verde***	Date: 3/21/01
Examination Level: **RO**	Operating Test Number: **PVNGS RO**

Administrative Topic/ Subject Description		**Describe method of evaluation:** **1. ONE Administrative JPM, OR** **2. TWO Administrative questions**	**K/A # IMP**
A.1	JPM A1 "Conduct of Operations"	Ability to perform specific system and integrated plant procedures during all modes of plant operation. (Candidate will be required to use Power Ascension Ramprate OAP "Operator Assistance Program" to determine if a continued power increase is authorized.) *Scheduled as Admin JPM for **RO & SRO.*** (Existing JPM AD001) *To be performed in simulator.*	2.1.23 4.0
	JPM A2 "Conduct of Operations"	Knowledge of conditions and limitations in the facility license. (Candidate will be required to calculate a RCS leakrate, have the SRO implement Tech Spec LCO.) *Scheduled as Admin JPM for **RO & SRO.** (Existing JPM AD002)*	2.1.33 3.4
A.2	JPM A3 "Equipment Control"	Knowledge of tagging and clearance procedures. (The 'A' Turbine Cooling Water Pump must be tagged out to replace the outboard pump bearing.) *Schedule as Admin JPM for **RO only.** (Existing JPM AD002)*	2.2.13 3.6
A.3	JPM A4 "Radiation Control"	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (Candidate will be required to demonstrate the proper method of entering a high radiation area including checking personal qualification.) *Scheduled as Admin JPM for **RO & SRO.*** (Modified) *Plant specific event, individual assigned activities when not qualified as independent worker.* *To be performed in plant prior to In-Plant JPM JP2.*	2.3.10 2.9
A.4	JPM A5 "Emergency Plan"	Knowledge of Emergency Communications Systems and Techniques. (Candidate will be required to perform CR actions for plant emergency.) *Scheduled as Admin JPM for **RO only.*** (Existing JPM AD006) *Plant specific event: e.g. chemical spill, fire.* *To be performed in Simulator as JPM.*	2.4.43 2.8

PVNGS License Examination
Administrative Topics Outline

PVNGS Form ES-301-1

Facility: ***Palo Verde***	Date: 3/21/01
Examination Level: **SRO**	Operating Test Number: **PVNGS SRO**

Administrative Topic/ Subject Description		**Describe method of evaluation:** **1. ONE Administrative JPM, OR** **2. TWO Administrative questions**	**K/A # IMP**
A.1	JPM A1 "Conduct of Operations"	Ability to perform specific system and integrated plant procedures during all modes of plant operation. (Candidate will be required to use Power Ascension Ramprate OAP "Operator Assistance Program" to determine if a continued power increase is authorized.) *Scheduled as Admin JPM for **RO & SRO.*** (Existing JPM AD001) *To be performed in simulator.*	2.1.23 4.0
	JPM A2 "Conduct of Operations"	Knowledge of conditions and limitations in the facility license. (Candidate will be required to calculate a leakrate using ERFDADS and implement Tech Spec LCO.) *Scheduled as Admin JPM for **RO & SRO.*** (Existing JPM AD002)	2.1.33 4.0
A.2	JPM A3 "Equipment Control"	Knowledge of the process for managing maintenance activities during power operations. (Candidate will be required to Review PCRIM "Plant Configuration Risk Indicator Matrix" for risk assessment and perform follow-up up work control actions and notifications *Schedule as Admin JPM for **SRO only.*** (Existing JPM AD007)	2.2.17 3.5
A.3	JPM A4 "Radiation Control"	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (Candidate will be required to check qualifications for task and determine that the radiological requirements of the REP to enter a high radiation area do not match the room posting.) *Scheduled as Admin JPM. for **RO & SRO.*** (Modified) *Plant specific event, individual assigned activities when not qualified as independent worker.* *To be performed in plant prior to In-Plant JPM JP2.*	2.3.10 3.3
A.4	JPM A5 "Emergency Plan"	Ability to take action called for in the Emergency Plan, including acting as Emergency Coordinator. (Candidate will classify event and perform initial Emergency Coordinator duties.) *Scheduled as Admin JPM 5A and 5B* for **SRO only.*** (New) *To be performed in Simulator as JPM.*	2.4.38 4.0

*Admin 5A is a classification for dynamic scenario #1. Admin 5B is a classification for dynamic scenario #2.